

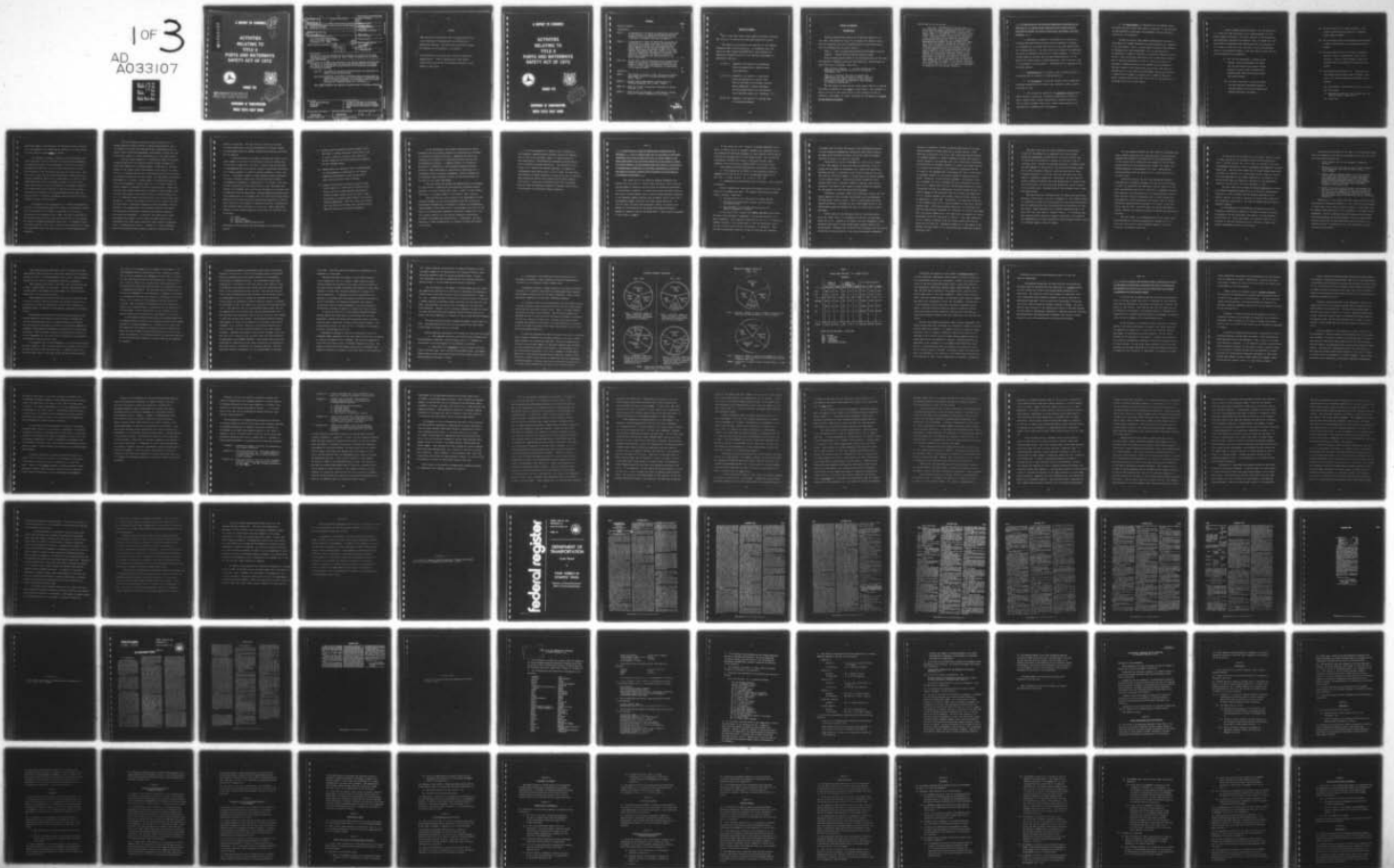
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A REPORT TO CONGRESS

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**ACTIVITIES
RELATING TO
TITLE II
PORTS AND WATERWAYS
SAFETY ACT OF 1972**



JANUARY 1975

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UNITED STATES COAST GUARD**

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Supplementary Notes

Section 203 of the Act requires that the Secretary, for a period of ten years following the enactment of Title II, make a report to Congress. This is the 3rd of 10 such reports.

16. Abstract

This report is structured ^{nr} to be responsive to the specific language of Section 203 of Title II. To accomplish this, the report has been divided into three parts, each headed by an appropriate excerpted portion of the reporting requirements as contained in the law.

Part I (1) responds to the question of describing Rules and Regulations to improve vessel controllability;

Part II (2) responds to the question of describing Rules and Regulations to reduce cargo loss in the event of an accident, environmental damage due to vessel groundings, and the progress made on an international level regarding design, etc. standards; and

Part III (3) responds to the question of problem areas in developing standards.

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A REPORT TO CONGRESS

**ACTIVITIES
RELATING TO
TITLE II
PORTS AND WATERWAYS
SAFETY ACT OF 1972**



JANUARY 1975



DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

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ABSTRACT

EXECUTIVE SUMMARY

This is the third report being submitted pursuant to Section 203, Title II, of the Ports and Waterways Safety Act of 1972.

This report is structured to be responsive to the specific language of Section 203 of Title II. To accomplish this, the report has been divided into ^{The following} three parts, each headed by an appropriate excerpted portion of the reporting requirements as contained in the law:

→ Part I, responds to the question of describing Rules and Regulations to improve vessel controllability;

→ Part II, responds to the question of describing Rules and Regulations to reduce cargo loss in the event of an accident, environmental damage due to vessel groundings, and the progress made on an international level regarding design, etc. standards, and

→ Part III responds to the question of problem areas in developing standards.

REPORT TO CONGRESS

INTRODUCTION

The Ports and Waterways Safety Act of 1972 was enacted on 10 July 1972. The purpose of the Act is to promote the safety of ports, harbors, waterfront areas and navigable waters of the United States.

The Act is divided into two parts, namely:

TITLE I - Ports and Waterways Safety and Environmental Quality

TITLE II - Vessels Carrying Certain Cargoes in Bulk

Title II amends Section 4417a of the Revised Statutes (46 USC 391a).

This Section is commonly called the Tank Vessel Act. The statement of policy for Title II declares, inter alia,

"That existing standards . . . of such vessels must be improved for the adequate protection of the marine environment." and

"That it is necessary that there be established . . . comprehensive minimum standards of design, construction, alteration, repair, maintenance and operation to prevent or mitigate the hazards of life, property and the marine environment."

The Tank Vessel Act gave the U.S. Coast Guard authority to develop and enforce standards for the safety of such vessels. The statement of policy in Title II adds another facet to this authority in that it addresses a requirement for vessel standards for the purposes of protecting the marine environment.

Section 203 of the Act states:

"Sec. 203. The Secretary of the Department in which the Coast Guard is operating shall, for a period of ten years following the enactment of this title, make a report to the Congress at the beginning of each regular session, regarding his activities under this title. Such report shall include but not be limited to (A) a description of the rules and regulations prescribed by the Secretary (i) to improve vessel maneuvering and stopping ability and otherwise reduce the risks of collisions, groundings and other accidents, (ii) to reduce cargo loss in the event of collision, groundings and other accidents, and (iii) to reduce damage to the marine environment from the normal operation of the vessels to which this title applies, (B) the progress made with respect to the adoption of international standards for the design, construction, alteration, and repair of vessels to which this title applies for protection of the marine environment, and (C) to the extent that the Secretary finds standards with respect to the design, construction, alteration, and repair of vessels for the purpose set forth in (A)(i), (ii) or (iii) above not possible, an explanation of the reasons therefor."

". . . A description of the Rules and Regulations prescribed by the Secretary (i) to improve vessel maneuvering and stopping ability and otherwise reduce the risks of collisions, groundings, and other accidents . . ."

In addressing a response to the specifics of this portion of Section 203 which deals primarily with the movement of vessels, it is appropriate to comment upon the use of the words "maneuvering" and "stopping ability." The Coast Guard has systematically approached the matter of regulating the control of vessel movement. In doing so, we have chosen to consider that the term "maneuverability" is the ability of a given vessel to perform maneuvers. This is but one facet of the problem of controllability. Controllability is composed of the following aspects:

a. Maneuverability of a specific ship; stopping ability is included within the category of "maneuverability."

b. The environment in which the specific ship is operating, including considerations of time of day, visibility, wind, current, and stage of tide.

c. The constraints imposed by the geographic location within which the ship is operating, including considerations of depth of water, channel width, channel configuration, channel obstructions such as shoals, bridges, docks, etc., vessel traffic density, and availability of external aids to navigation.

d. The human element as represented by the specific vessel personnel who must utilize their skills to evaluate the interactions of maneuverability, environment and geographic location and react correctly to the evaluation.

Inasmuch as each of these aspects impinges upon the others, this report will address the matter of controllability as a composite of all its aspects. The U. S. Coast Guard, acting for the Secretary of Transportation, has accomplished, or is in the process of accomplishing, a number of regulatory transactions involving controllability. While we believe these efforts are a significant achievement in meeting the mandate of Title II, they do not purport to represent a complete solution to the problem of controllability. Much more remains to be accomplished, particularly with regard to implementation of the research and development efforts now underway. A commentary with respect to proposals for a number of possible design standards which could affect the matter of controllability is contained in Part III of this report.

A major problem area with regard to the controllability of a vessel has been determined to be a general absence of information readily available to the ship's officers on the maneuvering characteristics relating to his specific ship. To remedy this, the Coast Guard is publishing final Regulations that will require all U.S. vessels of 1600 gross tons and over, in ocean and coastwise service, to prominently display in the pilot house of each ship the following maneuvering information:

- (1) For full and half speed, a turning circle diagram to port and starboard that shows the time and distance and transfer period required to alter course 90 degrees with maximum rudder angle and constant propulsion power settings.
- (2) The time and distance to stop the vessel from full and half speed while maintaining approximately the initial heading with minimum application of rudder.

- (3) For each vessel with a fixed propeller, a table of shaft revolutions per minute for a representative range of speeds.
- (4) For each vessel with a controllable pitch propeller, a table of settings for a representative range of speeds.
- (5) For each vessel that is fitted with an auxiliary device to assist in maneuvering, such as a bow thruster, a table of vessel speeds at which the auxiliary device is effective in maneuvering the vessel.
- (6) The maneuvering information is to be provided for the normal load and normal light or ballast condition of the vessel assuming the following circumstances:
 - (a) Calm weather - wind 10 knots or less, calm sea;
 - (b) No current;
 - (c) Deep water conditions - water depth twice the vessel's draft or greater; and
 - (d) Clean hull.

There must appear at the bottom of the information sheet a warning that the response of the vessel may be different from those listed if any of the above conditions are varied.

The necessary information relating to the environment and local conditions at each of the ports servicing vessels engaged in carrying bulk cargoes, within the meaning of Title II of the Ports and Waterways Safety Act of 1972, is best available to the Coast Guard Captains of the Port having authority over those ports. With this fact in view, the Coast Guard published an advance notice of proposed rulemaking, Marine Traffic Requirements, on June 28, 1974 (39FR 24157-24159) which is appended as Annex II of this report. These rules would set forth the concepts of a systematic approach to be administered by the Captains of the Port and will consider the various environmental and local geographic factors impacting upon the risk of collisions, groundings, and other marine accidents incident to vessel controllability.

The purpose of these regulations is to enable the Captain of the Port to initiate action which will reduce an unacceptable level of risk to the safety of the harbor, or the ship or to the marine environment, to an acceptable level. Where the risk is persistent or recurring, he would initiate a more enduring solution to the problem, but would not promulgate permanent regulations. If permanent regulations were required, such as for a vessel traffic system or for a regulated navigation area, they would continue to be promulgated by the Commandant.

The Coast Guard may require the ready availability of a maximum quantity of data relating to vessel maneuverability, and our Captains of the Port may enforce the most comprehensive set of vessel traffic regulations imaginable; nevertheless, the key for safe transit with respect to vessel controllability is the human element.

The Coast Guard administers a considerable amount of personnel standards legislation and regulation which has been promulgated to assure the competency of the human element. Regulation of the human element in the vessel control system begins at the input to the ranks of the U. S. merchant marine and is continued through the qualification and licensing programs of the Coast Guard. The improvement of personnel performance is, of course, a matter which is receiving considerable attention and emphasis. Manning levels on U. S. vessels provide for adequate numbers of personnel of various qualifications. Federal law requires Coast Guard-licensed pilots on vessels in the coastwise trade and state laws require state-licensed pilots on foreign vessels and on U. S. registered vessels entering certain areas located within their boundaries. In those areas where the state does not require pilotage, the Coast Guard is evaluating regulatory control by federal licensing. Incident to its responsibility for personnel standards enforcement, the Coast Guard has pursued a corrective role through suspension and revocation proceedings. In the past, the application of these proceedings with respect to state pilots has been based on state requirements that their pilots hold Coast Guard licenses as prerequisites to licensing by the states. A recent U. S. Court of Appeals' decision has placed the Coast Guard's authority to proceed in this

manner into question. The Coast Guard is continuing to pursue alternate approaches to the state-licensed pilot problem, however our enforcement authority appears limited and legislative assistance may be required.

A large proportion of accidents involving the failure of the human element in the vessel controllability system has been linked to the lack of capability on the part of vessel operating personnel in comprehending and evaluating all relevant navigational information as it becomes apparent to them and reacting correctly to their evaluation. A substantial number of these accidents could be prevented if certain equipment, publications and practices were mandatory. In implementing amendments to Regulations 12, 19 and 20 of the International Convention for the Safety of Life at Sea, 1960 which were adopted on 26 November 1968, ratified by the Senate on 31 October 1972, and deposited with the Secretariat, Intergovernmental Maritime Consultative Organization on 22 November 1972, the Coast Guard is publishing Regulations that would improve the navigational capability of United States vessels for the purpose of reducing collisions, groundings and other accidents which contribute to cargo loss. These rules would require all United States vessels of 1,600 gross tons and over to be fitted with:

- (1) Radar
- (2) Gyro Compass
- (3) Magnetic Compass
- (4) Electronic Echo Sounding Device

Additionally, the following rules would apply to all United States vessels:

- (1) Vessels would be required to carry adequate, up-to-date charts, sailing directions, coast pilots, list of lights, notices to mariners, tide tables and current tables and all other publications necessary for the intended voyage.
- (2) Vessels which are required to have a radiotelegraph or radiotelephone by regulations of the Federal Communications Commission would be required to carry the International Code of Signals.
- (3) Onboard those vessels operating in areas of high traffic density, in conditions of restricted visibility, and in all other hazardous navigational situations where automatic pilot is used, it must be possible to establish human control of the ship's steering immediately. This rule would also require that the officer of the watch have available without delay the services of a qualified helmsman.

As the technology of tank vessel construction and design progresses and our corollary concern for controllability increases, so also does the necessity grow for a deepening and continuing evaluation and revision of our qualifying examinations for deck and engineering officers. A complete revision of regulations pertaining to standards for those personnel handling hazardous products is being developed and finalized for publication as a forthcoming notice of proposed rulemaking. Minimum standards for all personnel aboard chemical carriers and liquified natural gas carriers are also under development.

The Coast Guard and the Maritime Administration are engaging in joint efforts to improve the qualifications of merchant marine personnel in certain critical skill areas. Results of this cooperative effort are already evident in the field of radar training.

The Coast Guard has participated in the development of international documents by the Intergovernmental Maritime Consultative Organization Subcommittee on Standards of Training and Watchkeeping. These documents, with others still to be developed, will serve as the basis of an international convention tentatively scheduled for 1977. The ultimate objective is to establish acceptable international standards for minimum crew qualifications. Undoubtedly, the implementation of these standards will be realized on board tank vessels of all flags.

It is also appropriate to mention that in addition to the foregoing, ongoing planning includes research and development on the various pertinent aspects of human engineering. More specifically, the Man/Machine Shiphandling System Requirement is receiving thorough exploration. The objective of this project is to identify and develop standards, in response to everchanging trends and patterns, so as to ensure the continuing qualification of vessel personnel in those vital areas of operation which drastically affect vessel safety and the public welfare. The project is tasked with providing the data for the optimum match of human and mechanical elements to minimize the potential for occurrence of catastrophic marine casualties.

PART II

". . . A description of Rules and Regulations prescribed by the Secretary . . . (ii) to reduce cargo loss in the event of collisions, groundings, and other accidents and (iii) to reduce damage to the marine environment from the normal operation of the vessels to which this title applies, (B) the progress made with respect to the adoption of international standards for the design, construction, alteration, and repair of vessels to which Title II applies for the protection of the Marine Environment . . ."

This second part of the reporting mandate encompasses the approach the Coast Guard is taking toward developing vessel standards through domestic regulatory action as well as through the development of international standards. To effectively protect the marine environment these standards-making efforts should be simultaneously responsive to environmental damage resulting from accidental loss of cargo and to environmental damage resulting from normal vessel operations. On June 28, 1974, the Coast Guard published a notice of proposed rule-making for the protection of the marine environment, Tank Vessels Engaged in Domestic Trade (39 FR 24152-24157). These rules are appended to this report as ANNEX I.

In the January 26, 1973 issue of the FEDERAL REGISTER (38 FR 2467), an advance notice of proposed rulemaking was published concerning standards for pollution abatement for new tankships constructed for trade on the navigable waters of the United States. The construction requirements concerned the concept of segregated ballast tanks achieved, in part by fitting a double bottom in the cargo length.

The advance notice was published with two purposes in mind:

1. Participation by the public in the regulatory process in implementing section 201 of the Ports and Waterways Safety Act of 1972 (Pub. L. 92-340, 86 Stat. 427, 46 U.S.C. 391); and
2. Complying with the effective date of January 1, 1976, mandated by Congress.

Over 60 comments were received on the advance notice and an evaluation of the comments was made. The comments contained three common areas of concern. These were:

1. The high initial cost associated with double bottoms.
2. The need for international agreement and the danger of unilateral action.
3. The treatment to be accorded existing foreign and domestic shipping not covered.

In the July 5, 1973 issue of the FEDERAL REGISTER (38 FR 17848), the Coast Guard published a supplement to the advance notice of proposed rulemaking. This supplement explained that 46 U.S.C. 391a(7)(c) as amended, allowed for the establishment of rule and regulations consonant with international treaties, conventions, or agreements. Since the IMCO International Conference on Marine Pollution was scheduled

in October 1973, and since the results of the Conference would have a direct bearing on implementing regulations under section 391a(7), the Coast Guard notified the public that action under the advance notice of 26 January 1973 would be withheld.

Section 401 of the Act of November 16, 1973 (Pub. L. 93-153, 87 Stat. 589) amended the effective dates in subsection (7)(C) of section 201 and added the requirement that, "Rules and regulations published pursuant to subsection (7)(A) shall be effective not later than June 30, 1974, with respect to United States flag vessels engaged in the coastwise trade." As previously noted, subsection (7)(A) requires publication of minimum standards of design, construction, alteration, and repair of the vessels to which section 201 applies for the purpose of protecting the marine environment.

The phrase "coastwise trade" is not defined by the Act, but the phrase appears in other statutes and has been used interchangeably with the phrase "coasting trade." Both of these phrases have been defined juridically to include not only trade between points in the United States along the seacoast but also to trade by way of rivers and lakes.

Section 4417a of the Revised Statutes of the United States (46 U.S.C. 391a) prior to its amendment by the Ports and Waterways Safety Act of 1972 applied to all vessels carrying inflammable or combustible liquid cargo in bulk, except public vessels owned by the United States. Paragraph 7(D) of section 4417a specifies that any rule or regulation for the protection of the marine environment promulgated

pursuant to subsection (7) must be equally applicable to U.S. flag vessels engaged in foreign trade and to foreign vessels. Since there was no provision in 46 U.S.C. 391a authorizing any distinction in treatment between U.S. vessels engaged in foreign trade and U.S. vessels engaged in the coastwise trade, nor any provision authorizing any distinction in treatment between U.S. vessels and foreign vessels, it is clear that the intent of the Congress in paragraph 7(D) was to assure in the implementation of paragraph 7(C) that no distinction of treatment between U.S. and foreign vessels be inferred from any treaty, convention, or international agreement. Section 401 of the Act of November 16, 1973, introduced the first distinction in treatment of U.S. vessels under the Ports and Waterways Safety Act of 1972, accelerating the date for promulgation of certain regulations for U.S. vessels engaged in the coastwise trade, and allowing the regulations for U.S. vessels engaged in the foreign trade and foreign vessels to be published at a later time. Accordingly, the regulations proposed in this document apply to U.S. vessels engaged in trade other than the foreign trade. Since these proposed regulations are consistent with both the International Conference for Prevention of Pollution from Ships, 1973, and current domestic law, the regulations are proposed as interim regulations until that time prior to January 1, 1976, when regulations for U.S. vessels in foreign trade and foreign vessels entering U.S. waters will be effective. Appended as ANNEX III to this report is the document entitled "Final Act of the International Conference on Marine Pollution, 1973."

The Coast Guard uses the term "coastwise" and "coastwise routes" for the purpose of the application of certain vessel inspection requirements (46 CFR 30.01-7, 70.10-13, 90.10-11 and 175.10-3) that are unrelated in meaning to "coastwise trade" or "coasting trade." Because the cabotage law phrase "coastwise trade" has been employed in section 201 of the Ports and Waterways Safety Act of 1972, the phrase "domestic trade" has been used in these proposed regulations to avoid any confusion that might arise with regard to inspection regulations. Accordingly, the term "domestic trade" is defined as meaning the trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port, including trade on the navigable rivers, lakes, and inland waters.

The Coast Guard has determined that the regulations promulgated pursuant to section 401 of the Act of November 16, 1973, should conform in a substantial manner with the provisions of the conventions dealing with oil pollution which have been elaborated but which have not come into force. These conventions are of general application and it is quite clear that they apply to seagoing vessels. It is equally clear that some provisions relating to design, construction, and operation are inappropriate to vessels operating on some navigable internal waters or to certain types or sizes of vessels.

For the foregoing reasons the Coast Guard has determined that these proposed regulations will apply generally to United States seagoing tank vessels of 150 gross tons or more while engaged in the carriage of oil (defined in the proposed 33 CFR 157.03(m) as petroleum in any form including oil, sludge, oil refuse, and refined products) in the domestic U.S. trade. Additionally, certain provisions will be applied to U.S. vessels operating in the Great Lakes.

Taking into account the fact that the Marine Pollution Conference was concluded in November 1973 and the Act of November 16, 1973 was enacted in the same month, and that Title II of the Ports and Waterways Safety Act of 1972 prior to amendment required environmentally related regulations to be promulgated by January 1, 1976, the Coast Guard has determined that it cannot develop new environmentally related regulations for certain types of vessels, principally unmanned barges operating on the rivers, to be effective on June 30, 1974. The Coast Guard and the Maritime Administration, jointly, are currently studying the design and construction of barges.

The Coast Guard, in the administration of its vessel safety and environmental protection programs must consider all of its statutory authorities as being integrated despite, in certain instances, overlapping authorities.

In the case of the carriage of oil by vessels, there is authority under section 311 of the Federal Water Pollution Control Act (Pub. L. 92-500, 86 Stat. 816, U.S.C. 1251) in addition to the Ports and Waterways Safety Act of 1972 to promulgate environmentally oriented regulations. The Coast Guard deems that the vessel design regulations contained in 33 CFR Part 155, issued under section 311j(1)(C) and (D) which are applicable to all vessels operating on the waters of the United States, meet, in large part, the spirit of the requirements imposed by section 401 of the Act of November 16, 1973.

The Coast Guard fully intends to provide comprehensive rational and necessary regulations under Title II of the Ports and Waterways Safety Act of 1972 to comply with the amended provisions of R.S. 4417a(7) thereof, but finds it necessary to divide these regulations into categories appropriate to the kinds of vessels and the nature of hazardous exposure.

In accordance with the preceding, the proposal follows the Convention, including the adoption of the metric system for certain calculations, the Oil Record Book requirements, and the discharge criteria for oil. These requirements are consistent with the U.S. proposals at the 1973 Conference and are much more stringent than present requirements relative to discharges.

The proposed requirements do not apply to the following vessels which are exempted by law from the requirements of section 201 of the Ports and Waterways Safety Act:

1. Public vessels that are not engaged in commercial services.
2. Vessels that carry oil only for use as fuel or stores, or carrying such cargo only in drums, barrels, or other packages.
3. Cannery tenders, fishing tenders, or fishing vessels of not more than 500 gross tons used in the salmon or crab fisheries of the States of Oregon, Washington, and Alaska when engaged exclusively in the fishing industry that are allowed to have on board petroleum products in bulk in accordance with requirements contained in 46 CFR Part 105.
4. Vessels of not more than 500 gross tons documented in the service of oil exploitation that are not tank vessels and that are subject to the proposed regulations only because of the transfer of fuel from the vessels' own fuel supply tanks to offshore drilling or production facilities.

Regulations to cover ships other than tankers which have their certificates of inspection endorsed to carry relatively small amounts of liquid bulk cargo, usually specialty products in deep tanks, will be issued in the future after a full assessment of the impact can be determined. Since no substances have been designated as hazardous polluting substances by the Environmental Protection Agency under section 311(b)(2)(A) of the Federal Water Pollution Control Act, regulations cannot be proposed at this time applicable to vessels carrying such substances.

The proposed design requirements contain standards for segregated ballast tanks required on a new vessel (defined in the proposed section 157.03(i)) of 70,000 deadweight tons or more. These standards include size and capacity requirements and piping arrangements.

Each seagoing tank vessel of 150 gross tons or more would have to have a minimum number of slop tanks. The slop tank standards include capacity requirements and requirements for inlet and outlet connections and allow separation aids.

Each seagoing tank vessel of 400 gross tons or more would have to have a tank that receives and holds oily residue resulting from purification of fuel and lubricating oil and from oil leakages in machinery spaces. Standards include capacity requirements and design details.

New seagoing tank vessels and certain existing seagoing tank vessels (defined in the proposed 33 CFR 157.03(j) as vessels that are not new vessels) must have cargo tanks designed in accordance with the calculation procedures contained in the proposed Appendix A. Standards include piping arrangements and limitations of tank volume and length. These standards incorporate the provisions of Annex C of the 1971 Amendments to the International Convention for the Prevention of Pollution of the Sea by Oil, 1954.

In accordance with the 1971 Amendments, a tank vessel contracted for after January 1, 1972, or where there was no building contract and the keel was laid or the tank vessel was at a similar stage of construction after June 30, 1972, must within two years after the entry

into force of the Amendments be in compliance with Annex C. The 1971 Amendments have not entered into force. Similarly, section 2(5) of the Oil Pollution Act Amendments of 1973 (Pub. L. 93-119, 87 Stat. 424) which revised the Oil Pollution Act, 1961 (75 Stat. 402, 33 U.S.C. 1001 et seq.) requires that tank vessels built in the United States after the effective date of the section be built in compliance with Annex C. The effective date of section 2(5) is the date the amendments to the Convention, as amended, are ratified or accepted with the advice and consent of the Senate of the United States. As of the date of this proposal, ratification has not occurred. The Coast Guard has determined that the standards in Annex C are an essential part of regulations for the protection of the environment and the incorporation of the standards in this proposal should not be delayed until the Convention is ratified.

A new seagoing tank vessel must meet the proposed subdivision and damage stability criteria, after assuming side and bottom damage defined in the proposed Appendix B. Calculations for cargo tanks and subdivision and stability requirements would be submitted for Coast Guard review when the plans and specifications for the tank vessel are submitted. An instruction manual that describes operation of the cargo and ballast system in a tank vessel must be submitted for approval.

The proposed operating requirements would allow a tank vessel engaged in the carriage of oil on the navigable waters of the United States to discharge only clean ballast (defined in the proposed § 157.03(e)) or segregated ballast. The requirements would allow seagoing U.S. tank vessels of 150 gross tons or more, while en route, to discharge an oily mixture from a cargo tank and a machinery space bilge if the prescribed conditions are met. Oily mixtures from the cargo could be discharged more than 50 miles from the nearest land at an instantaneous rate of oil content not exceeding 60 liters per nautical mile, not exceeding 1/15,000 by existing vessels or 1/30,000 by new vessels of the total quantity of cargo that the discharge formed a part. Oily mixtures that are from machinery space bilges that are not combined with oil cargo mixtures could be discharged more than 12 nautical miles from the nearest land if the oil content of the effluent is less than 100 parts per million. The discharge standards contain requirements for aiding the processing of the effluent using certain equipment, e.g., oil-water separators, oil discharge monitors and control systems, oily water interface detectors, and other similar equipment. Although this proposal requires such equipment, the equipment will not be required to be installed until after specifications are published in the FEDERAL REGISTER. Oily mixtures which cannot be discharged in compliance with the above criteria must be retained on board the vessel or transferred to a reception facility. The 1973 Conference contains requirements for the establishment of reception

facilities. This will also be the subject of regulations to be proposed at a later date.

Entries would have to be made in the Oil Record Book if certain operations occur on a tanker. These operations would include loading and unloading of oil cargo, internal transfer of oil cargo during a voyage, ballasting and cleaning of cargo tanks, discharge of water from slop tank, disposal of residues, and similar operations. In addition, the vessel would have to be operated in accordance with the stability information required in 46 CFR 31.01-30(d), the information developed from stability calculations based on proposed Appendix B, and the loading and distribution information necessary to comply with that criteria.

It should be noted that in the proposed regulations double bottoms beneath the cargo tank are not required, nor are they prohibited. Because the double bottom provision wasn't included, there has been a great deal of public discussion and comment. The double bottom issue is not new; in fact, it predates the passage of the Ports and Waterways Safety Act.

Subsequent to passage of the Ports and Waterways Safety Act, worldwide tanker casualties for the years 1969 and 1970 were reexamined to quantify the amount of oil released. This work was completed in early 1973 and Figures 1 and 2, attached, summarize this data. The apparent finding that bottom damage significantly outweighed side damage led directly to issuance by the Coast Guard of the January 26,

1973 Federal Register Advance Notice of Proposed Rulemaking requesting public comment on the desirability that segregated ballast tanker design be achieved in part by installing double bottoms. Further, this information was used in formulating the U.S. position advocating double bottoms at the 1973 IMCO Marine Pollution Convention.

The relationship of side damage to bottom damage upon ship design was explored for sensitivity in the course of developing the preparatory studies, and in early 1973 the Coast Guard contracted with J. J. Henry Co., Inc., a highly qualified firm active in the marine field, to perform a similar analysis of worldwide tanker casualties for the years 1971 and 1972. Unfortunately, the contract was not completed until after the 1973 Conference. Figures 3 and 4, attached, summarize the data for these two years and demonstrate quite opposite results from the data of the earlier two years regarding oil released in case of side and bottom damage.

The Coast Guard has recently assembled worldwide casualty data for 1973. Consolidating the 1973 data with the previous four years gives results shown in Figures 5 and 6, attached.

Several important conclusions can be drawn from this broad data base:

a. Side damaging casualties occur with greater frequency than bottom damaging casualties, the ratio being 1.66 to 1. Frequency of occurrences is one valid measure of the potential to pollute.

b. Quantified total estimates of the oil outflow from each type of casualty, e.g., where side and bottom damage result, are approximately equal and are sufficiently large to warrant equal concern as to design measures to mitigate outflow.

c. Two percent of the casualties resulted in total loss of the ship (78 incidents). These casualties contributed approximately 81 percent of the accidental outflow (787,000 tons).

Independent analyses of tanker accidents for the period 1959-1968, inclusive, by C. Grimes of Great Britain's Defense Operational Analysis Establishment confirm certain of the above conclusions. (Marine Traffic Engineering Symposium, 24-25 May 1972, Teddington, England)

As a validity check of the worldwide data collection effort, reports of tanker casualties occurring within 50 miles of the U.S. coastline were sorted from the Coast Guard casualty files. Table 1, attached, displays the results for fiscal years 1969-1973. The correlation between the worldwide and the U.S. data is good in the areas of frequency of incidents and relative outflow by accident type. The Coast Guard only recently assembled this material in the course of a fresh evaluation of regulatory action to be taken in connection with tanker design under Title II of the Ports and Waterways Safety Act.

It cannot be concluded from these five years of data that a particular type of damage so dominates the accidental release of oil, that a single design solution can or should be stipulated. The data is supportive of the need to place greater emphasis on designing tankships from the point of view of minimizing accidental oil pollution. One consequence of the 1973 International Convention is that, soon, tankships of 70,000 dead-weight tons or more must be designed with an additional volume of up to 40 percent in order to carry ballast in tanks other than oil cargo tanks (segregated ballast). The Coast Guard has incorporated this provision in its proposed rules published in the June 28, 1974, Federal Register.

WORLDWIDE TANKSHIP CASUALTIES

1969 - 1970

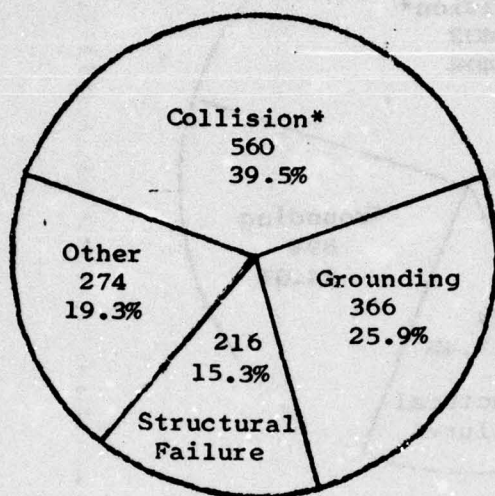


Fig. 1 - 1969-1970 Number of tanker incidents (polluting and nonpolluting) and percentage of total incidents.

1971 - 1972

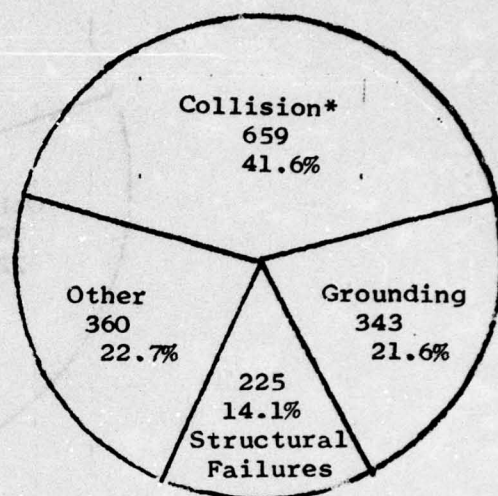


Fig. 3 - 1971-1972 Number of tanker incidents (polluting and nonpolluting) and percentage of total incidents.

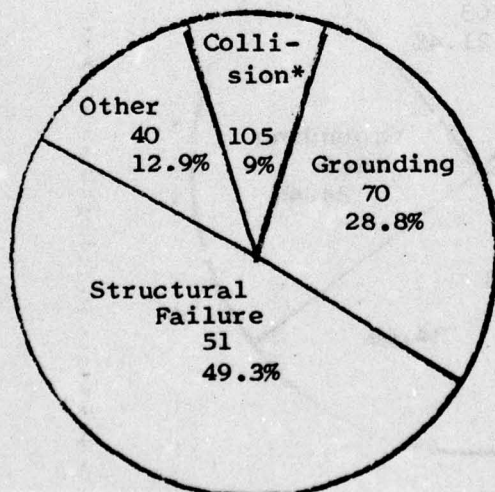


Fig. 2 - 1969-1970 Number of polluting incidents and contribution to total oil outflow (1969-1970 total outflow = 430,720 long tons)

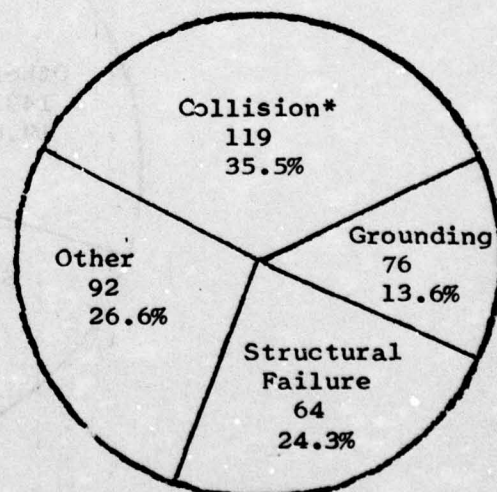


Fig. 4 - 1971-1972 Number of polluting incidents and contribution to total oil outflow (1971-1972 total outflow = 439,054 long tons)

*NOTE: "Collision" includes striking another ship or a fixed object

WORLDWIDE TANKSHIP CASUALTIES

1969 - 1973

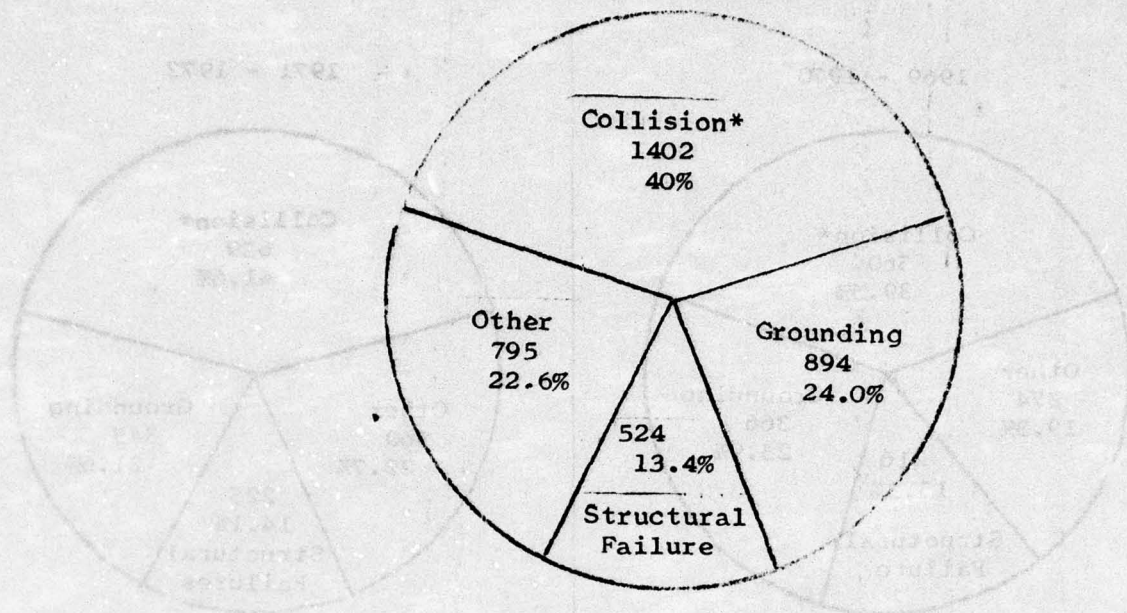


Fig. 5 1969-1973 Number of tanker incidents (polluting and nonpolluting) and percentage of total accidents.

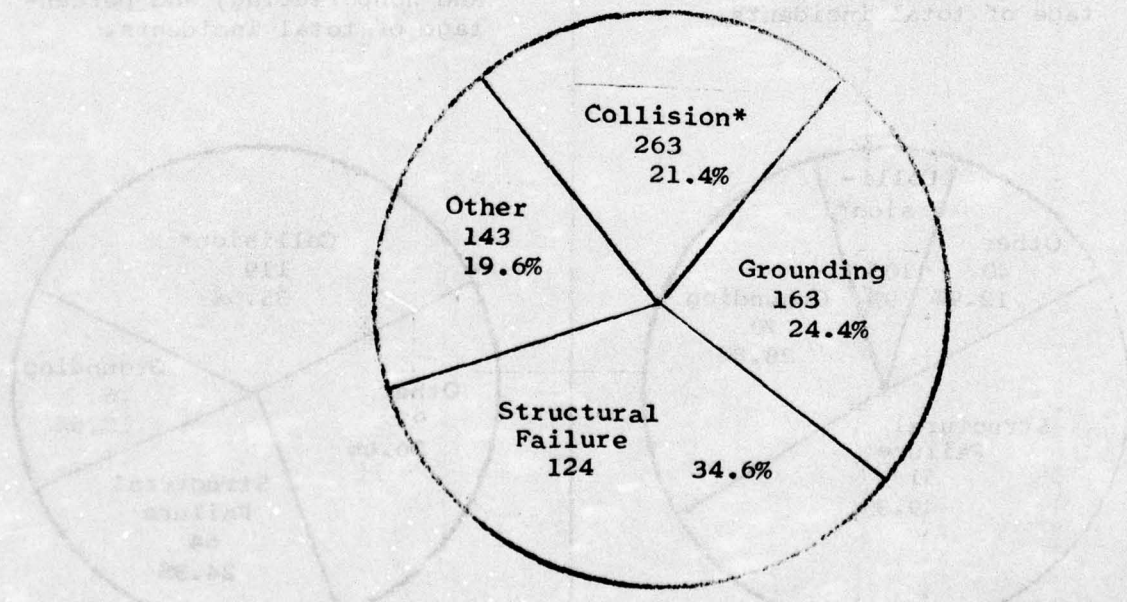


Fig. 6 1969-1973 Number of polluting incidents and contribution to total oil outflow (1969-1973 total outflow = 968,014 long tons)

*NOTE: "Collision" includes striking another ship or a fixed object

TABLE I

FISCAL YEARS 1969-1973 - U.S. WATERS (50 MI.)

TANKSHIPS

| | Number of Incidents | | | Number of Incidents with outflow | | | Oil Outflow Amounts | | |
|---------|---------------------|-----|-------|----------------------------------|-----|-------|---------------------|--------|--------|
| | U.S. | FN. | TOTAL | U.S. | FN. | TOTAL | U.S. | FN. | TOTAL |
| COLL | 206 | 121 | 327 | 13 | 13 | 26 | 4,655 | 2,276 | 6,931 |
| RAM | 261 | 50 | 311 | 16 | 5 | 21 | 1,571 | 2,750 | 4,321 |
| COL/RAM | 467 | 171 | 638 | 29 | 18 | 47 | 6,226 | 5,026 | 11,252 |
| GRD | 304 | 83 | 387 | 20 | 9 | 29 | 3,886 | 11,991 | 15,877 |
| STF | 74 | 7 | 81 | 8 | 7 | 15 | 30,083 * | 5,935 | 36,018 |
| TOTALS | 845 | 261 | 1106 | 86 | 52 | 91 | 40,195 | 22,952 | 63,147 |

*TOTAL LOSS OF ONE VESSEL: 29,950 TONS

- FN - Foreign
- COLL - Collisions
- RAM - Rammings
- GRD - Groundings
- STF - Structural Failures

Optimizing the location of this volume as defensive space can provide significant improvement toward reducing accidental pollution. The consolidated casualty data now makes it evident that design flexibility in locating segregated ballast tanks is much to be preferred over specifying a particular location, i.e., double bottoms. This is what the Coast Guard intended in the proposed rules, and this point will be made clear in the final rulemaking. Several vessel arrangements, some with double bottoms, are now under active industry development which will conceptually fulfill the requirement. The key point is that designers will be required to distribute segregated ballast spaces to provide effective protection against accidental releases giving due regard to other parameters which must be satisfied, i.e., longitudinal bending strength, tank size limitations, and survival after injury.

Because the proposed regulations didn't include requirements for double bottoms many have overlooked the significant accidental pollution features which are included. For example, when the regulations become effective, all U.S. tankers in domestic trade will be required to be designed so as to survive certain assumed damage anywhere within the cargo tank area at any condition of loading. One other item of great importance is the treatment to be accorded the main machinery space. This is a vulnerable space with the capability of causing the total loss of ship and cargo if flooded. On smaller tankers this space will have to be designed so that flooding of the engine space only will not cause the ship to sink. Larger tankers will be required to withstand

flooding of not only the main machinery space, but also one adjacent compartment.

The proposed regulations are taken from the 1973 Convention. The Coast Guard is convinced that the Convention is a strong document and one to which the United States should become signatory at an early date. The Convention offers the prospect of significant reduction of pollution from accidental releases, as well as reduction of operational discharges, fully in accord with the mandate of Paragraph 7(A) of R.S. 4417a calling for minimum standards of design. The Coast Guard is also cognizant of the international nature of maritime shipping and this nation's longstanding commitment to seek multi-national solutions. By working within the international framework, this country can best achieve its aims in the protection of the marine environment.

PART III

". . . (C) to the extent the Secretary finds standards with respect to the design, construction, alteration and repair of vessels for the purposes set forth in A(i), (ii) or (iii) above not possible, an explanation of the reasons thereof"

It has not been possible during the time since the passage of Title II through calendar year 1974, to establish all the standards that might be applicable to the design, construction, alteration and repair of tank vessels. This does not mean that the Coast Guard is not working on the problem; a considerable effort is underway and is evidenced by the combined technical efforts of government and industry alike; on both a domestic and an international scale.

The determination of regulatory efforts relative to reducing damage to the marine environment from normal tank vessel operations (as expressed by subpart A,iii of section 203) primarily involves enforcement of established discharge standards. Certain design features can be required in this regard to minimize the possibility of accidental and deliberate discharge of pollutants through the use of vessel systems. By and large, these regulatory efforts are well underway and have been addressed in existing and proposed regulation. In comparison with the matter of improvement of standards for normal

vessel operations, the matters of controllability and the establishment of standards for design, construction, alteration and repair, (as stated in subparts A,i and A,ii of section 203) and their inter-relationship are far more complex.

Simply stated, the problem is one of accident avoidance. The locations of probable marine accidents may be generally characterized as either open sea or confined waters. The controllability aspects and the possible interrelated engineering standards are generally different depending upon which of the two general locations we are concerned with.

Avoidance in either location may be realized, (1) if the potential occurrence of an accident is recognized, (2) if there is sufficient time to respond, (3) if there is enough room to move aside or stop in, and (4) if the vessel has the engineering capability to respond.

A potential accident may be initially recognized by a vessel's operating personnel through their own senses. Those senses may be aided electronically by such methods as radar or sonar, or by some other mechanical indicator. Or the potential accident could be recognized by personnel external to the vessel, either on another vessel, or on the shore. Potential accidents may be predicted in certain locations and traffic may be regulated accordingly in those areas through such methods as vessel traffic separation schemes, vessel traffic control, one-way traffic, or other similar methods.

Once a potential accident becomes recognized by ship's operating personnel, there must be sufficient time (1) for the human element in the ship's control system to evaluate and initiate correcting action, (2) for the other portions of the ship's control system to absorb and to answer the human correcting action input, and (3) for the ship to respond to the corrective input before it moves to the point where the potential accident will occur.

Possibly, sufficient methods can be developed to improve the recognition part of the avoidance problem; theoretically, even the human element can be eliminated. Technology might develop ways to accelerate the present response of a vessel's mechanical maneuvering system. Additional devices might be developed which would decrease the period of time, and the room required, that it takes to stop or maneuver a large vessel away from the place where the accident will occur.

Solutions proposed to the problem of accident avoidance test the imagination. Various research and development efforts are producing all manners of devices to affect the maneuverability of vessels. Such things as "barn door" type arresting gear that would protrude from the sides of the endangered ship as giant water brakes have been offered. Parachutes for stopping ships have been investigated, as have large jet engines aimed forward mounted on the bow of a vessel to provide thrust to decelerate its forward movement. Each of these solutions, even if effective, would present additional engineering

problems in such areas as structural strength, maintenance, etc. A philosophy frequently appears in these engineering solutions which asserts the idea that if one thing is good, two of the same thing are better. In a marine environment, as in other applications, such a philosophy is not always correct. Considerable professional and technical effort is presently being expended by the Coast Guard in evaluating and considering each of the many technical schemes and devices designed to promote accident avoidance.

One concept receiving considerable attention in the design standards under evaluation is the matter of redundancy. The private investment in capital in tankships and the Coast Guard's concern over potential catastrophes to the marine environment, as well as to life and property, demand that a level of redundancy be included in the controllability systems on U.S. vessels which are undergoing the plan approval process. Internationally, this objective is pursued through IMCO standards.

Accidental discharge of oil may be caused by failure of a tanker's hull structure as a result of faulty design, construction, or maintenance, improper loading, or explosion in a cargo tank space. These are also safety problems, attacked by existing safety regulatory standards which are under constant review to take into account operating experience and new technological developments.

Because of the complexity of the interrelated design features, such as that posed with the matter of "double bottoms," the Coast Guard has consistently pursued the objective of flexibility in determining specific vessel requirements on a case-by-case basis depending upon the individual components of a particular vessel's hull/machinery system. However, a number of recommendations have been offered calling for specific legislation requiring certain design standards, which taken singly or in concert, purport to be a quantum improvement to the matter of prevention of oil spills. Ample legislation presently exists enabling the Coast Guard to pursue the development of the necessary regulations which permit a systems approach to each design proposal. The flexibility inherent in such regulatory authority permits a wide range of pertinent standards to be applied to each vessel system upon its submission for Coast Guard plan approval. The absence of specific statutory requirements allows the application of selective standards, in varying degrees, proportionate to the risk involved in the vessel under approval; the result being the adaptation of a number of integrated standards to realize the optimum in pollution prevention.

Moreover, the call for specific legislated standards also speaks to "maneuvering" and "stopping ability" as design features. An imposed limitation of Coast Guard response to a broader interpretation of that mandate would pose a problem. It is the Coast Guard's view that the law intended the broader definition which embraces "controllability."

Notwithstanding the aforementioned proposed Rules published by the Coast Guard on June 28, 1974, some of the standards contained in legislative proposals for specific action and ultimately for enforcement by the Coast Guard deserve mention in this report in response to Part C of Section 203 of Title II. By and large these legislated standards would serve to amend Title II. Included in these proposed amendments are specifically the following standards:

- Standard I - Adequate horsepower to provide safe maneuvering and stopping capability.
- Standard II - Providing backup boiler, (take home capability), and steering motors, etc. as deemed necessary to assure safe operation in case of failure of primary equipment.
- Standard III - Tank size limited to one-half of 1971 amendment and 1973 Convention values (contains technical drafting error - "200 DWT" probably was meant to be "200 $\sqrt{\text{DWT}}$.")

Standard IV - Greater than 5000 DWT - Radar collision avoidance aid - computer envisioned to process data.

Standard V - Greater than 10,000 DWT - Maneuvering and stopping features singly or in combination as prescribed by Secretary.

1. controllable pitch propellers
2. multiple screws
3. multiple rudders
4. bow and stern thrusters
5. such other as Secretary may require

Standard VI - Greater than 20,000 DWT - Segregated ballast achieved in part by 1/15th beam double bottom throughout cargo length. No ballast in cargo tank. Ballast level not specified.

Standard VII - Greater than 50,000 - Inert gas system and recirculating tank washing by fixed machines. Capacity of tank cleaning machines to be 100 tons/hr.

The Coast Guard has sufficient authority to require every item mentioned in Standards I through VII. In fact, all the foregoing standards which have been offered for legislation have been, or are now actively being considered, as possible future rules and regulations requiring improvements in tank vessel design. The real question is not whether certain design alterations will improve vessel performance or operations, but how effective will the improvement be in reducing accidents and preventing pollution. There are two elements to this problem. The first is: What is the acceptable level of risk? The second is: How does the targeted improvement help to reach the acceptable level? A good example of these questions is the frequent discussion of and requests for regulations requiring bow and stern thrusters on tankers. Thrusters would substantially improve the low speed maneuverability of tankers, but generally would be ineffective above 6 knots.

Improvement in low speed maneuverability would help reduce those accidents in and around berths and piers - most of which are rammings. However, of the 951,319 tons of oil pollution from worldwide tanker accidents in the past five years only 13,654 tons or 1.4% resulted from ramming casualties. Effectiveness of thrusters in reducing ramming casualties is not known, but even if thrusters could help eliminate all pollution from this source, 98.6% of the problem remains.

The approach to Title II Regulations has been to first evaluate the overall marine transportation mode relative to spill prevention then to select candidate improvement measures; specifically evaluate each candidate against the R. S. 441/a(4) criteria of (1) need, (2) extent of improvement if implemented, and (3) practicality from both a cost and a technical standpoint; publish those measures which appear to meet the criteria, and finally monitor effectiveness and public comment. This procedure has been followed for those standards which have been published under the authority of the Ports and Waterways Safety Act. Other standards to be promulgated under these regulations will also follow the same procedure; however, not all the tools are presently available to effectively evaluate each step.

With respect to the specific aforementioned standards proposed for legislation the following comments are offered:

Four of the possible standards; I (Horsepower), II (Duplicate boilers and steering gear), IV (Collision Avoidance Radar) and V (Various maneuvering and stopping features) are directed at improvement of the controllability of vessels with the expected result that the overall level of safety will be increased to an environmentally acceptable level. In particular, three of these proposals would primarily affect the maneuvering aspect of controllability with the fourth, collision avoidance radar, impacting upon the human element. Many of these proposals have popular support from the public, especially from the environmentally concerned citizens. Taken strictly from an administrative viewpoint, the simplest and easiest possible solution for the Coast Guard in this area would be to issue regulations which would require several of the possible features listed above and then to consider our responsibilities under Title II fulfilled. Obviously, the controllability question is not that easily resolved. It is a multifaceted problem involving much more than the physical characteristics, machinery and navigational equipment. Therefore, were the Coast Guard to follow the simplest course of action, we would not be responsible in light of the Congressional mandate regarding controllability in Subsection (7)(A) which is to "reduce the possibility of collision, grounding or other accident." The Coast Guard has gone forward on a broad front evaluating and determining all the aspects of controllability and their interrelation, and, based on the immediate results of this effort, proposed some regulations which are described in Part I of this report. These regulations offer only partial solutions

because of our difficulty in determining an acceptable criterion against which vessel design and operation, channel configuration and environmental factors can be weighed. In particular, the Coast Guard has not found it possible to issue regulations on maneuvering design changes for tankships because thus far we have been unable to identify the safety or environmental benefit of these changes.

When addressing the maneuverability of a tank vessel it is helpful to divide maneuverability into its four basic components: (1) stopping ability, (2) turning ability, (3) course changing ability, and (4) course keeping ability. Of these four components, stopping ability has received more attention than any other. Yet in eight years since the first 200,000 DWT tanker (IDEMITSU MARU 1966) was put into service, the Coast Guard has not been able to document one case where inadequate stopping was a major contributing cause in a marine casualty. Stopping large tankers from design speed does take more time and distance than the stopping of smaller ships because of the tremendous mass of the vessel and its cargo. There is no conceivable means by which a large tanker can be "stopped on a dime," nor does it need to. In the open ocean, large tankers can readily detect the presence of other shipping and evade collisions with negligible deviations from course. In an emergency, the most effective evasive maneuver is to put the ship into a turn, assuming that there is adequate room and water depth. The reason for the effectiveness of this maneuver is that the maximum distance travelled in the direction the vessel was originally

moving at full speed using full rudder is approximately 3 ship lengths, while the stopping distance is approximately 15 ship lengths. In port areas and in and around offshore loading systems, large tankers have been assisted in their maneuvering by tugs in the same fashion as all other large ships (i.e., aircraft carriers, passenger liners and high speed container ships).

Astern horsepower, which is usually some fraction of the design horsepower, does affect the stopping capabilities of tankers. Design horsepower for a tanker is determined by requirements for the steady state steaming condition which constitutes a majority of a ship's life. In addition to safety considerations, other primary concerns of an owner when specifying the type of propulsion plant for his ship are high reliability, ease of maintenance and efficient use of fuel. From the standpoint of overall engineering efficiency, the propulsion system in a supertanker is very effective. The fact that the system has been optimized for steady steaming does not mean that the ship is unsafe from a maneuvering viewpoint.

Increasing the astern horsepower will shorten stopping distance, but not to a large degree. For example, doubling the astern horsepower in a standard 250,000 DWT tanker will reduce stopping distances from 16 knots by approximately 20% from 15 ship lengths to 12 ship lengths; decreasing ahead speed from 16 knots to 13 knots in anticipation of a need to stop will have the same effect.

A controllable-pitch propeller (CPP) would also shorten stopping distance, but again not to a large degree. Estimations based on manufacturers' reports are that CPP's would reduce the stopping distance of

a standard 250,000 DWT tanker by 30% from 15 ship lengths to 10.5 ship lengths; decreasing ahead speed from 16 knots to 12 knots will have the same effect.

As can be seen from both these examples, significant improvement in stopping of super tankers is not possible without substantial design changes, i.e., increasing astern horsepower several-fold. Possible requirements for such substantial design changes have not been justified, especially in view of the fact that the same desirable effects can be achieved through reductions in ahead speed.

The second aspect of vessel maneuverability, turning ability, is not discussed nearly as much as stopping ability, but is equally important. At operating speeds the turning radius of a specific vessel is the accepted measure of a vessel's turning ability. Turning radius is a function of the vessel shape, length-to-beam ratio, and rudder forces. Tank vessels, as presently designed, have excellent turning ability mainly because of their full shape and low length-to-beam ratios. The turning radius for a 250,000 DWT tanker is approximately 1.1 ship lengths while that of a much smaller and finer-lined Mariner class cargo ship is approximately 2.2 ship lengths. Those possible design features proposed as legislation, which would affect turning ability are twin rudders, twin screws and bow and stern thrusters. Installation of twin rudders would make it possible to increase the rudder area for a particular ship, thereby increasing the turning ability, provided twin screws were also installed so that the rudders would work in the propeller race. An increase of 60% in the presently

designed rudder area for a standard 250,000 DWT tanker would increase an already excellent turning ability by only 10%, thereby reducing the turning radius to about 1.0 ship lengths.

Turning ability at zero or very slow speeds can be substantially increased by installation of bow and stern thrusters. Previously mentioned in this report was a discussion of the apparent lack of effectiveness of this design feature in reducing marine casualties; that discussion is still pertinent. A further consideration in this area is the cross relationship of the human element and vessel design relating to bow and stern thrusters. At the Netherlands Ship Model Basin, where experiments of tanker maneuvers are conducted on a ship handling simulator, ship performance with the thrusters was observed to be worse than the standard ship not so equipped until after the pilots became practiced in using the new equipment on the specific test model.

Twin screws would also have some positive effect on the zero or very slow speed turning ability of tankers. By running one screw ahead and the other astern a twisting moment is applied to the ship which will assist in turning the ship. However, this turning assist is not nearly as large as that for thrusters and is therefore less effective.

There is no clear justification for design changes to improve the turning ability of tankers either at operational speed or at very low speed to reduce the risk of collisions, groundings or other accidents.

Course changing ability is closely related to turning ability, but differs in that it indicates the ability of a vessel to initiate or check a turn at operating speed. This aspect of maneuvering is

measured by a standard maneuver known as the zig-zag or "Z-maneuver." Vessel design factors which have a major influence on course changing ability are mass, length, hull form, rudder area and rate of rudder deflection. Since mass, length, and hull form are generally fixed for large tankers, improvement in course changing ability would need to come from either increased rudder area or increased rate of rudder deflection. Again using a standard 250,000 DWT tanker as a measure, an increase in rudder area by 60% would improve course changing ability as measured by the "Z-maneuver" by approximately 10%. Increasing rudder rate by 100% would increase course changing ability by less than 10%.

Course keeping ability, sometimes called course stability, refers to the ability of a vessel to steer a straight course with minimum rudder action. One of the concerns about large tanker maneuverability has been the lack of course stability. Generally there is a misunderstanding regarding course stability; therefore, a clear distinction must be made between a dynamically stable ship and a directionally stable ship. A vessel is considered dynamically stable on a straight course if, when disturbed from her steady motion, she will soon resume that same motion along a slightly shifted path without any correcting rudder being applied. A steered ship is said to be directionally stable if sustained oscillations of the ship's motions or if the rudder motions needed to compensate the ship's heading errors are sufficiently small to be considered tolerable. Most full-form ships, regardless of size, cannot achieve dynamic stability, but can achieve an acceptable

degree of directional stability. It is most desirable for a commercial vessel to possess directional stability. The reason for this is that loss of directional stability results in economic penalties due to increased voyage time and increased fuel consumption. Therefore vessel owners have incentive to insure adequate course stability through design. Design factors which have a major effect on course keeping ability are vessel shape, length-to-beam ratio, rudder area and steering control system response parameters. The Coast Guard has not seen a need to require design changes in this area because no practical change will make tankships dynamically stable and the present directional stability has proven adequate.

Examining each of the aspects of maneuverability, and the candidate design changes which would improve those aspects, has led the Coast Guard to believe that no practical single design change or combination of design changes will materially affect the maneuverability of a large tankship. This is not to say that some minimum vessel design for maneuverability should not be established; however, the basis for establishing the minimum must be its relation to the entire controllability question and not just to the inherent maneuvering capability of the ship as measured by standard maneuvers. When viewed in this context it becomes apparent that the minimum design standard necessary to insure safe navigation will vary for the same ship from port to port and even within the same port area during varying weather and tidal conditions. What the Coast Guard must be able to do is: (1) identify those parameters of vessel movement which accurately measure its total

controllability, (2) evaluate those parameters against the acceptable level of risk for that particular harbor or waterway and weather conditions and then (3) determine if additional precautions, such as tugs, should be required. In using such an approach, the Coast Guard will offer the prospective ship buyer incentives to incorporate those individual added design features which he feels are to his economic advantage, while at the same time allowing him flexibility in evaluating the economic trade-off of vessel design. For example, if when transiting a particular bridge under certain wind and current conditions, a tanker equipped with the conventional maneuvering systems, is by a Coast Guard regulation required to wait at anchor and thus delay its arrival, or alternatively hire costly tugs, and if the same tanker would have been allowed to transit the bridge had she been equipped with thrusters, the lost revenue accruing from the delay and increased ship, operating and crew expenses, and possibly tug costs, may cause the tanker owner to install thrusters on similar designs in order to achieve an economic benefit. Another beneficial feature of this incentive approach is that it can be applied to all existing vessels both foreign and domestic.

Reliability of propulsion and steering systems has also been proposed in legislated standards. Propulsion power for large tankers is either provided by heavy slow-speed diesel engines or by a steam power plant. The United States has had little experience with slow-speed diesels, but the reliability has been proven in European and Japanese tankers. When the steam system is used, it is conceivable

that only one main boiler may be installed, but the practice is to include provision for take-home capability by installing an auxiliary boiler heating service with the capacity to propel the vessel at considerably reduced speed through the low pressure stages of the main turbine. This take-home capability is similar in principle to that installed on the nuclear powered SAVANNAH. The SAVANNAH has one main reactor plant which provides propulsion. She also has two diesel generators and a 750 horsepower electric motor which can be coupled to the reduction gears to provide limited propulsion in the event the reactor must be shut down. As for the duplicity of the steering gear system, conformance to the standards of international conventions, together with recent recommendations of the Intergovernmental Maritime Consultative Organization (IMCO), seem adequate.

Collision avoidance radars are being considered by the Coast Guard. At the present time there is a research project to determine the possibilities that may be realized from various applications of collision avoidance systems. The title "collision avoidance radar" is somewhat misleading in that those collision avoidance systems presently available do not eliminate the possibility of collisions. The systems offer computer solutions to vessel motion problems and display these solutions, which generally are course, speed and closest point of approach of nearby vessels, in a systematic manner. Without the assistance of a collision avoidance system the mariner presently is capable of solving vessel motion problems using radar and/or visual

bearings and simple plotting procedures. Once the information is available the mariner is still required to make decisions regarding safe navigation of his ship.

Proposed Standard III, halving of tank size limits will affect both accidental oil spillage and operational discharges. Based upon IMCO studies, reducing the tank size by a factor of two would reduce accidental oil outflow from a standard 250,000 DWT tanker by approximately 17 percent. Increasing the number of bulkheads will increase the complexity of piping and create more surface area to which oil cargo can cling during the discharge operation. This increases the amount of oil which must be cleansed from the tank and separated out during LOT and sludge removal operations. Therefore, further subdivision of cargo tanks will tend to increase the amount of oil pollution due to tanker operations thereby offsetting the reduction from accidental pollution. In addition to increased complexity of piping systems, other disadvantages of reducing tank size are increased steel weight of vessel (reduced DWT), increased chance for overfilling a tank during tank loading operations and longer loading and unloading times.

As stated in the previous section of this report, the Coast Guard regulatory proposal published on June 28, 1974 does not prohibit double bottom construction of tankships. This matter of double bottoms and segregated ballast is the subject of proposed Standard VI.

The Coast Guard is opposed to mandatory requirements that oil tankers be constructed with double bottoms because such requirements would deny the possibility of other combinations of construction and operating standards for oil tankers which might provide better protection for our marine environment.

Tanker casualty statistics which include adequate pollution data have been available for such a short time period that conclusions drawn from the statistics are subject to considerable qualification. The three major sources of accidental pollution from tankers are collision, groundings and structural failures. The way in which ballast and cargo spaces are arranged has a strong influence on the likelihood of structural failure and on the quantity of oil which may be released in the event of collision or grounding. How these considerations may best be dealt with simultaneously is still undetermined, and we need the flexibility to stimulate responsive design combinations.

The necessity of extending the segregated ballast requirement down to the 20,000 DWT level has not been demonstrated, neither has been the complete prohibition against ever placing ballast in a cargo tank. This last provision would require excess segregated ballast to cover a worse case situation which would, of course, occur infrequently, if ever. The June 28, 1974 proposed regulations call for a segregated ballast capability sufficient to meet normal expected sea conditions.

Inert gas systems comprised the subject matter for the proposed possible Standard VII. The Coast Guard published on September 5, 1974 an advance notice of proposed rulemaking concerning tanker fire safety which solicited comments on the tonnage applicability of inert gas systems among other items. Present IMCO safety, not environmental, recommendations specify inert gas systems for crude tankers over 100,000 DWT and combination carriers carrying crude when in excess of 50,000 DWT. An inert gas system is necessary as a safety measure if washing of tanks is to be accomplished by fixed machines using the recirculating method of washing. The recirculating method and fixed machines are not necessarily tied together; nor is the 100 tons per hour figure relevant to anything.

In summary, these proposals for legislated standards are included within a number of possible actions currently under active consideration by the Coast Guard. However, the Coast Guard is concerned over the potential passage of legislation which would, through the prescription of specific possible remedies, thwart the application of broad regulatory authority upon the various vessel systems submitted for plan approval.

CONCLUSION

The proposed Rules published in the June 28, 1974 Federal Register are only the beginning of the Coast Guard's response to Title II of the Ports and Waterways Safety Act of 1972.

In response to that mandate, the Coast Guard has initiated a number of studies on its own as well as in concert with other agencies, through research and development. Included in this category are studies on construction standards for ships and barges in other than seagoing service, vessel maneuverability, vessel powering, and personnel qualifications. We are formulating a risk analysis model to develop a systems approach to both marine safety and environmental protection. Moreover, we are beginning to realize the results of our efforts to develop a management information system responsive to our mandate in Title II as well as an improvement in the casualty investigation - casualty analysis role in pinpointing the failures in the human-vessel design/maintenance error areas.

A N N E X I

Tank Vessels in Domestic Trade, Protection of Marine Environment;
Notice of Proposed Rulemaking (39 FR 24150 - 24157)

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PART IV

DEPARTMENT OF TRANSPORTATION

Coast Guard

■

TANK VESSELS IN DOMESTIC TRADE

**Protection of Marine Environment;
Notice of Proposed Rulemaking**

**DEPARTMENT OF
TRANSPORTATION**

Coast Guard

[33 CFR Parts 151, 157]

[CGD 74-32]

**TANK VESSELS ENGAGED IN DOMESTIC
TRADE**

**Protection of Marine Environment; Notice
of Proposed Rulemaking**

The Coast Guard is considering amending the pollution regulations by adding interim regulations that govern the design and operation of certain seagoing U.S. tank ships and barges certified to carry oil in the domestic United States trade.

Written comments. Interested persons are invited to participate in this proposed rulemaking by submitting written views, data, arguments, objections, and comments to the Executive Secretary, Marine Safety Council (G-CMC/82), Room 8234, U.S. Coast Guard, Washington, D.C. 20590. Each person submitting comments should include his name and address, identify this notice (CGD 74-32), and give reasons for any recommendation. Comments received will be available for examination by interested persons in Room 8234, U.S. Coast Guard Headquarters, Washington, D.C.

Public Hearing. The Coast Guard will hold public hearings on July 23 and 24, 1974 beginning at 9:00 a.m., in the Shaw Room, Seattle Center, 203 Harrison St., Seattle, Washington, and on July 30 and 31, 1974, beginning at 9:00 a.m., in Room 2232, 400 Seventh Street, S.W., Washington, D.C. Interested persons are invited to attend the hearings and present oral or written statements on this proposal. It is requested that anyone desiring to make oral comments at either hearing notify the Executive Secretary, at the above stated address, by July 19, 1974, and specify the approximate length of time needed for his presentation. Submission of a written summary or copy of the oral presentation is encouraged.

Closing date for comments. All communications received before August 19, 1974, will be evaluated before final action is taken on this proposal. These proposed regulations may be changed in light of the comments received.

In the January 26, 1973, issue of the *FEDERAL REGISTER* (38 2467), an advance notice of proposed rulemaking was published concerning standards for pollution abatement for new tank ships constructed for trade on the navigable waters of the United States. The construction requirements concerned the concept of segregated ballast tanks achieved, in part by fitting a double bottom in the cargo length.

The advance notice was published with two purposes in mind:

1. Participation by the public in the regulatory process in implementing section 201 of the *Ports and Waterways Safety Act of 1972* (Pub. L. 92-340, 86 Stat. 427, 46 U.S.C. 391(7)); and

2. Complying with the effective date of January 1, 1976, mandated by Congress.

Over 60 comments were received on the advance notice and an evaluation of the comments was made. The comments contained three common areas of concern. These were:

1. The high initial cost associated with double bottoms.
2. The need for international agreement and the danger of unilateral action.
3. The treatment to be accorded existing foreign and domestic shipping not covered.

In the July 5, 1973, issue of the *FEDERAL REGISTER* (38 FR 17848), the Coast Guard published a supplement to the advance notice of proposed rulemaking. This supplement explained that 46 U.S.C. 391a (c), as amended, allowed for the establishment of rules and regulations consonant with international treaties, conventions, or agreements. Since the *IMCO International Conference on Marine Pollution* was scheduled in October 1973, and since the results of the Conference would have a direct bearing on implementing regulations under section 391a (7), the Coast Guard notified the public that action under the advance notice would be withheld.

The authority of the proposed regulations, section 201 of title II of the *Ports and Waterways Safety Act of 1972* (Pub. L. 92-340, 86 Stat. 427), amends section 4417a of the *Revised Statutes of the United States* (46 U.S.C. 391a). Subsection 3 of the amended section 4417a reads as follows:

(3) Rules and Regulations—In order to secure effective provisions (A) for vessel safety, and (B) for protection of the marine environment, the Secretary of the department in which the Coast Guard is operating (hereafter referred to in this section as the "Secretary") shall establish for the vessels to which this section applies such additional rules and regulations as may be necessary with respect to the design and construction, alteration, repair, and maintenance of such vessels, including, but not limited to, the superstructures, hulls, places for stowing and carrying such cargo, fittings, equipment, appliances, propulsive machinery, auxiliary machinery, and boilers thereof; and with respect to all materials used in such construction, alteration, or repair; and with respect to the handling and stowage of such cargo, the manner of such handling or stowage, and the machinery and appliances used in such handling and stowage; and with respect to equipment and appliances for lifesaving, fire protection, and the prevention and mitigation of damage to the marine environment; and with respect to the operation of such vessels; and with respect to the requirements of the manning of such vessels and the duties and qualifications of the officers and crew thereof; and with respect to the inspection of all the foregoing. In establishing such rules and regulations the Secretary may, after hearing as provided in subsection (4), adopt rules of the American Bureau of Shipping or similar American classification society for classed vessels insofar as such rules pertain to the efficiency of hulls and the reliability of machinery of vessels to which this section applies. In establishing such rules and regulations, the Secretary shall give due consideration to the kinds and grades of such cargo permitted to be on board such vessel. In establishing such rules and regulations the Secretary shall, after consultation with the Secretary of Commerce and the Administrator of the Environmental Protection Agency, identify those established

for protection of the marine environment and those established for vessel safety.

In addressing itself to the requirements for rules and regulations for the protection of the marine environment, Congress has directed the following in subsection (7) (A) and (C):

(7) Rules and regulations for protection of the marine environment relating to vessel design and construction, alteration, and repair; international agreement—(A) The Secretary shall begin publication as soon as practicable of proposed rules and regulations setting forth minimum standards of design, construction, alteration, and repair of the vessel to which this section applies for the purpose of protecting the marine environment. Such rules and regulations shall, to the extent possible, include but not be limited to standards to improve vessel maneuvering and stopping ability and otherwise reduce the possibility of collision, grounding, or other accident, to reduce cargo loss following collision, grounding, or other accident, and to reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling, and other activities.

(C) Rules and regulations published pursuant to subsection (7) (A) shall be effective not earlier than January 1, 1974, unless the Secretary shall earlier establish rules and regulations consonant with international treaty, convention, or agreement, which generally address the regulation of similar topics for the protection of the marine environment. In the absence of the promulgation of such rules and regulations consonant with international treaty, convention, or agreement, the Secretary shall establish an effective date not later than January 1, 1976, for rules and regulations previously published pursuant to this subsection (7) which he then deems appropriate.

Section 201 of the *Ports and Waterways Safety Act of 1972* applies to all United States vessels carrying liquid cargo in bulk which is—

(A) inflammable or combustible, or

(B) oil, of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil, or

(C) designated as a hazardous polluting substance under Section 12(a) of the *Federal Water Pollution Control Act* (33 U.S.C. 1182);

Section 201 applies to foreign vessels carrying the cargoes, set forth in the preceding, while operating on the navigable waters of the United States.

Section 401 of the Act of November 16, 1973 (Pub. L. 93-153, 87 Stat. 589) amended the effective dates in subsection (7) (C) of section 201 and added the requirement that, "Rules and regulations published pursuant to Subsection (7) (A) shall be effective not later than June 30, 1974, with respect to United States flag vessels engaged in the coastwise trade." As previously noted, subsection (7) (A) requires publication of minimum standards of design, construction, alteration, and repair of the vessels to which section 201 applies for the purpose of protecting the marine environment.

The phrase "coastwise trade" is not defined by the Act, but the phrase ap-

pears in other statutes and has been used interchangeably with the phrase "coasting trade." Both of these phrases have been defined juridically to include not only trade between points in the United States along the seacoast but also to trade by way of rivers and lakes.

Section 4417a of the Revised Statutes of the United States (46 U.S.C. 391a) prior to its amendment by the Ports and Waterways Safety Act of 1972 applied to all vessels carrying inflammable or combustible liquid cargo in bulk, except public vessels owned by the United States. Section 7(D) of section 201 specifies that any rule or regulation for the protection of the marine environment promulgated pursuant to subsection (7) must be equally applicable to U.S. flag vessels engaged in foreign trade and to foreign vessels. Since there was no provision in 46 U.S.C. 391a authorizing any distinction in treatment between U.S. vessels engaged in foreign trade and U.S. vessels engaged in the coastwise trade, nor any provision authorizing any distinction in treatment between U.S. vessels and foreign vessels, it is clear that the intent of the Congress in subsection 7(D) was to assure in the implementation of subsection 7(C) that no distinction of treatment between U.S. and foreign vessels be inferred from any treaty, convention, or international agreement. Section 401 of the Act of November 16, 1973, introduced the first distinction in treatment of U.S. vessels under the Ports and Waterways Safety Act of 1972, accelerating the date for promulgation of certain regulations for U.S. vessels engaged in the coastwise trade, and allowing the regulations for U.S. vessels engaged in the foreign trade and foreign vessels to be published at a later time. Accordingly, the regulations proposed in this document apply to U.S. vessels engaged in trade other than the foreign trade. Since these proposed regulations are consistent with both the International Conference for Prevention of Pollution from Ships, 1973, and current domestic law, the regulations are proposed as interim regulations until that time prior to January 1, 1976, when regulations for U.S. vessels in foreign trade and foreign vessels entering U.S. waters will be effective.

The Coast Guard uses the term "coastwise" and "coastwise routes" for the purpose of the application of certain vessel inspection requirements (46 CFR 30.01-7, 70.10-13, 90.10-11 and 175.10-3) that are unrelated in meaning to "coastwise trade" or "coasting trade." Because the cabotage law phrase "coastwise trade" has been employed in section 201 of the Ports and Waterways Safety Act of 1972, the phrase "domestic trade" has been used in these proposed regulations to avoid any confusion that might arise with regard to inspection regulations. Accordingly, the term "domestic trade" is defined as meaning the trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port, including trade on the navigable rivers, lakes, and inland waters.

The Coast Guard has determined that the regulations promulgated pursuant to section 401 of the Act of November 16, 1973, should conform in a substantial manner with the provisions of the conventions dealing with oil pollution which have been elaborated but which have not come into force. These conventions are of general application and it is quite clear that they apply to seagoing vessels. It is equally clear that some provisions relating to design, construction, and operation are inappropriate to vessels operating on some navigable internal waters or to certain types or sizes of vessels.

For the foregoing reasons the Coast Guard has determined that these regulations will apply generally to United States seagoing tank vessels of 150 gross tons or more while engaged in the carriage of oil (defined in the proposed section 157.03(m) as petroleum in any form including oil, sludge, oil refuse, and refined products) in the domestic U.S. trade. Additionally, certain provisions will be applied to U.S. vessels operating in the Great Lakes.

Taking into account the fact that the Marine Pollution Conference was concluded in November of 1973 and the Act of November 16, 1973, was enacted in the same month, and that title II of the Ports and Waterways Safety Act of 1972 prior to amendment required environmentally related regulations to be promulgated by January 1, 1976, the Coast Guard has determined that it cannot develop new environmentally related regulations for certain types of vessels, principally unmanned barges operating on the rivers, to be effective on June 30, 1974. The Coast Guard and the Maritime Administration, jointly, are currently studying the design and construction of barges. The determinations from that study which will be completed in 1974 are viewed by the Coast Guard as necessary in the formulation of any additional design and construction standards for inland barges.

The Coast Guard, in the administration of its vessel safety and environmental protection programs must consider all of its statutory authorities as being integrated despite, in certain instances, overlapping authorities. In the case of the carriage of oil by vessels, there is authority under section 311 of the Federal Water Pollution Control Act (Pub. L. 92-500, 86 Stat. 816, 33 U.S.C. 1251) in addition to the Ports and Waterways Safety Act of 1972 to promulgate environmentally oriented regulations. The Coast Guard deems that the vessel design regulations contained in 33 CFR Part 155, issued under section 311J(1)(C) and (D) which are applicable to all vessels operating on the waters of the United States, meet, in large part, the spirit of the requirements imposed by section 401 of the Act of November 16, 1973.

The Coast Guard fully intends to provide comprehensive rational and necessary regulations under title II of the Ports and Waterways Safety Act of 1972 to comply with the amended provisions

of section 7 thereof but finds it necessary to divide these regulations into categories appropriate to the kinds of vessels and the nature of hazardous exposure. To summarize this discussion, certain categories of regulations are susceptible to promulgation within the statutory time frame; others will be promulgated as soon as practicable after June 30, 1974.

In accordance with the preceding, the proposal follows the Convention, including the adoption of the metric system for certain calculations, the Oil Record Book requirements, and the discharge criteria for oil. These requirements are consistent with the U.S. proposals at the 1973 Conference and are much more stringent than present requirements for discharges.

The proposed requirements do not apply to the following vessels which are exempted by law from the requirements of section 201 of the Ports and Waterways Safety Act:

1. Public vessels that are not engaged in commercial services.
2. Vessels that carry oil only for use as fuel or stores, or carrying such cargo only in drums, barrels, or other packages.
3. Cannery tenders, fishing tenders, or fishing vessels of not more than 500 gross tons used in the salmon or crab fisheries of the States of Oregon, Washington, and Alaska when engaged exclusively in the fishing industry that are allowed to have on board petroleum products in bulk in accordance with requirements contained in 46 CFR Part 105.
4. Vessels of not more than 500 gross tons documented in the service of oil exploitation that are not tank vessels and that are subject to the proposed regulations only because of the transfer of fuel from the vessels' own fuel supply tanks to offshore drilling or production facilities.

Regulations to cover ships other than tankers which have their certificates of inspection endorsed to carry relatively small amounts of liquid bulk cargo, usually specialty products in deep tanks, will be issued in the future after a full assessment of the impact can be determined. Since no substances have been designated as hazardous polluting substances under section 311(b)(2)(A) of the Federal Water Pollution Control Act, regulations cannot be proposed at this time applicable to vessels carrying such substances.

The proposed design requirements contain standards for segregated ballast tanks required on a new vessel (defined in the proposed section 157.03(i)) of 70,000 deadweight tons or more. These standards include size and capacity requirements and piping arrangements.

Each seagoing tank vessel of 150 gross tons or more would have to have a minimum number of slop tanks. The slop tank standards include capacity requirements and requirements for inlet and outlet connections and allow separation aids.

Each seagoing tank vessel of 400 gross tons or more would have to have a tank that receives and holds oily residue resulting from purification of fuel and lubricating oil and from oil leakages in machinery spaces. Standards include capacity requirements and design details.

New seagoing tank vessels and certain existing seagoing tank vessels (defined in the proposed section 157.03(j) as a vessel that is not a new vessel) must have cargo tanks designed in accordance with the calculation procedures contained in the proposed Appendix A. Standards include piping arrangements and limitations of tank volume and length. These standards incorporate the provisions of Annex C of the 1971 Amendments to the International Convention for the Prevention of Pollution of the Sea by Oil, 1954.

In accordance with the 1971 Amendments, a tank vessel contracted for after January 1, 1972, or where there was no building contract and the keel was laid or the tank vessel was at a similar stage of construction after June 30, 1972, must within two years after the entry into force of the Amendments be in compliance with Annex C. The 1971 Amendments have not entered into force. Similarly, section 2(5) of the Oil Pollution Act Amendments of 1973 (Pub. L. 93-119, 87 Stat. 424) which revised the Oil Pollution Act, 1961 (75 Stat. 402, 33 U.S.C. 1001 et seq.) requires that tank vessels built in the United States after the effective date of the section be built in compliance with Annex C. The effective date of section 2(5) is the date the amendments to the Convention, as amended, are ratified or accepted with the advice and consent of the Senate of the United States. As of the date of this proposal, ratification has not occurred. The Coast Guard has determined that the standards in Annex C are an essential part of regulations for the protection of the environment and the incorporation of the standards in this proposal should not be delayed until the Convention is ratified.

A new seagoing tank vessel must meet the proposed subdivision and damage stability criteria, after assuming side and bottom damage defined in the proposed Appendix B. Calculations for cargo tanks and subdivision and stability requirements would be submitted for Coast Guard review when the plans and specifications for the tank vessel are submitted. An instruction manual that describes operation of the cargo and ballast system in a tank vessel must be submitted for approval.

The proposed operating requirements would allow a tank vessel engaged in the carriage of oil on the navigable waters of the United States to discharge only clean ballast (defined in the proposed § 157.03(e)) or segregated ballast. The requirements would allow seagoing U.S. tank vessels of 150 gross tons or more, while en route, to discharge an oily mixture from a cargo tank and a machinery space bilge if the prescribed conditions are met. Oily mixtures from the cargo could be discharged more than 50 miles from the nearest land at an instantaneous rate of oil content not exceeding 60 liters per nautical mile, not exceeding 1/15,000 by existing vessels or 1/30,000 by new vessels of the total quantity of cargo that the discharge formed a part. Oily mixtures that are from machinery space bilges that are not combined with oil cargo mixtures could be discharged

more than 12 nautical miles from the nearest land if the oil content of the effluent is less than 100 parts per million. The discharge standards contain requirements for aiding the processing of the effluent using certain equipment, e.g., oil-water separators, oil discharge monitors and control systems, oily water interface detectors, and other similar equipment. Although this proposal requires such equipment, the equipment will not be required to be installed until after specifications are published in the FEDERAL REGISTER. Oily mixtures which cannot be discharged in compliance with the above criteria must be retained on board the vessel or transferred to a reception facility. The 1973 Conference contains requirements for the establishment of reception facilities. This will also be the subject of regulations to be proposed at a later date.

Entries would have to be made in the Oil Record Book if certain operations occur on a tanker. These operations would include loading and unloading of oil cargo, internal transfer of oil cargo during a voyage, ballasting and cleaning of cargo tanks, discharge of water from slop tank, disposal of residues, and similar operations. In addition, the vessel would have to be operated in accordance with the stability information required in 46 CFR 31.01-30(d), the information developed from stability calculations based on proposed Appendix B, and the loading and distribution information necessary to comply with that criteria.

It should be noted that double bottoms beneath the cargo tank area are not proposed, nor are they prohibited. While all studies ascribe varying degrees of effectiveness to double bottoms as a means to reduce accidental oil outflows in grounding casualties, this reduction is directly related to the individual ship involved. The large number of existing vessels would preclude any immediate significant reduction in oil outflow due to requiring double bottoms. As an alternative to such a design requirement, a system of operation requirements to minimize accidents is being proposed in an advance notice of proposed rulemaking which appears on page 24157 of this issue of the FEDERAL REGISTER.

Research and development of a conceptual vessel maneuvering model is underway in the Coast Guard. This model will integrate vessel variables, port dependent variables, environmental variables, and human factors. It is premature to conclude that this research will result in standards for vessel maneuvering. Proposed requirements for tank ships and other ocean and coastwise vessels of 1,600 gross tons or more to carry maneuvering information in their pilothouses appear in the July 20, 1973, issue of the FEDERAL REGISTER (38 FR 19411).

A draft environmental impact statement that discusses these interim regulations has been filed with the Council on Environmental Quality.

In consideration of the foregoing, it is proposed to amend chapter 1 of title 33, Code of Federal Regulations, as follows:

1. Section 151.35 (c) and (d) (2) would be revised to read as follows:

§ 151.35 Oil Record Book.

(c) If an operation listed in this paragraph occurs, the Oil Record Book must be completed in accordance with the requirements contained in paragraph (e) of this section.

(1) The following operation on a tanker must be recorded on a tank-to-tank basis:

- (i) Loading of oil cargo.
- (ii) Internal transfer of oil cargo during a voyage.
- (iii) Opening or closing before and after loading and unloading operations of valves or similar devices that interconnect cargo tanks.
- (iv) Opening or closing of means of communication between cargo piping and seawater ballast piping.
- (v) Opening or closing of vessel's cargo piping valves before, during, and after loading and unloading operations.
- (vi) Unloading of oil cargo.
- (vii) Ballasting of cargo tanks.
- (viii) Cleaning of cargo tanks.
- (ix) Discharge of ballast except from segregated ballast tanks.
- (x) Discharge of water from slop tanks.
- (xi) Disposal of residues.
- (xii) Discharge overboard in port or at sea of bilge water accumulated in machinery spaces.

(2) The following operations on a ship other than a tanker must be recorded on a tank-to-tank basis:

- (i) Ballasting, or cleaning during voyage, of bunker fuel tanks.
- (ii) Disposal of oily residues from bunker fuel tanks or other sources.

(d) * * *

(2) The escape of oil or an oily mixture resulting from—

- (i) Damage to the ship;
- (ii) Unavoidable leakage; or
- (iii) Any accident or other exceptional circumstance.

2. Subchapter O would be amended by adding Part 157 to read as follows:

PART 157—INTERIM RULES AND REGULATIONS FOR PROTECTION OF THE MARINE ENVIRONMENT RELATING TO TANK VESSELS ENGAGED IN DOMESTIC TRADE.

Subpart A—General

| Sec. | |
|--------------------------------------|--|
| 157.01 | Purpose. |
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Subpart C—Vessel Operation

- Sec.
157.25 Applicability.
157.27 Discharges; vessels engaged in the carriage of oil exclusively on rivers, lakes, bays, sounds, and the Great Lakes, and seagoing vessels of less than 150 gross tons.
157.29 Discharges; seagoing vessels of 150 gross tons or more.
157.31 Discharges; chemical additives.
157.33 Water ballast in oil fuel tanks.
157.35 Ballast added to cargo tank.
157.37 Discharge of cargo residue.
157.39 Machinery spaces bilges.
157.41 Emergencies.
157.43 Discharge in ports or at offshore terminal.
157.45 Valves in cargo or ballast piping system.
157.47 Information for master.
157.49 Instruction manual.

Appendix A—Damage assumptions, hypothetical outflows, and cargo tank size and arrangement.

Appendix B—Subdivision and stability assumptions.

AUTHORITY: R.S. 4417a (3) and (7), as amended (46 U.S.C. 391a (3) and (7)); 49 CFR 1.46 (c) (4).

Subpart A—General

§ 157.01 Purpose.

The regulations in this part apply to United States tank vessels engaged in the carriage of oil in domestic trade.

§ 157.03 Definitions.

As used in this part:

- (a) "Length" or "L" means the distance in meters from the fore side of the stem to the axis of the rudder stock on a waterline at 85 percent of the least molded depth measured from the molded baseline, or 96 percent of the total length on that waterline, whichever is greater. In vessels designed with drag, the waterline is measured parallel to the designed waterline.
(b) "Amidships" means the middle of the length.
(c) "Breadth" or "B" means the maximum molded breadth of a vessel in meters.
(d) "Center tank" means any tank in-board of a longitudinal bulkhead.
(e) "Clean ballast" means the ballast in a tank which, if discharged from a vessel that is stationary into clean, calm water on a clear day, would not—
(1) Produce visible traces of oil on the surface of the water or on adjoining shore lines; or
(2) Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shore lines.
(f) "Combination carrier" means a vessel designed to carry oil or solid cargoes in bulk.
(g) "Deadweight" or "DWT" means the difference in metric tons between the lightweight displacement and the total displacement of a vessel measured in water of specific gravity 1.025 at the minimum permissible summer freeboard in accordance with the International Convention on Load Lines, 1966, April 5, 1966, 18 UST 1857, TIAS 6331, 640 UNTS 133.

(h) "Lightweight" means the displacement of a vessel in metric tons without cargo, oil fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, and any persons and their effects.

- (i) "New vessel" means a vessel that—
(1) Is constructed under a contract awarded after December 31, 1974;
(2) In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1975;
(3) Is delivered after December 31, 1977; or
(4) Has undergone a major conversion for which—

- (i) The contract is awarded after December 31, 1974;
(ii) In the absence of a contract, conversion is begun after June 30, 1975; or
(iii) Conversion is completed after December 31, 1977.

(j) "Existing vessel" means any vessel that is not a new vessel.

(k) "Major conversion" means a conversion of an existing vessel that—

- (1) Substantially alters the dimensions or carrying capacity of the vessel;
(2) Changes the type of the vessel;
(3) The intent of which, in the opinion of the Coast Guard, is substantially to prolong the vessel's service life; or
(4) Otherwise so alters the vessel or a portion of the vessel that the vessel is no longer considered by the Coast Guard to be an existing vessel.

(l) "From the nearest land" means from the baseline from which the territorial sea of the United States is established in accordance with international law.

(m) "Instantaneous rate of discharge of oil content" means the rate of discharge of oil in liters per hour at any instant, divided by the speed of the vessel in knots at the same instant.

(n) "Oil" means petroleum in any form including oil, sludge, oil refuse, and refined products.

(o) "Oil fuel" means any oil used as fuel for the propulsion and auxiliary machinery of the vessel in which it is carried.

(p) "Oily mixture" means a mixture with any oil content.

(q) "Permeability of a space" means the ratio of the volume within a space that is assumed to be occupied by water to the total volume of that space.

(r) "Segregated ballast" means the ballast water that is introduced into a tank which is completely separated from the cargo oil and oil fuel system and which is permanently allocated to the carriage of ballast.

(s) "Slop tank" means a tank specifically designated for the collection of cargo drainings, washings, and other oil mixtures.

(t) "Tank" means an enclosed space that is formed by the permanent structure of a vessel, and designed for the carriage of liquid in bulk.

(u) "Tank barge" means a tank vessel not equipped with a means of self-propulsion.

(v) "Tank vessel" means a vessel that is specially constructed or converted to

carry liquid bulk cargo in tanks and includes tankers, tankships, tank barges, and combination carriers when carrying oil cargoes in bulk.

(w) "U.S. vessel" means a vessel that is owned, documented, or registered in the United States and is not a public vessel.

(x) "Wing tank" means a tank that is located adjacent to the side shell plating.

(y) "Tankship" means a tank vessel propelled by mechanical power or sail.

(z) "Domestic trade" means trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port including trade on the navigable rivers, lakes, and inland waters.

§ 157.05 Rules of procedure and construction.

In this part, unless the context requires otherwise—

(a) Metric system units must be used in performing calculations and measurements;

(b) Volumes and areas must be calculated using molded line dimensions of the vessel; and

(c) Forward and after perpendiculars are located at the forward and after ends of the lengths, respectively. The forward perpendicular coincides with the fore side of the stem on the waterline on which the length of the vessel is measured.

§ 157.07 Equivalents.

The Coast Guard may accept an equivalent, in accordance with the procedure in 46 CFR 30.15-1, of a design or an equipment to fulfill a requirement in this part except an operational method may not be substituted for a design or equipment requirement.

Subpart B—Design Requirements

§ 157.08 Applicability.

(a) The requirements in this subpart apply to seagoing tank vessels of 150 gross tons or more, unless otherwise specified, except the requirements of §§ 157.11, 157.13, and 157.15 do not apply to a vessel that engages exclusively in the carriage of asphalt.

(b) The requirements in § 157.21 also apply to vessels engaged in the carriage of oil on the navigable waters of the Great Lakes.

§ 157.09 Segregated ballast tanks.

(a) A new vessel of 70,000 tons deadweight or more must be designed with segregated ballast tanks that comply with the requirements of this section.

(b) The combined capacity of the segregated ballast tanks must be of sufficient size so that the vessel can operate safely on ballast voyages without recourse to the use of oil tanks for water ballast.

(c) In any ballast condition during any part of a voyage, including the conditions consisting of lightweight and segregated ballast, the vessel's drafts and trim must meet each of the following requirements:

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(1) The molded draft amidship (dm) in meters without taking into account vessel deformation must not be less than dm in the following mathematical relationship:

$$dm = 2.0 + 0.02L$$

(2) The drafts at the forward and after perpendiculars must correspond to those determined by the draft amidship as specified in paragraph (c)(1) of this section, in association with the trim by the stern of no more than 0.015L.

(3) The minimum allowable draft at the after perpendicular is that which is necessary to obtain full immersion of the propeller.

(d) The vessel may be designed to carry ballast water in a cargo tank during the condition described in § 157.35.

§ 157.11 Pumping, piping, and discharge arrangements.

(a) If a vessel's operation includes discharging into the sea effluent that is in compliance with subpart C of this part, a pipeline that terminates on a weather deck or on the vessel's side above the waterline in the deepest ballast condition must be installed except—

(1) An additional piping arrangement may be used for the discharge of segregated ballast and clean ballast below the waterline while the vessel is in a port or at an offshore terminal; and

(2) An existing vessel is not required to alter piping to discharge segregated ballast above the waterline in the deepest ballast condition.

(b) A vessel must have a fixed piping system designed to allow the transfer of dirty ballast residue and tank washings from a cargo tank into a slop tank.

(c) Except as allowed in § 155.370(b)(2) of this chapter, a vessel must have a manifold that is located on the weather deck and that terminates on each side of the vessel for connection to a reception facility to transfer dirty ballast water or an oily mixture.

§ 157.13 Designated area.

A new vessel must have a designated observation area on the weather deck or above that is—

(a) Located so that the effluent from the pipeline terminations required in § 157.11(c) and the discharge manifold required in § 157.11(c) may be visually observed; and

(b) Equipped with—

(1) A means to directly stop the discharge of effluent into the sea; or

(2) A positive communication system, such as a telephone or a radio, between the observation area and the discharge control position.

§ 157.15 Slop tanks in vessels.

(a) *Number.* A vessel must have the following minimum number of slop tanks that comply with the requirements of this section.

(1) A new vessel of less than 70,000 tons DWT and an existing tank vessel must have one slop tank.

(2) A new tank vessel of 70,000 tons DWT or more must have two slop tanks.

(b) *Capacity.* Slop tanks must have the capacity to retain slop from tank washings, oil residues, and dirty ballast residues but the total capacity may not be less than three percent of the oil carrying capacity except two percent capacity may be allowed if—

(1) There are segregated ballast tanks that meet the requirements contained in § 157.09; or

(2) There are no eductors fitted that use water in addition to the washing water.

(c) *Design.* A slop tank must be designed to minimize turbulence, entrainment of oil, and the creation of an emulsion in the tank by the use of separate inlet and outlet connections, and if baffles, weirs, or similar separation aids are used, they must aid in the oil/water separation process.

Note: An existing vessel must comply with the requirements in § 157.15 before December 31, 1977.

§ 157.17 Oily residue tank.

(a) A vessel of 400 gross tons or more must have a tank that receives and holds oily residue resulting from purification of fuel and lubricating oil and from oil leakages in machinery spaces.

(b) Each oily residue tank required in paragraph (a) of this section must have an adequate capacity that is determined by the—

(1) Type of machinery installed on the vessel; and

(2) Maximum fuel oil capacity.

(c) Each oily residue tank on a new vessel must be designed to facilitate—

(1) Cleaning; and

(2) Discharging to a reception facility.

Note: An existing vessel must comply with the requirements in § 157.17 (a) and (b) before December 31, 1977.

§ 157.19 Cargo tank arrangement and size.

(a) The requirements in this section apply to—

(1) A new vessel;

(2) A vessel delivered after January 1, 1977; and

(3) A vessel that is delivered before January 1, 1977 for which the building contract is awarded after January 1, 1972, or if there is no building contract, the keel is laid or the vessel is at a similar stage of construction after June 30, 1972.

(b) As determined in accordance with the procedures contained in Appendix A of this part, each cargo tank must be of such size and arrangement that—

(1) The hypothetical outflow for side damage (O_s) or for bottom damage (O_b) anywhere within the length of the vessel must not exceed O_s (30,000 cubic meters or $400^3/\text{DWT}$, whichever is greater, limited to a maximum of 40,000 cubic meters);

(2) The volume of each wing cargo tank and center cargo tank is less than the allowable volume of a wing cargo tank (VO_{Lw}) and the allowable volume of a center cargo tank (VO_{Lc}) respectively; and

(3) The length of a cargo tank is less than the allowable length of a cargo tank (L_c).

(c) If a cargo transfer system interconnects two or more cargo tanks, the system must have valves to segregate the tanks from each other.

(d) A line of piping that runs through a cargo tank in a position less than t_c from the vessel's side or less than v_c from the vessel's bottom, as defined in Appendix A of this part, must be fitted with a valve at the point the piping opens into a cargo tank.

(e) If piping that serves suction wells is installed within a double bottom, the piping must be—

(1) Fitted with valves located at the point of connection to the tank served to prevent oil outflow in the event of damage to the piping; and

(2) Designed to be installed as high from the bottom shell as possible.

(f) Calculations of the tank arrangement and size requirement contained in paragraph (b) of this section must be submitted for Coast Guard review with the plans and specifications that are required in 46 CFR 31.10-5.

Note: Vessels within the categories in § 157.19(a)(3) must meet the requirements in § 157.19 before December 31, 1976. If a vessel is constructed under a contract that was awarded before January 1, 1974 and does not carry crude oil, fuel oil, heavy diesel oil, or lubricating oil, the requirements in § 157.19 do not apply.

§ 157.21 Subdivision and stability.

(a) A new vessel must meet the following subdivision and damage stability criteria after assuming side and bottom damage as defined in Appendix B of this part:

(1) The final waterline, taking into account sinkage, heel, and trim, must be below the lower edge of an opening through which progressive flooding may take place, such as an air pipe, or an opening that is closed by means of a watertight door or hatch cover. This opening does not include those closed by—

(i) Watertight manhole cover;

(ii) Flush scuttle;

(iii) Small watertight cargo tank hatch cover that maintains the high integrity of the deck;

(iv) Remotely operated watertight sliding door; or

(v) Side scuttle of the non-opening type.

(2) In the final stage of flooding, the angle of heel due to unsymmetrical flooding must not exceed 25 degrees, except that this angle may be increased to 30 degrees if no deck edge immersion occurs.

(3) For acceptable stability in the final stage of flooding, the righting lever curve must have a range of at least 20 degrees beyond the position of equilibrium in association with a maximum residual righting lever of at least 0.1 meter. Protected or unprotected openings that may become temporarily immersed within the range of residual stability must be accounted for in the calculation.

(4) The stability must be sufficient during intermediate stages of flooding.

(b) Calculations to substantiate compliance with subdivision and damage stability criteria contained in paragraph (a) of this section must be submitted for Coast Guard review with the plans and specifications required in 46 CFR 31.10-5 and must include—

(1) The design characteristics of the vessel, the arrangements, configuration and contents of the damaged compartments; and

(2) The distribution, specific gravities, and the free surface effect of liquids.

§ 157.23 Cargo and ballast system information.

(a) A vessel designed in accordance with the requirements of this part must have an instruction manual that describes the automatic and manual operation of the cargo and ballast system in the vessel and that is approved by the Coast Guard with the plans and specifications required in 46 CFR 31.10-5.

(b) The style and format of the instruction manual required in paragraph (a) of this section must be similar to the manual entitled "Clean Seas Guide for Oil Tankers" which can be obtained from the International Chamber of Shipping, 30-32 St. Mary Axe, London, England, EC3A 8ET.

Subpart C—Vessel Operation

§ 157.25 Applicability.

This subpart prescribes regulations for the discharging of clean ballast, segregated ballast, and oily mixtures from, and for the carriage of ballast water on—

(a) Vessels engaged in the carriage of oil exclusively on rivers, lakes, bays, sounds, and the Great Lakes; and

(b) Seagoing vessels.

§ 157.27 Discharges; vessels engaged in the carriage of oil exclusively on rivers, lakes, bays, sounds, and the Great Lakes, and seagoing vessels of less than 150 gross tons.

Unless a vessel engaged in the carriage of oil exclusively on rivers, lakes, bays, sounds, and the Great Lakes, or a seagoing vessel of less than 150 gross tons discharges clean ballast or segregated ballast, the vessel must—

(a) Retain on board an oily mixture; or

(b) Transfer an oily mixture to a reception facility.

§ 157.29 Discharges; seagoing vessels of 150 gross tons or more.

Unless a seagoing vessel of 150 gross tons or more discharges an oily mixture in compliance with the requirements in §§ 157.37, 157.39, or 157.43, the vessel must—

(a) Retain the mixture; and

(b) Transfer the mixture to a reception facility.

§ 157.31 Discharges; chemical additives.

No person may use a chemical additive to circumvent the discharge require-

ments in §§ 157.27, 157.29, 157.37, 157.39, and 157.43.

§ 157.33 Water ballast in oil fuel tanks.

A new vessel may not carry ballast water in an oil fuel tank.

§ 157.35 Ballast added to cargo tank.

A vessel that meets the design requirement in § 157.09(c) may carry water ballast in a cargo tank during abnormally severe weather conditions if more ballast water than can be carried in segregated ballast tanks is required for the safety of the vessel. This ballast water must be—

(a) Processed and discharged in compliance with the requirements in § 157.37; and

(b) Recorded in the Oil Record Book in accordance with the requirements in § 151.35(c) (1) (vii) of this chapter.

§ 157.37 Discharge of cargo residue.

(a) Except as required in paragraph (b) of this section, the discharge into sea of an oily mixture from a cargo tank and cargo pump room bilges of a vessel is prohibited unless the vessel—

(1) Is more than 50 nautical miles from the nearest land;

(2) Is proceeding en route;

(3) Is discharging at an instantaneous rate of oil content not exceeding 60 liters per nautical mile;

(4) Is an existing vessel and the total quantity of oil discharge into the sea does not exceed 1/15,000 of the total quantity of the cargo that the discharge formed a part, or is a new vessel and the total quantity of oil discharged into the sea does not exceed 1/30,000 of the total quantity of the cargo that the discharge formed a part; and

(5) Has in operation an oil discharge monitoring and control system approved by the Coast Guard (specification regulation to be proposed).

(b) A vessel that engages exclusively in the carriage of asphalt must transfer cargo residues and tank washings to a reception facility.

§ 157.39 Machinery spaces bilges.

(a) No vessel may discharge an oily mixture from a machinery space bilge that is combined with an oil cargo mixture unless the vessel discharges in compliance with § 157.37.

(b) A vessel may discharge an oily mixture from a machinery space bilge that is not within the prohibition contained in paragraph (a) of this section if the vessel—

(1) Is more than 12 nautical miles from the nearest land;

(2) Is proceeding en route;

(3) Is discharging an effluent with an oil content of less than 100 parts per million; and

(4) Has in operation an oil discharge monitoring and control system approved by the Coast Guard (specification regulation to be proposed) and an oily water separating equipment approved by the

Coast Guard (specification regulation to be proposed).

§ 157.41 Emergencies.

Sections 157.27, 157.29, 157.37, and 157.39 do not apply to a vessel that discharges into the sea oil or oily mixtures—

(a) For the purpose of securing the safety of the vessel or for saving life at sea; or

(b) As a result of damage to the vessel or its equipment if—

(1) Reasonable precautions are taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimizing the discharge; and

(2) The owner, master or person in charge did not intend to cause damage, or did not act recklessly and with knowledge that damage of the environment would probably result.

§ 157.43 Discharge in ports or at offshore terminal.

A master may discharge in a port or at an offshore terminal segregated ballast and clean ballast through the piping described in § 157.11(a) if he makes a visual examination of the top of the contents of the tank to be discharged and finds there is no oily mixture in the contents.

§ 157.45 Valves in cargo or ballast piping system.

If a vessel is at sea and the tanks contain oil, each valve or closing device in the cargo or ballast piping system or in the transfer system must be kept closed except they may be opened for cargo transfer to trim the vessel.

§ 157.47 Information for master.

A master or person in charge shall operate the vessel in accordance with the—

(a) Stability information required in 46 CFR 31.01-30(d);

(b) Damage stability information determined in accordance with the criteria contained in Appendix B of this part; and

(c) Loading and distribution of cargo information determined in compliance with the damage stability criteria required in Appendix B of this part.

§ 157.49 Instruction manual.

No person may operate the cargo and ballast systems unless he operates in compliance with the approved instruction manual required in § 157.23.

APPENDIX A—DAMAGE ASSUMPTIONS, HYPOTHETICAL OUTFLOWS, AND CARGO TANK SIZE AND ARRANGEMENTS

1. *Source.* The procedures for the damage assumption calculations contained in this Appendix conform to Regulations 22, 23, and 24 of Annex I of the International Convention for the Prevention of the Pollution from Ships, 1973 done at London, November 2, 1973.

2. *Assumptions.* For the purpose of calculating hypothetical outflow from tank vessels, three dimensions of the extent of damage of a parallelepiped on the side and bottom of the vessel are assumed.

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(a) For side damage, the conditions are as follows:

| Damage: | Conditions |
|--|---|
| (1) Longitudinal extent (l_e): | $\frac{11L^2}{3}$ or 14.5 meters, whichever is less. |
| (2) Transverse extent (t_e): (inboard from the vessel's side at angles to the centerline at the level corresponding to the assigned summer freeboard). | $\frac{B}{5}$ or 11.5 meters whichever is less. |
| (3) Vertical extent (v_e): | From the base line upwards without limit. |

(b) For bottom damage, two conditions to be applied individually to the stated portions of the vessel, as follows:

| Damage | Conditions | |
|---|---|--|
| | For 0.3L from the forward perpendicular of ship | Any other part of ship |
| (1) Longitudinal extent (l_e): | $\frac{L}{10}$ | $\frac{L}{10}$ or 5 meters, whichever is less. |
| (2) Transverse extent (t_e): | $\frac{B}{6}$ or 10 meters, whichever is less but not less than 5 meters. | 5 meters. |
| (3) Vertical extent from the base line (v_e): | $\frac{B}{15}$ or 6 meters, whichever is less. | $\frac{B}{15}$ or 6 meters, whichever is less. |

3. Hypothetical Outflow of Oil. (a) The hypothetical outflow of oil in the case of side damage (O_s) and bottom damage (O_b) is calculated by the following formula with respect to compartments breached by damage to all conceivable locations along the length of the vessel to the extent as defined in section 2 of this Appendix.

(1) For side damage: Formula (I)

$$O_s = \sum W_i + \sum K_i C_i$$

(2) For bottom damage: Formula (II)

$$O_b = \frac{1}{3} (\sum Z_i W_i + \sum Z_i C_i)$$

Where:

W_i = Volume of a wing tank assumed to be breached by the damage as specified in section 2 of this Appendix; W_i for a segregated ballast tank may be taken equal to zero.

C_i = Volume of a center tank assumed to be breached by the damage as specified in section 2 of this Appendix; C_i for a segregated ballast tank may be taken equal to zero.

$K_i = 1 - \frac{b_i}{T_e}$; when b_i is equal to or greater than t_e , K_i is equal to zero.

$Z_i = 1 - \frac{h_i}{v_e}$; when h_i is equal to or greater than v_e , Z_i is equal to zero.

b_i = Minimum width of wing tank under consideration measured inboard from the vessel's side at right angles to the centerline at the level corresponding to the assigned summer freeboard.

h_i = Minimum depth of the double bottom under consideration, where no double bottom is fitted, h_i is equal to zero.

(b) If a void space or segregated ballast tank of a length less than l_e is located between wing oil tanks, O_s in formula (I) of this section may be calculated on the basis of volume W_i being the actual volume of one such tank (where they are of equal capacity) or the smaller of the two tanks (if they differ in capacity), adjacent to such space, multiplied by S_i as defined below and taking for all other wing tanks involved in such a collision the value of the actual full volume.

$$S_i = 1 - \frac{l_i}{l_e}$$

Where l_i = length of void space or segregated ballast tank under consideration.

(c) Credit may only be given in respect of double bottom tanks which are either empty or carrying clean water when cargo is carried in the tanks above.

(1) If the double bottom does not extend for the full length and width of the tank involved, the double bottom is considered nonexistent and the volume of the tanks above the area of the bottom damage must be included in formula (II) of this section even if the tank is not considered breached because of the installation of such a partial double bottom.

(2) Suction wells may be neglected in the determination of the value h_i if such wells are not excessive in area and extend below the tank for a minimum distance and in no case more than half the height of the double bottom. If the depth of such a well exceeds half the heights of the double bottom h_i taken equal to the double bottom height minus the well height.

(d) In the case where bottom damage simultaneously involves four center tanks, the value of O_b may be calculated according to formula (III) as follows:

$$O_b = 1/4 (\sum Z_i W_i + \sum Z_i C_i)$$

4. Allowable volumes of cargo tanks. (a) The allowable volume of a wing cargo tank (VOL_w) is equal to seventy-five percent of O_s . In a segregated ballast tank vessel VOL_w may equal O_s for a wing cargo oil tank located between two segregated ballast tanks each of length greater than l_e and width greater than t_e .

(b) The allowable volume of a center cargo tank (VOL_c) is 50,000 cubic meters.

5. Allowable length of cargo tanks. The allowable length of a cargo tank (l_e) is equal to the greater of 10 meters or one of the following values:

(a) If no longitudinal bulkhead is provided, 0.1L

(b) If a longitudinal bulkhead is provided at the centerline only, 0.15L

(c) If two or more longitudinal bulkheads are provided:

- (1) For wing tanks, 0.2L; and
- (2) For center tanks—

(i) If $\frac{b_i}{B}$ is equal to or greater than $\frac{1}{3}$, 0.2L; or

(ii) If $\frac{b_i}{B}$ is less than $\frac{1}{3}$ and—

(A) No centerline longitudinal bulkhead is provided, $(0.5 \frac{b_i}{B} + 0.1) L$; or

(B) A centerline longitudinal bulkhead is provided, $(0.25 \frac{b_i}{B} + 0.15) L$.

APPENDIX B—SUBDIVISION AND STABILITY ASSUMPTIONS

1. Source. The procedures for the loading assumption calculations contained in this

Appendix conform to Regulation 25 of Annex I of the International Convention for the Prevention of the Pollution from Ships, 1973, done at London, November 2, 1973.

2. Loading Assumptions. For the purpose of calculating subdivision and damage stability for a tank vessel, the operating drafts must reflect actual partial or full load conditions consistent with trim and strength of the vessel. Ballast conditions need not be considered if the tank vessel is not carrying oil in cargo tanks excluding oily residues. Loading condition must reflect the specific gravities of the cargo.

3. Damage Assumptions. (a) Damage is applied to all conceivable locations along the length of the vessel as follows:

(1) For a vessel of more than 225 meters in length, anywhere in the vessel's length.

(2) For a vessel of more than 150 meters, but not exceeding 225 meters in length, anywhere in the vessel's length except where the after or forward bulkhead bounding a machinery space located aft is involved in the damage assumption. The machinery space is calculated as a single floodable compartment.

(3) For a vessel less than 150 meters in length, anywhere in the vessel's length between adjacent transverse bulkheads except the machinery space.

(b) The extent and the character of the assumed side or bottom damage, as defined in section 2 of Appendix A of this part, must be applied except longitudinal bottom damage within 0.3L from the forward perpendicular must be assumed to be the same as that for side damage. If any damage of lesser extent results in a more severe condition, such damage must be assumed.

(c) Where damage involves transverse bulkheads as specified in paragraphs (a) (1) and (2) of this section, transverse watertight bulkheads must be spaced at least at a distance equal to the longitudinal extent of assumed damage specified in paragraph (a) (1) of this section in order to be considered effective. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads within such extent of damage must be assumed as nonexistent for the purpose of determining flooded compartments.

(d) If the damage between adjacent transverse watertight bulkheads is within the definition contained in paragraph (a) (3) of this section, no main transverse bulkhead or a transverse bulkhead bounding side tanks or double bottom tanks is to be assumed damaged, unless—

(1) The spacing of the adjacent bulkheads is less than the longitudinal extent of assumed damage defined in paragraph (b) of this section; or

(2) There is a step or a recess in a transverse bulkhead of more than 3.05 meters in length, located within the extent of penetrations of assumed damage. The step formed by the after peak bulkhead and after peak tank top is not regarded as a step for these calculations.

(e) If pipes, ducts, or tunnels are situated within the assumed extent of damage, there must be arrangements so that progressive flooding may not thereby extend to compartments other than those assumed to be floodable for each case of damage.

4. Characteristic and Condition Assumptions for Calculations (a) Account must be taken of any empty or partially filled tanks, the specific gravity of cargoes carried, and any outflow of liquids from damaged compartments.

(b) The permeabilities are assumed as follows:

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| Intended Space Use: | Permeability |
|-------------------------|------------------------|
| Stores..... | 0.00 |
| Accommodation..... | 0.95 |
| Machinery..... | 0.85 |
| Voids..... | 0.95 |
| Consumable liquids..... | ¹ 0 or 0.95 |
| Other liquids..... | ² 0 or 0.95 |

¹ Whichever results in the more severe requirements.

² The permeability of partially filled compartments must be consistent with actual density and the amount of liquid carried.

(c) The buoyance of any superstructure directly above the side damage is to be disregarded. The unflooded parts of superstructures beyond the extent of damage may be taken into consideration if they are separated from the damaged space by watertight bulkheads and no progressive flooding of these intact spaces takes place. Class I doors are allowed in watertight bulkheads in the superstructure.

(d) The free surface effect is to be calculated at an angle of 5 degrees for each individual full compartment. Partially filled tanks must have free surface corrections computed at final angle of heel.

(e) In calculating the effect of free surfaces of consumable liquids, it is to be assumed that, for each type of liquid, at least one transverse pair or a single centerline tank has a free surface and the tank or combination of tanks to be taken into account is to be those where the effect of free surface is the greatest.

(R.S. 4417a(3) and (7), as amended (46 U.S.C. 391a(3) and (7)); 49 CFR 1.46(c)(4)).

Dated: June 25, 1974.

W. M. BENKERT,
Rear Admiral, U.S. Coast Guard,
Chief, Office of Merchant
Marine Safety.

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A N N E X I I

Marine Traffic Requirements, Advance Notice of Proposed Rule-
making (39 FR 24157 - 24159)

FRIDAY, JUNE 28, 1974

WASHINGTON, D.C.

Volume 39 ■ Number 126



proposed rules

PART IV

[33 CFR Subchapter P]

[CGD 74-77]

MARINE TRAFFIC REQUIREMENTS

Advance Notice of Proposed Rulemaking

The Coast Guard is considering adding requirements to the ports and waterways safety regulations that would govern the operation of all major U.S. and foreign vessels in the navigable waters of the United States except those in innocent passage not bound for or departing U.S. ports. Also being considered are requirements for the carriage or installation of equipment and devices on vessels of more than 150 gross tons.

AUTHORITY FOR REGULATIONS

The regulations would be proposed under the authority of sections 104 and 201 (R.S. 4417a(3)) of the Ports and Waterways Safety Act of 1972 (Pub. L. 92-340, 86 Stat. 424), as delegated in 49 CFR 1.46(o)(4); section 311(j) of the Federal Water Pollution Control Act, Pub. L. 92-500, 86 Stat. 862, 33 U.S.C. 1321, as delegated in section 2 of E.O. 11735 (38 FR 21243) and 49 CFR 1.46(m); and the National Environmental Policy Act of 1969 (83 Stat. 852, 42 U.S.C. 4231, et seq.).

COMMENTS ON ADVANCE NOTICE

Interested persons are requested to assist the Coast Guard by submitting written comments, data, views, or arguments to the Executive Secretary, Marine Safety Council (G-CMC/82), room 8234, U.S. Coast Guard, Washington, D.C. 20590. A participant in this rule making procedure should furnish comments, views, data, or arguments to the Coast Guard as soon as possible but no later than August 19, 1974. Copies of material received will be available for examination in room 8234. Arrangements for State and local governments, representatives of the marine industry, port and harbor authorities, environment groups, and other interested parties to discuss with representatives of the Coast Guard the proposal in this advance notice may be made with the Executive Secretary at 202-426-1477.

Oral comments may be submitted on this advance notice at the public hearings the Coast Guard will hold on Docket CGD 74-32, the notice of which appears on page _____ of this issue of the FEDERAL REGISTER. The public hearings will be held on July 23 and 24, 1974, beginning at 9:00 a.m., in the Shaw Room, Seattle Center, 303 Harrison St., Seattle, Washington, and on July 30 and 31, 1974, beginning at 9:00 a.m., in Room 2232, 400 Seventh St. SW., Washington, D.C. It

is requested that anyone desiring to make oral comments at either hearing notify the Executive Secretary, at the above stated address by July 19, 1974, and specify the approximate length of time needed for his presentation. Submission of a written summary or copy of the oral presentation is encouraged.

DISCUSSION OF PROPOSED REGULATIONS

Senate Report No. 92-724 (March 28, 1972) states that the purpose of the Ports and Waterways Safety Act of 1972 (Pub. L. 92-340, 86 Stat. 424) is to promote the safety and protect the environmental quality of ports, waterfront areas, and the navigable waters of the United States. Broad authority is granted by title I of the Act to establish, operate, and maintain vessel traffic services and systems for ports, harbors, and other waters subject to congested vessel traffic and "control vessel traffic in areas determined to be especially hazardous, or under conditions of reduced visibility, adverse weather, vessel congestion, or other hazardous circumstances" in order to "prevent damage to, or the destruction or loss of any vessel, bridge, or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters; and to protect the navigable waters and the resources therein from environmental harm resulting from vessel or structure damage, destruction, or loss."

In addition, title II of the Ports and Waterways Safety Act of 1972 authorizes comprehensive regulations for the design, construction, alteration, repair, maintenance, and operation of tankers and certain other vessels. The reason stated for this provision of the Act is as follows: "[T]he carriage by vessels of certain cargoes in bulk creates substantial hazards to life, property, the navigable waters of the United States (including the quality thereof) and the resources contained therein . . . [and] that existing standards for the design, construction, alteration, repair, maintenance, and operation of such vessels must be improved for the adequate protection of the marine environment."

The Federal Water Pollution Control Act (86 Stat. 862, 33 U.S.C. 1321(b)(1)) states the policy of the United States as follows: "[T]here should be no discharges of oil or hazardous substances into or upon the navigable waters of the United States, adjoining shorelines or into or upon the waters of the contiguous zone." Regulations issued under the authority of section 311(j) of this Act are required to be consistent with maritime safety and navigation laws.

Section 101(a) of the National En-

vironmental Policy Act of 1969 (83 Stat. 852, 42 U.S.C. 4231) states that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans. The Act authorizes and directs that to the fullest extent possible the policies, regulations, and public laws of the United States must be interpreted and administered in accordance with the policies set forth in the Act.

In view of the policy stated in these statutes and in view of the increasing vessel traffic carrying hazardous cargoes, the Coast Guard has determined that there must be an improvement in the operating practices aboard all major vessels on the navigable waters. The increasing number of large vessels carrying hazardous cargoes in bulk on the navigable waters of the United States has created a significant and growing hazard to life, property, and the marine environment. Eighty percent of vessel casualties occur within coastal and harbor regions. The *Torrey Canyon* grounding, the *Tamano* grounding, the *Oregon Standard* and the *Arizona Standard* collision, and the tug *Carolyn* and *Weeks Barge No. 254* collision with the Chesapeake Bay bridge and Tunnel, exemplify casualties that have occurred in waters adjacent to shore areas. Each of these casualties posed a significant threat to life, property, and the environment. Information regarding these incidents and similar incidents reveals that human error is often the primary cause of casualties. The conclusion of a study based on Coast Guard investigations is that human error is a contributing factor in 85 percent of casualties.

Currently, oil constitutes sixty percent of the cargo carried by vessels traversing the oceans of the world. A Coast Guard study projects that the total tonnage of tankers carrying oil in 1975 will be at least one and one-half times greater than the tonnage in 1971. S. Rep. No. 92-724 indicates a similar increase in the amount of oil to be carried. Due to the increasing U.S. reliance on imported crude oil, the hazard to life, property, and the environment will also increase as the waters become more congested with traffic. The Coast Guard believes that only uniform requirements imposed on

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all major vessels can produce safer conditions for congested or hazardous maritime traffic since any vessel over 150 gross tons can collide or create an imminent collision or grounding situation involving a vessel carrying oil in bulk. Therefore, it is the ultimate goal of the regulations under consideration to establish safer standards for the operation of vessels capable of causing a major casualty within the navigable waters.

REGULATIONS TO BE PROPOSED

The purpose of any regulations to be proposed is to prevent maritime casualties and the resultant discharge of oil or hazardous substances into the navigable waters of the United States by regulating the operating requirements of major vessels on those waters. The equipment and operating regulations to be proposed would apply to foreign vessels when bound for or departing from U.S. ports and to United States seagoing vessels that operate within the navigable waters of the United States. Seagoing vessels generally include those vessels on coastal and ocean trade routes. Vessels on the St. Lawrence Seaway, the Great Lakes, and vessels operating only within rivers, lakes, bays, and sounds would be excepted from the requirements of paragraphs 2, 3, and 4 of this advance notice. However, the proposed requirements of paragraph 1 of this notice would apply to all vessels including those operating on the Great Lakes, and rivers, lakes, bays, and sounds. Further regulations for the Great Lakes are dependent upon final agreement between Canada and the United States. Further requirements for vessels operating exclusively on rivers, lakes, bays, and sounds will depend upon additional evaluation of the practical and economic impact of operating requirements on these vessels by the Coast Guard.

This advance notice is not intended to indicate that the Coast Guard has formed final conclusions on any aspect of the proposal. Public comment on the functions to be required, the tonnages specified, and the applicability of the requirements to a particular class of vessels is requested and will be used in determining the regulations to be proposed. This advance notice proposes specific functions and tonnages in order to provide a starting point for public comment. The following description sets forth the substance of the regulations to be proposed.

SUBSTANCE OF REGULATIONS TO BE PROPOSED

1. All U.S. and foreign vessels in the navigable waters except vessels in innocent passage not bound for or departing U.S. ports would be required to comply with:

a. The specific requirements of any vessel traffic system through which the vessel passes.

b. The orders of the Captain of the Port¹ when he makes an individual case determination that a particular area is especially hazardous or that hazardous circumstances exist within his jurisdictional boundaries. The Captain of the Port considers the following factors among others before issuing any order:

- (1) Configuration of the waterway involved including the depth and width of the channel to be transited.
- (2) Wind direction and velocity.
- (3) Tidal current and stage of tide.
- (4) Visibility.
- (5) Time of day.
- (6) Type and amount of cargo being carried.
- (7) Hull design of the vessel involved including the presence or lack of a double hull, double bottom, and cargo segregation.

(8) Propulsion system of the vessel including factors such as horsepower, number of shafts, size of propellers, bow thrusters, stern thrusters, and other similar variables which affect controllability and maneuverability of the vessel.

(9) Tugs in attendance.

(10) Inoperative or deficient equipment aboard the vessel that may affect its ability to safely transit the navigable waters.

(11) Type and density of other vessel traffic operating in the same waterway.

(12) The presence of a pilot aboard the vessel.

(13) The requests and recommendations of the vessel's master, person in charge, and pilot.

(14) Vessel speed and intended time of transit.

(15) Intended route and destination of vessel.

2. All U.S. and foreign vessels that are self-propelled seagoing vessels or seagoing towing vessels with tow in any configuration whose aggregate tonnage exceeds the specified amount, except a vessel in innocent passage not bound for or departing a U.S. port would be required to maintain and use the following equipment when within the navigable waters:

a. *Vessels of more than 150 gross tons.*

(1) One radar.

(2) A properly adjusted magnetic compass.

(3) A fathometer in the pilothouse.

(4) Piloting navigation instruments such as parallel rules, dividers, and related instruments necessary for maintaining an accurate plot of vessel movement on a chart.

(5) Corrected charts of the largest scale practicable for the area being transited.

(6) Current corrected copies of the Coast Pilot and the Light List and current copies of tide tables and tidal current tables for the waters being transited.

b. *Vessels of more than 1600 gross tons.* (1) A gyro compass.

(2) A towing pendant. An unmanned barge would be required to have a towing pendant rigged over the side.

(3) A recording fathometer. Fathometer records would be retained on board the vessel for at least 30 days.

(4) A means that visually indicates the speed of the vessel.

c. *Vessels of more than 5000 gross tons.* (1) A course recorder. Course recorder records would be retained on board the vessel for at least 30 days.

(d) *Vessels of more than 10,000 gross tons.* (1) A second radar. One radar would be equipped with an "anti-collision" device. One of the two radars would have an "S-band" (10 centimeter) capability and the other would have an "X-band" (3 centimeter) capability. Each radar would be suitable for surface navigation operation.

e. *Self-propelled tank ships of more than 35,000 gross tons.* (1) A rate of turn indicator.

3. All U.S. and foreign vessels that are self-propelled seagoing vessels of 150 gross tons or more, or seagoing towing vessels with tow in any configuration whose aggregate tonnage exceeds 150 gross tons, except those in innocent passage not bound for or departing U.S. ports, would be required to have personnel on board comply with the following requirements before entering into and before getting underway within the navigable waters:

a. Test and log the testing of the following vital systems:

(1) Steering (all modes and stations).

(2) Emergency generator.

(3) Remote machinery controls.

(4) Main propulsion for power ahead and astern.

(5) Internal vessel communications.

(6) Vessel alarms and signaling devices.

b. The master, person in charge, or pilot of a vessel would be required to be familiar with the details of each notice to mariners relevant to the vessel's intended track since the date of the corrected chart being used to transit the area.

4. All U.S. and foreign vessels that are self-propelled seagoing vessels of 1600 gross tons or more, or seagoing towing vessels with tow in any configuration whose aggregate tonnage exceeds 1600 gross tons, except those in innocent passage not bound for or departing U.S. ports, would be required to have personnel on board comply with the following requirements when underway within the navigable waters:

¹ In the March 1, 1974 issue of the FEDERAL REGISTER (39 FR 7948), the Coast Guard published an advance notice of proposed rule-making regarding regulations to authorize each District Commander and Captain of the Port to control vessel traffic in especially hazardous areas or during hazardous circumstances, and to direct the movement of a vessel whenever necessary to prevent damage to or by that vessel. This document paragraph is intended to supplement the advance notice published in 39 FR 7948.

PROPOSED RULES

a. Within the confines of harbors and hazardous waterways (to be identified by the Captain of the Port in the FEDERAL REGISTER) sufficient competent personnel on board self-propelled vessels would:

(1) Stand by the primary steering machinery space to handle a steering casualty.

(2) Man the anchor windlass or similar equipment in order to be ready to drop anchor. One bow anchor on these vessels would be ready for letting go.

(3) Man the main steering control station to manually control the vessel direction.

b. Set the main ship's propulsion system to maneuvering mode. The vessel's main propulsion spaces would be manned with personnel competent to manually answer engine maneuvering orders

if any automatic engine maneuvering system fails to perform properly.

c. Plot the vessel's movement on the corrected chart for the area being transited. Towing vessels with tow in any configuration whose aggregate tonnage is less than 10,000 gross tons would not be required to comply with this requirement. The person maintaining the plot would be required to lay out a trackline of intended vessel movement on the chart. Position fixes would be plotted at sufficiently frequent intervals so that the position of the vessel with respect to the trackline is indicated. If a casualty occurs, the chart would be required to be retained. It is contemplated that a licensed deck officer or licensed operator other than the person actually controlling vessel movement would maintain the plot. The person actually controlling ves-

sel movement would obtain from the person maintaining the plot information on the vessel's movement that is timely, accurate, and understandable.

d. Maintain a bow lookout with adequate communication to the bridge. The master of the vessel would not be required to station a lookout on the bow when conditions prevented the lookout from performing his assigned function.

(Sec. 104 and 201 (R.S. 4417a(3)), 86 Stat. 424, Sec. 311(j), 86 Stat. 862 (33 U.S.C. 1321), 83 Stat. 852 (42 U.S.C. 4231); Sec. 2, E.O. 11735; 49 CFR 1.46 (m) and (o)(4))

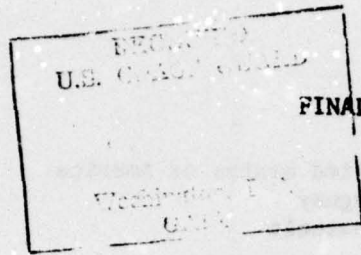
Dated: June 25, 1974.

W. M. BENKERT,
Rear Admiral, U.S. Coast Guard,
Chief, Office of Merchant Marine
Safety.

[FR Doc.74-14885 Filed 6-27-74; 8:45 am]

A N N E X I I I

Final Act of the International Conference on Marine
Pollution, 1973



FINAL ACT OF THE INTERNATIONAL CONFERENCE
ON MARINE POLLUTION, 1973

1. By its Resolution A.176(VI) of 21 October 1969, the Assembly of the Inter-Governmental Maritime Consultative Organization decided to convene in 1973 an International Conference on Marine Pollution. This Conference was held in London from 8 October to 2 November 1973.

2. The following States were represented by delegations at the Conference:

- | | |
|---|--|
| Argentina | Kenya |
| Australia | Khmer Republic |
| Bahrain | Kuwait |
| Belgium | Liberia |
| Brazil | Libyan Arab Republic |
| Bulgaria | Madagascar |
| Byelorussian Soviet Socialist Republic | Mexico |
| Canada | Monaco |
| Chile | Morocco |
| Cuba | Netherlands |
| Cyprus | New Zealand |
| Denmark | Nigeria |
| Dominican Republic | Norway |
| Ecuador | Panama |
| Egypt | Peru |
| Finland | Philippines |
| France | Poland |
| German Democratic Republic | Portugal |
| Germany, Federal Republic of | Republic of Korea |
| Ghana | Romania |
| Greece | Saudi Arabia |
| Haiti | Singapore |
| Hungary | South Africa |
| Iceland | Spain |
| India | Sri Lanka |
| Indonesia | Sweden |
| Iran | Switzerland |
| Iraq | Thailand |
| Ireland | Trinidad and Tobago |
| Italy | Tunisia |
| Ivory Coast | Ukrainian Soviet Socialist Republic |
| Japan | Union of Soviet Socialist Republics |
| Jordan | |

| | |
|---|--------------------------|
| United Arab Emirates | United States of America |
| United Kingdom of Great Britain and Northern Ireland | Uruguay |
| United Republic of Tanzania | Venezuela |

3. The following States were represented at the Conference by observers:

| | |
|----------|----------------------|
| Colombia | Republic of Viet-Nam |
| Jamaica | Turkey |
| Malawi | Yugoslavia |
| Oman | |

The Government of Hong Kong was also represented by an observer.

4. At the invitation of the Assembly the following organizations in the United Nations system sent representatives to the Conference:

United Nations
United Nations Environment Programme
Food and Agriculture Organization
United Nations Educational, Scientific and Cultural Organization
International Bank for Reconstruction and Development
International Atomic Energy Agency

5. The following inter-governmental organizations sent observers to the Conference:

European Economic Community
International Institute for the Unification of Private Law

6. The following non-governmental organizations also sent observers to the Conference:

International Chamber of Shipping
International Organization for Standardization
International Electrotechnical Commission
International Union of Marine Insurance
International Association of Ports and Harbors
The Baltic and International Maritime Conference
International Association of Classification Societies
International Law Association
European Council of Chemical Manufacturers' Federation
Oil Companies International Marine Forum
International Shipowners' Association
Friends of the Earth International

7. At the opening of the Conference The Hon. Michael Heseltine, Minister of Aerospace and Shipping of the United Kingdom and Mr. Maurice Strong, Executive Director of the United Nations Environment Programme made statements supporting the objectives of the Conference.

8. The Conference elected Mr. S.V. Bhave, Head of the Indian delegation, as President of the Conference.

9. Twenty-four Vice-Presidents of the Conference were elected, as follows:

First Vice-President: Mr. G. Lindencrona (Sweden)

Mr. R.M. Gowland (Argentina)
H.E. Mr. M. Raffaelli (Brazil)
The Hon. Jack Davis (Canada)
Dr. M. Oporto (Cuba)
Mr. M.A. El-Sammak (Egypt)
Mr. J.P. Cabouat (France)
Dr. H. Rentner (German Democratic Republic)
Dr. G. Breuer (Germany, Federal Republic of)
H.E. Mr. H.V.H. Sekyi (Ghana)
Mr. M. Sjadzali (Indonesia)
Mr. H. Afshar (Iran)
Mr. K.G. Loukou (Ivory Coast)
H.E. Mr. S. Sugihara (Japan)
Mr. A.G. Toukan (Jordan)
Mr. E. Dinga (Kenya)
Mr. N.A. Al-Nakib (Kuwait)
Mr. M. Ramarozaka (Madagascar)
Dr. Vizcaino Murray (Mexico)
Captain D.W. Boyes (New Zealand)
Mr. S. Perkowicz (Poland)
H.E. Mr. G. Nhigula (United Republic of Tanzania)
Mr. V. Tikhonov (USSR)
Mr. J.N. Archer (United Kingdom)

10. Mr. Colin Goad, Secretary-General of the Organization, acted as Secretary-General of the Conference with Mr. J. Quéguiner, Deputy Secretary-General, as Deputy Secretary-General of the Conference. Captain A. Saveliev, Secretary of the Maritime Safety Committee of the Organization, was appointed Executive Secretary of the Conference and Mr. Y. Sasamura, Head of Marine Science and Technology Division, and Mr. T. Mensah, Head of Legal Division, of the Organization were appointed Deputy Executive Secretaries of the Conference.

11. The Conference established the following Committees and a Steering Committee composed of officers of the Conference:

Committee I:

Chairman: H.E. Dr. P.V.J. Solomon (Trinidad and Tobago)
Vice-Chairman: Mr. G. Lindencrona (Sweden)

Committee II:

Chairman: Dr. L. Spinelli (Italy)
Vice-Chairman: Dr. W. Al-Nimr (Bahrain)

Committee III:

Chairman: Mr. R.J. Lakey (United States of America)
Vice-Chairman: Mr. Koh Eng Tian (Singapore)

Committee IV:

Chairman: H.E. Prof. A. Yankov (Bulgaria)
Vice-Chairman: The Hon. G.F.B. Cooper (Liberia)

Credentials Committee:

Chairman: Mr. P.A. Araque (Philippines)

Drafting Committee:

Chairman: Mr. G.A.E. Longe (Nigeria)
Vice-Chairman: H.E. Mr. J.D. del Campo (Uruguay)

12. The following documentation formed the basis of the work of the Conference:

- Draft Text of an International Convention for the Prevention of Pollution from Ships, 1973
- Draft Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil
- Draft Resolutions relating to the prevention and control of marine pollution

- Proposals and comments, including amendments to the drafts mentioned above, submitted to the Conference by interested Governments and Organizations.

13. As a result of its deliberations, recorded in the summary records and reports of the Conference, the following instruments were adopted by the Conference:

INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION
FROM SHIPS, 1973

with its Protocols, Annexes and Appendices; and

PROTOCOL RELATING TO INTERVENTION ON THE HIGH SEAS IN CASES
OF MARINE POLLUTION BY SUBSTANCES OTHER THAN OIL

The Convention and the Protocol constitute Attachments 1 and 2 to this Final Act respectively.

14. The Conference also adopted Resolutions the texts of which comprise Attachment 3 of this Final Act.

15. The text of this Final Act including its attachments, is deposited with the Secretary-General of the Inter-Governmental Maritime Consultative Organization (IMCO). It is established in a single original in the English, French, Russian and Spanish languages, and accompanied by the texts of the International Convention for the Prevention of Pollution from Ships, 1973, with its Protocols, Annexes and Appendices, the Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, and the Resolutions of the Conference. The texts of the Convention, its Protocols, Annexes and Appendices, as well as of the Protocol, appear in their authentic languages, English, French, Russian and Spanish. The texts of Resolutions of the Conference appear in English, French, Russian and Spanish. Official translations of the Convention with its Protocols, Annexes and Appendices, and the Protocol, shall be prepared in the Arabic, German, Italian and Japanese languages. Originals of these official translations shall be deposited with this Final Act.

16. The Secretary-General of the Inter-Governmental Maritime Consultative Organization shall send a certified copy of this Final Act and, when they have been prepared, certified copies of the official translations of the Convention with its Protocols, Annexes and Appendices, the Protocol and the Resolutions of the Conference to the Governments invited to be represented at the Conference in accordance with the wishes of those Governments.

IN WITNESS WHEREOF the undersigned have affixed their signatures to this Final Act.

DONE AT LONDON this second day of November, one thousand nine hundred and seventy-three.

INTERNATIONAL CONVENTION FOR THE PREVENTION
OF POLLUTION FROM SHIPS, 1973

THE PARTIES TO THE CONVENTION,

BEING CONSCIOUS of the need to preserve the human environment in general and the marine environment in particular,

RECOGNIZING that deliberate, negligent or accidental release of oil and other harmful substances from ships constitutes a serious source of pollution,

RECOGNIZING ALSO the importance of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as being the first multilateral instrument to be concluded with the prime objective of protecting the environment, and appreciating the significant contribution which that Convention has made in preserving the seas and coastal environment from pollution,

DESIRING to achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharge of such substances,

CONSIDERING that this object may best be achieved by establishing rules not limited to oil pollution having a universal purport,

HAVE AGREED as follows:

ARTICLE 1

General Obligations under the Convention

(1) The Parties to the Convention undertake to give effect to the provisions of the present Convention and those Annexes thereto by which they are bound, in order to prevent the pollution of the marine environment by the discharge of harmful substances or effluents containing such substances in contravention of the Convention.

(2) Unless expressly provided otherwise, a reference to the present Convention constitutes at the same time a reference to its Protocols and to the Annexes.

ARTICLE 2

Definitions

For the purposes of the present Convention, unless expressly provided otherwise:

- (1) "Regulations" means the Regulations contained in the Annexes to the present Convention.
- (2) "Harmful substance" means any substance which, if introduced into the sea, is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea, and includes any substance subject to control by the present Convention.
- (3) (a) "Discharge", in relation to harmful substances or effluents containing such substances, means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying;
(b) "Discharge" does not include:
 - (i) dumping within the meaning of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, done at London on 13 November 1972; or
 - (ii) release of harmful substances directly arising from the exploration, exploitation and associated off-shore processing of sea-bed mineral resources; or
 - (iii) release of harmful substances for purposes of legitimate scientific research into pollution abatement or control.

(4) "Ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms.

(5) "Administration" means the Government of the State under whose authority the ship is operating. With respect to a ship entitled to fly a flag of any State, the Administration is the Government of that State. With respect to fixed or floating platforms engaged in exploration and exploitation of the sea-bed and subsoil thereof adjacent to the coast over which the coastal State exercises sovereign rights for the purposes of exploration and exploitation of their natural resources, the Administration is the Government of the coastal State concerned.

(6) "Incident" means an event involving the actual or probable discharge into the sea of a harmful substance, or effluents containing such a substance.

(7) "Organization" means the Inter-Governmental Maritime Consultative Organization.

ARTICLE 3

Application

(1) The present Convention shall apply to:

- (a) ships entitled to fly the flag of a Party to the Convention; and
- (b) ships not entitled to fly the flag of a Party but which operate under the authority of a Party.

(2) Nothing in the present Article shall be construed as derogating from or extending the sovereign rights of the Parties under international law over the sea-bed and subsoil thereof adjacent to their coasts for the purposes of exploration and exploitation of their natural resources.

(3) The present Convention shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention.

ARTICLE 4

Violation

(1) Any violation of the requirements of the present Convention shall be prohibited and sanctions shall be established therefor under the law of the Administration of the ship concerned wherever the violation occurs. If the Administration is informed of such a violation and is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken as soon as possible, in accordance with its law.

(2) Any violation of the requirements of the present Convention within the jurisdiction of any Party to the Convention shall be prohibited and sanctions shall be established therefor under the law of that Party. Whenever such a violation occurs, that Party shall either:

- (a) cause proceedings to be taken in accordance with its law;
or
- (b) furnish to the Administration of the ship such information and evidence as may be in its possession that a violation has occurred.

(3) Where information or evidence with respect to any violation of the present Convention by a ship is furnished to the Administration of that ship, the Administration shall promptly inform the Party which has furnished the information or evidence, and the Organization, of the action taken.

(4) The penalties specified under the law of a Party pursuant to the present Article shall be adequate in severity to discourage violations of the present Convention and shall be equally severe irrespective of where the violations occur.

ARTICLE 5

Certificates and Special Rules on
Inspection of Ships

(1) Subject to the provisions of paragraph (2) of the present Article a certificate issued under the authority of a Party to the Convention in accordance with the provisions of the Regulations shall be accepted by the other Parties and regarded for all purposes covered by the present Convention as having the same validity as a certificate issued by them.

(2) A ship required to hold a certificate in accordance with the provisions of the Regulations is subject, while in the ports or off-shore terminals under the jurisdiction of a Party, to inspection by officers duly authorized by that Party. Any such inspection shall be limited to verifying that there is on board a valid certificate, unless there are clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that certificate. In that case, or if the ship does not carry a valid certificate, the Party carrying out the inspection shall take such steps as will ensure that the ship shall not sail until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment. That Party may, however, grant such a ship permission to leave the port or off-shore terminal for the purpose of proceeding to the nearest appropriate repair yard available.

(3) If a Party denies a foreign ship entry to the ports or off-shore terminals under its jurisdiction or takes any action against such a ship for the reason that the ship does not comply with the provisions of the present Convention, the Party shall immediately inform the consul or diplomatic representative of the Party whose flag the ship is entitled to fly, or if this is not possible, the Administration

of the ship concerned. Before denying entry or taking such action the Party may request consultation with the Administration of the ship concerned. Information shall also be given to the Administration when a ship does not carry a valid certificate in accordance with the provisions of the Regulations.

(4) With respect to the ships of non-Parties to the Convention, Parties shall apply the requirements of the present Convention as may be necessary to ensure that no more favourable treatment is given to such ships.

ARTICLE 6

Detection of Violations and Enforcement of the Convention

(1) Parties to the Convention shall co-operate in the detection of violations and the enforcement of the provisions of the present Convention, using all appropriate and practicable measures of detection and environmental monitoring, adequate procedures for reporting and accumulation of evidence.

(2) A ship to which the present Convention applies may, in any port or off-shore terminal of a Party, be subject to inspection by officers appointed or authorized by that Party for the purpose of verifying whether the ship has discharged any harmful substances in violation of the provisions of the Regulations. If an inspection indicates a violation of the Convention, a report shall be forwarded to the Administration for any appropriate action.

(3) Any Party shall furnish to the Administration evidence, if any, that the ship has discharged harmful substances or effluents containing such substances in violation of the provisions of the Regulations. If it is practicable to do so, the competent authority of the former Party shall notify the Master of the ship of the alleged violation.

(4) Upon receiving such evidence, the Administration so informed shall investigate the matter, and may request the other Party to furnish further or better evidence of the alleged contravention.

If the Administration is satisfied that sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation, it shall cause such proceedings to be taken in accordance with its law as soon as possible. The Administration shall promptly inform the Party which has reported the alleged violation, as well as the Organization, of the action taken.

(5) A Party may also inspect a ship to which the present Convention applies when it enters the ports or off-shore terminals under its jurisdiction, if a request for an investigation is received from any Party together with sufficient evidence that the ship has discharged harmful substances or effluents containing such substances in any place. The report of such investigation shall be sent to the Party requesting it and to the Administration so that the appropriate action may be taken under the present Convention.

ARTICLE 7

Undue Delay to Ships

- (1) All possible efforts shall be made to avoid a ship being unduly detained or delayed under Article 4, 5 or 6 of the present Convention.
- (2) When a ship is unduly detained or delayed under Article 4, 5 or 6 of the present Convention, it shall be entitled to compensation for any loss or damage suffered.

ARTICLE 8

Reports on Incidents Involving Harmful Substances

- (1) A report of an incident shall be made without delay to the fullest extent possible in accordance with the provisions of Protocol I to the present Convention.
- (2) Each Party to the Convention shall:
 - (a) make all arrangements necessary for an appropriate officer or agency to receive and process all reports on incidents;
 - and

(b) notify the Organization with complete details of such arrangements for circulation to other Parties and Member States of the Organization.

(3) Whenever a Party receives a report under the provisions of the present Article, that Party shall relay the report without delay to:

- (a) the Administration of the ship involved; and
- (b) any other State which may be affected.

(4) Each Party to the Convention undertakes to issue instructions to its maritime inspection vessels and aircraft and to other appropriate services, to report to its authorities any incident referred to in Protocol I to the present Convention. That Party shall, if it considers it appropriate, report accordingly to the Organization and to any other party concerned.

ARTICLE 9

Other Treaties and Interpretation

(1) Upon its entry into force, the present Convention supersedes the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended, as between Parties to that Convention.

(2) Nothing in the present Convention shall prejudice the codification and development of the law of the sea by the United Nations Conference on the Law of the Sea convened pursuant to Resolution 2750 C(XXV) of the General Assembly of the United Nations nor the present or future claims and legal views of any State concerning the law of the sea and the nature and extent of coastal and flag State jurisdiction.

(3) The term "jurisdiction" in the present Convention shall be construed in the light of international law in force at the time of application or interpretation of the present Convention.

ARTICLE 10

Settlement of Disputes

Any dispute between two or more Parties to the Convention concerning the interpretation or application of the present Convention shall, if settlement by negotiation between the Parties involved has not been possible, and if these Parties do not otherwise agree, be submitted upon request of any of them to arbitration as set out in Protocol II to the present Convention.

ARTICLE 11

Communication of Information

(1) The Parties to the Convention undertake to communicate to the Organization:

- (a) the text of laws, orders, decrees and regulations and other instruments which have been promulgated on the various matters within the scope of the present Convention;
- (b) a list of non-governmental agencies which are authorized to act on their behalf in matters relating to the design, construction and equipment of ships carrying harmful substances in accordance with the provisions of the Regulations;
- (c) a sufficient number of specimens of their certificates issued under the provisions of the Regulations;
- (d) a list of reception facilities including their location, capacity and available facilities and other characteristics;
- (e) official reports or summaries of official reports in so far as they show the results of the application of the present Convention; and

(f) an annual statistical report, in a form standardized by the Organization, of penalties actually imposed for infringement of the present Convention.

(2) The Organization shall notify Parties of the receipt of any communications under the present Article and circulate to all Parties any information communicated to it under sub-paragraphs (1)(b) to (f) of the present Article.

ARTICLE 12

Casualties to Ships

(1) Each Administration undertakes to conduct an investigation of any casualty occurring to any of its ships subject to the provisions of the Regulations if such casualty has produced a major deleterious effect upon the marine environment.

(2) Each Party to the Convention undertakes to supply the Organization with information concerning the findings of such investigation, when it judges that such information may assist in determining what changes in the present Convention might be desirable.

ARTICLE 13

Signature, Ratification, Acceptance, Approval and Accession

(1) The present Convention shall remain open for signature at the Headquarters of the Organization from 15 January 1974 until 31 December 1974 and shall thereafter remain open for accession. States may become Parties to the present Convention by:

- (a) signature without reservation as to ratification, acceptance or approval; or
- (b) signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or
- (c) accession.

(2) Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with the Secretary-General of the Organization.

(3) The Secretary-General of the Organization shall inform all States which have signed the present Convention or acceded to it of any signature or of the deposit of any new instrument of ratification, acceptance, approval or accession and the date of its deposit.

ARTICLE 14

Optional Annexes

(1) A State may at the time of signing, ratifying, accepting, approving or acceding to the present Convention declare that it does not accept any one or all of Annexes III, IV and V (hereinafter referred to as "Optional Annexes") of the present Convention. Subject to the above, Parties to the Convention shall be bound by any Annex in its entirety.

(2) A State which has declared that it is not bound by an Optional Annex may at any time accept such Annex by depositing with the Organization an instrument of the kind referred to in Article 13(2).

(3) A State which makes a declaration under paragraph (1) of the present Article in respect of an Optional Annex and which has not subsequently accepted that Annex in accordance with paragraph (2) of the present Article shall not be under any obligation nor entitled to claim any privileges under the present Convention in respect of matters related to such Annex and all references to Parties in the present Convention shall not include that State in so far as matters related to such Annex are concerned.

(4) The Organization shall inform the States which have signed or acceded to the present Convention of any declaration under the present Article as well as the receipt of any instrument deposited in accordance with the provisions of paragraph (2) of the present Article.

ARTICLE 15

Entry into Force

(1) The present Convention shall enter into force twelve months after the date on which not less than 15 States, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant shipping, have become parties to it in accordance with Article 13.

(2) An Optional Annex shall enter into force twelve months after the date on which the conditions stipulated in paragraph (1) of the present Article have been satisfied in relation to that Annex.

(3) The Organization shall inform the States which have signed the present Convention or acceded to it of the date on which it enters into force and of the date on which an Optional Annex enters into force in accordance with paragraph (2) of the present Article.

(4) For States which have deposited an instrument of ratification, acceptance, approval or accession in respect of the present Convention or any Optional Annex after the requirements for entry into force thereof have been met but prior to the date of entry into force, the ratification, acceptance, approval or accession shall take effect on the date of entry into force of the Convention or such Annex or three months after the date of deposit of the instrument whichever is the later date.

(5) For States which have deposited an instrument of ratification, acceptance, approval or accession after the date on which the Convention or an Optional Annex entered into force, the Convention or the Optional Annex shall become effective three months after the date of deposit of the instrument.

(6) After the date on which all the conditions required under Article 16 to bring an amendment to the present Convention or an Optional Annex into force have been fulfilled, any instrument of ratification, acceptance, approval or accession deposited shall apply to the Convention or Annex as amended.

ARTICLE 16

Amendments

- (1) The present Convention may be amended by any of the procedures specified in the following paragraphs.
- (2) Amendments after consideration by the Organization:
 - (a) any amendment proposed by a Party to the Convention shall be submitted to the Organization and circulated by its Secretary-General to all Members of the Organization and all Parties at least six months prior to its consideration;
 - (b) any amendment proposed and circulated as above shall be submitted to an appropriate body by the Organization for consideration;
 - (c) Parties to the Convention, whether or not Members of the Organization, shall be entitled to participate in the proceedings of the appropriate body;
 - (d) amendments shall be adopted by a two-thirds majority of only the Parties to the Convention present and voting;
 - (e) if adopted in accordance with sub-paragraph (d) above, amendments shall be communicated by the Secretary-General of the Organization to all the Parties to the Convention for acceptance;
 - (f) an amendment shall be deemed to have been accepted in the following circumstances:
 - (i) an amendment to an Article of the Convention shall be deemed to have been accepted on the date on which it is accepted by two-thirds of the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet;

- (ii) an amendment to an Annex to the Convention shall be deemed to have been accepted in accordance with the procedure specified in sub-paragraph (f)(iii) unless the appropriate body, at the time of its adoption, determines that the amendment shall be deemed to have been accepted on the date on which it is accepted by two-thirds of the Parties, the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet. Nevertheless, at any time before the entry into force of an amendment to an Annex to the Convention, a Party may notify the Secretary-General of the Organization that its express approval will be necessary before the amendment enters into force for it. The latter shall bring such notification and the date of its receipt to the notice of Parties;
- (iii) an amendment to an Appendix to an Annex to the Convention shall be deemed to have been accepted at the end of a period to be determined by the appropriate body at the time of its adoption, which period shall be not less than ten months, unless within that period an objection is communicated to the Organization by not less than one-third of the Parties or by the Parties the combined merchant fleets of which constitute not less than fifty per cent of the gross tonnage of the world's merchant fleet whichever condition is fulfilled;
- (iv) an amendment to Protocol I to the Convention shall be subject to the same procedures as for the amendments to the Annexes to the Convention, as provided for in sub-paragraphs (f)(ii) or (f)(iii) above;
- (v) an amendment to Protocol II to the Convention shall be subject to the same procedures as for the amendments to an Article of the Convention, as provided for in sub-paragraph (f)(i) above;

(g) the amendment shall enter into force under the following conditions:

(i) in the case of an amendment to an Article of the Convention, to Protocol II, or to Protocol I or to an Annex to the Convention not under the procedure specified in sub-paragraph (f)(iii), the amendment accepted in conformity with the foregoing provisions shall enter into force six months after the date of its acceptance with respect to the Parties which have declared that they have accepted it;

(ii) in the case of an amendment to Protocol I, to an Appendix to an Annex or to an Annex to the Convention under the procedure specified in sub-paragraph (f)(iii), the amendment deemed to have been accepted in accordance with the foregoing conditions shall enter into force six months after its acceptance for all the Parties with the exception of those which, before that date, have made a declaration that they do not accept it or a declaration under sub-paragraph (f)(ii), that their express approval is necessary.

(3) Amendment by a Conference:

(a) Upon the request of a Party, concurred in by at least one-third of the Parties, the Organization shall convene a Conference of Parties to the Convention to consider amendments to the present Convention.

(b) Every amendment adopted by such a Conference by a two-thirds majority of those present and voting of the Parties shall be communicated by the Secretary-General of the Organization to all Contracting Parties for their acceptance.

- (c) Unless the Conference decides otherwise, the amendment shall be deemed to have been accepted and to have entered into force in accordance with the procedures specified for that purpose in paragraph (2)(f) and (g) above.
- (4) (a) In the case of an amendment to an Optional Annex, a reference in the present Article to a "Party to the Convention" shall be deemed to mean a reference to a Party bound by that Annex.
(b) Any Party which has declined to accept an amendment to an Annex shall be treated as a non-Party only for the purpose of application of that amendment.
- (5) The adoption and entry into force of a new Annex shall be subject to the same procedures as for the adoption and entry into force of an amendment to an Article of the Convention.
- (6) Unless expressly provided otherwise, any amendment to the present Convention made under this Article, which relates to the structure of a ship, shall apply only to ships for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, on or after the date on which the amendment comes into force.
- (7) Any amendment to a Protocol or to an Annex shall relate to the substance of that Protocol or Annex and shall be consistent with the Articles of the present Convention.
- (8) The Secretary-General of the Organization shall inform all Parties of any amendments which enter into force under the present Article, together with the date on which each such amendment enters into force.
- (9) Any declaration of acceptance or of objection to an amendment under the present Article shall be notified in writing to the Secretary-General of the Organization. The latter shall bring such notification and the date of its receipt to the notice of the Parties to the Convention.

ARTICLE 17

Promotion of Technical Co-operation

The Parties to the Convention shall promote, in consultation with the Organization and other international bodies, with assistance and co-ordination by the Executive Director of the United Nations Environment Programme, support for those Parties which request technical assistance for:

- (a) the training of scientific and technical personnel;
- (b) the supply of necessary equipment and facilities for reception and monitoring;
- (c) the facilitation of other measures and arrangements to prevent or mitigate pollution of the marine environment by ships; and
- (d) the encouragement of research;

preferably within the countries concerned, so furthering the aims and purposes of the present Convention.

ARTICLE 18

Denunciation

- (1) The present Convention or any Optional Annex may be denounced by any Parties to the Convention at any time after the expiry of five years from the date on which the Convention or such Annex enters into force for that Party.
- (2) Denunciation shall be effected by notification in writing to the Secretary-General of the Organization who shall inform all the other Parties of any such notification received and of the date of its receipt as well as the date on which such denunciation takes effect.
- (3) A denunciation shall take effect twelve months after receipt of the notification of denunciation by the Secretary-General of the Organization or after the expiry of any other longer period which may be indicated in the notification.

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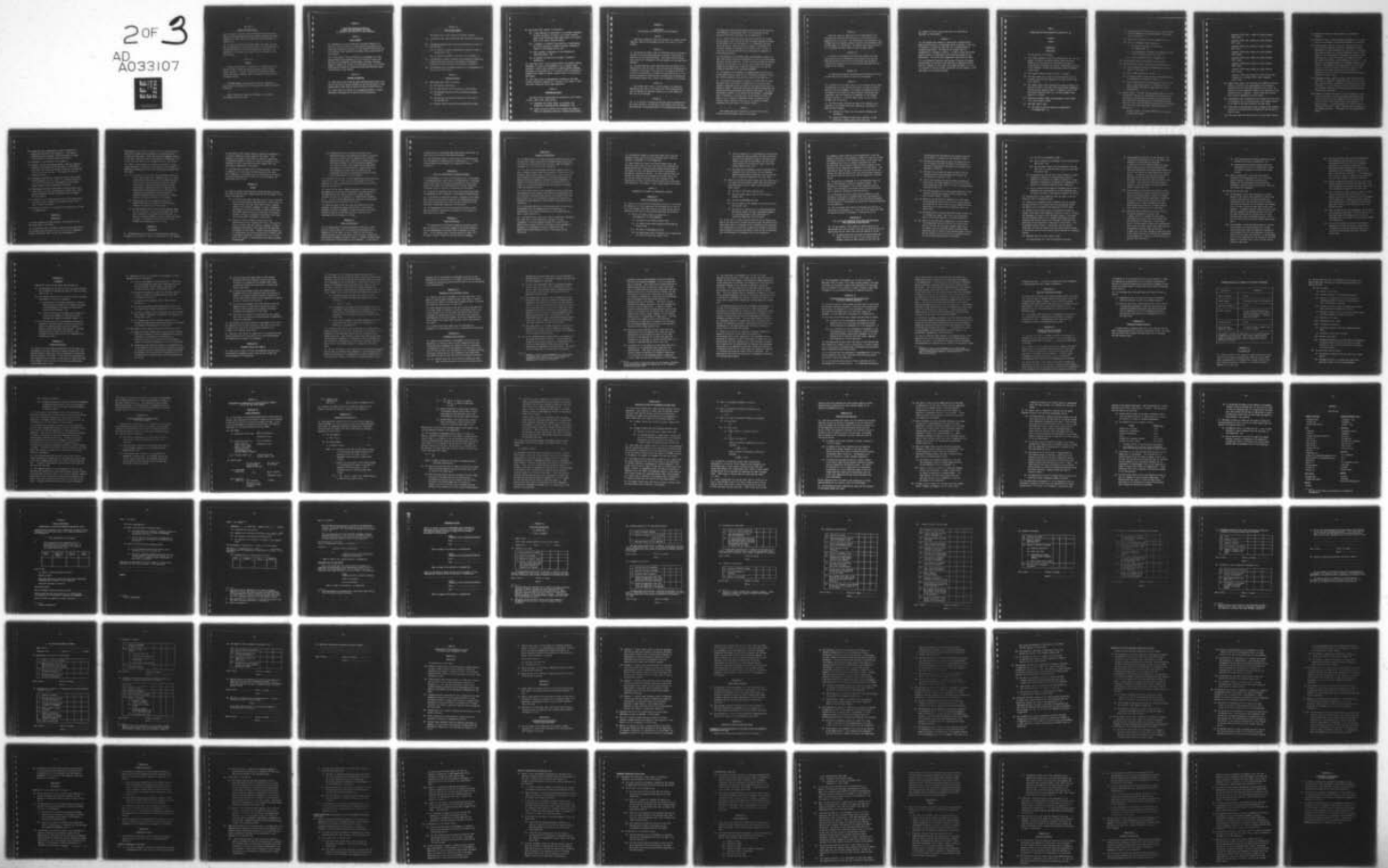
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ARTICLE 19

Deposit and Registration

(1) The present Convention shall be deposited with the Secretary-General of the Organization who shall transmit certified true copies thereof to all States which have signed the present Convention or acceded to it.

(2) As soon as the present Convention enters into force, the text shall be transmitted by the Secretary-General of the Organization to the Secretary-General of the United Nations for registration and publication, in accordance with Article 102 of the Charter of the United Nations.

ARTICLE 20

Languages

The present Convention is established in a single copy in the English, French, Russian and Spanish languages, each text being equally authentic. Official translations in the Arabic, German, Italian and Japanese languages shall be prepared and deposited with the signed original.

IN WITNESS WHEREOF the undersigned being duly authorized by their respective Governments for that purpose have signed the present Convention.

DONE AT LONDON this second day of November, one thousand nine hundred and seventy-three.

PROTOCOL I

PROVISIONS CONCERNING REPORTS ON
INCIDENTS INVOLVING HARMFUL SUBSTANCES
(in accordance with Article 8 of the Convention)

ARTICLE I

Duty to Report

- (1) The Master of a ship involved in an incident referred to in Article III of this Protocol, or other person having charge of the ship, shall report the particulars of such incident without delay and to the fullest extent possible in accordance with the provisions of this Protocol.
- (2) In the event of the ship referred to in paragraph (1) of the present Article being abandoned, or in the event of a report from such ship being incomplete or unobtainable, the owner, charterer, manager or operator of the ship, or their agents shall, to the fullest extent possible assume the obligations placed upon the Master under the provisions of this Protocol.

ARTICLE II

Methods of Reporting

- (1) Each report shall be made by radio whenever possible, but in any case by the fastest channels available at the time the report is made. Reports made by radio shall be given the highest possible priority.
- (2) Reports shall be directed to the appropriate officer or agency specified in paragraph 2(a) of Article 8 of the Convention.

ARTICLE III

When to Make Reports

The report shall be made whenever an incident involves:

- (a) a discharge other than as permitted under the present Convention;
or
- (b) a discharge permitted under the present Convention by virtue of the fact that:
 - (i) it is for the purpose of securing the safety of a ship or saving life at sea; or
 - (ii) it results from damage to the ship or its equipment; or
- (c) a discharge of a harmful substance for the purpose of combating a specific pollution incident or for purposes of legitimate scientific research into pollution abatement or control; or
- (d) the probability of a discharge referred to in sub-paragraphs (a), (b) or (c) of this Article.

ARTICLE IV

Contents of Report

- (1) Each report shall contain in general:
 - (a) the identity of the ship;
 - (b) the time and date of the occurrence of the incident;
 - (c) the geographic position of the ship when the incident occurred;
 - (d) the wind and sea conditions prevailing at the time of the incident; and
 - (e) relevant details respecting the condition of the ship.

(2) Each report shall contain, in particular:

- (a) a clear indication or description of the harmful substances involved, including, if possible, the correct technical names of such substances (trade names should not be used in place of the correct technical names);
- (b) a statement or estimate of the quantities, concentrations and likely conditions of harmful substances discharged or likely to be discharged into the sea;
- (c) where relevant, a description of the packaging and identifying marks; and
- (d) if possible the name of the consignor, consignee or manufacturer.

(3) Each report shall clearly indicate whether the harmful substance discharged, or likely to be discharged is oil, a noxious liquid substance, a noxious solid substance or a noxious gaseous substance and whether such substance was or is carried in bulk or contained in packaged form, freight containers, portable tanks, or road and rail tank wagons.

(4) Each report shall be supplemented as necessary by any other relevant information requested by a recipient of the report or which the person sending the report deems appropriate.

ARTICLE V

Supplementary Report

Any person who is obliged under the provisions of this Protocol to send a report shall, when possible:

- (a) supplement the initial report, as necessary, with information concerning further developments; and
- (b) comply as fully as possible with requests from affected States for additional information concerning the incident.

PROTOCOL II

ARBITRATION
(in accordance with Article 10 of the Convention)

ARTICLE I

Arbitration procedure, unless the Parties to the dispute decide otherwise, shall be in accordance with the rules set out in this Protocol.

ARTICLE II

(1) An Arbitration Tribunal shall be established upon the request of one Party to the Convention addressed to another in application of Article 10 of the present Convention. The request for arbitration shall consist of a statement of the case together with any supporting documents.

(2) The requesting Party shall inform the Secretary-General of the Organization of the fact that it has applied for the establishment of a Tribunal, of the names of the Parties to the dispute, and of the Articles of the Convention or Regulations over which there is in its opinion disagreement concerning their interpretation or application. The Secretary-General shall transmit this information to all Parties.

ARTICLE III

The Tribunal shall consist of three members: one Arbitrator nominated by each Party to the dispute and a third Arbitrator who shall be nominated by agreement between the two first named, and shall act as its Chairman.

ARTICLE IV

(1) If, at the end of a period of sixty days from the nomination of the second Arbitrator, the Chairman of the Tribunal shall not have been nominated, the Secretary-General of the Organization upon request

of either Party shall within a further period of sixty days proceed to such nomination, selecting him from a list of qualified persons previously drawn up by the Council of the Organization.

(2) If, within a period of sixty days from the date of the receipt of the request, one of the Parties shall not have nominated the member of the Tribunal for whose designation it is responsible, the other Party may directly inform the Secretary-General of the Organization who shall nominate the Chairman of the Tribunal within a period of sixty days, selecting him from the list prescribed in paragraph (1) of the present Article.

(3) The Chairman of the Tribunal shall, upon nomination, request the Party which has not provided an Arbitrator, to do so in the same manner and under the same conditions. If the Party does not make the required nomination, the Chairman of the Tribunal shall request the Secretary-General of the Organization to make the nomination in the form and conditions prescribed in the preceding paragraph.

(4) The Chairman of the Tribunal, if nominated under the provisions of the present Article, shall not be or have been a national of one of the Parties concerned, except with the consent of the other Party.

(5) In the case of the decease or default of an Arbitrator for whose nomination one of the Parties is responsible, the said Party shall nominate a replacement within a period of sixty days from the date of decease or default. Should the said Party not make the nomination, the arbitration shall proceed under the remaining Arbitrators. In case of the decease or default of the Chairman of the Tribunal, a replacement shall be nominated in accordance with the provisions of Article III above, or in the absence of agreement between the members of the Tribunal within a period of sixty days of the decease or default, according to the provisions of the present Article.

ARTICLE V

The Tribunal may hear and determine counter-claims arising directly out of the subject matter of the dispute.

ARTICLE VI

Each Party shall be responsible for the remuneration of its Arbitrator and connected costs and for the costs entailed by the preparation of its own case. The remuneration of the Chairman of the Tribunal and of all general expenses incurred by the Arbitration shall be borne equally by the Parties. The Tribunal shall keep a record of all its expenses and shall furnish a final statement thereof.

ARTICLE VII

Any Party to the Convention which has an interest of a legal nature and which may be affected by the decision in the case may, after giving written notice to the Parties which have originally initiated the procedure, join in the arbitration procedure with the consent of the Tribunal.

ARTICLE VIII

Any Arbitration Tribunal established under the provisions of the present Protocol shall decide its own rules of procedure.

ARTICLE IX

(1) Decisions of the Tribunal both as to its procedure and its place of meeting and as to any question laid before it, shall be taken by majority votes of its members; the absence or abstention of one of the members of the Tribunal for whose nomination the Parties were responsible, shall not constitute an impediment to the Tribunal reaching a decision. In cases of equal voting, the vote of the Chairman shall be decisive.

(2) The Parties shall facilitate the work of the Tribunal and in particular, in accordance with their legislation, and using all means at their disposal:

- (a) provide the Tribunal with the necessary documents and information;
- (b) enable the Tribunal to enter their territory, to hear witnesses or experts, and to visit the scene.

(3) Absence or default of one Party shall not constitute an impediment to the procedure.

ARTICLE X

(1) The Tribunal shall render its award within a period of five months from the time it is established unless it decides, in the case of necessity, to extend the time limit for a further period not exceeding three months. The award of the Tribunal shall be accompanied by a statement of reasons. It shall be final and without appeal and shall be communicated to the Secretary-General of the Organization. The Parties shall immediately comply with the award.

(2) Any controversy which may arise between the Parties as regards interpretation or execution of the award may be submitted by either Party for judgement to the Tribunal which made the award, or, if it is not available to another Tribunal constituted for this purpose, in the same manner as the original Tribunal.

ANNEX I

REGULATIONS FOR THE PREVENTION OF POLLUTION BY OIL

CHAPTER I

GENERAL

Regulation 1

Definitions

For the purposes of this Annex:

- (1) "Oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products (other than petrochemicals which are subject to the provisions of Annex II of the present Convention) and, without limiting the generality of the foregoing, includes the substances listed in Appendix I to this Annex.
- (2) "Oily mixture" means a mixture with any oil content.
- (3) "Oil fuel" means any oil used as fuel in connexion with the propulsion and auxiliary machinery of the ship in which such oil is carried.
- (4) "Oil tanker" means a ship constructed or adapted primarily to carry oil in bulk in its cargo spaces and includes combination carriers and any "chemical tanker" as defined in Annex II of the present Convention when it is carrying a cargo or part cargo of oil in bulk.
- (5) "Combination carrier" means a ship designed to carry either oil or solid cargoes in bulk.
- (6) "New ship" means a ship:
 - (a) for which the building contract is placed after 31 December 1975; or

- (b) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction after 30 June 1976; or
 - (c) the delivery of which is after 31 December 1979; or
 - (d) which has undergone a major conversion:
 - (i) for which the contract is placed after 31 December 1975; or
 - (ii) in the absence of a contract, the construction work of which is begun after 30 June 1976; or
 - (iii) which is completed after 31 December 1979.
- (7) "Existing ship" means a ship which is not a new ship.
- (8) "Major conversion" means a conversion of an existing ship:
- (a) which substantially alters the dimensions or carrying capacity of the ship; or
 - (b) which changes the type of the ship; or
 - (c) the intent of which in the opinion of the Administration is substantially to prolong its life; or
 - (d) which otherwise so alters the ship that if it were a new ship, it would become subject to relevant provisions of the present Convention not applicable to it as an existing ship.
- (9) "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law, except that, for the purposes of the present Convention "from the nearest land" off the north eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in
- latitude 11°South, longitude 142°08' East to a point in latitude 10°35' South,

longitude 141⁰55' East - thence to a point latitude 10⁰00' South,

longitude 142⁰00' East, thence to a point latitude 9⁰10' South,

longitude 143⁰52' East, thence to a point latitude 9⁰00' South,

longitude 144⁰30' East, thence to a point latitude 13⁰00' South,

longitude 144⁰00' East, thence to a point latitude 15⁰00' South,

longitude 146⁰00' East, thence to a point latitude 18⁰00' South,

longitude 147⁰00' East, thence to a point latitude 21⁰00' South,

longitude 153⁰00' East, thence to a point on the coast of Australia in latitude 24⁰42' South, longitude 153⁰15' East.

- (10) "Special area" means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required. Special areas shall include those listed in Regulation 10 of this Annex.
- (11) "Instantaneous rate of discharge of oil content" means the rate of discharge of oil in litres per hour at any instant divided by the speed of the ship in knots at the same instant.
- (12) "Tank" means an enclosed space which is formed by the permanent structure of a ship and which is designed for the carriage of liquid in bulk.
- (13) "Wing tank" means any tank adjacent to the side shell plating.

- (14) "Centre tank" means any tank inboard of a longitudinal bulkhead.
- (15) "Slop tank" means a tank specifically designated for the collection of tank drainings, tank washings and other oily mixtures.
- (16) "Clean ballast" means the ballast in a tank which since oil was last carried therein, has been so cleaned that effluent therefrom if it were discharged from a ship which is stationary into clean calm water on a clear day would not produce visible traces of oil on the surface of the water or on adjoining shore lines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shore lines. If the ballast is discharged through an oil discharge monitoring and control system approved by the Administration, evidence based on such a system to the effect that the oil content of the effluent did not exceed 15 parts per million shall be determinative that the ballast was clean, notwithstanding the presence of visible traces.
- (17) "Segregated ballast" means the ballast water introduced into a tank which is completely separated from the cargo oil and oil fuel system and which is permanently allocated to the carriage of ballast or to the carriage of ballast or cargoes other than oil or noxious substances as variously defined in the Annexes of the present Convention.
- (18) "Length" (L) means 96 per cent of the total length on a waterline at 85 per cent of the least moulded depth measured from the top of the keel, or the length from the fore side of the stem to the axis of the rudder stock on that waterline, if that be greater. In ships designed with a rake of keel the waterline on which this length is measured shall be parallel to the designed waterline. The length (L) shall be measured in metres.

- (19) "Forward and after perpendiculars" shall be taken at the forward and after ends of the length (L). The forward perpendicular shall coincide with the foreside of the stem on the waterline on which the length is measured.
- (20) "Amidships" is at the middle of the length (L).
- (21) "Breadth" (B) means the maximum breadth of the ship, measured amidships to the moulded line of the frame in a ship with a metal shell and to the outer surface of the hull in a ship with a shell of any other material. The breadth (B) shall be measured in metres.
- (22) "Deadweight" (DW) means the difference in metric tons between the displacement of a ship in water of a specific gravity of 1.025 at the load water line corresponding to the assigned summer freeboard and the lightweight of the ship.
- (23) "Lightweight" means the displacement of a ship in metric tons without cargo, oil fuel, lubricating oil, ballast water, fresh water and feedwater in tanks, consumable stores, passengers and their effects.
- (24) "Permeability" of a space means the ratio of the volume within that space which is assumed to be occupied by water to the total volume of that space.
- (25) "Volumes" and "areas" in a ship shall be calculated in all cases to moulded lines.

Regulation 2

Application

- (1) Unless expressly provided otherwise, the provisions of this Annex shall apply to all ships.
- (2) In ships other than oil tankers fitted with cargo spaces which are constructed and utilized to carry oil in bulk of an aggregate capacity of 200 cubic metres or more, the requirements of

Regulations 9, 10, 14, 15(1), (2) and (3), 18, 20 and 24(4) of this Annex for oil tankers shall also apply to the construction and operation of those spaces, except that where such aggregate capacity is less than 1,000 cubic metres the requirements of Regulation 15(4) of this Annex may apply in lieu of Regulation 15(1), (2) and (3).

(3) Where a cargo subject to the provisions of Annex II of the present Convention is carried in a cargo space of an oil tanker, the appropriate requirements of Annex II of the present Convention shall also apply.

- (4) (a) Any hydrofoil, air-cushion vehicle and other new type of vessel (near-surface craft, submarine craft, etc.) whose constructional features are such as to render the application of any of the provisions of Chapters II and III of this Annex relating to construction and equipment unreasonable or impracticable may be exempted by the Administration from such provisions, provided that the construction and equipment of that ship provides equivalent protection against pollution by oil, having regard to the service for which it is intended.
- (b) Particulars of any such exemption granted by the Administration shall be indicated in the Certificate referred to in Regulation 5 of this Annex.
- (c) The Administration which allows any such exemption shall, as soon as possible, but not more than ninety days thereafter, communicate to the Organization particulars of same and the reasons therefor, which the Organization shall circulate to the Parties to the Convention for their information and appropriate action, if any.

Regulation 3

Equivalents

- (1) The Administration may allow any fitting, material, appliance or apparatus to be fitted in a ship as an alternative to that required

by this Annex if such fitting, material, appliance or apparatus is at least as effective as that required by this Annex. This authority of the Administration shall not extend to substitution of operational methods to effect the control of discharge of oil as equivalent to those design and construction features which are prescribed by Regulations in this Annex.

(2) The Administration which allows a fitting, material, appliance or apparatus, as an alternative to that required by this Annex shall communicate to the Organization for circulation to the Parties to the Convention particulars thereof, for their information and appropriate action, if any.

Regulation 4

Surveys

(1) Every oil tanker of 150 tons gross tonnage and above, and every other ship of 400 tons gross tonnage and above shall be subject to the surveys specified below:

- (a) An initial survey before the ship is put in service or before the certificate required under Regulation 5 of this Annex is issued for the first time, which shall include a complete survey of its structure, equipment, fittings, arrangements and material in so far as the ship is covered by this Annex. This survey shall be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable requirements of this Annex.
- (b) Periodical surveys at intervals specified by the Administration, but not exceeding five years, which shall be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable requirements of this Annex. However, where the duration of the International Oil Pollution Prevention Certificate (1973) is extended as specified in Regulation 8(3) or (4) of this Annex, the interval of the periodical survey may be extended correspondingly.

(c) Intermediate surveys at intervals specified by the Administration but not exceeding thirty months, which shall be such as to ensure that the equipment and associated pump and piping systems, including oil discharge monitoring and control systems, oily-water separating equipment and oil filtering systems, fully comply with the applicable requirements of this Annex and are in good working order. Such intermediate surveys shall be endorsed on the International Oil Pollution Prevention Certificate (1973) issued under Regulation 5 of this Annex.

(2) The Administration shall establish appropriate measures for ships which are not subject to the provisions of paragraph (1) of this Regulation in order to ensure that the applicable provisions of this Annex are complied with.

(3) Surveys of the ship as regards enforcement of the provisions of this Annex shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. In every case the Administration concerned fully guarantees the completeness and efficiency of the surveys.

(4) After any survey of the ship under this Regulation has been completed, no significant change shall be made in the structure, equipment, fittings, arrangements or material covered by the survey without the sanction of the Administration, except the direct replacement of such equipment or fittings.

Regulation 5

Issue of Certificate

(1) An International Oil Pollution Prevention Certificate (1973) shall be issued, after survey in accordance with the provisions of Regulation 4 of this Annex, to any oil tanker of 150 tons gross tonnage and above and any other ships of 400 tons gross tonnage and above which are engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention. In the case of

existing ships this requirement shall apply twelve months after the date of entry into force of the present Convention.

(2) Such Certificate shall be issued either by the Administration or by any persons or organization duly authorized by it. In every case the Administration assumes full responsibility for the certificate.

Regulation 6

Issue of a Certificate by Another Government

(1) The Government of a Party to the Convention may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this Annex are complied with, shall issue or authorize the issue of an International Oil Pollution Prevention Certificate (1973) to the ship in accordance with this Annex.

(2) A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.

(3) A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as the Certificate issued under Regulation 5 of this Annex.

(4) No International Oil Pollution Prevention Certificate (1973) shall be issued to a ship which is entitled to fly the flag of a State which is not a Party.

Regulation 7

Form of Certificate

The International Oil Pollution Prevention Certificate (1973) shall be drawn up in an official language of the issuing country in the form corresponding to the model given in Appendix II to this Annex. If the language used is neither English nor French, the text shall include a translation into one of these languages.

Regulation 8

Duration of Certificate

(1) An International Oil Pollution Prevention Certificate (1973) shall be issued for a period specified by the Administration, which shall not exceed five years from the date of issue, except as provided in paragraphs (2), (3) and (4) of this Regulation.

(2) If a ship at the time when the Certificate expires is not in a port or offshore terminal under the jurisdiction of the Party to the Convention whose flag the ship is entitled to fly, the certificate may be extended by the Administration, but such extension shall be granted only for the purpose of allowing the ship to complete its voyage to the State whose flag the ship is entitled to fly or in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so.

(3) No Certificate shall be thus extended for a period longer than five months and a ship to which such extension is granted shall not on its arrival in the State whose flag it is entitled to fly or the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port or State without having obtained a new certificate.

(4) A Certificate which has not been extended under the provisions of paragraph (2) of this Regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it.

(5) A Certificate shall cease to be valid if significant alterations have taken place in the construction, equipment, fittings, arrangements, or material required without the sanction of the Administration, except the direct replacement of such equipment or fittings, or if intermediate surveys as specified by the Administration under Regulation 4(1)(c) of this Annex are not carried out.

(6) A Certificate issued to a ship shall cease to be valid upon transfer of such a ship to the flag of another State, except as provided in paragraph (7) of this Regulation.

(7) Upon transfer of a ship to the flag of another Party, the Certificate shall remain in force for a period not exceeding five months provided that it would not have expired before the end of that period, or until the Administration issues a replacement Certificate, whichever is earlier. As soon as possible after the transfer has taken place the Government of the Party whose flag the ship was formerly entitled to fly shall transmit to the Administration a copy of the Certificate carried by the ship before the transfer and, if available, a copy of the relevant survey report.

CHAPTER II

REQUIREMENTS FOR CONTROL OF OPERATIONAL POLLUTION

Regulation 9

Control of Discharge of Oil

(1) Subject to the provisions of Regulations 10 and 11 of this Annex and paragraph (2) of this Regulation, any discharge into the sea of oil or oily mixtures from ships to which this Annex applies shall be prohibited except when all the following conditions are satisfied:

(a) for an oil tanker, except as provided for in sub-paragraph (b) of this paragraph:

- (i) the tanker is not within a special area;
- (ii) the tanker is more than 50 nautical miles from the nearest land;
- (iii) the tanker is proceeding en route;
- (iv) the instantaneous rate of discharge of oil content does not exceed 60 litres per nautical mile;

(v) the total quantity of oil discharged into the sea does not exceed for existing tankers 1/15,000 of the total quantity of the particular cargo of which the residue formed a part, and for new tankers 1/30,000 of the total quantity of the particular cargo of which the residue formed a part; and

(vi) the tanker has in operation, except as provided for in Regulation 15(3) of this Annex, an oil discharge monitoring and control system and a slop tank arrangement as required by Regulation 15 of this Annex;

(b) from a ship of 400 tons gross tonnage and above other than an oil tanker and from machinery space bilges excluding cargo pump room bilges of an oil tanker unless mixed with oil cargo residue:

(i) the ship is not within a special area;

(ii) the ship is more than 12 nautical miles from the nearest land;

(iii) the ship is proceeding en route;

(iv) the oil content of the effluent is less than 100 parts per million; and

(v) the ship has in operation an oil discharge monitoring and control system, oily water separating equipment, oil filtering system or other installation as required by Regulation 16 of this Annex.

(2) In the case of a ship of less than 400 tons gross tonnage other than an oil tanker whilst outside the special area, the Administration shall ensure that it is equipped as far as practicable and reasonable with installations to ensure the storage of oil residues on board and their discharge to reception facilities or into the sea in compliance with the requirements of paragraph (1)(b) of this Regulation.

(3) Whenever visible traces of oil are observed on or below the surface of the water in the immediate vicinity of a ship or its wake, Governments of Parties to the Convention should, to the extent they are reasonably able to do so, promptly investigate the facts bearing on the issue of whether there has been a violation of the provisions of this Regulation or Regulation 10 of this Annex. The investigation should include, in particular, the wind and sea conditions, the track and speed of the ship, other possible sources of the visible traces in the vicinity, and any relevant oil discharge records.

(4) The provisions of paragraph (1) of this Regulation shall not apply to the discharge of clean or segregated ballast. The provisions of sub-paragraph (1)(b) of this Regulation shall not apply to the discharge of oily mixture which without dilution has an oil content not exceeding 15 parts per million.

(5) No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this Regulation.

(6) The oil residues which cannot be discharged into the sea in compliance with paragraphs (1), (2) and (4) of this Regulation shall be retained on board or discharged to reception facilities.

Regulation 10

Methods for the Prevention of Oil Pollution from Ships
While Operating in Special Areas

(1) For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area and the "Gulfs area" which are defined as follows:

(a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea

constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar at the meridian of $5^{\circ}36'\text{W}$.

- (b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at $57^{\circ}44.8'\text{N}$.
 - (c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N .
 - (d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane ($12^{\circ}8.5'\text{N}$, $43^{\circ}19.6'\text{E}$) and Husn Murad ($12^{\circ}40.4'\text{N}$, $43^{\circ}30.2'\text{E}$).
 - (e) The Gulfs area means the sea area located north west of the rhumb line between Ras al Hadd ($22^{\circ}30'\text{N}$, $59^{\circ}48'\text{E}$) and Ras Al Fasteh ($25^{\circ}04'\text{N}$, $61^{\circ}25'\text{E}$).
- (2) (a) Subject to the provisions of Regulation 11 of this Annex, any discharge into the sea of oil or oily mixture from any oil tanker and any ship of 400 tons gross tonnage and above other than an oil tanker shall be prohibited, while in a special area.
- (b) Such ships while in a special area shall retain on board all oil drainage and sludge, dirty ballast and tank washing waters and discharge them only to reception facilities.
- (3) (a) Subject to the provisions of Regulation 11 of this Annex, any discharge into the sea of oil or oily mixture from a ship of less than 400 tons gross tonnage, other than an oil tanker, shall be prohibited while in a special area, except when the oil content of the effluent without dilution does not exceed 15 parts per million or alternatively when all of the following conditions are satisfied:

- (i) the ship is proceeding en route;
- (ii) the oil content of the effluent is less than 100 parts per million; and
- (iii) the discharge is made as far as practicable from the land, but in no case less than 12 nautical miles from the nearest land.

(b) No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this Regulation.

(c) The oil residues which cannot be discharged into the sea in compliance with sub-paragraph (a) of this paragraph shall be retained on board or discharged to reception facilities.

(4) The provisions of this Regulation shall not apply to the discharge of clean or segregated ballast.

(5) Nothing in this Regulation shall prohibit a ship on a voyage only part of which is in a special area from discharging outside the special area in accordance with Regulation 9 of this Annex.

(6) Whenever visible traces of oil are observed on or below the surface of the water in the immediate vicinity of a ship or its wake, the Governments of Parties to the Convention should, to the extent they are reasonably able to do so, promptly investigate the facts bearing on the issue of whether there has been a violation of the provisions of this Regulation or Regulation 9 of this Annex. The investigation should include, in particular, the wind and sea conditions, the track and speed of the ship, other possible sources of the visible traces in the vicinity, and any relevant oil discharge records.

(7) Reception facilities within special areas:

(a) Mediterranean Sea, Black Sea and Baltic Sea areas:

- (i) The Government of each Party to the Convention, the coastline of which borders on any given special area undertakes to ensure that not later than 1 January 1977 all oil loading terminals and repair ports within the special area are provided with facilities adequate for the reception and treatment of all the dirty ballast and tank washing water from oil tankers. In addition all ports within the special area shall be provided with adequate reception facilities for other residues and oily mixtures from all ships. Such facilities shall have adequate capacity to meet the needs of the ships using them without causing undue delay.
- (ii) The Government of each Party having under its jurisdiction entrances to seawater courses with low depth contour which might require a reduction of draught by the discharge of ballast undertakes to ensure the provision of the facilities referred to in subparagraph (a)(i) of this paragraph but with the proviso that ships required to discharge slops or dirty ballast could be subject to some delay.
- (iii) During the period between the entry into force of the present Convention (if earlier than 1 January 1977) and 1 January 1977 ships while navigating in the special areas shall comply with the requirements of Regulation 9 of this Annex. However, the Governments of Parties the coastlines of which border any of the special areas under this subparagraph may establish a date earlier than 1 January 1977, but after the date of entry into force of the present Convention, from which the requirements of this Regulation in respect of the special areas in question shall take effect:

- (1) if all the reception facilities required have been provided by the date so established; and
 - (2) provided that the Parties concerned notify the Organization of the date so established at least six months in advance, for circulation to other parties.
- (iv) After 1 January 1977, or the date established in accordance with sub-paragraph (a)(iii) of this paragraph if earlier, each Party shall notify the Organization for transmission to the Contracting Governments concerned of all cases where the facilities are alleged to be inadequate.
- (b) Red Sea area and Gulfs area:
- (i) The Government of each Party the coastline of which borders on the special areas undertakes to ensure that as soon as possible all oil loading terminals and repair ports within these special areas are provided with facilities adequate for the reception and treatment of all the dirty ballast and tank washing water from tankers. In addition all ports within the special area shall be provided with adequate reception facilities for other residues and oily mixtures from all ships. Such facilities shall have adequate capacity to meet the needs of the ships using them without causing undue delay.
 - (ii) The Government of each Party having under its jurisdiction entrances to seawater courses with low depth contour which might require a reduction of draught by the discharge of ballast shall undertake to ensure the provision of the facilities referred to in sub-paragraph (b)(i) of this paragraph but with the proviso that ships required to discharge slops or dirty ballast could be subject to some delay.

- (iii) Each Party concerned shall notify the Organization of the measures taken pursuant to provisions of sub-paragraph (b)(i) and (ii) of this paragraph. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this Regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.
- (iv) During the period between the entry into force of the present Convention and the date so established, ships while navigating in the special area shall comply with the requirements of Regulation 9 of this Annex.
- (v) After such date oil tankers loading in ports in these special areas where such facilities are not yet available shall also fully comply with the requirements of this Regulation. However, oil tankers entering these special areas for the purpose of loading shall make every effort to enter the area with only clean ballast on board.
- (vi) After the date on which the requirements for the special area in question take effect, each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities are alleged to be inadequate.
- (vii) At least the reception facilities as prescribed in Regulation 12 of this Annex shall be provided by 1 January 1977 or one year after the date of entry into force of the present Convention, whichever occurs later.

Regulation 11

Exceptions

Regulations 9 and 10 of this Annex shall not apply to:

- (a) the discharge into the sea of oil or oily mixture necessary for the purpose of securing the safety of a ship or saving life at sea; or
- (b) the discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:
 - (i) provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimizing the discharge; and
 - (ii) except if the owner or the Master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or
- (c) the discharge into the sea of substances containing oil, approved by the Administration, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

Regulation 12

Reception Facilities

- (1) Subject to the provisions of Regulation 10 of this Annex, the Government of each Party undertakes to ensure the provision at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the needs of the ships using them without causing undue delay to ships.

(2) Reception facilities in accordance with paragraph (1) of this Regulation shall be provided in:

- (a) all ports and terminals in which crude oil is loaded into oil tankers where such tankers have immediately prior to arrival completed a ballast voyage of not more than 72 hours or not more than 1,200 nautical miles;
- (b) all ports and terminals in which oil other than crude oil in bulk is loaded at an average quantity of more than 1,000 metric tons per day;
- (c) all ports having ship repair yards or tank cleaning facilities;
- (d) all ports and terminals which handle ships provided with the sludge tank(s) required by Regulation 17 of this Annex;
- (e) all ports in respect of oily bilge waters and other residues, which cannot be discharged in accordance with Regulation 9 of this Annex; and
- (f) all loading ports for bulk cargoes in respect of oil residues from combination carriers which cannot be discharged in accordance with Regulation 9 of this Annex.

(3) The capacity for the reception facilities shall be as follows:

- (a) Crude oil loading terminals shall have sufficient reception facilities to receive oil and oily mixtures which cannot be discharged in accordance with the provisions of Regulation 9(1)(a) of this Annex from all oil tankers on voyages as described in paragraph (2)(a) of this Regulation.
- (b) Loading ports and terminals referred to in paragraph (2)(b) of this Regulation shall have sufficient reception facilities to receive oil and oily mixtures which cannot be discharged in accordance with the provisions of Regulation 9(1)(a) of this Annex from oil tankers which load oil other than crude oil in bulk.

- (c) All ports having ship repair yards or tank cleaning facilities shall have sufficient reception facilities to receive all residues and oily mixtures which remain on board for disposal from ships prior to entering such yards or facilities.
 - (d) All facilities provided in ports and terminals under paragraph (2)(d) of this Regulation shall be sufficient to receive all residues retained according to Regulation 17 of this Annex from all ships that may reasonably be expected to call at such ports and terminals.
 - (e) All facilities provided in ports and terminals under this Regulation shall be sufficient to receive oily bilge waters and other residues which cannot be discharged in accordance with Regulation 9 of this Annex.
 - (f) The facilities provided in loading ports for bulk cargoes shall take into account the special problems of combination carriers as appropriate.
- (4) The reception facilities prescribed in paragraphs (2) and (3) of this Regulation shall be made available no later than one year from the date of entry into force of the present Convention or by 1 January 1977, whichever occurs later.
- (5) Each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

Regulation 13

Segregated Ballast Oil Tankers

- (1) Every new oil tanker of 70,000 tons deadweight and above shall be provided with segregated ballast tanks and shall comply with the requirements of this Regulation.

(2) The capacity of the segregated ballast tanks shall be so determined that the ship may operate safely on ballast voyages without recourse to the use of oil tanks for water ballast except as provided for in paragraph (3) of this Regulation. In all cases, however, the capacity of segregated ballast tanks shall be at least such that in any ballast condition at any part of the voyage, including the conditions consisting of lightweight plus segregated ballast only, the ship's draughts and trim can meet each of the following requirements:

- (a) the moulded draught amidships (dm) in metres (without taking into account any ship's deformation) shall not be less than:

$$dm = 2.0 + 0.02L;$$

- (b) the draughts at the forward and after perpendiculars shall correspond to those determined by the draught amidships (dm), as specified in sub-paragraph (a) of this paragraph, in association with the trim by the stern of not greater than 0.015L; and

- (c) in any case the draught at the after perpendicular shall not be less than that which is necessary to obtain full immersion of the propeller(s).

(3) In no case shall ballast water be carried in oil tanks except in weather conditions so severe that, in the opinion of the Master, it is necessary to carry additional ballast water in oil tanks for the safety of the ship. Such additional ballast water shall be processed and discharged in compliance with Regulation 9 and in accordance with the requirements of Regulation 15 of this Annex, and entry shall be made in the Oil Record Book referred to in Regulation 20 of this Annex.

(4) Any oil tanker which is not required to be provided with segregated ballast tanks in accordance with paragraph (1) of this Regulation may, however, be qualified as a segregated ballast tanker, provided that in the case of an oil tanker of 150 metres in length and above it fully

complies with the requirements of paragraphs (2) and (3) of this Regulation and in the case of an oil tanker of less than 150 metres in length the segregated ballast conditions shall be to the satisfaction of the Administration.

Regulation 14

Segregation of Oil and Water Ballast

(1) Except as provided in paragraph (2) of this Regulation, in new ships of 4,000 tons gross tonnage and above other than oil tankers, and in new oil tankers of 150 tons gross tonnage and above, no ballast water shall be carried in any oil fuel tank.

(2) Where abnormal conditions or the need to carry large quantities of oil fuel render it necessary to carry ballast water which is not a clean ballast in any oil fuel tank, such ballast water shall be discharged to reception facilities or into the sea in compliance with Regulation 9 using the equipment specified in Regulation 16(2) of this Annex, and an entry shall be made in the Oil Record Book to this effect.

(3) All other ships shall comply with the requirements of paragraph (1) of this Regulation as far as reasonable and practicable.

Regulation 15

Retention of Oil on Board

(1) Subject to the provisions of paragraphs (5) and (6) of this Regulation, oil tankers of 150 tons gross tonnage and above shall be provided with arrangements in accordance with the requirements of paragraphs (2) and (3) of this Regulation, provided that in the case of existing tankers the requirements for oil discharge monitoring and control systems and slop tank arrangements shall apply three years after the date of entry into force of the present Convention.

(2) (a) Adequate means shall be provided for cleaning the cargo tanks and transferring the dirty ballast residue and tank

washings from the cargo tanks into a slop tank approved by the Administration. In existing oil tankers, any cargo tank may be designated as a slop tank.

- (b) In this system arrangements shall be provided to transfer the oily waste into a slop tank or combination of slop tanks in such a way that any effluent discharged into the sea will be such as to comply with the provisions of Regulation 9 of this Annex.
 - (c) The arrangements of the slop tank or combination of slop tanks shall have a capacity necessary to retain the slops generated by tank washing, oil residues and dirty ballast residues but the total shall be not less than 3 per cent of the oil carrying capacity of the ship, except that, where segregated ballast tanks are provided in accordance with Regulation 13 of this Annex, or where arrangements such as eductors involving the use of water additional to the washing water are not fitted, the Administration may accept 2 per cent. New oil tankers over 70,000 tons deadweight shall be provided with at least two slop tanks.
 - (d) Slop tanks shall be so designed particularly in respect of the position of inlets, outlets, baffles or weirs where fitted, so as to avoid excessive turbulence and entrainment of oil or emulsion with the water.
- (3) (a) An oil discharge monitoring and control system approved by the Administration shall be fitted. In considering the design of the oil content meter to be incorporated in the system, the Administration shall have regard to the specification recommended by the Organization.* The system shall be fitted with a recording device to provide a

* Reference is made to the Recommendation on International Performance Specifications for Oily-Water Separating Equipment and Oil Content Meters adopted by the Organization by Resolution A.233(VII).

continuous record of the discharge in litres per nautical mile and total quantity discharged, or the oil content and rate of discharge. This record shall be identifiable as to time and date and shall be kept for at least three years. The oil discharge monitor and control system shall come into operation when there is any discharge of effluent into the sea and shall be such as will ensure that any discharge of oily mixture is automatically stopped when the instantaneous rate of discharge of oil exceeds that permitted by Regulation 9(1)(a) of this Annex. Any failure of this monitoring and control system shall stop the discharge and be noted in the Oil Record Book. A manually operated alternative method shall be provided and may be used in the event of such failure, but the defective unit shall be made operable before the oil tanker commences its next ballast voyage unless it is proceeding to a repair port. Existing oil tankers shall comply with all of the provisions specified above except that the stopping of the discharge may be performed manually and the rate of discharge may be estimated from the pump characteristic.

- (b) Effective oil/water interface detectors approved by the Administration shall be provided for a rapid and accurate determination of the oil/water interface in slop tanks and shall be available for use in other tanks where the separation of oil and water is effected and from which it is intended to discharge effluent direct to the sea.
- (c) Instructions as to the operation of the system shall be in accordance with an operational manual approved by the Administration. They shall cover manual as well as automatic operations and shall be intended to ensure that at no time shall oil be discharged except in compliance with the conditions specified in Regulation 9 of this Annex.*

* Reference is made to "Clean Seas Guide for Oil Tankers", published by the International Chamber of Shipping and the Oil Companies International Marine Forum.

(4) The requirements of paragraphs (1), (2) and (3) of this Regulation shall not apply to oil tankers of less than 150 tons gross tonnage, for which the control of discharge of oil under Regulation 9 of this Annex shall be effected by the retention of oil on board with subsequent discharge of all contaminated washings to reception facilities. The total quantity of oil and water used for washing and returned to a storage tank shall be recorded in the Oil Record Book. This total quantity shall be discharged to reception facilities unless adequate arrangements are made to ensure that any effluent which is allowed to be discharged into the sea is effectively monitored to ensure that the provisions of Regulation 9 of this Annex are complied with.

(5) The Administration may waive the requirements of paragraphs (1), (2) and (3) of this Regulation for any oil tanker which engages exclusively on voyages both of 72 hours or less in duration and within 50 miles from the nearest land, provided that the oil tanker is not required to hold and does not hold an International Oil Pollution Prevention Certificate (1973). Any such waiver shall be subject to the requirement that the oil tanker shall retain on board all oily mixtures for subsequent discharge to reception facilities and to the determination by the Administration that facilities available to receive such oily mixtures are adequate.

(6) Where in the view of the Organization equipment required by Regulation 9(1)(a)(vi) of this Annex and specified in sub-paragraph (3)(a) of this Regulation is not obtainable for the monitoring of discharge of light refined products (white oils), the Administration may waive compliance with such requirement, provided that discharge shall be permitted only in compliance with procedures established by the Organization which shall satisfy the conditions of Regulation 9(1)(a) of this Annex except the obligation to have an oil discharge monitoring and control system in operation. The Organization shall review the availability of equipment at intervals not exceeding twelve months.

(7) The requirements of paragraphs (1), (2) and (3) of this Regulation shall not apply to oil tankers carrying asphalt, for which the control of discharge of asphalt under Regulation 9 of this Annex shall be effected by the retention of asphalt residues on board with discharge of all contaminated washings to reception facilities.

Regulation 16

Oil Discharge Monitoring and Control System and
Oily-Water Separating Equipment

- (1) Any ship of 400 tons gross tonnage and above shall be fitted with an oily-water separating equipment or filtering system complying with the provisions of paragraph (6) of this Regulation. Any such ship which carries large quantities of oil fuel shall comply with paragraph 2 of this Regulation or paragraph (1) of Regulation 14.
- (2) Any ship of 10,000 tons gross tonnage and above shall be fitted:
 - (a) in addition to the requirements of paragraph (1) of this Regulation with an oil discharge monitoring and control system complying with paragraph (5) of this Regulation; or
 - (b) as an alternative to the requirements of paragraph (1) and sub-paragraph (2)(a) of this Regulation, with an oily-water separating equipment complying with paragraph (6) of this Regulation and an effective filtering system, complying with paragraph (7) of this Regulation.
- (3) The Administration shall ensure that ships of less than 400 tons gross tonnage are equipped, as far as practicable, to retain on board oil or oily mixtures or discharge them in accordance with the requirements of Regulation 9(1)(b) of this Annex.
- (4) For existing ships the requirements of paragraphs (1), (2) and (3) of this Regulation shall apply three years after the date of entry into force of the present Convention.
- (5) An oil discharge monitoring and control system shall be of a design approved by the Administration. In considering the design of

the oil content meter to be incorporated into the system, the Administration shall have regard to the specification recommended by the Organization.* The system shall be fitted with a recording device to provide a continuous record of the oil content in parts per million. This record shall be identifiable as to time and date and shall be kept for at least three years. The monitoring and control system shall come into operation when there is any discharge of effluent into the sea and shall be such as will ensure that any discharge of oily mixture is automatically stopped when the oil content of effluent exceeds that permitted by Regulation 9(1)(b) of this Annex. Any failure of this monitoring and control system shall stop the discharge and be noted in the Oil Record Book. The defective unit shall be made operable before the ship commences its next voyage unless it is proceeding to a repair port. Existing ships shall comply with all of the provisions specified above except that the stopping of the discharge may be performed manually.

(6) Oily-water separating equipment or an oil filtering system shall be of a design approved by the Administration and shall be such as will ensure that any oily mixture discharged into the sea after passing through the separator or filtering systems shall have an oil content of not more than 100 parts per million. In considering the design of such equipment, the Administration shall have regard to the specification recommended by the Organization.*

(7) The oil filtering system referred to in paragraph (2)(b) of this Regulation shall be of a design approved by the Administration and shall be such that it will accept the discharge from the separating system and produce an effluent the oil content of which does not exceed

* Reference is made to the Recommendation on International Performance Specifications for Oily-Water Separating Equipment and Oil Content Meters adopted by the Organization by Resolution A.233(VII).

15 parts per million. It shall be provided with alarm arrangements to indicate when this level cannot be maintained.

Regulation 17

Tanks for Oil Residues (Sludge)

(1) Every ship of 400 tons gross tonnage and above shall be provided with a tank or tanks of adequate capacity, having regard to the type of machinery and length of voyage, to receive the oily residues (sludges) which cannot be dealt with otherwise in accordance with the requirements of this Annex, such as those resulting from the purification of fuel and lubricating oils and oil leakages in the machinery spaces.

(2) In new ships, such tanks shall be designed and constructed so as to facilitate their cleaning and the discharge of residues to reception facilities. Existing ships shall comply with this requirement as far as is reasonable and practicable.

Regulation 18

Pumping, Piping and Discharge
Arrangements of Oil Tankers

(1) In every oil tanker, a discharge manifold for connexion to reception facilities for the discharge of dirty ballast water or oil contaminated water shall be located on the open deck on both sides of the ship.

(2) In every oil tanker, pipelines for the discharge to the sea of effluent which may be permitted under Regulation 9 of this Annex shall be led to the open deck or to the ship's side above the waterline in the deepest ballast condition. Different piping arrangements to permit operation in the manner permitted in sub-paragraphs (4)(a) and (b) of this Regulation may be accepted.

(3) In new oil tankers means shall be provided for stopping the discharge of effluent into the sea from a position on upper deck or above located so that the manifold in use referred to in paragraph (1) of this Regulation and the effluent from the pipelines referred to

in paragraph (2) of this Regulation may be visually observed. Means for stopping the discharge need not be provided at the observation position if a positive communication system such as telephone or radio system is provided between the observation position and the discharge control position.

(4) All discharges shall take place above the waterline except as follows:

- (a) Segregated ballast and clean ballast may be discharged below the waterline in ports or at offshore terminals.
- (b) Existing ships which, without modification, are not capable of discharging segregated ballast above the waterline may discharge segregated ballast below the waterline provided that an examination of the tank immediately before the discharge has established that no contamination with oil has taken place.

Regulation 19

Standard Discharge Connection

To enable pipes of reception facilities to be connected with the ship's discharge pipeline for residues from machinery bilges, both lines shall be fitted with a standard discharge connection in accordance with the following table:

Standard Dimensions of Flanges for Discharge Connections

| Description | Dimension |
|--|--|
| Outside diameter | 215 mm |
| Inner diameter | According to pipe outside diameter |
| Bolt circle diameter | 183 mm |
| Slots in flange | 6 holes 22 mm in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 22 mm |
| Flange thickness | 20 mm |
| Bolts and nuts: quantity, diameter | 6, each of 20 mm in diameter and of suitable length |
| The flange is designed to accept pipes up to a maximum internal diameter of 125 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a gasket of oilproof material, shall be suitable for a service pressure of 6 kg/cm ² . | |

Regulation 20

Oil Record Book

(1) Every oil tanker of 150 tons gross tonnage and above and every ship of 400 tons gross tonnage and above other than an oil tanker shall be provided with an Oil Record Book, whether as part of the ship's official log book or otherwise, in the form specified in Appendix III to this Annex.

(2) The Oil Record Book shall be completed on each occasion, on a tank-to-tank basis, whenever any of the following operations take place in the ship:

(a) For oil tankers

- (i) loading of oil cargo;
- (ii) internal transfer of oil cargo during voyage;
- (iii) opening or closing before and after loading and unloading operations of valves or similar devices which inter-connect cargo tanks;
- (iv) opening or closing of means of communication between cargo piping and seawater ballast piping;
- (v) opening or closing of ships' side valves before, during and after loading and unloading operations;
- (vi) unloading of oil cargo;
- (vii) ballasting of cargo tanks;
- (viii) cleaning of cargo tanks;
- (ix) discharge of ballast except from segregated ballast tanks;
- (x) discharge of water from slop tanks;
- (xi) disposal of residues;
- (xii) discharge overboard of bilge water which has accumulated in machinery spaces whilst in port, and the routine discharge at sea of bilge water which has accumulated in machinery spaces.

(b) For ships other than oil tankers

- (i) ballasting or cleaning of fuel oil tanks or oil cargo spaces;
- (ii) discharge of ballast or cleaning water from tanks referred to under (i) of this sub-paragraph;

(iii) disposal of residues;

(iv) discharge overboard of bilge water which has accumulated in machinery spaces whilst in port, and the routine discharge at sea of bilge water which has accumulated in machinery spaces.

(3) In the event of such discharge of oil or oily mixture as is referred to in Regulation 11 of this Annex or in the event of accidental or other exceptional discharge of oil not excepted by that Regulation, a statement shall be made in the Oil Record Book of the circumstances of, and the reasons for, the discharge.

(4) Each operation described in paragraph (2) of this Regulation shall be fully recorded without delay in the Oil Record Book so that all the entries in the book appropriate to that operation are completed. Each section of the book shall be signed by the officer or officers in charge of the operations concerned and shall be countersigned by the Master of the ship. The entries in the Oil Record Book shall be in an official language of the State whose flag the ship is entitled to fly, and, for ships holding an International Oil Pollution Prevention Certificate, (1973) in English or French. The entries in an official national language of the State whose flag the ship is entitled to fly shall prevail in case of a dispute or discrepancy.

(5) The Oil Record Book shall be kept in such a place as to be readily available for inspection at all reasonable times and, except in the case of unmanned ships under tow, shall be kept on board the ship. It shall be preserved for a period of three years after the last entry has been made.

(6) The competent authority of the Government of a Party to the Convention may inspect the Oil Record Book on board any ship to which this Annex applies while the ship is in its port or offshore terminals and may make a copy of any entry in that book and may require the Master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the Master

of the ship as a true copy of an entry in the ship's Oil Record Book shall be made admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of an Oil Record Book and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

Regulation 21

Special Requirements for Drilling Rigs
and other Platforms

Fixed and floating drilling rigs when engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources and other platforms shall comply with the requirements of this Annex applicable to ships of 400 tons gross tonnage and above other than oil tankers, except that:

- (a) they shall be equipped as far as practicable with the installations required in Regulations 16 and 17 of this Annex;
- (b) they shall keep a record of all operations involving oil or oily mixture discharges, in a form approved by the Administration; and
- (c) in any special area and subject to the provisions of Regulation 11 of this Annex, the discharge into the sea of oil or oily mixture shall be prohibited except when the oil content of the discharge without dilution does not exceed 15 parts per million.

CHAPTER III

REQUIREMENTS FOR MINIMIZING OIL POLLUTION FROM OIL TANKERS
DUE TO SIDE AND BOTTOM DAMAGES

Regulation 22

Damage Assumptions

(1) For the purpose of calculating hypothetical oil outflow from oil tankers, three dimensions of the extent of damage of a parallelepiped on the side and bottom of the ship are assumed as follows. In the case of bottom damages two conditions are set forth to be applied individually to the stated portions of the oil tanker.

(a) Side damage

- (i) Longitudinal extent (ℓ_c): $\frac{1}{3}L$ or 14.5 metres,
whichever is less
- (ii) Transverse extent (t_c): $\frac{B}{5}$ or 11.5 metres,
(inboard from the ship's side at right angles to the centre-line at the level corresponding to the assigned summer freeboard)
whichever is less
- (iii) Vertical extent (v_c): from the base line upwards without limit

(b) Bottom damage

- | | For 0.3L from the forward perpendicular of the ship | Any other part of the ship |
|--------------------------------------|---|--|
| (i) Longitudinal extent (ℓ_s) | $\frac{L}{10}$ | $\frac{L}{10}$ or 5 metres, whichever is less |
| (ii) Transverse extent (t_s) | $\frac{B}{6}$ or 10 metres, whichever is less but not less than 5 metres | 5 metres |

(iii) Vertical extent
from the base
line (v_s): $\frac{B}{15}$ or 6 metres, whichever is less

(2) Wherever the symbols given in this Regulation appear in this Chapter, they have the meaning as defined in this Regulation.

Regulation 23

Hypothetical Outflow of Oil

(1) The hypothetical outflow of oil in the case of side damage (O_c) and bottom damage (O_s) shall be calculated by the following formulae with respect to compartments breached by damage to all conceivable locations along the length of the ship to the extent as defined in Regulation 22 of this Annex.

(a) for side damages:

$$O_c = \sum W_i + \sum K_i C_i \quad (I)$$

(b) for bottom damages:

$$O_s = \frac{1}{3} (\sum Z_i W_i + \sum Z_i C_i) \quad (II)$$

where: W_i = volume of a wing tank in cubic metres assumed to be breached by the damage as specified in Regulation 22 of this Annex; W_i for a segregated ballast tank may be taken equal to zero,

C_i = volume of a centre tank in cubic metres assumed to be breached by the damage as specified in Regulation 22 of this Annex; C_i for a segregated ballast tank may be taken equal to zero,

$K_i = 1 - \frac{b_i}{t_c}$ when b_i is equal to or greater than t_c .
 K_i shall be taken equal to zero,

$Z_i = 1 - \frac{h_i}{v_s}$ when h_i is equal to or greater than v_s , Z_i shall be taken equal to zero,

b_i = width of wing tank in metres under consideration measured inboard from the ship's side at right angles to the centreline at the level corresponding to the assigned summer freeboard,

h_i = minimum depth of the double bottom in metres under consideration; where no double bottom is fitted h_i shall be taken equal to zero.

Whenever symbols given in this paragraph appear in this Chapter, they have the meaning as defined in this Regulation.

(2) If a void space or segregated ballast tank of a length less than ℓ_c as defined in Regulation 22 of this Annex is located between wing oil tanks, O_c in formula (I) may be calculated on the basis of volume W_i being the actual volume of one such tank (where they are of equal capacity) or the smaller of the two tanks (if they differ in capacity) adjacent to such space, multiplied by S_i as defined below and taking for all other wing tanks involved in such a collision the value of the actual full volume.

$$S_i = 1 - \frac{\ell_i}{\ell_c}$$

where ℓ_i = length in metres of void space or segregated ballast tank under consideration.

- (3) (a) Credit shall only be given in respect of double bottom tanks which are either empty or carrying clean water when cargo is carried in the tanks above.
- (b) Where the double bottom does not extend for the full length and width of the tank involved, the double bottom is considered non-existent and the volume of the tanks above the area of the bottom damage shall be included in formula (II) even if the tank is not considered breached because of the installation of such a partial double bottom.

- (c) Suction wells may be neglected in the determination of the value h_1 provided such wells are not excessive in area and extend below the tank for a minimum distance and in no case more than half the height of the double bottom. If the depth of such a well exceeds half the height of the double bottom, h_1 shall be taken equal to the double bottom height minus the well height.

Piping serving such wells if installed within the double bottom shall be fitted with valves or other closing arrangements located at the point of connexion to the tank served to prevent oil outflow in the event of damage to the piping. Such piping shall be installed as high from the bottom shell as possible. These valves shall be kept closed at sea at any time when the tank contains oil cargo, except that they may be opened only for cargo transfer needed for the purpose of trimming of the ship.

- (4) In the case where bottom damage simultaneously involves four centre tanks, the value of O_s may be calculated according to the formula

$$O_s = \frac{1}{4} (\sum Z_i W_i + \sum Z_i C_i) \quad \text{(III)}$$

- (5) An Administration may credit as reducing oil outflow in case of bottom damage, an installed cargo transfer system having an emergency high suction in each cargo oil tank, capable of transferring from a breached tank or tanks to segregated ballast tanks or to available cargo tankage if it can be assured that such tanks will have sufficient ullage. Credit for such a system would be governed by ability to transfer in two hours of operation oil equal to one half of the largest of the breached tanks involved and by availability of equivalent receiving capacity in ballast or cargo tanks. The credit shall be confined to permitting calculation of O_s according to formula (III). The pipes for such suctions shall be installed at least at a height not less than the vertical extent of the bottom damage v_s . The Administration shall supply the Organization with the information concerning the arrangements accepted by it, for circulation to other Parties to the Convention

Regulation 24

Limitation of Size and Arrangement of Cargo Tanks

(1) Every new oil tanker shall comply with the provision of this Regulation. Every existing oil tanker shall be required, within two years after the date of entry into force of the present Convention, to comply with the provisions of this Regulation if such a tanker falls into either of the following categories:

(a) a tanker, the delivery of which is after 1 January 1977;

or

(b) a tanker to which both the following conditions apply:

(i) delivery is not later than 1 January 1977; and

(ii) the building contract is placed after 1 January 1974, or in cases where no building contract has previously been placed, the keel is laid or the tanker is at a similar stage of construction after 30 June 1974.

(2) Cargo tanks of oil tankers shall be of such size and arrangements that the hypothetical outflow O_c or O_s calculated in accordance with the provisions of Regulation 23 of this Annex anywhere in the length of the ship does not exceed 30,000 cubic metres or $400\sqrt[3]{DW}$, whichever is the greater, but subject to a maximum of 40,000 cubic metres.

(3) The volume of any one wing cargo oil tank of an oil tanker shall not exceed seventy-five per cent of the limits of the hypothetical oil outflow referred to in paragraph (2) of this Regulation. The volume of any one centre cargo oil tank shall not exceed 50,000 cubic metres. However, in segregated ballast oil tankers as defined in Regulation 13 of this Annex, the permitted volume of a wing cargo oil tank situated between two segregated ballast tanks, each exceeding l_c in length, may be increased to the maximum limit of hypothetical oil outflow provided that the width of the wing tanks exceeds t_c .

(4) The length of each cargo tank shall not exceed 10 metres or one of the following values, whichever is the greater:

- (a) where no longitudinal bulkhead is provided:

$$0.1L$$

- (b) where a longitudinal bulkhead is provided at the centreline only:

$$0.15L$$

- (c) where two or more longitudinal bulkheads are provided:

- (i) for wing tanks:

$$0.2L$$

- (ii) for centre tanks:

- (1) if $\frac{b_i}{B}$ is equal to or greater than $1/5$:

$$0.2L$$

- (2) if $\frac{b_i}{B}$ is less than $1/5$:

- where no centreline longitudinal bulkhead is provided:

$$\left(0.5\frac{b_i}{B} + 0.1\right)L$$

- where a centreline longitudinal bulkhead is provided:

$$\left(0.25\frac{b_i}{B} + 0.15\right)L$$

(5) In order not to exceed the volume limits established by paragraphs (2), (3) and (4) of this Regulation and irrespective of the accepted type of cargo transfer system installed, when such system inter-connects two or more cargo tanks, valves or other similar closing devices shall be provided for separating the tanks from each other. These valves or devices shall be closed when the tanker is at sea.

(6) Lines of piping which run through cargo tanks in a position less than t_c from the ship's side or less than v_c from the ship's bottom shall be fitted with valves or similar closing devices at the point at which they open into any cargo tank. These valves shall be kept

closed at sea at any time when the tanks contain cargo oil, except that they may be opened only for cargo transfer needed for the purpose of trimming of the ship.

Regulation 25

Subdivision and Stability

(1) Every new oil tanker shall comply with the subdivision and damage stability criteria as specified in paragraph (3) of this Regulation, after the assumed side or bottom damage as specified in paragraph (2) of this Regulation, for any operating draught reflecting actual partial or full load conditions consistent with trim and strength of the ship as well as specific gravities of the cargo. Such damage shall be applied to all conceivable locations along the length of the ship as follows:

- (a) in tankers of more than 225 metres in length, anywhere in the ship's length;
- (b) in tankers of more than 150 metres, but not exceeding 225 metres in length, anywhere in the ship's length except involving either after or forward bulkhead bounding the machinery space located aft. The machinery space shall be treated as a single floodable compartment;
- (c) in tankers not exceeding 150 metres in length, anywhere in the ship's length between adjacent transverse bulkheads with the exception of the machinery space. For tankers of 100 metres or less in length where all requirements of paragraph (3) of this Regulation cannot be fulfilled without materially impairing the operational qualities of the ship, Administrations may allow relaxations from these requirements.

Ballast conditions where the tanker is not carrying oil in cargo tanks excluding any oily residues, shall not be considered.

(2) The following provisions regarding the extent and the character of the assumed damage shall apply:

- (a) The extent of side or bottom damage shall be as specified in Regulation 22 of this Annex, except that the longitudinal extent of bottom damage within 0.3L from the forward perpendicular shall be the same as for side damage, as specified in Regulation 22(1)(a)(i) of this Annex. If any damage of lesser extent results in a more severe condition such damage shall be assumed.
- (b) Where the damage involving transverse bulkheads is envisaged as specified in sub-paragraphs (1)(a) and (b) of this Regulation, transverse watertight bulkheads shall be spaced at least at a distance equal to the longitudinal extent of assumed damage specified in sub-paragraph (a) of this paragraph in order to be considered effective. Where transverse bulkheads are spaced at a lesser distance, one or more of these bulkheads within such extent of damage shall be assumed as non-existent for the purpose of determining flooded compartments.
- (c) Where the damage between adjacent transverse watertight bulkheads is envisaged as specified in sub-paragraph (1)(c) of this Regulation, no main transverse bulkhead or a transverse bulkhead bounding side tanks or double bottom tanks shall be assumed damaged, unless:
- (i) the spacing of the adjacent bulkheads is less than the longitudinal extent of assumed damage specified in sub-paragraph (a) of this paragraph; or
 - (ii) there is a step or a recess in a transverse bulkhead of more than 3.05 metres in length, located within the extent of penetration of assumed damage. The step formed by the after peak bulkhead and after peak tank top shall not be regarded as a step for the purpose of this Regulation.
- (d) If pipes, ducts or tunnels are situated within the assumed extent of damage, arrangements shall be made so that

progressive flooding cannot thereby extend to compartments other than those assumed to be floodable for each case of damage.

(3) Oil tankers shall be regarded as complying with the damage stability criteria if the following requirements are met:

- (a) The final waterline, taking into account sinkage, heel and trim, shall be below the lower edge of any opening through which progressive flooding may take place. Such openings shall include air pipes and those which are closed by means of weathertight doors or hatch covers and may exclude those openings closed by means of watertight manhole covers and flush scuttles, small watertight cargo tank hatch covers which maintain the high integrity of the deck, remotely operated watertight sliding doors, and side scuttles of the non-opening type.
- (b) In the final stage of flooding, the angle of heel due to unsymmetrical flooding shall not exceed 25 degrees, provided that this angle may be increased up to 30 degrees if no deck edge immersion occurs.
- (c) The stability in the final stage of flooding shall be investigated and may be regarded as sufficient if the righting lever curve has at least a range of 20 degrees beyond the position of equilibrium in association with a maximum residual righting lever of at least 0.1 metre. The Administration shall give consideration to the potential hazard presented by protected or unprotected openings which may become temporarily immersed within the range of residual stability.
- (d) The Administration shall be satisfied that the stability is sufficient during intermediate stages of flooding.

(4) The requirements of paragraph (1) of this Regulation shall be confirmed by calculations which take into consideration the design characteristics of the ship, the arrangements, configuration and

contents of the damaged compartments; and the distribution, specific gravities and the free surface effect of liquids. The calculations shall be based on the following:

(a) Account shall be taken of any empty or partially filled tank, the specific gravity of cargoes carried, as well as any outflow of liquids from damaged compartments.

(b) The permeabilities are assumed as follows:

| <u>Spaces</u> | <u>Permeability</u> |
|---------------------------------|---------------------|
| Appropriated to Stores | 0.60 |
| Occupied by Accommodation | 0.95 |
| Occupied by Machinery | 0.85 |
| Voids | 0.95 |
| Intended for consumable liquids | 0 or 0.95* |
| Intended for other liquids | 0 to 0.95** |

* Whichever results in the more severe requirements.

** The permeability of partially filled compartments shall be consistent with the amount of liquid carried.

(c) The buoyancy of any superstructure directly above the side damage shall be disregarded. The unflooded parts of superstructures beyond the extent of damage, however, may be taken into consideration provided that they are separated from the damaged space by watertight bulkheads and the requirements of sub-paragraph (3)(a) of this Regulation in respect of these intact spaces are complied with. Hinged watertight doors may be acceptable in watertight bulkheads in the superstructure.

(d) The free surface effect shall be calculated at an angle of heel of 5 degrees for each individual compartment. The Administration may require or allow the free surface corrections to be calculated at an angle of heel greater than 5 degrees for partially-filled tanks.

(e) In calculating the effect of free surfaces of consumable liquids it shall be assumed that, for each type of liquid at least one transverse pair or a single centre line tank has a free surface and the tank or combination of tanks to be taken into account shall be those where the effect of free surfaces is the greatest.

(5) The Master of every oil tanker and the person in charge of a non-self-propelled oil tanker to which this Annex applies shall be supplied in an approved form with:

- (a) information relative to loading and distribution of cargo necessary to ensure compliance with the provisions of this Regulation; and
- (b) data on the ability of the ship to comply with damage stability criteria as determined by this Regulation, including the effect of relaxations that may have been allowed under sub-paragraph (1)(c) of this Regulation.

APPENDIX I

LIST OF OILS*

Asphalt solutions

Blending Stocks
Roofers Flux
Straight Run Residue

Oils

Clarified
Crude Oil
Mixtures containing crude oil
Diesel Oil
Fuel Oil No.4
Fuel Oil No.5
Fuel Oil No.6
Residual Fuel Oil
Road Oil
Transformer Oil
Aromatic Oil (excluding vegetable oil)
Lubricating Oils and Blending Stocks
Mineral Oil
Motor Oil
Penetrating Oil
Spindle Oil
Turbine Oil

Distillates

Straight Run
Flashed Feed Stocks

Gas Oil:

Cracked

Gasolene Blending Stocks

Alkylates - fuel
Reformats
Polymer - fuel

Gasolenes

Casinghead (natural)
Automotive
Aviation
Straight Run
Fuel Oil No.1 (Kerosene)
Fuel Oil No.1-D
Fuel Oil No.2
Fuel Oil No.2-D

Jet Fuels

JP-1 (Kerosene)
JP-3
JP-4
JP-5 (Kerosene, Heavy)
Turbo Fuel
Kerosene
Mineral Spirit

Naphtha

Solvent
Petroleum
Heartcut Distillate Oil

* The list of oils shall not necessarily be considered as comprehensive.

APPENDIX II

Form of Certificate

INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE (1973)

Issued under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, under the Authority of the Government of

.....
(full designation of the country)

by

.....
(full designation of the competent person or organization authorized under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973)

| Name of Ship | Distinctive Number or Letter | Port of Registry | Gross Tonnage |
|--------------|------------------------------|------------------|---------------|
| | | | |

Type of ship:

Oil tanker, including combination carrier*

Asphalt carrier*

Ship other than an oil tanker with cargo tanks coming under Regulation 2(2) of Annex I of the Convention*

Ship other than any of the above*

New/existing ship*

Date of building or major conversion contract:

Date on which keel was laid or ship was at a similar stage of construction or on which major conversion was commenced:

Date of delivery or completion of major conversion:

* Delete as appropriate.

PART A ALL SHIPS

The ship is equipped with:

for ships of 400 tons gross tonnage and above:

- (a) oily-water separating equipment* (capable of producing the effluent with an oil content not exceeding 100 parts per million) or
- (b) an oil filtering system* (capable of producing the effluent with an oil content not exceeding 100 parts per million)

for ships of 10,000 tons gross tonnage and above:

- (c) an oil discharge monitoring and control system* (additional to (a) or (b) above) or
- (d) oily-water separating equipment and an oil filtering system* (capable of producing the effluent with an oil content not exceeding 15 parts per million) in lieu of (a) or (b) above.

Particulars of requirements from which exemption is granted under Regulation 2(2) and 2(4)(a) of Annex I of the Convention:

.....
.....

REMARKS:

* Delete as appropriate.

PART B OIL TANKER^{1/} ^{2/}

Deadweight metric tons. Length of ship metres.

It is certified that this ship is:

- (a) required to be constructed according to and complies with^{3/}
- (b) not required to be constructed according to^{3/}
- (c) not required to be constructed according to, but complies with^{3/}

the requirements of Regulation 24 of Annex I of the Convention.

The capacity of segregated ballast tanks is cubic metres and complies with the requirements of Regulation 13 of Annex I of the Convention.

The segregated ballast is distributed as follows:

| Tank | Quantity | Tank | Quantity |
|------|----------|------|----------|
| | | | |

^{1/} This Part should be completed for oil tankers including combination carriers and asphalt carriers, and those entries which are applicable should be completed for ships other than oil tankers which are constructed and utilized to carry oil in bulk of an aggregate capacity of 200 cubic metres or above.

^{2/} This page need not be reproduced on a Certificate issued to any ship other than those referred to in footnote ^{1/}.

^{3/} Delete as appropriate.

THIS IS TO CERTIFY:

That the ship has been surveyed in accordance with Regulation 4 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, concerning the prevention of pollution by oil; and

That the survey shows that the structure, equipment, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of Annex I of the Convention.

This Certificate is valid until subject to intermediate survey(s) at intervals of

Issued at (place of issue of Certificate)

.....19... (Signature of duly authorized official issuing the Certificate)

(Seal or stamp of the issuing Authority, as appropriate)

Endorsement for existing ships^{4/}

This is to certify that this ship has been so equipped as to comply with the requirements of the International Convention for the Prevention of Pollution from Ships, 1973 as relating to existing ships three years from the date of entry into force of the Convention.

Signed (Signature of duly authorized official)

Place of endorsement

Date of endorsement

(Seal or stamp of the Authority, as appropriate)

^{4/} This entry need not be reproduced on a Certificate other than the first Certificate issued to any ship.

Intermediate survey

This is to certify that at an intermediate survey required by Regulation 4(1)(c) of Annex I of the Convention, this ship and the condition thereof are found to comply with the relevant provisions of the Convention.

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

Under the provisions of Regulation 8(2) and (4) of Annex I of the Convention the validity of this Certificate is extended until

.....

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

APPENDIX III

Form of Oil Record Book

OIL RECORD BOOK

I - FOR OIL TANKERS^{1/}

Name of ship

Total cargo carrying capacity of ship in cubic metres

Voyage from(date).....to.....(date).....

(a) Loading of oil cargo

| | | | |
|--|--|--|--|
| 1. Date and place of loading | | | |
| 2. Types of oil loaded | | | |
| 3. Identity of tank(s) loaded | | | |
| 4. Closing of applicable cargo tank valves and applicable line cut-off valves on completion of loading ^{2/} | | | |

The undersigned certifies that in addition to the above, all sea valves, overboard discharge valves, cargo tank and pipeline connections and inter-connections, were secured on completion of loading oil cargo.

Date of entry Officer in charge

Master

^{1/} This Part should be completed for oil tankers including combination carriers and asphalt carriers, and those entries which are applicable shall be completed for ships other than oil tankers which are constructed and utilized to carry oil in bulk of an aggregate capacity of 200 cubic metres or above. This Part need not be reproduced on an Oil Record Book issued to any ship other than those referred to above.

^{2/} Applicable valves and similar devices are those referred to in Regulations 20(2)(a)(iii), 23 and 24 of Annex I of the Convention.

(b) Internal transfer of oil cargo during voyage

| | | | | | |
|---------------------------------------|------|------|--|--|--|
| 5. Date of internal transfer | | | | | |
| 6. Identity of tank(s) | (i) | From | | | |
| | (ii) | To | | | |
| 7. Was(were) tank(s) in 6(i) emptied? | | | | | |

The undersigned certifies that in addition to the above, all sea valves, overboard discharge valves, cargo tank and pipeline connections and inter-connections, were secured on completion of internal transfer of oil cargo.

Date of entry Officer in charge
Master

(c) Unloading of oil cargo

| | | | | | |
|---|--|--|--|--|--|
| 8. Date and place of unloading | | | | | |
| 9. Identity of tank(s) unloaded | | | | | |
| 10. Was(were) tank(s) emptied? | | | | | |
| 11. Opening of applicable cargo tank valves and applicable line cut-off valves prior to cargo unloading ^{2/} | | | | | |
| 12. Closing of applicable cargo tank valves and applicable line cut-off valves on completion of unloading ^{2/} | | | | | |

The undersigned certifies that in addition to the above, all sea valves, overboard discharge valves, cargo tank and pipeline connections and inter-connections, were secured on completion of unloading of oil cargo.

Date of entry Officer in charge
Master

(d) Ballasting of cargo tanks

| | | | |
|--|--|--|--|
| 13. Identity of tank(s) ballasted | | | |
| 14. Date and position of ship at start of ballasting | | | |
| 15. If valves connecting cargo lines and segregated ballast lines were used give time, date and position of ship when valves were (a) opened, and (b) closed | | | |

The undersigned certifies that in addition to the above all sea valves, overboard discharge valves, cargo tank and pipeline connections and inter-connections, were secured on completion of ballasting.

Date of entry Officer in charge

Master

(e) Cleaning of cargo tanks

| | | | |
|---------------------------------------|--|--|--|
| 16. Identity of tank(s) cleaned | | | |
| 17. Date and duration of cleaning | | | |
| 18. Methods of cleaning ^{3/} | | | |

Date of entry Officer in charge

Master

^{3/} Hand hosing, machine washing and/or chemical cleaning. Where chemically cleaned, the chemical concerned and the amount used should be stated.

(f) Discharge of dirty ballast

| | | | |
|---|--|--|--|
| 19. Identity of tank(s) | | | |
| 20. Date and position of ship at start of discharge to sea | | | |
| 21. Date and position of ship at finish of discharge to sea | | | |
| 22. Ship's speed(s) during discharge | | | |
| 23. Quantity discharged to sea | | | |
| 24. Quantity of polluted water transferred to slop tank(s) (identify slop tank(s)) | | | |
| 25. Date and port of discharge into shore reception facilities (if applicable) | | | |
| 26. Was any part of the discharge conducted during darkness, if so, for how long? | | | |
| 27. Was a regular check kept on the effluent and the surface of the water in the locality of the discharge? | | | |
| 28. Was any oil observed on the surface of the water in the locality of the discharge? | | | |

Date of entry Officer in charge

Master

(g) Discharge of water from slop tanks

| | | | |
|---|--|--|--|
| 29. Identity of slop tank(s) | | | |
| 30. Time of settling from last entry of residues, or | | | |
| 31. Time of settling from last discharge | | | |
| 32. Date, time and position of ship at start of discharge | | | |
| 33. Sounding of total contents at start of discharge | | | |
| 34. Sounding of oil/water interface at start of discharge | | | |
| 35. Bulk quantity discharged and rate of discharge | | | |
| 36. Final quantity discharged and rate of discharge | | | |
| 37. Date, time and position of ship at end of discharge | | | |
| 38. Ship's speed(s) during discharge | | | |
| 39. Sounding of oil/water interface at end of discharge | | | |
| 40. Was any part of the discharge conducted during darkness, if so, for how long? | | | |
| 41. Was a regular check kept on the effluent and the surface of the water in the locality of the discharge? | | | |
| 42. Was any oil observed on the surface of the water in the locality of the discharge? | | | |

Date of entry Officer in charge

Master

(h) Disposal of residues

| | | | |
|---|--|--|--|
| 43. Identity of tank(s) | | | |
| 44. Quantity disposed from each tank | | | |
| 45. Method of disposal of residue: (a) Reception facilities (b) Mixed with cargo (c) Transferred to another (other) tank(s) (identify tank(s)) (d) Other method (state which) | | | |
| 46. Date and port of disposal of residue | | | |

Date of entry Officer in charge

Master

(1) Discharge of clean ballast contained in cargo tanks

| | | | | |
|-----|---|--|--|--|
| 47. | Date and position of ship at commencement of discharge of clean ballast | | | |
| 48. | Identity of tank(s) discharged | | | |
| 49. | Was (were) the tank(s) empty on completion? | | | |
| 50. | Position of vessel on completion if different from 47 | | | |
| 51. | Was any part of the discharge conducted during darkness, if so, for how long? | | | |
| 52. | Was a regular check kept on the effluent and the surface of the water in the locality of the discharge? | | | |
| 53. | Was any oil observed on the surface of the water in the locality of the discharge? | | | |

Date of entry Officer in charge

Master

(j) Discharge overboard of bilge water containing oil which has accumulated in machinery spaces whilst in port^{4/}

| | | | |
|---|--|--|--|
| 54. Port | | | |
| 55. Duration of stay | | | |
| 56. Quantity disposed | | | |
| 57. Date and place of disposal | | | |
| 58. Method of disposal (state whether a separator was used) | | | |

Date of entry Officer in charge
Master

(k) Accidental or other exceptional discharges of oil

| | | | |
|--|--|--|--|
| 59. Date and time of occurrence | | | |
| 60. Place or position of ship at time of occurrence | | | |
| 61. Approximate quantity and type of oil | | | |
| 62. Circumstances of discharge or escape, the reasons therefor and general remarks | | | |

Date of entry Officer in charge
Master

^{4/} Where the pump starts automatically and discharges through a separator at all times it will be sufficient to enter each day "Automatic discharge from bilges through a separator".

(l) Has the oil monitoring and control system been out of operation at any time when discharging overboard? If so, give time and date of failure and time and date of restoration and confirm that this was due to equipment failure and state reason if known

.....
.....
.....

Date of entry Officer in charge
Master

(m) Additional operational procedures and general remarks

.....
.....
.....

For oil tankers of less than 150 tons gross tonnage operating in accordance with Regulation 15(4) of Annex I of the Convention, an appropriate oil record book should be developed by the Administration.

For asphalt carriers, a separate oil record book may be developed by the Administration utilizing sections (a), (b), (c), (e), (h), (j), (k) and (m) of this form of oil record book.

II - FOR SHIPS OTHER THAN OIL TANKERS

Name of ship

Operations from(date), to(date)

(a) Ballasting or cleaning of oil fuel tanks

| | | | |
|--|--|--|--|
| 1. Identity of tank(s) ballasted | | | |
| 2. Whether cleaned since they last contained oil and, if not, type of oil previously carried | | | |
| 3. Date and position of ship at start of cleaning | | | |
| 4. Date and position of ship at start of ballasting | | | |

Date of entry Officer in charge

Master

(b) Discharge of dirty ballast or cleaning water from tanks referred to under section (a)

| | | | |
|---|--|--|--|
| 5. Identity of tank(s) | | | |
| 6. Date and position of ship at start of discharge | | | |
| 7. Date and position of ship at finish of discharge | | | |
| 8. Ship's speed(s) during discharge | | | |
| 9. Method of discharge (state whether to reception facility or through installed equipment) | | | |
| 10. Quantity discharged | | | |

Date of entry Officer in charge

Master

(c) Disposal of residues

| | | | |
|---|--|--|--|
| 11. Quantity of residue retained on board | | | |
| 12. Methods of disposal of residue: (a) reception facilities (b) mixed with next bunkering (c) transferred to another (other) tank (d) other method (state which) | | | |
| 13. Date and port of disposal of residue | | | |

Date of entry Officer in charge
Master

(d) Discharge overboard of bilge water containing oil which has accumulated in machinery spaces whilst in port 5/

| | | | |
|--|--|--|--|
| 14. Port | | | |
| 15. Duration of stay | | | |
| 16. Quantity discharged | | | |
| 17. Date and place of discharge | | | |
| 18. Method of discharge: (a) through oily-water separating equipment; (b) through oil filtering system; (c) through oily-water separating equipment and an oil filtering system; (d) to reception facilities | | | |

Date of entry Officer in charge
Master

5/ Where the pump starts automatically and discharges through a separator at all times it will be sufficient to enter each day "Automatic discharge from bilges through a separator".

(e) Accidental or other exceptional discharges of oil

| | | | |
|--|--|--|--|
| 19. Date and time of occurrence | | | |
| 20. Place or position of ship at time of occurrence | | | |
| 21. Approximate quantity and type of oil | | | |
| 22. Circumstances of discharge or escape, the reasons therefor and general remarks | | | |

Date of entry Officer in charge
Master

(f) Has the required oil monitoring and control system been out of operation at any time when discharging overboard? If so, state time and date of failure and time and date of restoration, and confirm that this was due to equipment failure, and state reason if known

Date of entry Officer in charge
Master

(g) New ships of 4,000 tons gross tonnage and above: has dirty ballast been carried in oil fuel tanks?

Yes/No

If so, state which tanks were so ballasted and method of discharge of the dirty ballast
.....
.....

Date of entry Officer in charge
Master

(h) Additional operational procedures and general remarks

.....
.....
.....

Date of entry Officer in charge

Master



ANNEX II

REGULATIONS FOR THE CONTROL OF POLLUTION
BY NOXIOUS LIQUID SUBSTANCES IN BULK

Regulation 1

Definitions

For the purposes of this Annex:

- (1) "Chemical tanker" means a ship constructed or adapted primarily to carry a cargo of noxious liquid substances in bulk and includes an "oil tanker" as defined in Annex I of the present Convention when carrying a cargo or part cargo of noxious liquid substances in bulk.
- (2) "Clean ballast" means ballast carried in a tank which, since it was last used to carry a cargo containing a substance in Category A, B, C or D has been thoroughly cleaned and the residues resulting therefrom have been discharged and the tank emptied in accordance with the appropriate requirements of this Annex.
- (3) "Segregated ballast" means ballast water introduced into a tank permanently allocated to the carriage of ballast or to the carriage of ballast or cargoes other than oil or noxious liquid substances as variously defined in the Annexes of the present Convention, and which is completely separated from the cargo and oil fuel system.
- (4) "Nearest land" is as defined in Regulation 1(9) of Annex I of the present Convention.
- (5) "Liquid substances" are those having a vapour pressure not exceeding 2.8 kp/cm^2 at a temperature of 37.8°C .
- (6) "Noxious liquid substance" means any substance designated in Appendix II to this Annex or provisionally assessed under the provisions of Regulation 3(4) as falling into Category A, B, C or D.

- (7) "Special area" means a sea area where for recognized technical reasons in relation to its oceanographic and ecological condition and to its peculiar transportation traffic the adoption of special mandatory methods for the prevention of sea pollution by noxious liquid substances is required.

Special areas shall be:

- (a) The Baltic Sea Area, and
- (b) The Black Sea Area.

- (8) "Baltic Sea Area" is as defined in Regulation 10(1)(b) of Annex I of the present Convention.
- (9) "Black Sea Area" is as defined in Regulation 10(1)(c) of Annex I of the present Convention.

Regulation 2

Application

- (1) Unless expressly provided otherwise the provisions of this Annex shall apply to all ships carrying noxious liquid substances in bulk.
- (2) Where a cargo subject to the provisions of Annex I of the present Convention is carried in a cargo space of a chemical tanker, the appropriate requirements of Annex I of the present Convention shall also apply.
- (3) Regulation 13 of this Annex shall apply only to ships carrying substances which are categorized for discharge control purposes in Category A, B or C.

Regulation 3

Categorization and Listing of Noxious Liquid Substances

- (1) For the purpose of the Regulations of this Annex, except Regulation 13, noxious liquid substances shall be divided into four categories as follows:

- (a) Category A - Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea and therefore justify the application of stringent anti-pollution measures.
 - (b) Category B - Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify the application of special anti-pollution measures.
 - (c) Category C - Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a minor hazard to either marine resources or human health or cause minor harm to amenities or other legitimate uses of the sea and therefore require special operational conditions.
 - (d) Category D - Noxious liquid substances which if discharged into the sea from tank cleaning or deballasting operations would present a recognizable hazard to either marine resources or human health or cause minimal harm to amenities or other legitimate uses of the sea and therefore require some attention in operational conditions.
- (2) Guidelines for use in the categorization of noxious liquid substances are given in Appendix I to this Annex.
 - (3) The list of noxious liquid substances carried in bulk and presently categorized which are subject to the provisions of this Annex is set out in Appendix II to this Annex.
 - (4) Where it is proposed to carry a liquid substance in bulk which has not been categorized under paragraph (1) of this Regulation or evaluated as referred to in Regulation 4(1) of this Annex, the Governments of Parties to the Convention involved in the proposed

operation shall establish and agree on a provisional assessment for the proposed operation on the basis of the guidelines referred to in paragraph (2) of this Regulation. Until full agreement between the Governments involved has been reached, the substance shall be carried under the most severe conditions proposed. As soon as possible, but not later than ninety days after its first carriage, the Administration concerned shall notify the Organization and provide details of the substance and the provisional assessment for prompt circulation to all Parties for their information and consideration. The Government of each Party shall have a period of ninety days in which to forward its comments to the Organization, with a view to the assessment of the substance.

Regulation 4

Other Liquid Substances

- (1) The substances listed in Appendix III to this Annex have been evaluated and found to fall outside the Categories A, B, C and D, as defined in Regulation 3(1) of this Annex because they are presently considered to present no harm to human health, marine resources, amenities or other legitimate uses of the sea, when discharged into the sea from tank cleaning or deballasting operations.
- (2) The discharge of bilge or ballast water or other residues or mixtures containing only substances listed in Appendix III to this Annex shall not be subject to any requirement of this Annex.
- (3) The discharge into the sea of clean ballast or segregated ballast shall not be subject to any requirement of this Annex.

Regulation 5

Discharge of Noxious Liquid Substances

Categories A, B and C Substances outside Special Areas and Category D Substances in All Areas

Subject to the provisions of Regulation 6 of this Annex,

- (1) The discharge into the sea of substances in Category A as defined in Regulation 3(1)(a) of this Annex or of those provisionally assessed as such or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited. If tanks containing such substances or mixtures are to be washed, the resulting residues shall be discharged to a reception facility until the concentration of the substance in the effluent to such facility is at or below the residual concentration prescribed for that substance in column III of Appendix II to this Annex and until the tank is empty. Provided that the residue then remaining in the tank is subsequently diluted by the addition of a volume of water of not less than 5 per cent of the total volume of the tank, it may be discharged into the sea when all the following conditions are also satisfied:

 - (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (b) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
 - (c) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.

- (2) The discharge into the sea of substances in Category B as defined in Regulation 3(1)(b) of this Annex or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except when all the following conditions are satisfied:

 - (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (b) the procedures and arrangements for discharge are approved by the Administration. Such procedures and arrangements shall be based upon standards developed by the Organization

and shall ensure that the concentration and rate of discharge of the effluent is such that the concentration of the substance in the wake astern of the ship does not exceed 1 part per million;

- (c) the maximum quantity of cargo discharged from each tank and its associated piping system does not exceed the maximum quantity approved in accordance with the procedures referred to in sub-paragraph (b) of this paragraph, which shall in no case exceed the greater of 1 cubic metre or 1/3,000 of the tank capacity in cubic metres;
 - (d) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
 - (e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.
- (3) The discharge into the sea of substances in Category C as defined in Regulation 3(1)(c) of this Annex or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except when all the following conditions are satisfied:
- (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (b) the procedures and arrangements for discharge are approved by the Administration. Such procedures and arrangements shall be based upon standards developed by the Organization and shall ensure that the concentration and rate of discharge of the effluent is such that the concentration of the substance in the wake astern of the ship does not exceed 10 parts per million;
 - (c) the maximum quantity of cargo discharged from each tank and its associated piping system does not exceed the maximum quantity approved in accordance with the procedures referred to in sub-paragraph (b) of this paragraph, which shall in no

case exceed the greater of 3 cubic metres or 1/1,000 of the tank capacity in cubic metres;

- (d) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
- (e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.

(4) The discharge into the sea of substances in Category D as defined in Regulation 3(1)(d) of this Annex, or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except when all the following conditions are satisfied:

- (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
- (b) such mixtures are of a concentration not greater than one part of the substance in ten parts of water; and
- (c) the discharge is made at a distance of not less than 12 nautical miles from the nearest land.

(5) Ventilation procedures approved by the Administration may be used to remove cargo residues from a tank. Such procedures shall be based upon standards developed by the Organization. If subsequent washing of the tank is necessary, the discharge into the sea of the resulting tank washings shall be made in accordance with paragraph (1), (2), (3) or (4) of this Regulation, whichever is applicable.

(6) The discharge into the sea of substances which have not been categorized, provisionally assessed, or evaluated as referred to in Regulation 4(1) of this Annex, or of ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited.

Categories A, B and C Substances within Special Areas

Subject to the provisions of Regulation 6 of this Annex,

- (7) The discharge into the sea of substances in Category A as defined in Regulation 3(1)(a) of this Annex or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited. If tanks containing such substances or mixtures are to be washed the resulting residues shall be discharged to a reception facility which the States bordering the special area shall provide in accordance with Regulation 7 of this Annex, until the concentration of the substance in the effluent to such facility is at or below the residual concentration prescribed for that substance in column IV of Appendix II to this Annex and until the tank is empty. Provided that the residue then remaining in the tank is subsequently diluted by the addition of a volume of water of not less than 5 per cent of the total volume of the tank, it may be discharged into the sea when all the following conditions are also satisfied:
- (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (b) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
 - (c) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.
- (8) The discharge into the sea of substances in Category B as defined in Regulation 3(1)(b) of this Annex or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except when all the following conditions are satisfied:
- (a) the tank has been washed after unloading with a volume of water of not less than 0.5 per cent of the total volume of the tank, and the resulting residues have been discharged to a reception facility until the tank is empty;

- (b) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (c) the procedures and arrangements for discharge and washings are approved by the Administration. Such procedures and arrangements shall be based upon standards developed by the Organization and shall ensure that the concentration and rate of discharge of the effluent is such that the concentration of the substance in the wake astern of the ship does not exceed 1 part per million;
 - (d) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
 - (e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.
- (9) The discharge into the sea of substances in Category C as defined in Regulation 3(1)(c) of this Annex or of those provisionally assessed as such, or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except when all the following conditions are satisfied:
- (a) the ship is proceeding en route at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;
 - (b) the procedures and arrangements for discharge are approved by the Administration. Such procedures and arrangements shall be based upon standards developed by the Organization and shall ensure that the concentration and rate of discharge of the effluent is such that the concentration of the substance in the wake astern of the ship does not exceed 1 part per million;
 - (c) the maximum quantity of cargo discharged from each tank and its associated piping system does not exceed the maximum quantity approved in accordance with the procedures referred

to in sub-paragraph (b) of this paragraph which shall in no case exceed the greater of 1 cubic metre or 1/3,000 of the tank capacity in cubic metres;

- (d) the discharge is made below the waterline, taking into account the location of the seawater intakes; and
 - (e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 metres.
- (10) Ventilation procedures approved by the Administration may be used to remove cargo residues from a tank. Such procedures shall be based upon standards developed by the Organization. If subsequent washing of the tank is necessary, the discharge into the sea of the resulting tank washings shall be made in accordance with paragraphs (7), (8) or (9) of this Regulation, whichever is applicable.
- (11) The discharge into the sea of substances which have not been categorized, provisionally assessed or evaluated as referred to in Regulation 4(1) of this Annex, or of ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited.
- (12) Nothing in this Regulation shall prohibit a ship from retaining on board the residues from a category B or C cargo and discharging such residues into the sea outside a special area in accordance with paragraph (2) or (3) of this Regulation, respectively.
- (13) (a) The Governments of Parties to the Convention, the coastlines of which border on any given special area, shall collectively agree and establish a date by which time the requirement of Regulation 7(1) of this Annex will be fulfilled and from which the requirements of paragraphs (7), (8), (9) and (10) of this Regulation in respect of that area shall take effect and notify the Organization of the date so established at least six months in advance of that date. The Organization shall then promptly notify all Parties of that date.

- (b) If the date of entry into force of the present Convention is earlier than the date established in accordance with sub-paragraph (a) of this paragraph, the requirements of paragraphs (1), (2) and (3) of this Regulation shall apply during the interim period.

Regulation 6

Exceptions

Regulation 5 of this Annex shall not apply to:

- (a) the discharge into the sea of noxious liquid substances or mixtures containing such substances necessary for the purpose of securing the safety of a ship or saving life at sea; or
- (b) the discharge into the sea of noxious liquid substances or mixtures containing such substances resulting from damage to a ship or its equipment:
 - (i) provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimizing the discharge; and
 - (ii) except if the owner or the Master acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result; or
- (c) the discharge into the sea of noxious liquid substances or mixtures containing such substances, approved by the Administration, when being used for the purpose of combating specific pollution incidents in order to minimize the damage from pollution. Any such discharge shall be subject to the approval of any Government in whose jurisdiction it is contemplated the discharge will occur.

Regulation 7

Reception Facilities

- (1) The Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the needs of ships using its ports, terminals or repair ports as follows:
 - (a) cargo loading and unloading ports and terminals shall have facilities adequate for reception without undue delay to ships of such residues and mixtures containing noxious liquid substances as would remain for disposal from ships carrying them as a consequence of the application of this Annex; and
 - (b) ship repair ports undertaking repairs to chemical tankers shall have facilities adequate for the reception of residues and mixtures containing noxious liquid substances.
- (2) The Government of each Party shall determine the types of facilities provided for the purpose of paragraph (1) of this Regulation at each cargo loading and unloading port, terminal and ship repair port in its territories and notify the Organization thereof.
- (3) Each Party shall notify the Organization, for transmission to the Parties concerned, of any case where facilities required under paragraph (1) of this Regulation are alleged to be inadequate.

Regulation 8

Measures of Control

- (1) The Government of each Party to the Convention shall appoint or authorize surveyors for the purpose of implementing this Regulation.

Category A Substances in All Areas

- (2) (a) If a tank is partially unloaded or unloaded but not cleaned, an appropriate entry shall be made in the Cargo Record Book.

- (b) Until that tank is cleaned every subsequent pumping or transfer operation carried out in connexion with that tank shall also be entered in the Cargo Record Book.
- (3) If the tank is to be washed:
 - (a) the effluent from the tank washing operation shall be discharged from the ship to a reception facility at least until the concentration of the substance in the discharge, as indicated by analyses of samples of the effluent taken by the surveyor, has fallen to the residual concentration specified for that substance in Appendix II to this Annex. When the required residual concentration has been achieved, remaining tank washings shall continue to be discharged to the reception facility until the tank is empty. Appropriate entries of these operations shall be made in the Cargo Record Book and certified by the surveyor; and
 - (b) after diluting the residue then remaining in the tank with at least 5 per cent of the tank capacity of water, this mixture may be discharged into the sea in accordance with the provisions of sub-paragraphs (1)(a), (b) and (c) or 7(a), (b) and (c), whichever is applicable, of Regulation 5 of this Annex. Appropriate entries of these operations shall be made in the Cargo Record Book.
- (4) Where the Government of the receiving Party is satisfied that it is impracticable to measure the concentration of the substance in the effluent without causing undue delay to the ship, that Party may accept an alternative procedure as being equivalent to sub-paragraph (3)(a) provided that:
 - (a) a precleaning procedure for that tank and that substance, based on standards developed by the Organization, is approved by the Administration and that Party is satisfied that such procedure will fulfil the requirements of paragraph (1) or (7), whichever is applicable, of Regulation 5 of this Annex with respect to the attainment of the prescribed residual concentrations;

- (b) a surveyor duly authorized by that Party shall certify in the Cargo Record Book that:
 - (i) the tank, its pump and piping system have been emptied, and that the quantity of cargo remaining in the tank is at or below the quantity on which the approved precleaning procedure referred to in sub-paragraph (ii) of this paragraph has been based;
 - (ii) precleaning has been carried out in accordance with the precleaning procedure approved by the Administration for that tank and that substance; and
 - (iii) the tank washings resulting from such precleaning have been discharged to a reception facility and the tank is empty;
- (c) the discharge into the sea of any remaining residues shall be in accordance with the provisions of paragraph (3)(b) of this Regulation and an appropriate entry is made in the Cargo Record Book.

Category B Substances Outside Special Areas and Category C Substances in All Areas

- (5) Subject to such surveillance and approval by the authorized or appointed surveyor as may be deemed necessary by the Government of the Party, the Master of a ship shall, with respect to a Category B substance outside special areas or a Category C substance in all areas, ensure compliance with the following:
 - (a) If a tank is partially unloaded or unloaded but not cleaned, an appropriate entry shall be made in the Cargo Record Book.
 - (b) If the tank is to be cleaned at sea:
 - (i) the cargo piping system serving that tank shall be drained and an appropriate entry made in the Cargo Record Book;
 - (ii) the quantity of substance remaining in the tank shall not exceed the maximum quantity which may be discharged into the sea for that substance under Regulation 5(2)(c) of

this Annex outside special areas in the case of Category B substances, or under Regulations 5(3)(c) and 5(9)(c) outside and within special areas respectively in the case of Category C substances. An appropriate entry shall be made in the Cargo Record Book;

- (iii) where it is intended to discharge the quantity of substance remaining into the sea the approved procedures shall be complied with, and the necessary dilution of the substance satisfactory for such a discharge shall be achieved. An appropriate entry shall be made in the Cargo Record Book; or
 - (iv) where the tank washings are not discharged into the sea, if any internal transfer of tank washings takes place from that tank an appropriate entry shall be made in the Cargo Record Book; and
 - (v) any subsequent discharge into the sea of such tank washings shall be made in accordance with the requirements of Regulation 5 of this Annex for the appropriate area and Category of substance involved.
- (c) If the tank is to be cleaned in port:
- (i) the tank washings shall be discharged to a reception facility and an appropriate entry shall be made in the Cargo Record Book; or
 - (ii) the tank washings shall be retained on board the ship and an appropriate entry shall be made in the Cargo Record Book indicating the location and disposition of the tank washings.
- (d) If after unloading a Category C substance within a special area, any residues or tank washings are to be retained on board until the ship is outside the special area, the Master shall so indicate by an appropriate entry in the Cargo Record Book and in this case the procedures set out in Regulation 5(3) of this Annex shall be applicable.

Category B Substances within Special Areas

- (6) Subject to such surveillance and approval by the authorized or appointed surveyor as may be deemed necessary by the Government of the Party, the Master of a ship shall, with respect to a Category B substance within a special area, ensure compliance with the following:
- (a) If a tank is partially unloaded or unloaded but not cleaned, an appropriate entry shall be made in the Cargo Record Book.
 - (b) Until that tank is cleaned every subsequent pumping or transfer operation carried out in connection with that tank shall also be entered in the Cargo Record Book.
 - (c) If the tank is to be washed, the effluent from the tank washing operation, which shall contain a volume of water not less than 0.5 per cent of the total volume of the tank, shall be discharged from the ship to a reception facility until the tank, its pump and piping system are empty. An appropriate entry shall be made in the Cargo Record Book.
 - (d) If the tank is to be further cleaned and emptied at sea, the Master shall:
 - (i) ensure that the approved procedures referred to in Regulation 5(8)(c) of this Annex are complied with and that the appropriate entries are made in the Cargo Record Book; and
 - (ii) ensure that any discharge into the sea is made in accordance with the requirements of Regulation 5(8) of this Annex and an appropriate entry is made in the Cargo Record Book.
 - (e) If after unloading a Category B substance within a special area, any residues or tank washings are to be retained on board until the ship is outside the special area, the Master shall so indicate by an appropriate entry in the Cargo Record Book and in this case the procedures set out in Regulation 5(2) of this Annex shall be applicable.

Category D Substances in All Areas

- (7) The Master of a ship shall, with respect to a Category D substance, ensure compliance with the following:
- (a) If a tank is partially unloaded or unloaded but not cleaned, an appropriate entry shall be made in the Cargo Record Book.
 - (b) If the tank is to be cleaned at sea:
 - (i) the cargo piping system serving that tank shall be drained and an appropriate entry made in the Cargo Record Book;
 - (ii) where it is intended to discharge the quantity of substance remaining into the sea, the necessary dilution of the substance satisfactory for such a discharge shall be achieved. An appropriate entry shall be made in the Cargo Record Book; or
 - (iii) where the tank washings are not discharged into the sea, if any internal transfer of tank washings takes place from that tank an appropriate entry shall be made in the Cargo Record Book; and
 - (iv) any subsequent discharge into the sea of such tank washings shall be made in accordance with the requirements of Regulation 5(4) of this Annex.
 - (c) If the tank is to be cleaned in port:
 - (i) the tank washings shall be discharged to a reception facility and an appropriate entry shall be made in the Cargo Record Book; or
 - (ii) the tank washings shall be retained on board the ship and an appropriate entry shall be made in the Cargo Record Book indicating the location and disposition of the tank washings.

Discharge from a Slop Tank

- (8) Any residues retained on board in a slop tank, including those from pump room bilges, which contain a Category A substance, or within a special area either a Category A or a Category B substance, shall be discharged to a reception facility in accordance with the provisions of Regulation 5(1), (7) or (8) of this Annex, whichever is applicable. An appropriate entry shall be made in the Cargo Record Book.
- (9) Any residues retained on board in a slop tank, including those from pump room bilges, which contain a quantity of a Category B substance outside a special area or a Category C substance in all areas in excess of the aggregate of the maximum quantities specified in Regulation 5(2)(c), (3)(c) or (9) (c) of this Annex, whichever is applicable, shall be discharged to a reception facility. An appropriate entry shall be made in the Cargo Record Book.

Regulation 9

Cargo Record Book

- (1) Every ship to which this Annex applies shall be provided with a Cargo Record Book, whether as part of the ship's official log book or otherwise, in the form specified in Appendix IV to this Annex.
- (2) The Cargo Record Book shall be completed, on a tank-to-tank basis, whenever any of the following operations with respect to a noxious liquid substance take place in the ship:
 - (i) loading of cargo;
 - (ii) unloading of cargo;
 - (iii) transfer of cargo;
 - (iv) transfer of cargo, cargo residues or mixtures containing cargo to a slop tank;
 - (v) cleaning of cargo tanks;
 - (vi) transfer from slop tanks;

- (vii) ballasting of cargo tanks;
 - (viii) transfer of dirty ballast water;
 - (ix) discharge into the sea in accordance with Regulation 5 of this Annex.
- (3) In the event of any discharge of the kind referred to in Article 7 of the present Convention and Regulation 6 of this Annex of any noxious liquid substance or mixture containing such substance, whether intentional or accidental, an entry shall be made in the Cargo Record Book stating the circumstances of, and the reason for, the discharge.
- (4) When a surveyor appointed or authorized by the Government of the Party to the Convention to supervise any operations under this Annex has inspected a ship, then that surveyor shall make an appropriate entry in the Cargo Record Book.
- (5) Each operation referred to in paragraphs (2) and (3) of this Regulation shall be fully recorded without delay in the Cargo Record Book so that all the entries in the Book appropriate to that operation are completed. Each entry shall be signed by the officer or officers in charge of the operation concerned and, when the ship is manned, each page shall be signed by the Master of the ship. The entries in the Cargo Record Book shall be in an official language of the State whose flag the ship is entitled to fly, and, for ships holding an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) in English or French. The entries in an official national language of the State whose flag the ship is entitled to fly shall prevail in case of a dispute or discrepancy.
- (6) The Cargo Record Book shall be kept in such a place as to be readily available for inspection and, except in the case of unmanned ships under tow, shall be kept on board the ship. It shall be retained for a period of two years after the last entry has been made.
- (7) The competent authority of the Government of a Party may inspect the Cargo Record Book on board any ship to which this Annex applies

while the ship is in its port, and may make a copy of any entry in that book and may require the Master of the ship to certify that the copy is a true copy of such entry. Any copy so made which has been certified by the Master of the ship as a true copy of an entry in the ship's Cargo Record Book shall be made admissible in any judicial proceedings as evidence of the facts stated in the entry. The inspection of a Cargo Record Book and the taking of a certified copy by the competent authority under this paragraph shall be performed as expeditiously as possible without causing the ship to be unduly delayed.

Regulation 10

Surveys

- (1) Ships which are subject to the provisions of this Annex and which carry noxious liquid substances in bulk shall be surveyed as follows:
 - (a) An initial survey before a ship is put into service or before the certificate required by Regulation 11 of this Annex is issued for the first time, which shall include a complete inspection of its structure, equipment, fittings, arrangements and material insofar as the ship is covered by this Annex. The survey shall be such as to ensure full compliance with the applicable requirements of this Annex.
 - (b) Periodical surveys at intervals specified by the Administration which shall not exceed five years and which shall be such as to ensure that the structure, equipment, fittings, arrangements and material fully comply with the applicable requirements of this Annex. However, where the duration of the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) is extended as specified in Regulation 12(2) or (4) of this Annex, the interval of the periodical survey may be extended correspondingly.

- (c) Intermediate surveys at intervals specified by the Administration which shall not exceed thirty months and which shall be such as to ensure that the equipment and associated pump and piping systems, fully comply with the applicable requirements of this Annex and are in good working order. The survey shall be endorsed on the International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) issued under Regulation 11 of this Annex.
- (2) Surveys of a ship with respect to the enforcement of the provisions of this Annex shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. In every case the Administration concerned shall fully guarantee the completeness and efficiency of the surveys.
- (3) After any survey of a ship under this Regulation has been completed, no significant change shall be made in the structure, equipment, fittings, arrangements or material, covered by the survey without the sanction of the Administration, except the direct replacement of such equipment and fittings for the purpose of repair or maintenance.

Regulation 11

Issue of Certificate

- (1) An International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) shall be issued to any ship carrying noxious liquid substances which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention after survey of such ship in accordance with the provisions of Regulation 10 of this Annex.
- (2) Such Certificate shall be issued either by the Administration or by a person or organization duly authorized by it. In every case the Administration shall assume full responsibility for the Certificate.

- (3) (a) The Government of a Party may, at the request of the Administration, cause a ship to be surveyed and if satisfied that the provisions of this Annex are complied with shall issue or authorize the issue of a Certificate to the ship in accordance with this Annex.
 - (b) A copy of the Certificate and a copy of the survey report shall be transmitted as soon as possible to the requesting Administration.
 - (c) A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and shall have the same force and receive the same recognition as a certificate issued under paragraph (1) of this Regulation.
 - (d) No International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) shall be issued to any ship which is entitled to fly the flag of a State which is not a Party.
- (4) The Certificate shall be drawn up in an official language of the issuing country in a form corresponding to the model given in Appendix V to this Annex. If the language used is neither English nor French, the text shall include a translation into one of these languages.

Regulation 12

Duration of Certificate

- (1) An International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (1973) shall be issued for a period specified by the Administration, which shall not exceed five years from the date of issue, except as provided in paragraphs (2) and (4) of this Regulation.
- (2) If a ship at the time when the Certificate expires is not in a port or offshore terminal under the jurisdiction of the Party to the Convention whose flag the ship is entitled to fly, the

Certificate may be extended by the Administration, but such extension shall be granted only for the purpose of allowing the ship to complete its voyage to the State whose flag the ship is entitled to fly or in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so.

- (3) No Certificate shall be thus extended for a period longer than five months and a ship to which such extension is granted shall not on its arrival in the State whose flag it is entitled to fly or the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port or State without having obtained a new Certificate.
- (4) A Certificate which has not been extended under the provisions of paragraph (2) of this Regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it.
- (5) A Certificate shall cease to be valid if significant alterations have taken place in the structure, equipment, fittings, arrangements and material required by this Annex without the sanction of the Administration, except the direct replacement of such equipment or fitting for the purpose of repair or maintenance or if intermediate surveys as specified by the Administration under Regulation 10(1)(c) of this Annex are not carried out.
- (6) A Certificate issued to a ship shall cease to be valid upon transfer of such a ship to the flag of another State, except as provided in paragraph (7) of this Regulation.
- (7) Upon transfer of a ship to the flag of another Party, the Certificate shall remain in force for a period not exceeding five months provided that it would not have expired before the end of that period, or until the Administration issues a replacement Certificate, whichever is earlier. As soon as possible after the transfer has taken place the Government of the Party whose flag the ship was formerly entitled to fly shall transmit to the Administration a copy of the Certificate carried by the ship before the transfer and, if available, a copy of the relevant survey report.

Regulation 13

Requirements for Minimizing
Accidental Pollution

- (1) The design, construction, equipment and operation of ships carrying noxious liquid substances in bulk which are subject to the provisions of this Annex shall be such as to minimize the uncontrolled discharge into the sea of such substances.
- (2) Pursuant to the provisions of paragraph (1) of this Regulation, the Government of each Party shall issue, or cause to be issued, detailed requirements on the design, construction, equipment and operation of such ships.
- (3) In respect of chemical tankers, the requirements referred to in paragraph (2) of this Regulation shall contain at least all the provisions given in the Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk adopted by the Assembly of the Organization in Resolution A.212(VII) and as may be amended by the Organization, provided that the amendments to that Code are adopted and brought into force in accordance with the provisions of Article 16 of the present Convention for amendment procedures to an Appendix to an Annex.

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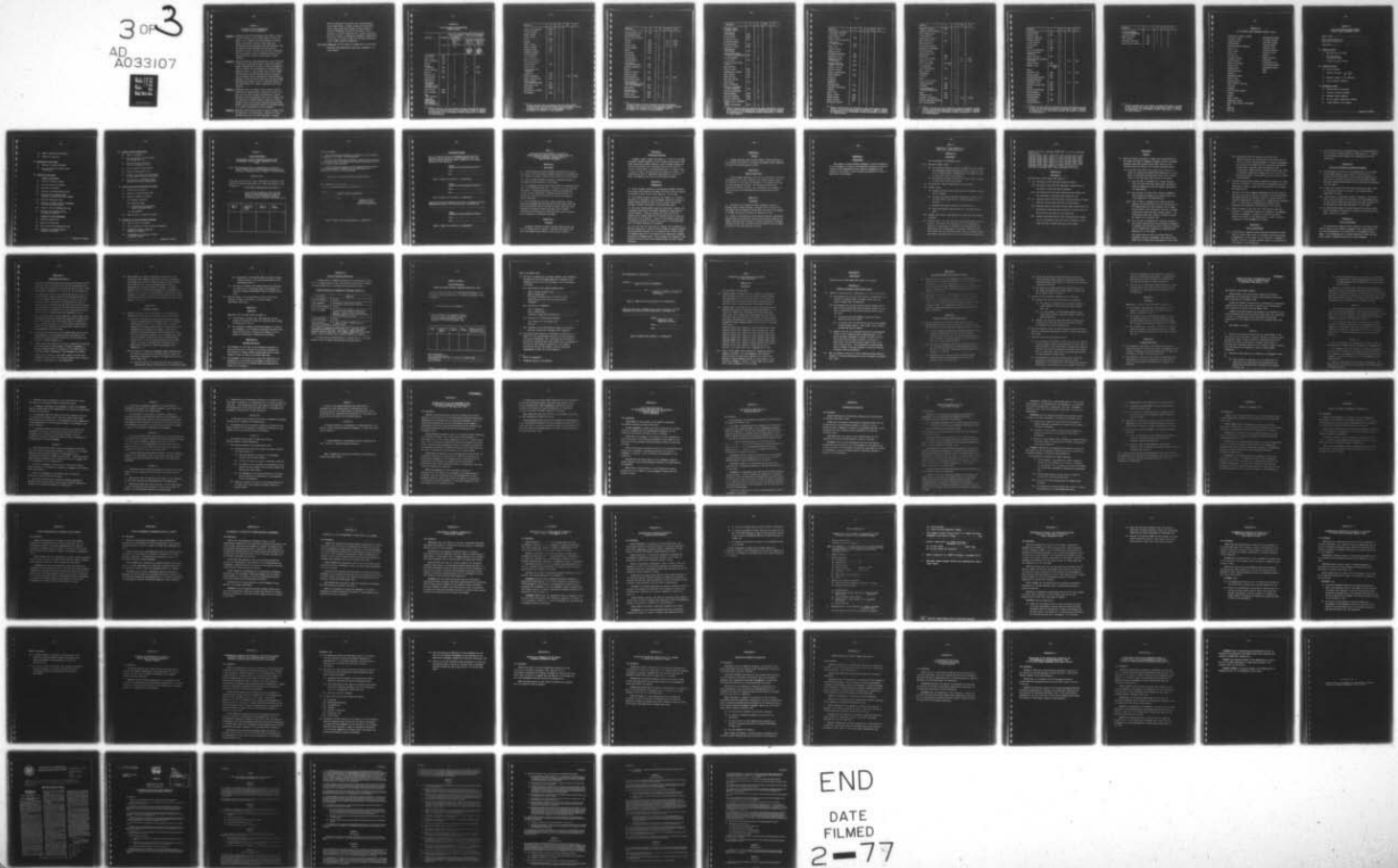
COAST GUARD WASHINGTON D C OFFICE OF MERCHANT MARINE--ETC F/G 13/12
ACTIVITIES RELATING TO TITLE II PORTS AND WATERWAYS SAFETY ACT --ETC(U)
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APPENDIX I

GUIDELINES FOR THE CATEGORIZATION
OF NOXIOUS LIQUID SUBSTANCES

Category A Substances which are bioaccumulated and liable to produce a hazard to aquatic life or human health; or which are highly toxic to aquatic life (as expressed by a Hazard Rating 4, defined by a T_{Lm} less than 1 ppm); and additionally certain substances which are moderately toxic to aquatic life (as expressed by a Hazard Rating 3, defined by a T_{Lm} of 1 or more, but less than 10 ppm) when particular weight is given to additional factors in the hazard profile or to special characteristics of the substance.

Category B Substances which are bioaccumulated with a short retention of the order of one week or less; or which are liable to produce tainting of the sea food; or which are moderately toxic to aquatic life (as expressed by a Hazard Rating 3, defined by a T_{Lm} of 1 ppm or more, but less than 10 ppm); and additionally certain substances which are slightly toxic to aquatic life (as expressed by a Hazard Rating 2, defined by a T_{Lm} of 10 ppm or more, but less than 100 ppm) when particular weight is given to additional factors in the hazard profile or to special characteristics of the substance.

Category C Substances which are slightly toxic to aquatic life (as expressed by a Hazard Rating 2, defined by a T_{Lm} of 10 or more, but less than 100 ppm); and additionally certain substances which are practically non-toxic to aquatic life (as expressed by a Hazard Rating 1, defined by a T_{Lm} of 100 ppm or more, but less than 1,000 ppm) when particular weight is given to additional factors in the hazard profile or to special characteristics of the substance.

Category D Substances which are practically non-toxic to aquatic life, (as expressed by a Hazard Rating 1, defined by a T_{Lm} of 100 ppm or more, but less than 1,000 ppm); or causing

deposits blanketing the seafloor with a high biochemical oxygen demand (BOD); or highly hazardous to human health, with an LD₅₀ of less than 5 mg/kg; or produce moderate reduction of amenities because of persistency, smell or poisonous or irritant characteristics, possibly interfering with use of beaches; or moderately hazardous to human health, with an LD₅₀ of 5 mg/kg or more, but less than 50 mg/kg and produce slight reduction of amenities.

Other Liquid Substances (for the purposes of Regulation 4 of this Annex)

Substances other than those categorized in Categories A, B, C and D above.

APPENDIX II

LIST OF NOXIOUS LIQUID SUBSTANCES
CARRIED IN BULK

| Substance | UN Number | Pollution Category for operational discharge | | Residual concentration (per cent by weight) | |
|---|-----------|--|-------------------------------|---|-----------------------------|
| | | (Regulation 3 of Annex II) | (Regulation 5(1) of Annex II) | (Regulation 5(7) of Annex II) | |
| | | I | II | III | IV |
| | | | | <u>Outside special areas</u> | <u>Within special areas</u> |
| Acetaldehyde | 1089 | | C | | |
| Acetic acid | 1842 | | C | | |
| Acetic anhydride | 1715 | | C | | |
| Acetone | 1090 | | D | | |
| Acetone cyanohydrin | 1541 | | A | 0.1 | 0.05 |
| Acetyl chloride | 1717 | | C | | |
| Acrolein | 1092 | | A | 0.1 | 0.05 |
| Acrylic acid* | - | | C | | |
| Acrylonitrile | 1093 | | B | | |
| Adiponitrile | - | | D | | |
| Alkylbenzene sulfonate (straight chain) | - | | C | | |
| (branched chain) | | | B | | |
| Allyl alcohol | 1098 | | B | | |
| Allyl chloride | 1100 | | C | | |
| Alum (15% solution) | - | | D | | |
| Aminoethyl-ethanolamine (Hydroxyethyl-ethylenediamine)* | - | | D | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|---|------|----|------|-------|
| Ammonia (28% aqueous) | 1005 | B | | |
| iso-Amyl acetate | 1104 | C | | |
| n-Amyl acetate | 1104 | C | | |
| n-Amyl alcohol | - | D | | |
| Aniline | 1547 | C | | |
| Benzene | 1114 | C | | |
| Benzyl alcohol | - | D | | |
| Benzyl chloride | 1738 | B | | |
| n-Butyl acetate | 1123 | D | | |
| sec-Butyl acetate | 1124 | D | | |
| n-Butyl acrylate | - | D | | |
| Butyl butyrate* | - | B | | |
| Butylene glycol(s) | - | D | | |
| Butyl methacrylate | - | D | | |
| n-Butyraldehyde | 1129 | B | | |
| Butyric acid | - | B | | |
| Calcium hydroxide (solution) | - | D | | |
| Camphor oil | 1130 | B | | |
| Carbon disulphide | 1131 | A | 0.01 | 0.005 |
| Carbon tetrachloride | 1846 | B | | |
| Caustic potash (Potassium hydroxide) | 1814 | C | | |
| Chloroacetic acid | 1750 | C | | |
| Chloroform | 1888 | B | | |
| Chlorohydrins (crude)* | - | D | | |
| Chloroprene* | 1991 | C | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|--|------|----|-----|------|
| Chlorosulphonic acid | 1754 | C | | |
| para-Chlorotoluene | - | B | | |
| Citric acid (10%-25%) | - | D | | |
| Creosote | 1334 | A | 0.1 | 0.05 |
| Cresols | 2076 | A | 0.1 | 0.05 |
| Cresylic acid | 2022 | A | 0.1 | 0.05 |
| Crotonaldehyde | 1143 | B | | |
| Cumene | 1918 | C | | |
| Cyclohexane | 1145 | C | | |
| Cyclohexanol | - | D | | |
| Cyclohexanone | 1915 | D | | |
| Cyclohexylamine* | - | D | | |
| para-Cymene (Isopropyltoluene)* | 2046 | D | | |
| Decahydronaphthalene | 1147 | D | | |
| Decane* | - | D | | |
| Diacetone alcohol* | 1148 | D | | |
| Dibenzyl ether* | - | C | | |
| Dichlorobenzenes | 1591 | A | 0.1 | 0.05 |
| Dichloroethyl ether | 1916 | B | | |
| Dichloropropene - Dichloropropane mixture (D.D. Soil fumigant) | 2047 | B | | |
| Diethylamine | 1154 | C | | |
| Diethylbenzene (mixed isomers) | 2049 | C | | |
| Diethyl ether | 1155 | D | | |
| Diethylenetriamine* | 2079 | C | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|---|------|----|-----|----|
| Diethylene glycol monoethyl ether | - | C | | |
| Diethylketone (3-Pentanone) | 1156 | D | | |
| Diisobutylene* | 2050 | D | | |
| Diisobutyl ketone | 1157 | D | | |
| Diisopropanolamine | - | C | | |
| Diisopropylamine | 1158 | C | | |
| Diisopropyl ether* | 1159 | D | | |
| Dimethylamine (40% aqueous) | 1160 | C | | |
| Dimethylethanolamine (2-Dimethylaminoethanol)* | 2051 | C | | |
| Dimethylformamide | - | D | | |
| 1, 4-Dioxane* | 1165 | C | | |
| Diphenyl/Diphenyloxide, mixtures* | - | D | | |
| Dodecylbenzene | - | C | | |
| Epichlorohydrin | 2023 | B | | |
| 2-Ethoxyethyl acetate* | 1172 | D | | |
| Ethyl acetate | 1173 | D | | |
| Ethyl acrylate | 1917 | D | | |
| Ethyl amyl ketone* | - | C | | |
| Ethylbenzene | 1175 | C | | |
| Ethyl cyclohexane | - | D | | |
| Ethylene chlorohydrin (2-Chloro-ethanol) | 1135 | D | | |
| Ethylene cyanohydrin* | - | D | | |
| Ethylenediamine | 1604 | C | | |
| Ethylene dibromide | 1605 | B | | |
| Ethylene dichloride | 1184 | B | | |
| Ethylene glycol monoethyl ether (Methyl cellosolve) | 1171 | D | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|---|------|----|-----|----|
| 2-Ethylhexyl acrylate* | - | D | | |
| 2-Ethylhexyl alcohol | - | C | | |
| Ethyl lactate* | 1192 | D | | |
| 2-Ethyl 3-propylacrolein* | - | B | | |
| Formaldehyde (37-50% solution) | 1198 | C | | |
| Formic acid | 1779 | D | | |
| Furfuryl alcohol | - | C | | |
| Heptanoic acid* | - | D | | |
| Hexamethylenediamine* | 1783 | C | | |
| Hydrochloric acid | 1789 | D | | |
| Hydrofluoric acid (40% aqueous) | 1790 | B | | |
| Hydrogen peroxide (greater than 60%) | 2015 | C | | |
| Isobutyl acrylate | - | D | | |
| Isobutyl alcohol | 1212 | D | | |
| Isobutyl methacrylate | - | D | | |
| Isobutyraldehyde | 2045 | C | | |
| Isooctane* | - | D | | |
| Isopentane | - | D | | |
| Isophorone | - | D | | |
| Isopropylamine | 1221 | C | | |
| Isopropyl cyclohexane | - | D | | |
| Isoprene | 1218 | D | | |
| Lactic acid | - | D | | |
| Mesityl oxide* | 1229 | C | | |
| Methyl acetate | 1231 | D | | |
| Methyl acrylate | 1919 | C | | |
| Methylamyl alcohol | - | D | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|--|-----------|----|------|-------|
| Methylene chloride | 1593 | B | | |
| 2-Methyl-5-Ethylpyridine* | - | B | | |
| Methyl methacrylate | 1247 | D | | |
| 2-Methylpentene* | - | D | | |
| alpha-Methylstyrene* | - | D | | |
| Monochlorobenzene | 1134 | B | | |
| Monoethanolamine | - | D | | |
| Monoisopropanolamine | - | C | | |
| Monomethyl ethanolamine | - | C | | |
| Mononitrobenzene | - | C | | |
| Monoisopropylamine | - | C | | |
| Morpholine* | 2054 | C | | |
| Naphthalene (molten) | 1334 | A | 0.1 | 0.05 |
| Naphthenic acids* | - | A | 0.1 | 0.05 |
| Nitric acid (90%) | 2031/2032 | C | | |
| 2-Nitropropane | - | D | | |
| ortho-Nitrotoluene | 1664 | C | | |
| Nonyl alcohol* | - | C | | |
| Nonylphenol | - | C | | |
| n-Octanol | - | C | | |
| Oleum | 1831 | C | | |
| Oxalic acid (10-25%) | - | D | | |
| Pentachloroethane | 1669 | B | | |
| n-Pentane | 1265 | C | | |
| Perchloroethylene (Tetrachloroethylene) | 1897 | B | | |
| Phenol | 1671 | B | | |
| Phosphoric acid | 1805 | D | | |
| Phosphorus (elemental) | 1338 | A | 0.01 | 0.005 |
| Phthalic anhydride (molten) | - | C | | |
| beta-Propiolactone* | - | B | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|---|--------------------|----|-----|------|
| Propionaldehyde | 1275 | D | | |
| Propionic acid | 1848 | D | | |
| Propionic anhydride | - | D | | |
| n-Propyl acetate* | 1276 | C | | |
| n-Propyl alcohol | 1274 | D | | |
| n-Propylamine | 1277 | C | | |
| Pyridine | 1282 | B | | |
| Silicon tetrachloride | 1818 | D | | |
| Sodium bichromate (solution) | - | C | | |
| Sodium hydroxide | 1824 | C | | |
| Sodium pentachlorophenate (solution) | - | A | 0.1 | 0.05 |
| Styrene monomer | 2055 | C | | |
| Sulphuric acid | 1830/1831/ 1832 | C | | |
| Tallow | - | D | | |
| Tetraethyl lead | 1649 | A | 0.1 | 0.05 |
| Tetrahydrofuran | 2056 | D | | |
| Tetrahydronaphthalene | 1540 | C | | |
| Tetramethylbenzene | - | D | | |
| Tetramethyl lead | 1649 | A | 0.1 | 0.05 |
| Titanium tetrachloride | 1838 | D | | |
| Toluene | 1294 | C | | |
| Toluene diisocyanate* | 2078 | B | | |
| Trichloroethane | - | C | | |
| Trichloroethylene | 1710 | B | | |
| Triethanolamine | - | D | | |
| Triethylamine | 1296 | C | | |
| Trimethylbenzene* | - | C | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

| Substance | I | II | III | IV |
|--|------|----|-----|----|
| Tritolyl phosphate (Tricresyl phosphate)* | - | B | | |
| Turpentine (wood) | 1299 | B | | |
| Vinyl acetate | 1301 | C | | |
| Vinylidene chloride* | 1303 | B | | |
| Xylenes (mixed isomers) | 1307 | C | | |

* Asterisk indicates that the substance has been provisionally included in this list and that further data are necessary in order to complete the evaluation of its environmental hazards, particularly in relation to living resources.

APPENDIX III

LIST OF OTHER LIQUID SUBSTANCES CARRIED IN BULK

| | |
|--|----------------------|
| Acetonitrile (Methyl cyanide) | Polypropylene glycol |
| tert-Amyl alcohol | iso-Propyl acetate |
| n-Butyl alcohol | iso-Propyl alcohol |
| Butyrolactone | Propylene glycol |
| Calcium chloride (solution) | Propylene oxide |
| Castor oil | Propylene tetramer |
| Citric juices | Propylene trimer |
| Coconut oil | Sorbitol |
| Cod liver oil | Sulphur (liquid) |
| iso-Decyl alcohol | Tridecanol |
| n-Decyl alcohol | Triethylene glycol |
| Decyl octyl alcohol | Triethylenetetramine |
| Dibutyl ether | Tripropylene glycol |
| Diethanolamine | Water |
| Diethylene glycol | Wine |
| Dipentene | |
| Dipropylene glycol | |
| Ethyl alcohol | |
| Ethylene glycol | |
| Fatty alcohols (C ₁₂ -C ₂₀) | |
| Glycerine | |
| n-Heptane | |
| Heptene (mixed isomers) | |
| n-Hexane | |
| Ligroin | |
| Methyl alcohol | |
| Methylamyl acetate | |
| Methyl ethyl ketone (2-butanone) | |
| Milk | |
| Molasses | |
| Olive Oil | |

APPENDIX IV

CARGO RECORD BOOK FOR SHIPS CARRYING
NOXIOUS LIQUID SUBSTANCES IN BULK

Name of ship

Cargo carrying capacity of
each tank in cubic metres

Voyage from to

(a) Loading of cargo

1. Date and place of loading
2. Name and category
of cargo(es) loaded
3. Identity of tank(s) loaded

(b) Transfer of cargo

4. Date of transfer
5. Identity of tank(s) (i) From
(ii) To
6. Was(were) tank(s) in 5(i) emptied?
7. If not, quantity remaining

(c) Unloading of cargo

8. Date and place of unloading
9. Identity of tank(s) unloaded
10. Was(were) tank(s) emptied?
11. If not, quantity remaining in tank(s)
12. Is(are) tank(s) to be cleaned?

.....Signature of Master

13. Amount transferred to slop tank

14. Identity of slop tank

(d) Ballasting of cargo tanks

15. Identity of tank(s) ballasted

16. Date and position of ship at start of ballasting

(e) Cleaning of cargo tanks

Category A substances

17. Identity of tank(s) cleaned

18. Date and location of cleaning

19. Method(s) of cleaning

20. Location of reception facility used

21. Concentration of effluent when discharge to reception facility stopped

22. Quantity remaining in tank

23. Procedure and amount of water introduced into tank in final cleaning

24. Location, date of discharge into sea

25. Procedure and equipment used in discharge into the sea

Category B, C and D substances

26. Washing procedure used

27. Quantity of water used

28. Date, location of discharge into sea

29. Procedure and equipment used in discharge into the sea

..... Signature of Master

(f) Transfer of dirty ballast water

30. Identity of tank(s)
31. Date and position of ship at start of discharge into sea
32. Date and position of ship at finish of discharge into sea
33. Ship's speed(s) during discharge
34. Quantity discharged into sea
35. Quantity of polluted water transferred to slop tank(s) (identify slop tank(s))
36. Date and port of discharge to shore reception facilities (if applicable)

(g) Transfer from slop tank/disposal of residue

37. Identity of slop tank(s)
38. Quantity disposed from each tank
39. Method of disposal of residue:
 - (a) Reception facilities
 - (b) Mixed with cargo
 - (c) Transferred to another(other) tank(s) (identify tank(s))
 - (d) Other method
40. Date and port of disposal of residue

(h) Accidental or other exceptional discharge

41. Date and time of occurrence
42. Place or position of ship at time of occurrence
43. Approximate quantity, name and category of substance
44. Circumstances of discharge or escape and general remarks.

..... Signature of Master

APPENDIX V

Form of Certificate

INTERNATIONAL POLLUTION PREVENTION CERTIFICATE FOR
THE CARRIAGE OF NOXIOUS LIQUID SUBSTANCES IN BULK
(1973)

(Note: This Certificate shall be supplemented in the case of a chemical tanker by the certificate required pursuant to the provisions of Regulation 13(3) of Annex II of the Convention)

(Official Seal)

Issued under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, under the Authority of the Government of
(full official designation of the country)

by
(full official designation of the competent person or organization authorized under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973)

| Name of Ship | Distinctive Number or Letter | Port of Registry | Gross Tonnage |
|--------------|------------------------------|------------------|---------------|
| | | | |

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with the provisions of Regulation 10 of Annex II of the Convention.
2. That the survey showed that the design, construction and equipment of the ship are such as to minimize the uncontrolled discharge into the sea of noxious liquid substances.
3. That the following arrangements and procedures have been approved by the Administration in connexion with the implementation of Regulation 5 of Annex II of the Convention:

.....
 (Continued on the annexed signed and dated sheet(s))

This certificate is valid, until,
 subject to intermediate survey(s) at intervals of

Issued at
 (place of issue of Certificate)

..... 19.. ..
 (Signature of duly
 authorized official
 issuing the Certificate)

| | | | |
|--|--|--|--|
| | | | |
| | | | |

(Seal or stamp of the issuing Authority, as appropriate)

Intermediate surveys

This is to certify that at an intermediate survey required by Regulation 10(1)(c) of Annex II of the Convention, this ship and the condition thereof are found to comply with the relevant provisions of the Convention.

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

Under the provisions of Regulation 12(2) and (4) of Annex II of the Convention the validity of this Certificate is extended until

.....

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

ANNEX III

REGULATIONS FOR THE PREVENTION OF POLLUTION BY
HARMFUL SUBSTANCES CARRIED BY SEA IN PACKAGED FORMS, OR
IN FREIGHT CONTAINERS, PORTABLE TANKS OR
ROAD AND RAIL TANK WAGONS

Regulation 1

Application

- (1) Unless expressly provided otherwise, the Regulations of this Annex apply to all ships carrying harmful substances in packaged forms, or in freight containers, portable tanks or road and rail tank wagons.
- (2) Such carriage of harmful substances is prohibited except in accordance with the provisions of this Annex.
- (3) To supplement the provisions of this Annex the Government of each Party to the Convention shall issue, or cause to be issued, detailed requirements on packaging, marking and labelling, documentation, stowage, quantity limitations, exceptions and notification, for preventing or minimizing pollution of the marine environment by harmful substances.
- (4) For the purpose of this Annex, empty receptacles, freight containers, portable tanks and road and rail tank wagons which have been used previously for the carriage of harmful substances shall themselves be treated as harmful substances unless adequate precautions have been taken to ensure that they contain no residue that is hazardous to the marine environment.

Regulation 2

Packaging

Packagings, freight containers, portable tanks and road and rail tank wagons shall be adequate to minimize the hazard to the marine environment having regard to their specific contents.

Regulation 3

Marking and Labelling

Packages, whether shipped individually or in units or in freight containers, freight containers, portable tanks or road and rail tank wagons containing a harmful substance, shall be durably marked with the correct technical name (trade names shall not be used as the correct technical name), and further marked with a distinctive label or stencil of label, indicating that the contents are harmful. Such identification shall be supplemented where possible by any other means, for example by the use of the United Nations number.

Regulation 4

Documentation

- (1) In all documents relating to the carriage of harmful substances by sea where such substances are named, the correct technical name of the substances shall be used (trade names shall not be used).
- (2) The shipping documents supplied by the shipper shall include a certificate or declaration that the shipment offered for carriage is properly packed, marked and labelled and in proper condition for carriage to minimize the hazard to the marine environment.
- (3) Each ship carrying harmful substances shall have a special list or manifest setting forth the harmful substances on board and the location thereof. A detailed stowage plan which sets out the location of all harmful substances on board may be used in place of such special list or manifest. Copies of such documents shall also be retained on shore by the owner of the ship or his representative until the harmful substances are unloaded.
- (4) In a case where the ship carries a special list or manifest or a detailed stowage plan, required for the carriage of dangerous goods by the International Convention for the Safety of Life at Sea in force, the documents required for the purpose of this Annex may be combined with those for dangerous goods. Where documents are combined, a clear distinction shall be made between dangerous goods and other harmful substances.

Regulation 5

Stowage

Harmful substances shall be both properly stowed and secured so as to minimize the hazards to the marine environment without impairing the safety of ship and persons on board.

Regulation 6

Quantity Limitations

Certain harmful substances which are very hazardous to the marine environment may, for sound scientific and technical reasons, need to be prohibited for carriage or be limited as to the quantity which may be carried aboard any one ship. In limiting the quantity due consideration shall be given to size, construction and equipment of the ship as well as the packaging and the inherent nature of the substance.

Regulation 7

Exceptions

- (1) Discharge by jettisoning of harmful substances carried in packaged forms, freight containers, portable tanks or road and rail tank wagons shall be prohibited except where necessary for the purpose of securing the safety of the ship or saving life at sea.
- (2) Subject to the provisions of the present Convention, appropriate measures based on the physical, chemical and biological properties of harmful substances shall be taken to regulate the washing of leakages overboard provided that compliance with such measures would not impair the safety of the ship and persons on board.

Regulation 8

Notification

With respect to certain harmful substances, as may be designated by the Government of a Party to the Convention, the master or owner of the ship or his representative shall notify the appropriate port authority of the intent to load or unload such substances at least 24 hours prior to such action.

ANNEX IV

REGULATIONS FOR THE PREVENTION OF
POLLUTION BY SEWAGE FROM SHIPS

Regulation 1

Definitions

For the purposes of the present Annex:

- (1) "New ship" means a ship:
 - (a) for which the building contract is placed, or in the absence of a building contract, the keel of which is laid, or which is at a similar stage of construction, on or after the date of entry into force of this Annex; or
 - (b) the delivery of which is three years or more after the date of entry into force of this Annex.
- (2) "Existing ship" means a ship which is not a new ship.
- (3) "Sewage" means:
 - (a) Drainage and other wastes from any form of toilets, urinals, and WC scuppers;
 - (b) drainage from medical premises (dispensary, sick bay, etc.) via wash basins, wash tubs and scuppers located in such premises;
 - (c) drainage from spaces containing living animals; or
 - (d) other waste waters when mixed with the drainages defined above.
- (4) "Holding tank" means a tank used for the collection and storage of sewage.
- (5) "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of the present Convention "from the nearest land" off the north eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in

latitude 11° South, longitude 142°08' East to a point in latitude 10°35' South, longitude 141°55' East - thence to a point latitude 10°00' South, longitude 142°00' East, thence to a point latitude 9°10' South, longitude 143°52' East, thence to a point latitude 9°00' South, longitude 144°30' East, thence to a point latitude 13°00' South, longitude 146°00' East, thence to a point latitude 18°00' South, longitude 147°00' East, thence to a point latitude 21°00' South, longitude 153°00' East, thence to a point on the coast of Australia in latitude 24°42' South, longitude 153°15' East.

Regulation 2

Application

The provisions of this Annex shall apply to:

- (a) (i) new ships of 200 tons gross tonnage and above;
- (ii) new ships of less than 200 tons gross tonnage which are certified to carry more than 10 persons;
- (iii) new ships which do not have a measured gross tonnage and are certified to carry more than 10 persons; and
- (b) (i) existing ships of 200 tons gross tonnage and above, 10 years after the date of entry into force of this Annex;
- (ii) existing ships of less than 200 tons gross tonnage which are certified to carry more than 10 persons, 10 years after the date of entry into force of this Annex; and
- (iii) existing ships which do not have a measured gross tonnage and are certified to carry more than 10 persons, 10 years after the date of entry into force of this Annex.

Regulation 3

Surveys

- (1) Every ship which is required to comply with the provisions of this Annex and which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention shall be subject to the surveys specified below:
- (a) An initial survey before the ship is put in service or before the certificate required under Regulation 4 of this Annex is issued for the first time, which shall include a survey of the ship which shall be such as to ensure:
- (i) when the ship is equipped with a sewage treatment plant the plant shall meet operational requirements based on standards and the test methods developed by the Organization;
 - (ii) when the ship is fitted with a system to comminute and disinfect the sewage, such a system shall be of a type approved by the Administration;
 - (iii) when the ship is equipped with a holding tank the capacity of such tank shall be to the satisfaction of the Administration for the retention of all sewage having regard to the operation of the ship, the number of persons on board and other relevant factors. The holding tank shall have a means to indicate visually the amount of its contents; and
 - (iv) that the ship is equipped with a pipeline leading to the exterior convenient for the discharge of sewage to a reception facility and that such a pipeline is fitted with a standard shore connection in compliance with Regulation 11 of this Annex.

This survey shall be such as to ensure that the equipment, fittings, arrangements and material fully comply with the applicable requirements of this Annex.

- (b) Periodical surveys at intervals specified by the Administration but not exceeding five years which shall be such as to ensure that the equipment, fittings, arrangements and material fully comply with the applicable requirements of this Annex. However, where the duration of the International Sewage Pollution Prevention Certificate (1973) is extended as specified in Regulation 7(2) or (4) of this Annex, the interval of the periodical survey may be extended correspondingly.
- (2) The Administration shall establish appropriate measures for ships which are not subject to the provisions of paragraph (1) of this Regulation in order to ensure that the provisions of this Annex are complied with.
- (3) Surveys of the ship as regards enforcement of the provisions of this Annex shall be carried out by officers of the Administration. The Administration may, however, entrust the surveys either to surveyors nominated for the purpose or to organizations recognized by it. In every case the Administration concerned fully guarantees the completeness and efficiency of the surveys.
- (4) After any survey of the ship under this Regulation has been completed, no significant change shall be made in the equipment, fittings, arrangements, or material covered by the survey without the approval of the Administration, except the direct replacement of such equipment or fittings.

Regulation 4

Issue of Certificate

- (1) An International Sewage Pollution Prevention Certificate (1973) shall be issued, after survey in accordance with the provisions of Regulation 3 of this Annex, to any ship which is engaged in voyages to ports or offshore terminals under the jurisdiction of other Parties to the Convention.

- (2) Such Certificate shall be issued either by the Administration or by any persons or organization duly authorized by it. In every case the Administration assumes full responsibility for the Certificate.

Regulation 5

Issue of a Certificate by Another Government

- (1) The Government of a Party to the Convention may, at the request of the Administration, cause a ship to be surveyed and, if satisfied that the provisions of this Annex are complied with, shall issue or authorize the issue of an International Sewage Pollution Prevention Certificate (1973) to the ship in accordance with this Annex.
- (2) A copy of the Certificate and a copy of the survey report shall be transmitted as early as possible to the Administration requesting the survey.
- (3) A Certificate so issued shall contain a statement to the effect that it has been issued at the request of the Administration and it shall have the same force and receive the same recognition as the Certificate issued under Regulation 4 of this Annex.
- (4) No International Sewage Pollution Prevention Certificate (1973) shall be issued to a ship which is entitled to fly the flag of a State, which is not a Party.

Regulation 6

Form of Certificate

The International Sewage Pollution Prevention Certificate (1973) shall be drawn up in an official language of the issuing country in the form corresponding to the model given in the Appendix to this Annex. If the language used is neither English nor French, the text shall include a translation into one of these languages.

Regulation 7

Duration of Certificate

- (1) An International Sewage Pollution Prevention Certificate (1973) shall be issued for a period specified by the Administration, which shall not exceed five years from the date of issue, except as provided in paragraphs (2), (3) and (4) of this Regulation.
- (2) If a ship at the time when the Certificate expires is not in a port or offshore terminal under the jurisdiction of the Party to the Convention whose flag the ship is entitled to fly, the Certificate may be extended by the Administration, but such extension shall be granted only for the purpose of allowing the ship to complete its voyage to the State whose flag the ship is entitled to fly or in which it is to be surveyed and then only in cases where it appears proper and reasonable to do so.
- (3) No Certificate shall be thus extended for a period longer than five months and a ship to which such extension is granted shall not on its arrival in the State whose flag it is entitled to fly or the port in which it is to be surveyed, be entitled by virtue of such extension to leave that port or State without having obtained a new Certificate.
- (4) A Certificate which has not been extended under the provisions of paragraph (2) of this Regulation may be extended by the Administration for a period of grace of up to one month from the date of expiry stated on it.
- (5) A Certificate shall cease to be valid if significant alterations have taken place in the equipment, fittings, arrangement or material required without the approval of the Administration, except the direct replacement of such equipment or fittings.
- (6) A Certificate issued to a ship shall cease to be valid upon transfer of such a ship to the flag of another State, except as provided in paragraph (7) of this Regulation.

- (7) Upon transfer of a ship to the flag of another Party, the Certificate shall remain in force for a period not exceeding five months provided that it would not have expired before the end of that period, or until the Administration issues a replacement Certificate, whichever is earlier. As soon as possible after the transfer has taken place the Government of the Party whose flag the ship was formerly entitled to fly shall transmit to the Administration a copy of the Certificate carried by the ship before the transfer and, if available, a copy of the relevant survey report.

Regulation 8

Discharge of Sewage

- (1) Subject to the provisions of Regulation 9 of this Annex, the discharge of sewage into the sea is prohibited, except when:
- (a) the ship is discharging comminuted and disinfected sewage using a system approved by the Administration in accordance with Regulation 3(1)(a) at a distance of more than four nautical miles from the nearest land, or sewage which is not comminuted or disinfected at a distance of more than 12 nautical miles from the nearest land, provided that in any case, the sewage that has been stored in holding tanks shall not be discharged instantaneously but at a moderate rate when the ship is en route and proceeding at not less than 4 knots; the rate of discharge shall be approved by the Administration based upon standards developed by the Organization; or
 - (b) the ship has in operation an approved sewage treatment plant which has been certified by the Administration to meet the operational requirements referred to in Regulation 3(1)(a)(i) of this Annex, and
 - (i) the test results of the plant are laid down in the ship's International Sewage Pollution Prevention Certificate (1973);

- (ii) additionally, the effluent shall not produce visible floating solids in, nor cause discolouration of the surrounding water; or
 - (c) the ship is situated in the waters under the jurisdiction of a State and is discharging sewage in accordance with such less stringent requirements as may be imposed by such State.
- (2) When the sewage is mixed with wastes or waste water having different discharge requirements, the more stringent requirements shall apply.

Regulation 9

Exceptions

Regulation 8 of this Annex shall not apply to:

- (a) the discharge of sewage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or
- (b) the discharge of sewage resulting from damage to a ship or its equipment if all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the discharge.

Regulation 10

Reception Facilities

- (1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of sewage, without causing undue delay to ships, adequate to meet the needs of the ships using them.
- (2) The Government of each Party shall notify the Organization for transmission to the Contracting Governments concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

Regulation 11

Standard Discharge Connections

To enable pipes of reception facilities to be connected with the ship's discharge pipeline, both lines shall be fitted with a standard discharge connection in accordance with the following table:

Standard Dimensions of Flanges for Discharge Connections

| Description | Dimension |
|--|--|
| Outside diameter | 210 mm |
| Inner diameter | According to pipe outside diameter |
| Bolt circle diameter | 170 mm |
| Slots in flange | 4 holes 18 mm in diameter equidistantly placed on a bolt circle of the above diameter, slotted to the flange periphery. The slot width to be 18 mm |
| Flange thickness | 16 mm |
| Bolts and nuts: quantity and diameter | 4, each of 16 mm in diameter and of suitable length |
| The flange is designed to accept pipes up to a maximum internal diameter of 100 mm and shall be of steel or other equivalent material having a flat face. This flange, together with a suitable gasket, shall be suitable for a service pressure of 6 kg/cm ² . | |

For ships having a moulded depth of 5 metres and less, the inner diameter of the discharge connection may be 38 millimetres.

APPENDIX TO ANNEX IV

Form of Certificate

INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE (1973)

Issued under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973, under the Authority of the Government of

.....
(full designation of the country)

by
(full designation of the competent person or organization authorized under the provisions of the International Convention for the Prevention of Pollution from Ships, 1973)

| Name of Ship | Distinctive Number or Letter | Port of Registry | Gross Tonnage | Number of persons which the ship is certified to carry |
|--------------|------------------------------|------------------|---------------|--|
| | | | | |

New/existing ship*
Date of building contract
Date on which keel was laid or ship was at a similar stage of construction
Date of delivery

* Delete as appropriate

THIS IS TO CERTIFY THAT:

- (1) The ship is equipped with a sewage treatment plant/comminuter/ holding tank* and a discharge pipeline in compliance with Regulation 3(1)(a)(i) to (iv) of Annex IV of the Convention as follows:

*(a) Description of the sewage treatment plant:

Type of sewage treatment plant
Name of manufacturer
The sewage treatment plant is certified by the
Administration to meet the following effluent
standards:**

*(b) Description of comminuter:

Type of comminuter
Name of manufacturer
Standard of sewage after disinfection

*(c) Description of holding tank equipment:

Total capacity of the holding tankm³
Location

(d) A pipeline for the discharge of sewage to a reception facility, fitted with a standard shore connection.

- (2) The ship has been surveyed in accordance with Regulation 3 of Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973, concerning the prevention of pollution by sewage and the survey showed that the equipment of the ship and the condition thereof are in all respects satisfactory and the ship complies with the applicable requirements of Annex IV of the Convention.

* Delete as appropriate

** Parameters should be incorporated

This Certificate is valid until

Issued at
(place of issue of Certificate)

.....19.....
(Signature of official issuing the Certificate)

(Seal or stamp of the Issuing Authority, as appropriate)

Under the provisions of Regulation 7(2) and (4) of Annex IV of the Convention the validity of this Certificate is extended until

.....

Signed
(Signature of duly authorized official)

Place

Date

(Seal or stamp of the Authority, as appropriate)

ANNEX V

REGULATIONS FOR THE PREVENTION OF POLLUTION
BY GARBAGE FROM SHIPS

Regulation 1

Definitions

For the purposes of this Annex:

- (1) "Garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to the present Convention.
- (2) "Nearest land". The term "from the nearest land" means from the baseline from which the territorial sea of the territory in question is established in accordance with international law except that, for the purposes of the present Convention "from the nearest land" off the north eastern coast of Australia shall mean from a line drawn from a point on the coast of Australia in latitude 11° South, longitude $142^{\circ}08'$ East to a point in latitude $10^{\circ}35'$ South, longitude $141^{\circ}55'$ East, thence to a point latitude $10^{\circ}00'$ South, longitude $142^{\circ}00'$ East, thence to a point latitude $9^{\circ}10'$ South, longitude $143^{\circ}52'$ East, thence to a point latitude $9^{\circ}00'$ South, longitude $144^{\circ}30'$ East, thence to a point latitude $13^{\circ}00'$ South, longitude $144^{\circ}00'$ East, thence to a point latitude $15^{\circ}00'$ South, longitude $146^{\circ}00'$ East, thence to a point latitude $18^{\circ}00'$ South, longitude $147^{\circ}00'$ East, thence to a point latitude $21^{\circ}00'$ South, longitude $153^{\circ}00'$ East, thence to a point on the coast of Australia in latitude $24^{\circ}42'$ South, longitude $153^{\circ}15'$ East.
- (3) "Special area" means a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required. Special areas shall include those listed in Regulation 5 of this Annex.

Regulation 2

Application

The provisions of this Annex shall apply to all ships.

Regulation 3

Disposal of Garbage Outside Special Areas

- (1) Subject to the provisions of Regulations 4, 5 and 6 of this Annex:
 - (a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags is prohibited;
 - (b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:
 - (i) 25 nautical miles for dunnage, lining and packing materials which will float;
 - (ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;
 - (c) disposal into the sea of garbage specified in sub-paragraph (b)(ii) of this Regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with openings no greater than 25 millimetres.
- (2) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

Regulation 4

Special Requirements for Disposal of Garbage

- (1) Subject to the provisions of paragraph (2) of this Regulation, the disposal of any materials regulated by this Annex is prohibited from fixed or floating platforms engaged in the exploration, exploitation and associated offshore processing of sea-bed mineral resources, and from all other ships when alongside or within 500 metres of such platforms.
- (2) The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder from such fixed or floating platforms located more than 12 nautical miles from land and all other ships when alongside or within 500 metres of such platforms. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimetres.

Regulation 5

Disposal of Garbage within Special Areas

- (1) For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area and the "Gulfs area" which are defined as follows:
 - (a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar at the meridian of $5^{\circ}36'\text{W}$.
 - (b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at $57^{\circ}44.8'\text{N}$.
 - (c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N .

- (d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane ($12^{\circ}08.5'N$, $43^{\circ}19.5'E$) and Husn Murad ($12^{\circ}40.4'N$, $43^{\circ}30.2'E$).
 - (e) The "Gulfs area" means the sea area located north west of the rhumb line between Ras al Hadd ($22^{\circ}30'N$, $59^{\circ}48'E$) and Ras al Fasteh ($25^{\circ}04'N$, $61^{\circ}25'E$).
- (2) Subject to the provisions of Regulation 6 of this Annex:
- (a) disposal into the sea of the following is prohibited:
 - (i) all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags; and
 - (ii) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;
 - (b) disposal into the sea of food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land.
- (3) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.
- (4) Reception facilities within special areas:
- (a) The Government of each Party to the Convention, the coastline of which borders a special area undertakes to ensure that as soon as possible in all ports within a special area, adequate reception facilities are provided in accordance with Regulation 7 of this Annex, taking into account the special needs of ships operating in these areas.
 - (b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph (a) of this Regulation. Upon receipt of sufficient notifications the Organization shall establish a date from

which the requirements of this Regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.

- (c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available, shall fully comply with the requirements of this Regulation.

Regulation 6

Exceptions

Regulations 3, 4 and 5 of this Annex shall not apply to:

- (a) the disposal of garbage from a ship necessary for the purpose of securing the safety of a ship and those on board or saving life at sea; or
- (b) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken before and after the occurrence of the damage, for the purpose of preventing or minimizing the escape; or
- (c) the accidental loss of synthetic fishing nets or synthetic material incidental to the repair of such nets, provided that all reasonable precautions have been taken to prevent such loss.

Regulation 7

Reception Facilities

- (1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of the ships using them.
- (2) The Government of each Party shall notify the Organization for transmission to the Parties concerned of all cases where the facilities provided under this Regulation are alleged to be inadequate.

PROTOCOL RELATING TO INTERVENTION ON THE
HIGH SEAS IN CASES OF MARINE POLLUTION
BY SUBSTANCES OTHER THAN OIL, 1973

THE PARTIES TO THE PRESENT PROTOCOL,

BEING PARTIES to the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, done at Brussels on 29 November 1969,

TAKING INTO ACCOUNT the Resolution on International Co-operation Concerning Pollutants other than Oil adopted by the International Legal Conference on Marine Pollution Damage, 1969,

FURTHER TAKING INTO ACCOUNT that pursuant to the Resolution, the Inter-Governmental Maritime Consultative Organization has intensified its work, in collaboration with all interested international organizations, on all aspects of pollution by substances other than oil,

HAVE AGREED as follows:

ARTICLE I

1. Parties to the present Protocol may take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution by substances other than oil following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences.
2. "Substances other than oil" as referred to in paragraph 1 shall be:
 - (a) those substances enumerated in a list which shall be established by an appropriate body designated by the Organization and which shall be annexed to the present Protocol, and

(b) those other substances which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

3. Whenever an intervening Party takes action with regard to a substance referred to in paragraph 2(b) above that Party shall have the burden of establishing that the substance, under the circumstances present at the time of the intervention, could reasonably pose a grave and imminent danger analogous to that posed by any of the substances enumerated in the list referred to in paragraph 2(a) above.

ARTICLE II

1. The provisions of paragraph 2 of Article I and of Articles II to VIII of the Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969, and the Annex thereto as they relate to oil, shall be applicable with regard to the substances referred to in Article I of the present Protocol.

2. For the purpose of the present Protocol the list of experts referred to in Articles III(c) and IV of the Convention shall be extended to include experts qualified to give advice in relation to substances other than oil. Nominations to the list may be made by Member States of the Organization and by Parties to the present Protocol.

ARTICLE III

1. The list referred to in paragraph 2(a) of Article I shall be maintained by the appropriate body designated by the Organization.

2. Any amendment to the list proposed by a Party to the present Protocol shall be submitted to the Organization and circulated by it to all Members of the Organization and all Parties to the present Protocol at least three months prior to its consideration by the appropriate body.

3. Parties to the present Protocol whether or not Members of the Organization shall be entitled to participate in the proceedings of the appropriate body.

4. Amendments shall be adopted by a two-thirds majority of only the Parties to the present Protocol present and voting.
5. If adopted in accordance with paragraph 4 above, the amendment shall be communicated by the Organization to all Parties to the present Protocol for acceptance.
6. The amendment shall be deemed to have been accepted at the end of a period of six months after it has been communicated, unless within that period an objection to the amendment has been communicated to the Organization by not less than one-third of the Parties to the present Protocol.
7. An amendment deemed to have been accepted in accordance with paragraph 6 above shall enter into force three months after its acceptance for all Parties to the present Protocol, with the exception of those which before that date have made a declaration of non-acceptance of the said amendment.

ARTICLE IV

1. The present Protocol shall be open for signature by the States which have signed the Convention referred to in Article II or acceded thereto, and by any State invited to be represented at the International Conference on Marine Pollution 1973. The Protocol shall remain open for signature from 15 January 1974 until 31 December 1974 at the Headquarters of the Organization.
2. Subject to paragraph 4 of this Article, the present Protocol shall be subject to ratification, acceptance or approval by the States which have signed it.
3. Subject to paragraph 4, this Protocol shall be open for accession by States which did not sign it.
4. The present Protocol may be ratified, accepted, approved or acceded to only by States which have ratified, accepted, approved or acceded to the Convention referred to in Article II.

ARTICLE V

1. Ratification, acceptance, approval or accession shall be effected by the deposit of a formal instrument to that effect with the Secretary-General of the Organization.
2. Any instrument of ratification, acceptance, approval or accession deposited after the entry into force of an amendment to the present Protocol with respect to all existing Parties or after the completion of all measures required for the entry into force of the amendment with respect to all existing Parties shall be deemed to apply to the Protocol as modified by the amendment.

ARTICLE VI

1. The present Protocol shall enter into force on the ninetieth day following the date on which fifteen States have deposited instruments of ratification, acceptance, approval or accession with the Secretary-General of the Organization, provided however that the present Protocol shall not enter into force before the Convention referred to in Article II has entered into force.
2. For each State which subsequently ratifies, accepts, approves or accedes to it, the present Protocol shall enter into force on the ninetieth day after the deposit by such State of the appropriate instrument.

ARTICLE VII

1. The present Protocol may be denounced by any Party at any time after the date on which the Protocol enters into force for that Party.
2. Denunciation shall be effected by the deposit of an instrument to that effect with the Secretary-General of the Organization.
3. Denunciation shall take effect one year, or such longer period as may be specified in the instrument of denunciation, after its deposit with the Secretary-General of the Organization.

4. Denunciation of the Convention referred to in Article II by a Party shall be deemed to be a denunciation of the present Protocol by that Party. Such denunciation shall take effect on the same day as the denunciation of the Convention takes effect in accordance with paragraph 3 of Article XII of that Convention.

ARTICLE VIII

1. A conference for the purpose of revising or amending the present Protocol may be convened by the Organization.
2. The Organization shall convene a conference of Parties to the present Protocol for the purpose of revising or amending it at the request of not less than one-third of the Parties.

ARTICLE IX

1. The present Protocol shall be deposited with the Secretary-General of the Organization.
2. The Secretary-General of the Organization shall:
 - (a) inform all States which have signed the present Protocol or acceded thereto of:
 - (i) each new signature or deposit of an instrument together with the date thereof;
 - (ii) the date of entry into force of the present Protocol;
 - (iii) the deposit of any instrument of denunciation of the present Protocol together with the date on which the denunciation takes effect;
 - (iv) any amendments to the present Protocol or its Annex and any objection or declaration of non-acceptance of the said amendment;
 - (b) transmit certified true copies of the present Protocol to all States which have signed the present Protocol or acceded thereto.

ARTICLE X

As soon as the present Protocol enters into force, a certified true copy thereof shall be transmitted by the Secretary-General of the Organization to the Secretariat of the United Nations for registration and publication in accordance with Article 102 of the Charter of the United Nations.

ARTICLE XI

The present Protocol is established in a single original in the English, French, Russian and Spanish languages, all four texts being equally authentic.

IN WITNESS WHEREOF the undersigned being duly authorized for that purpose have signed the present Protocol.

DONE AT LONDON this second day of November one thousand nine hundred and seventy-three.

ATTACHMENT 3

RESOLUTION 1

IMPLEMENTATION OF THE 1969 AMENDMENTS TO THE
INTERNATIONAL CONVENTION FOR THE PREVENTION
OF POLLUTION OF THE SEA BY OIL, 1954

THE CONFERENCE,

NOTING its main objectives as set out in Resolution A.237(VII) adopted by the Assembly of the Inter-Governmental Maritime Consultative Organization on 12 October 1971, as being the achievement, by 1975 if possible but certainly by the end of the decade, of the complete elimination of the wilful and intentional pollution of the seas by oil and noxious substances other than oil and the minimization of accidental spills,

NOTING FURTHER Recommendation 86(e) of the United Nations Conference on the Human Environment, 1972, which called upon Governments to participate fully in the present Conference as well as in other efforts with a view to bringing all significant sources of pollution within the marine environment under appropriate controls, including in particular, the complete elimination of deliberate pollution by oil from ships with the goal of achieving this by the middle of the present decade,

RECOGNIZING the importance of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as being the first multilateral instrument to be concluded with the prime objective of protecting the environment, and appreciating the significant contribution which that Convention has made in preserving the seas and coastal environment from pollution,

NOTING the Amendments to that Convention, set out in Resolution A.175(VI) adopted by the Assembly of the Organization on 21 October 1969, and considering that the implementation of those Amendments would be a major step towards the complete elimination of oil pollution and would bring about a significant reduction in the total quantity of oil reaching the sea,

BELIEVING that the International Convention for the Prevention of Pollution of the Sea from Ships, 1973, which was concluded by the present Conference will, when implemented, constitute a further important step towards the complete elimination of intentional pollution of the sea by harmful substances from ships,

BEING AWARE that some lapse of time will inevitably occur before the 1973 Convention can enter into force,

URGES Governments which have not yet accepted the 1969 Amendments to the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, to do so as a matter of urgency without awaiting the entry into force of the International Convention for the Prevention of Pollution from Ships, 1973.

RESOLUTION 2

RAPID ENTRY INTO FORCE OF
THE INTERNATIONAL CONVENTION FOR THE PREVENTION
OF POLLUTION FROM SHIPS, 1973
AND ITS AMENDMENTS

THE CONFERENCE,

BEING AWARE of the acuteness of the threat to the marine environment caused by pollution from ships,

HAVING DETERMINED to combat this form of pollution on the basis of and in accordance with the International Convention for the Prevention of Pollution from Ships, 1973, as adopted,

TAKING NOTE of paragraph (1) of Article 1 of this Convention by which the Parties to the Convention undertake to give effect to the provisions of the Convention and those Annexes thereto by which they are bound,

NOTES with particular interest Article 16 of the Convention which provides for a procedure accelerating the entry into force of amendments to Protocol I and to the Annexes and Appendices to the Convention,

REALIZES that the effectiveness of that amendment procedure largely depends on there being national procedures for rapid approval of amendments,

URGES States to become Parties to the Convention as soon as possible and to give effect to later amendments thereto with the minimum of delay.

RESOLUTION 3

THE COMPLETE ELIMINATION OF OIL
POLLUTION FROM SHIPS

THE CONFERENCE,

HAVING CONCLUDED the International Convention for the Prevention of Pollution from Ships, 1973,

BEING AWARE of Recommendation 86(e) adopted by the United Nations Conference on the Human Environment, 1972, recommending Governments, within the framework of the 1973 Inter-Governmental Maritime Consultative Organization Conference on Marine Pollution, inter alia, to strive towards complete elimination of deliberate pollution by oil from ships, with the goal of achieving this by the middle of the present decade,

NOTING that the Governing Council of the United Nations Environment Programme at its first session has requested the Executive Director to urge the Inter-Governmental Maritime Consultative Organization to set a time-limit for the complete prohibition of intentional oil discharge in the seas,

CONSIDERING that the Convention and particularly the regulations contained therein on the discharge of oil into the sea will be an important means of curbing pollution by oil from ships,

RECOGNIZING, however, that the Convention alone may not be sufficient for a satisfactory protection of the sea from pollution by oil from ships,

RECOMMENDS that Governments and other interested bodies concerned undertake concerted efforts, including the elaboration of additional regulations within the framework of the Organization and the provision of the necessary reception facilities, further to reduce the discharge of oil from ships into the sea with a view to the complete elimination of intentional pollution as soon as possible, but not later than the end of the present decade,

INVITES the Organization to take all possible measures to assist Governments in this task.

RESOLUTION 4

INFORMATION ON PENALTIES

THE CONFERENCE,

HAVING CONCLUDED the International Convention for the Prevention of Pollution from Ships, 1973,

NOTING that the penalties which shall be specified under the laws of the Parties to the Convention pursuant to Article 4 of this Convention must be adequate in severity to discourage violation of this Convention and must be equally severe irrespective of where the violation occurs,

CONSIDERING that each Party to this Convention has the sole competence to provide suitable penalties under its own laws,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization make available to all States Members of the Organization as well as Parties to the Convention information which might be relevant in considering a scale of suitable penalties applicable pursuant to Article 4 of the Convention.

RESOLUTION 5

INTENTIONAL POLLUTION OF THE SEA
AND ACCIDENTAL SPILLAGES

THE CONFERENCE,

NOTING that it was assigned the following two objectives by Resolution A.237(VII), adopted by the Assembly of the Intergovernmental Maritime Consultative Organization,

- (1) the complete elimination of wilful and intentional pollution of the sea by oil and noxious substances other than oil; and
- (2) the minimization of accidental spills;

these objectives to be achieved by 1975, if possible, but certainly by the end of the decade,

RECOGNIZING that it has primarily been as a result of extensive preparatory work within the Organization that the Conference has been able to prepare and open for signature the International Convention for the Prevention of Pollution from Ships, 1973,

BEING AWARE that the said Convention comprehensively covers the problem of intentional pollution by oil, noxious liquid substances in bulk, harmful substances in packaged forms or in freight containers or portable tanks or road and rail tank wagons, sewage and garbage, whereas it deals with the problem of accidental pollution only to a limited extent, bearing in mind that many aspects of this problem are and will continue to be dealt with within the framework of other technical Conventions relating to maritime safety,

BEING ALSO AWARE of the close relationship between ship safety and the prevention of pollution from ships,

RECOGNIZING ALSO that considerable progress has been made by the Organization in furtherance of the second objective, by developing proposed international rules and standards directed towards, or contributing to, the prevention, mitigation and minimization of accidental pollution, including the prevention of accidents to ships, minimization of spillages after accidents and mitigation of damage after spillages,

RECOGNIZING FURTHER that a considerable amount of work in this field leading to the formulation of, and amendments to, conventions for which the Organization is depositary, and other instruments relating to ship safety and prevention of pollution, has yet to be accomplished,

RECOMMENDS that the Organization pursue and encourage studies relating to pollution abatement in the marine environment such as:

- (a) collection of scientific data on the identification of harmful substances transported by ships and their effect on the marine environment;
- (b) collection of ship casualty statistics, particularly on casualties resulting in the pollution of the marine environment;
- (c) analysis of such casualty data including the interrelationship of average tanker size and age with incidents and magnitude of pollution casualties,

RECOMMENDS FURTHER that the Organization continue its work with high priority on the development of measures for the minimization of accidental spillages, particularly those relating to:

- (a) prevention of accidents to ships including:
 - (i) safe navigational procedures and traffic separation schemes for the prevention of collisions, strandings and groundings, this to include the ultimate development of international performance standards for navigational aids;
 - (ii) watchkeeping practices in port and at sea and the training and certification of seamen;
 - (iii) provision of modern navigational and communications equipment;
 - (iv) the operational procedures during the transfer, loading and unloading of oil and noxious substances;

- (v) manoeuvrability and controllability of large ships;
 - (vi) construction and equipment of ships carrying oil or noxious substances; and
 - (vii) safe carriage of dangerous goods in packaged forms or in freight containers or portable tanks or road and rail tank wagons,
- (b) minimization of the risk of escape of oil and other noxious substances in the event of maritime accidents, including facilitation of transfer of cargo in the event of accidents,
- (c) minimization of pollution damage to the marine environment including:
- (i) study and development of new techniques and methods for cleaning, recycling and disposing of hazardous substances carried by ships; and
 - (ii) technical study and development of devices and chemicals used in removing oil and other harmful substances discharged into the sea,

with a view to having appropriate action taken by way of the adoption and implementation at an early date of amendments to existing conventions relating to safety at sea and prevention of pollution or of new conventions, as appropriate.

RESOLUTION 6

CONTROL OF DISCHARGE OF OIL

THE CONFERENCE,

NOTING that all petroleum-derived oils are regulated under Annex I of the International Convention for the Prevention of Pollution from Ships, 1973,

NOTING FURTHER that the regulation of certain light refined petroleum oils under Annex I of the Convention introduces a new dimension and scope to international control of ship-generated oil pollution,

RECOGNIZING that different types of petroleum-derived oils may behave differently in the marine environment and may have different hazard characteristics, and

CONSIDERING that the behaviour and effects of all petroleum-derived oils in the marine environment, and in particular the methods and procedures for controlling their discharge from ships, are appropriate matters for further study by the Inter-Governmental Maritime Consultative Organization,

RECOMMENDS that the Organization take appropriate steps, at an early date, to review, on a comprehensive basis, the environmental problems created by the discharge of all petroleum-derived oils into the marine environment, with particular reference to the problems associated with the discharge of light refined oils and with a view to possible improvement of the provisions of Annex I of the Convention.

RESOLUTION 7

METHOD TO IDENTIFY THE SOURCE OF DISCHARGED OIL

THE CONFERENCE,

HAVING IN MIND Regulation 9 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, whereby the discharge of oil or oily mixtures from ships shall be prohibited except when such discharge satisfies specified conditions,

RECOGNIZING the need to ensure that any ship which has discharged oil or oily mixtures in contravention of the said Regulation shall be identified promptly and punished,

RECOGNIZING ALSO that some Governments have promoted work to develop a practical method whereby the discharged oil can be promptly identified as the oil loaded on board a certain ship,

URGES those Governments to continue their efforts and all other Governments to initiate research into this problem, with a view to arriving at an early solution.

RESOLUTION 8

DRAUGHT REQUIREMENTS FOR SEGREGATED BALLAST TANKERS

THE CONFERENCE,

NOTING that Regulation 13 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, in determining the amount of required segregated ballast capacity, specifies a segregated ballast draught as a function of ship length, and that this will be applied to tankers of 150 metres in length and above,

NOTING FURTHER that this requirement is largely based on experience which pertains in general to large tankers where the amount of ballast taken aboard has been left to the discretion of the Master,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization take appropriate action to consider these ballast draught requirements, taking full account of further experience with ships of various sizes which have operated safely in their ballast conditions and to examine them with a view to determining whether any improvement is required, with special regard to the need for a more specific requirement for tankers of less than 150 metres in length.

RESOLUTION 9

TONNAGE MEASUREMENT OF SEGREGATED BALLAST OIL TANKERS

THE CONFERENCE,

NOTING that Regulation 13 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, requires segregated ballast for new oil tankers of 70,000 tons deadweight and above,

NOTING ALSO that this requirement may cause new segregated ballast oil tankers to have substantial increases in freeboard and certain principal dimensions, in comparison with existing oil tankers, for equivalent productive cargo deadweights,

NOTING FURTHER that substantially increased principal dimensions without increased deadweight may in some cases increase either gross or net registered tonnage or both, for segregated ballast oil tankers,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization study the matter of equitable determination of gross and net registered tonnage for segregated ballast oil tankers in comparison with existing oil tankers of equivalent productive cargo deadweight.

RESOLUTION 10

DEVELOPMENT OF EFFICIENT OIL CONTENT MONITORING ARRANGEMENTS

THE CONFERENCE,

NOTING that the Regulations contained in Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, rely for their control and enforcement in a number of instances on an oil discharge monitoring system and, in particular, that Regulation 15 of that Annex requires that an oil tanker designed for retention of oil on board shall be fitted with such a system to control the quality of any effluent discharged into the sea,

NOTING ALSO that Regulation 1(16) of that Annex provides for ballast to be considered as clean ballast if oil content monitoring arrangements establish that the oil content of the effluent from such a tank does not exceed 15 parts per million,

NOTING FURTHER the Recommendation on International Performance Specifications for Oily-Water Separating Equipment and Oil Content Meters adopted by the Assembly of the Inter-Governmental Maritime Consultative Organization by Resolution A.233(VII),

RECOGNIZING that further progress in the development of such monitors is an urgent requirement,

RECOMMENDS that the Organization should promote studies with a view to developing more sensitive, accurate and reliable oil content measuring instruments to cope with the full range of the oils covered by that Annex.

RESOLUTION 11

LIMITATION OF SIZE AND ARRANGEMENT OF CARGO TANKS IN OIL TANKERS

THE CONFERENCE,

NOTING with satisfaction that most tankers ordered since 1 January 1972 comply with the provisions regarding the limitation of the size and the arrangement of cargo tanks as laid down in the 1971 Amendments to the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, contained in Resolution A.246(VII) adopted by the Assembly of the Inter-Governmental Maritime Consultative Organization, although those Amendments have not yet entered into force,

NOTING FURTHER that Resolution A.247(VII) of the Assembly of the Organization invites Governments to put into effect these requirements as soon as possible,

EMPHASIZING the desirability of the entry into force of the 1971 Amendments at the earliest possible date and in any case not later than the date of entry into force of the International Convention for the Prevention of Pollution from Ships, 1973,

BEING AWARE that some lapse of time will inevitably occur before the 1973 Convention can enter into force,

URGES all Governments to accept the Amendments to the 1954 Convention contained in Resolution A.246(VII) of the Assembly of the Organization as soon as possible.

RESOLUTION 12

DEVELOPMENT OF SCIENTIFIC INFORMATION ON
WATER QUALITY CRITERIA

THE CONFERENCE,

RECOGNIZING that the capacity of the sea to assimilate pollutants and render them harmless is limited and that its ability to regenerate natural resources is also limited,

BELIEVING that the adequacy of measures taken to prevent pollution of the sea by substances that are liable to create hazard to human health, to harm marine life, to damage amenities or to interfere with other legitimate uses of the sea needs to be kept under review,

BELIEVING ALSO that there is a need to organize all interested competent organizations in establishing methods whereby the needs of the marine environment relative to water quality can be established, to identify the sources of pollution and continually assess the various methods of controlling marine pollution for the development of new or more effective control measures where appropriate,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization should co-operate with other organizations and in particular with the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) to achieve these aims whereby a first step might be to examine the method and procedure necessary to establish water quality criteria for the protection of the marine environment.

RESOLUTION 13

PROCEDURES AND ARRANGEMENTS FOR THE DISCHARGE OF
NOXIOUS LIQUID SUBSTANCES INTO THE SEA

THE CONFERENCE,

HAVING CONCLUDED, in pursuance of its main objectives, the International Convention for the Prevention of Pollution from Ships, 1973, which, inter alia, contains in Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk,

NOTING in particular, Regulation 5 of Annex II by which the discharge into the sea of noxious liquid substances of Categories A, B, C and D or of ballast water, tank washings or other residues or mixtures containing such substances is prohibited, except in compliance with specified conditions including procedures and arrangements which shall be approved by the Administration to ensure that the criteria specified for each Category will be met,

DESIRING to facilitate international trade by ensuring, as far as possible, the uniform implementation of Annex II,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization should ensure, with a view to providing a uniform basis for the guidance of the Parties to the Convention in approving such procedures and arrangements, that the necessary studies are undertaken with highest priority, in order to develop the standards referred to in Regulations 5 and 8 of Annex II,

RECOMMENDS FURTHER that the Organization should subsequently review the form of the Cargo Record Book contained in Appendix IV of Annex II of the Convention, taking into account the standards for procedures and arrangements previously developed.

RESOLUTION 14

RECOMMENDATION ON HAZARD EVALUATION OF
NOXIOUS LIQUID SUBSTANCES

THE CONFERENCE,

HAVING CONCLUDED, in pursuance of its main objectives, the International Convention for the Prevention of Pollution from Ships, 1973, which, inter alia, contains in Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk,

NOTING Resolution 17 by which the Conference recommended the development of appropriate provisions relating to the control of pollution by noxious solid substances carried in bulk,

NOTING, in particular, Regulations 3 and 4 of Annex II and its Appendices II and III by which liquid substances are categorized in accordance with their environmental hazards when released into the sea through the normal operation of ships,

NOTING ALSO with appreciation that the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) had developed a rationale and had made hazard evaluations of some 400 substances which provided a sound scientific basis for their categorization,

DESIRING to facilitate international trade by avoiding, as far as possible, the necessity for Parties to the Convention to enter into consultation on substances not listed in Appendices II and III to Annex II,

NOTING FURTHER, however, that there are substances which require further data in order to complete the evaluation of their environmental hazards, particularly in relation to living resources,

BEING AWARE of the need to keep these Appendices up to date,

RECOMMENDS that the Inter-Governmental Maritime Consultative Organization should as a matter of urgency take appropriate steps:

- (a) to review the criteria used to define Category D substances;
- (b) to evaluate the hazard of those substances for which further data were found necessary as well as new substances proposed to be carried in accordance with the rationale developed by GESAMP; and
- (c) to increase all the lists to cover all the substances known to be carried,

INVITES Governments to pursue and encourage studies on environmental hazards of such substances and provide the Organization, as specified in the Annex to this Resolution, with as much information as is available.

ANNEX TO RESOLUTION 14

INFORMATION ON A NEW SUBSTANCE TO BE TRANSPORTED BY SHIPS
FOR THE EVALUATION OF ITS ENVIRONMENTAL HAZARDS

1. Correct technical name:
(Secondary or alternative name(s))

Note: The information listed below would enable a complete assessment to be made but a provisional assessment may be based on as much relevant information as is currently available to the Governments involved.

2. Chemical formula:
3. Physical properties:
 - (a) Boiling point:^oC
 - (b) Melting point:^oC
 - (c) Specific gravity:
 - (d) Vapour pressure:kp/cm² at 37.8^oC
 - (e) Solubility in water:mg/l at 20^oC
 - (f) Viscosity:
 - (g) Odour (qualitative description):
 - (h) Colour:
4. Chemical and biochemical properties:
 - (a) Chemical stability (oxidation, reduction, UV light):
 - (b) Reactivity with sea water:
.....
 - (c) Biodegradability:
 - (d) Chemical oxygen demand (COD)/5-day Biochemical oxygen demand (BOD)₅mg/l(20^oC)
 - (e) Biotransformation (where known):
 - (f) Polymerizability under exposure to the atmosphere and sunlight:
 - (g) Lipid solubility:
5. Bioaccumulation by marine organisms (cf. GESAMP IV/19/Supp.1, paragraphs 23-26):
 - (a) Rate and level of uptake and retention of substances:
.....

- (b) Tainting effect:
- (c) Colour and other appearance changes:
- 6. Other damage to marine living resources (cf. GESAMP IV/19/Supp.1, paragraphs 27-30) Toxicity (TLm_{96}):ppm.
.....
- 7. Hazard to human health (cf. GESAMP IV/19/Supp.1, paragraphs 31-34, 37):
 - (a) By oral intake:mg/kg (LD_{50})
 - (b) By skin contact and inhalation:
.....
- 8. Effect on amenities (cf. GESAMP IV/19/Supp.1, paragraphs 38-42):
.....
- 9. Additional remarks (briefly describe test conditions for items 5, 6 and 7 above).

Note: Approved standard method should be used where possible.

RESOLUTION 15

RECOMMENDATION CONCERNING THE CONVENTION PROVISIONS
RELATING TO THE CARRIAGE OF NOXIOUS
LIQUID SUBSTANCES IN BULK

THE CONFERENCE,

NOTING the Regulations relating to the design, construction, equipment and procedures for ships carrying noxious liquid substances in bulk contained in Annex II of the International Convention for the Prevention of Pollution from Ships, 1973, in particular Regulation 13(2) of that Annex by which Parties to the Convention are obliged to issue, or cause to be issued, detailed requirements on the design, construction, equipment and procedures for such ships in order to ensure compliance with Regulation 2(1) of that Annex,

NOTING ALSO Regulation 13(3) of that Annex which requires that for chemical tankers the detailed requirements shall contain at least all the provisions given in the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk ("Bulk Chemical Code") adopted by the Assembly of the Inter-Governmental Maritime Consultative Organization in Resolution A.212(VII),

NOTING FURTHER that the Organization has prepared an approach to modification of the Bulk Chemical Code to include marine pollution prevention measures,

DESIRING the formulation of appropriate provisions for the carriage of noxious liquid substances in bulk in ships that are not self-propelled and in ships other than chemical tankers,

RECOMMENDS that the Organization:

- (a) amends the Bulk Chemical Code as early as possible in order to include requirements necessary from the marine pollution prevention point of view and also to ensure consistency with the provisions of the Convention, in particular the definition of a new and existing ship in paragraph 1.7 of the Code;

- (b) keeps the Code under constant review with regard to prevention of marine pollution, taking into account both experience and future development of technology; and
- (c) develops with priority Codes for the carriage of noxious liquid substances in bulk in ships that are not self-propelled and in ships other than chemical tankers.

RESOLUTION 16

RECOMMENDATION CONCERNING THE PREVENTION OF
POLLUTION BY LIQUEFIED OR COMPRESSED
GASES CARRIED IN BULK

THE CONFERENCE,

NOTING that the International Convention for the Prevention of Pollution from Ships, 1973, contains in Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk which are framed to eliminate or minimize intentional or accidental pollution by such substances,

RECOGNIZING a potential hazard to the environment in general which is also involved in the carriage of some liquefied or compressed gases in bulk by ships,

NOTING also that the Inter-Governmental Maritime Consultative Organization has under preparation a Code for the Construction and Equipment of Ships Carrying Dangerous Liquefied or Compressed Gases in Bulk ("Gas Carrier Code"),

RECOMMENDS that:

- (a) the Organization should use all its endeavours to bring the Gas Carrier Code to the earliest possible completion; and
- (b) Parties to the Convention, following the finalization of the Gas Carrier Code, should issue or cause to be issued such national requirements as may be necessary to minimize any harmful effect of transporting liquefied or compressed gases in bulk on the environment.

RESOLUTION 17

RECOMMENDATION CONCERNING THE PREVENTION OF POLLUTION
BY NOXIOUS SOLID SUBSTANCES CARRIED IN BULK

THE CONFERENCE,

NOTING that the International Convention for the Prevention of Pollution from Ships, 1973, contains in Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk which are framed to eliminate or minimize intentional or accidental pollution by such substances,

RECOGNIZING a potential hazard to the marine environment which is also involved in the carriage of noxious solid substances in bulk by ships,

RECOGNIZING ALSO a possible need to formulate appropriate provisions for inclusion in the International Convention for the Prevention of Pollution from Ships, 1973,

NOTING however that the present state of knowledge in this field has not advanced sufficiently to enable the Conference to formulate such provisions,

RECOMMENDS that:

- (a) the Inter-Governmental Maritime Consultative Organization pursue and encourage studies on the impact that the carriage of noxious solid substances in bulk by ships may have upon the marine environment and on the measures for minimizing the threat to the marine environment which arises from the carriage of such substances; and
- (b) the results of such studies be directed towards the development of the appropriate provisions relating to the control of pollution by noxious solid substances carried in bulk for inclusion in the 1973 Convention.

INVITES Governments:

- (a) to forward reports of incidents involving noxious solid substances carried in bulk by ships to the Organization pending development of the regulations of the 1973 Convention; and
- (b) to issue, or cause to be issued, such national requirements as may be necessary to minimize any harmful effect of transporting noxious solid substances in bulk on the environment.

RESOLUTION 18

RESEARCH INTO THE EFFECT OF DISCHARGE OF
BALLAST WATER CONTAINING BACTERIA OF
EPIDEMIC DISEASES

THE CONFERENCE,

NOTING that ballast water taken in waters which may contain bacteria of epidemic diseases may, when discharged into the sea in another location, cause a danger of spreading of the epidemic diseases to other countries,

REQUESTS the World Health Organization, in collaboration with the Inter-Governmental Maritime Consultative Organization, to initiate studies on that problem on the basis of any evidence and of proposals which may be submitted by any Government.

RESOLUTION 19

RECOMMENDATION CONCERNING THE PREVENTION OF POLLUTION BY HARMFUL
SUBSTANCES CARRIED BY SEA IN PACKAGED FORMS OR IN FREIGHT
CONTAINERS, PORTABLE TANKS OR ROAD AND RAIL TANK WAGONS

THE CONFERENCE,

NOTING the Regulations set forth in Annex III of the International Convention for the Prevention of Pollution from Ships, 1973, relating to the carriage of harmful substances by sea in packaged forms, or in freight containers, portable tanks, or road and rail tank wagons, in particular Regulation 1(3) of that Annex by which Parties to the Convention are obliged to issue, or cause to be issued, detailed instructions on packaging, marking and labelling, documentation, stowage, quantity limitations, exceptions and notification for preventing or minimizing pollution of the marine environment,

NOTING ALSO the Regulations relating to the safe carriage of dangerous goods by sea as set out in Chapter VII of the International Convention for the Safety of Life at Sea, 1960, in particular Regulation 1(d) of that Chapter by which Contracting Governments are obliged to issue, or cause to be issued, detailed instructions for the safe packing and stowage of specific dangerous goods or categories of dangerous goods which shall include any precautions necessary in relation to other cargo,

NOTING FURTHER the International Maritime Dangerous Goods Code which was prepared in implementation of Recommendation 56 of the International Conference on Safety of Life at Sea, 1960, and has been recommended by the Inter-Governmental Maritime Consultative Organization as a uniform basis upon which Governments should formulate the national regulations envisaged in Chapter VII of the 1960 Safety Convention,

RECOGNIZING that provisions concerning harmful substances as defined in Article 2(2) of the 1973 Convention must be specified and be complementary to those which have been adopted for the carriage of dangerous goods by sea,

RECOMMENDS that:

- (a) the Organization pursue and encourage studies on the impact that the carriage by sea of such harmful substances in packaged forms, or in freight containers, portable tanks, or road and rail tank wagons, may have upon the marine environment;
- (b) the results of such studies be directed towards the revision of the scope of the International Maritime Dangerous Goods Code, taking into account:
 - (i) substances that are harmful to the marine environment whether or not they are classed as dangerous goods;
 - (ii) the minimization of the threat to the marine environment that arises from the carriage by sea of the substances that will be enumerated in that Code; and
 - (iii) safety in maritime transport;
- (c) in such revision particular account be taken of:
 - (i) packaging,
 - (ii) marking and labelling,
 - (iii) documentation,
 - (iv) stowage,
 - (v) quantity limitations,
 - (vi) exceptions, and
 - (vii) notification.
- (d) Governments consider adoption of the format of the International Maritime Dangerous Goods Code for the systematic development of regulations and standards for the carriage by sea of harmful substances that represent a threat to the marine environment so as to ensure compatibility between safety requirements and provisions relating to pollution abatement;

- (e) such particulars as referred to in this paragraph form the basis for the further development of the provisions of the Regulations contained in Annex III of the 1973 Convention; and
- (f) Parties to the 1973 Convention make arrangements to cater for the possible need to recover or otherwise deal with harmful substances which are lost or may be lost into the sea from ships.

RESOLUTION 20

**PROVISION OF STANDARDS AND TEST METHODS
CONCERNING DISCHARGE OF SEWAGE**

THE CONFERENCE,

NOTING that Annex IV of the International Convention for the Prevention of Pollution from Ships, 1973, contains certain requirements concerning the discharge of sewage into the sea from ships which should be based on standards and test methods to be developed by the Inter-Governmental Maritime Consultative Organization,

URGES the Organization to take action to develop such standards and test methods as soon as possible.

RESOLUTION 21

PROVISION OF RECEPTION FACILITIES FOR THE DISCHARGE
OF SEWAGE AND DISPOSAL OF GARBAGE

THE CONFERENCE,

NOTING that Annexes IV and V of the International Convention for the Prevention of Pollution from Ships, 1973, provide that the discharge of sewage and disposal of garbage into the sea from ships shall be prohibited except when specified conditions are satisfied,

RECOGNIZING the need for adequate reception facilities to make possible the application of these requirements for the discharge of sewage and disposal of garbage,

RECOGNIZING FURTHER that the effective implementation of Annexes IV and V of the Convention is dependent upon the availability of such reception facilities on a world-wide basis,

URGES Governments to take appropriate action to ensure the provision, as early as possible, of adequate facilities for the reception of sewage and garbage from ships, adequate to meet the needs of the ships using them without causing undue delay.

RESOLUTION 22

PROMOTION OF TECHNICAL CO-OPERATION

THE CONFERENCE,

RECOGNIZING that the complete elimination of pollution in the marine environment by ships requires broad international co-operation and technical and scientific resources,

RECOGNIZING FURTHER that Parties to the International Convention for the Prevention of Pollution from Ships, 1973, will be asked to undertake full responsibility and make arrangements for detecting, monitoring and preventing or mitigating pollution by ships,

BELIEVING that the promotion of technical co-operation on an inter-governmental level will hasten the implementation of the Convention by States not already possessing the necessary or adequate technical and scientific expertise,

URGES Governments to promote, in consultation with the Inter-Governmental Maritime Consultative Organization and other international bodies, and with assistance and co-ordination by the Executive Director of the United Nations Environment Programme, support for those States which request technical assistance for:

- (a) the training of scientific and technical personnel;
- (b) the supply of necessary equipment and facilities for monitoring;
- (c) the facilitation of other measures and arrangements to prevent or mitigate pollution of the marine environment by ships; and
- (d) the encouragement of research,

URGES FURTHER Governments to initiate action in connexion with the above without awaiting the entry into force of the Convention.

RESOLUTION 23

NATURE AND EXTENT OF STATES' RIGHTS OVER THE SEA

THE CONFERENCE,

BEARING IN MIND that a United Nations Conference on the Law of the Sea is to be convened pursuant to Resolution 2750 C (XXV) of the General Assembly of the United Nations,

TAKING INTO ACCOUNT the specialized character of the present Conference,

CONSIDERING that the International Convention for the Prevention of Pollution from Ships, 1973, establishes technical requirements relating to the operation, design and equipment of ships with regard to the prevention of marine pollution, and that, wherever necessary, these international standards should be progressively amended and further improved within the framework of that Convention,

MINDFUL of paragraph (2) of Article 9 of the Convention,

NOTING that the Convention deals mainly with technical questions such as operation, equipment and design of ships,

BEING CONVINCED that the appropriate forum to deal with the question of the nature and extent of States' rights over the sea is the above-mentioned Conference on the Law of the Sea,

DECLARES that the decision of the present Conference reflects a clear intention to leave that question to the above-mentioned Conference on the Law of the Sea,

DECLARES FURTHER that the rights exercised by a State within its jurisdiction in accordance with the Convention do not preclude the existence of other rights of that State under international law.

RESOLUTION 24

CO-ORDINATION OF ACTIVITIES
ON THE PREVENTION AND CONTROL
OF MARINE POLLUTION

THE CONFERENCE,

NOTING that the International Convention for the Prevention of Pollution from Ships, 1973, has conferred upon the Inter-Governmental Maritime Consultative Organization and its Secretary-General, important functions to be performed under the Convention,

RECOGNIZING the need for effective co-ordination of activities carried out by different international organizations concerned with the prevention and control of marine pollution,

RECOMMENDS that the Organization, where necessary, consult with and seek assistance from other international organizations and expert bodies concerned within the United Nations system in order to achieve the objectives of the present Convention.

RESOLUTION 25

**TRANSMISSION OF THE INTERNATIONAL CONVENTION FOR
THE PREVENTION OF POLLUTION FROM SHIPS, 1973
TO THE UNITED NATIONS CONFERENCE ON THE LAW OF THE SEA**

THE CONFERENCE,

BEARING IN MIND that a United Nations Conference on the Law of the Sea will be convened pursuant to Resolution 2750 C (XXV) of the General Assembly of the United Nations,

NOTING that, in accordance with the foregoing Resolution, international law concerning marine pollution forms a part of the Law of the Sea,

REQUESTS the Secretary-General of the Inter-Governmental Maritime Consultative Organization to forward the International Convention for the Prevention of Pollution from Ships, 1973, to the United Nations Conference on the Law of the Sea, so that this Convention can be taken into account in the broader context of that Conference.

RESOLUTION 26

ESTABLISHMENT OF THE LIST OF SUBSTANCES ANNEXED TO
THE PROTOCOL RELATING TO INTERVENTION ON THE HIGH SEAS
IN CASES OF MARINE POLLUTION BY SUBSTANCES OTHER THAN OIL

THE CONFERENCE,

NOTING that the Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, 1973, provides in its Articles I and III that the list of substances to be annexed to the Protocol shall be established and maintained by an appropriate body designated by the Inter-Governmental Maritime Consultative Organization,

NOTING FURTHER that the Protocol provides that Parties to the Protocol whether or not Members of the Organization shall be entitled to participate in the proceedings of the appropriate body when it considers matters relating to the list,

RECOGNIZING that the early establishment of this list will encourage acceptance of the Protocol by Governments and thereby promote the speedy entry into force of the Protocol,

REQUESTS the Organization to designate at the earliest practicable opportunity the appropriate body in accordance with the provisions of Articles I and III of the Protocol and to provide this body with the necessary facilities for its work,

REQUESTS that appropriate body to proceed with all speed and establish the list not later than 30 November 1974, which list shall be adopted by a two-thirds majority of those present and voting in that body,

RECOMMENDS that in establishing and maintaining the list of substances the appropriate body should consult and co-operate with competent international organizations,

REQUESTS the Secretary-General of the Organization, as soon as the list has been established, to annex copies thereof to the authentic texts of the Protocol,

REQUESTS FURTHER the Secretary-General of the Organization to communicate this list to Governments without delay.

A N N E X I V

Construction and Equipment of Tank Vessels, Advance
Notice of Proposed Rulemaking (39 FR 32144)



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS
U.S. COAST GUARD (G-CMC/82)

WASHINGTON, D.C. 20590
PHONE: 202 426-1477
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1 October 1974
Serial: 17-P-74

Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments to the Executive Secretary, Marine Safety Council, U. S. Coast Guard (G-CMC/82), Washington, D. C., 20590, prior to

proposed rules

DEPARTMENT OF TRANSPORTATION

Coast Guard

[46 CFR Parts 30, 31, 32, 33, 34, 35]

[CGD 74-127]

CONSTRUCTION AND EQUIPMENT OF TANK VESSELS

Advance Notice of Proposed Rulemaking

The United States Coast Guard is considering amending Subchapter D, Rules and Regulations for Tank Vessels, to include all of the provisions of IMCO Resolution A.271(VIII), entitled "Draft Regulations Concerning Fire Safety Measures for Tankers and Combination Carriers", which was adopted on 20 November 1973 by the Inter-Governmental Maritime Consultative Organization Assembly (IMCO).

This advance notice of proposed rulemaking is being issued to provide timely notice of the impending changes to the regulations for tank vessels. It is projected that the new requirements will become effective for vessels, the keels of which are laid or which are at a similar stage of construction, on or after 1 January 1975. The proposed structural fire protection requirements apply to all manned tank vessels and the proposed regulation changes concerning fire prevention and protection systems apply to all propelled tank vessels of 500 or more gross tons. Details of the proposed regulation changes are scheduled to be published in the FEDERAL REGISTER within a reasonable period of time following publication of this advanced notice. Interested persons may obtain a copy of IMCO Resolution A.271(VIII) by writing to U.S. Coast Guard (GCMC/82), Room 8234, 400 Seventh Street, S.W., Washington, D.C. 20590. Each inquiry should identify the notice (CGD 74-127) and include a name and complete return address.

Since many of the provisions of IMCO Resolution A.271(VIII) are already contained in 46 CFR, Subchapter D, the new requirements will not be published as a separate part, but will be included in the appropriate subparts of the existing regulations.

Some of the proposed regulation changes are already standard practice and should not result in significant

changes. In general, the proposed changes will include, with some variation, the following:

1. Category A machinery spaces must be positioned aft of the cargo area and must be separated from the cargo pump rooms by "A" class boundaries. The casing doors on Category A machinery spaces must be self-closing. The surface of insulation on interior boundaries of such spaces must be impervious to oil and oil vapors.

2. Accommodation spaces, control stations, and service spaces must be positioned aft. Common boundaries separating cargo pump rooms or machinery spaces of Category A from accommodation and service spaces must be insulated to "A-60" requirements, as should the boundaries between pump rooms and control stations. In addition, exterior boundaries of deckhouses and superstructures enclosing accommodation and service spaces must be "A-60" Class for the portion facing the cargo tank and for 10 feet (3 meters) aft of the front boundary. The front boundary and 16 feet (5 meters) aft of the front boundary of deckhouses and superstructures facing the cargo tanks may not have doors on the main deck opening into spaces with access to accommodation and service areas, may only have fixed port lights, and may have port lights on the first tier of the main deck if fitted with inside covers of steel.

3. Concealed spaces behind ceilings, panelings, or linings must be divided by non-combustible draft stops not more than 45 feet (14 meters) apart.

4. Combustible veneers within accommodation and service areas may be increased to a maximum thickness of .079 inch (2 mm), except that within corridors, stairway, enclosures, and control stations the thickness may not exceed .059 inch (1.5 mm).

5. The passage of ventilation ducts from Category A machinery spaces through accommodation and service spaces and control stations is restricted. Similarly, the passage of ventilation ducts for accommodation and service spaces and control stations through machinery spaces of category A is restricted.

6. The foam concentrate storage requirements for the deck foam system are being increased to allow 20 minutes of foam generation. The capacity of any monitor must be at least .373 gallons per

minute per square foot of deck area protected by that monitor, in addition to other sizing requirements based on cargo tank area and largest tank area. The design range of foam monitors may not exceed 75% of the throw determined by tests in still air conditions. On tankers of 100,000 dead weight tons or over and combination carriers of 50,000 dead weight tons and over, monitors and hose connections must be situated on the port and starboard sides of the house, facing the cargo deck. Effort should be made to assure that the deck foam system is capable of simple and rapid operation.

7. An inert gas system must be provided for protection of cargo tanks on crude oil tankers of 100,000 dead weight tons and over and on crude oil combination carriers of 50,000 dead weight tons and over. The system must be capable of providing a suitable oxygen deficient atmosphere, with an oxygen content not normally exceeding 5% by volume. The capacity of the inert gas system must be at least 125% of the rated cargo pump capacity and the system must be capable of supplying inert gas on demand to the cargo tanks.

Comments are welcome and should be addressed to the Commandant (G-CMC/82), U.S. Coast Guard, Washington, D.C. 20590. Specific details of the proposed changes will be published in the near future for formal comments. In addition, public hearings will be held prior to publication of the final rulemaking.

This advance notice of proposed rulemaking is issued under the authority of 46 U.S.C. 375, 391a, 418; 49 U.S.C. 1655 (b); 49 CFR 1.46(b); and E.O. 11239 (30 FR 9671).

Dated: August 28, 1974.

W. M. BENKERT,
Rear Admiral, U.S. Coast Guard,
Chief, Office of Merchant Marine Safety.

Dist: (SDL No. 99)

A: None

B: c(12);n(5);e(3);pq(1)

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ASSEMBLY - 8th session
Agenda item 10

IMCO

RESOLUTION A.271(VIII)

adopted on 20 November 1973

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A VIII/Res.271
12 December 1973

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APR 1 1974

Washington, D.C.
GAIA

**RECOMMENDATION TO PUT FIRE SAFETY MEASURES FOR
TANKERS AND COMBINATION CARRIERS INTO EFFECT**

THE ASSEMBLY,

NOTING Article 16(i) of the IMCO Convention concerning the functions of the Assembly,

NOTING FURTHER Recommendation 15 of the International Conference on Safety of Life at Sea, 1960 concerning safety measures in tankers,

RECALLING that it had adopted in Resolution A.213(VII) the Recommendation on Fire Safety Requirements for Construction and Equipment of New Tankers and at the same time instructed the Maritime Safety Committee to continue its study on the subject with the view to developing the Recommendation further,

RECALLING ALSO that in Resolution A.213(VII) all governments concerned were invited to take appropriate steps to give effect to the Recommendation as soon as possible and to consider inter-governmental agreement for a common date for its coming into force,

NOTING that the Maritime Safety Committee at its twenty-sixth session expressed concern on the lack of inter-governmental agreement on a common date of coming into force of Resolution A.213(VII) and that the view was expressed that the date of coming into force might be 1 January 1974,

HAVING CONSIDERED the Recommendation of the Maritime Safety Committee at its twenty-eighth session,

DECIDES to approve draft Regulations on Fire Safety Measures for Tankers and Combination Carriers the text of which is shown at Annex to this Resolution, for inclusion in the draft International Convention for the Safety of Life at Sea, 1974,

ENDORSES the above-mentioned draft Regulations as a Recommendation which shall supersede the text of the Annex to Resolution A.213(VII),

INVITES all governments concerned:

- (a) to make known the provisions of the draft Regulations to shipowners and operators under their jurisdiction;
- (b) to make every effort to ensure that the draft Regulations apply to ships the keels of which are laid, or which are at a similar stage of construction, on or after 1 July 1974; and
- (c) to inform the Organization of measures taken by them in this respect,

REQUESTS the Maritime Safety Committee to continue its study on this subject with a view to developing the requirements further as regards the provisions in respect of smaller vessels carrying crude oil and vessels of all sizes carrying products other than those described in Regulation 1 of the above-mentioned draft Regulations.

ANNEX

**DRAFT REGULATIONS CONCERNING FIRE SAFETY MEASURES
FOR TANKERS AND COMBINATION CARRIERS**

Regulation 1

Application

- (a) These Regulations shall apply to all new tankers of 500 tons gross tonnage and over, including combination carriers, carrying crude oil and petroleum products having a closed flashpoint not exceeding 60°C and whose Reid vapour pressure is below that of atmospheric pressure and other liquid products having a similar fire hazard, the keels of which are laid, or which are at a similar stage of construction on or after the date on which these Regulations come into force. In addition, such ships shall comply with the provisions of Parts E and F of Chapter II of the International Convention for the Safety of Life at Sea, 1960 (hereinafter referred to as the Convention).
- (b) When other cargoes which introduce additional fire hazards are to be carried, additional safety measures shall be required to the satisfaction of the Administration.

Regulation 2

General

The purpose of these Regulations is to require an effective and practical degree of fire protection in tankers. The basic principles underlying these Regulations are:

- (a) separation of accommodation spaces from the remainder of the ship by thermal and structural boundaries;
- (b) protection of means of escape;
- (c) containment and extinction of any fire in the space of origin;
- (d) restricted use of combustible materials; and,
- (e) minimization of possibility of ignition of cargo vapour.

Regulation 3

Definitions

Except as specified in this Regulation the terms used in these Regulations shall be as defined in Regulation 94 of Chapter II of the Convention:

- (a) "Deadweight" means the difference between the displacement of a ship at summer load waterline and the lightweight of the ship in metric tons;
- (b) "Lightweight" means the displacement of a ship in metric tons without cargo, oil fuel, lubricating oil, ballast and fresh water in tanks, stores and crew, and their effects;
- (c) "Combination carrier" means a tanker designed to carry oil or alternatively solid cargoes in bulk.

Regulation 4

Location and Separation of Spaces

- (a) Machinery spaces of Category A shall be positioned aft of cargo tanks and slop tanks and shall be isolated from them by a cofferdam, cargo pump room or oil fuel bunker tank; they shall also be situated aft of such cargo pump rooms and cofferdams, but not necessarily aft of the oil fuel bunker tanks. However, the lower portion of the pump room may be recessed into such spaces to accommodate pumps provided the deck head of the recess is in general not more than one-third of the moulded depth above the keel except that in the case of ships of not more than 25,000 tons deadweight where it can be demonstrated that for reasons of access and satisfactory piping arrangements this is impracticable, the Administration may permit a recess in excess of such height, but not exceeding one half of the moulded depth above the keel.

- (b) Accommodation spaces, main cargo control stations, control stations and service spaces shall be positioned aft of all cargo tanks, slop tanks, cargo pump rooms and cofferdams which isolate cargo or slop tanks from machinery spaces of Category A. Any common bulkhead separating a cargo pump room, including the pump room entrance, from accommodation, service spaces and control stations shall be constructed to "A-60" Class. Where deemed necessary, accommodation, control stations, machinery spaces other than those of Category A and service spaces may be permitted forward of all cargo tanks, slop tanks, cargo pump rooms and cofferdams subject to an equivalent standard of safety and appropriate availability of fire extinguishing arrangements being provided to the satisfaction of the Administration.
- (c) Where the fitting of a navigation position above the cargo tank area is shown to be necessary it shall be for navigation purposes only and it shall be separated from the cargo tank deck by means of an open space with a height of at least 2 metres. The fire protection of such navigation position shall in addition be as required for control spaces as set forth in Regulation 7(a) and (b) and other provisions as applicable of these Regulations.
- (d) Means shall be provided to keep deck spills away from the accommodation and service areas. This may be accomplished by provision of a permanent continuous coaming of a suitable height extending from side to side. Special consideration shall be given to the arrangements associated with stern loading.
- (e) Exterior boundaries of superstructures and deckhouses enclosing accommodation and service spaces and including any overhanging decks which support such accommodation, shall be insulated to "A-60" Class for the whole of the portions which face cargo oil tanks and for 3 metres aft of the front boundary. In the case of the sides of these superstructures and deckhouses, such insulation shall be carried as high as is deemed necessary by the Administration.
- (f) In boundaries, facing cargo tanks, of superstructures and deckhouses containing accommodation and service spaces the following provisions shall apply:
- (i) No doors shall be permitted in the first tier on the main deck, except to those spaces not having access to accommodation and service spaces such as cargo control stations, provision rooms and store-rooms. Where such doors are fitted, the boundaries of the space shall be insulated to "A-60" Class. Bolted plates for removal of machinery may be fitted in such boundaries.
 - (ii) Port lights in such boundaries shall be of a fixed (non-opening) type. Pilot house windows may be non-fixed (opening).
 - (iii) Port lights in the first tier on the main deck shall be fitted with inside covers of steel or equivalent material.

The requirements of this paragraph, where applicable, shall also be applied to the boundaries of the superstructures and deckhouses for a distance of 5 metres measured longitudinally from the forward end of such structures.

Regulation 5

Means of Escape

In addition to the requirements of Regulation 68(b)(i) of Chapter II of the Convention, consideration shall be given by the Administration to the availability of emergency means of escape for personnel from each cabin.

Regulation 6

Ventilation

- (a) The arrangement and positioning of openings in the cargo tank deck from which gas emission can occur shall be such as to minimize the possibility of gas being admitted to enclosed spaces containing a source of ignition, or collecting in the vicinity of deck machinery and equipment which may constitute an ignition hazard. In every case the height of the outlet above the deck and the discharge velocity of the gas shall be considered in conjunction with the distance of any outlet from any deckhouse opening or source of ignition.
- (b) The arrangement of ventilation inlets and outlets and other deckhouse and superstructure boundary space openings shall be such as to complement the provisions of paragraph (a) of this Regulation. Such vents especially for machinery spaces shall be situated as far aft as practicable. Due consideration in this regard should be given when the ship is equipped to load or discharge at the stern. Sources of ignition such as electrical equipment shall be so arranged as to avoid an explosion hazard.

(c) Cargo pump rooms shall be mechanically ventilated and discharges from the exhaust fans shall be led to a safe place on the open deck. The ventilation of these rooms shall have sufficient capacity to minimize the possibility of accumulation of flammable vapours. The number of changes of air shall be at least 20 times per hour based upon the gross volume of the space. The air ducts shall be arranged so that all of the space is effectively ventilated. The ventilation shall be of the suction type.

Regulation 7

Construction

- (a)
- (i) The hull, superstructure, structural bulkhead decks and deckhouses shall be constructed of steel or other equivalent material.
 - (ii) Bulkheads between cargo pump rooms, including their trunks and machinery spaces of Category A shall be "A" Class and shall have no penetrations which are less than "A-0" Class or equivalent in all respects, other than the cargo pump shaft glands and similar glanded penetrations.
 - (iii) Bulkheads and decks forming divisions separating machinery spaces of Category A and cargo pump rooms, including their trunks, respectively, from the accommodation and service spaces shall be of "A-60" Class. Such bulkheads and decks and any boundaries of machinery spaces of Category A and cargo pump rooms shall not be pierced for windows or port lights.
 - (iv) The requirements of sub-paragraphs (ii) and (iii) of this paragraph, however, do not preclude the installation of permanent approved gas-tight lighting enclosures for illuminating the pump rooms provided that they are of adequate strength and maintain the integrity and gas-tightness of the bulkhead as "A" Class. Further, it does not preclude the use of windows in a control room located entirely within a machinery space.
 - (v) Control stations shall be separated from adjacent enclosed spaces by means of "A" Class bulkheads and decks. The insulation of these control station boundaries shall be to the satisfaction of the Administration having in mind the risk of fire in adjacent spaces.
 - (vi) Casing doors in machinery spaces of Category A shall be self-closing and comply with the related provisions of sub-paragraph (b)(vii) of this Regulation.
 - (vii) The surface of the insulation on interior boundaries of machinery spaces of Category A shall be impervious to oil and oil vapours.
 - (viii) Primary deck coverings, if applied, shall be of approved materials which will not readily ignite.
 - (ix) Interior stairways shall be of steel or other suitable material.
 - (x) When adjacent to accommodation spaces, bulkheads of galleys, paint stores, lamp rooms and boatswain's stores shall be of steel or equivalent material.
 - (xi) Paints, varnishes and other finishes used on exposed interior surfaces shall not be of a nature to offer an undue fire hazard in the judgment of the Administration and shall not be capable of producing excessive quantities of smoke or other toxic properties.
 - (xii) Pipes conveying oil or combustible liquids shall be of a material approved by the Administration having regard to the fire risk. Materials readily rendered ineffective by heat shall not be used for overboard scuppers, sanitary discharges, and other outlets which are close to the waterline and where the failure of the material in the event of fire would give rise to danger of flooding.
 - (xiii) Electric radiators, if used, must be fixed in position and so constructed as to reduce fire risks to a minimum. No such radiators shall be fitted with an element so exposed that clothing, curtains or other similar materials can be scorched or set on fire by heat from the element.
 - (xiv) Cellulose-nitrate based film shall not be used in cinematograph installations on board ships.
 - (xv) Power ventilation of machinery spaces shall be capable of being stopped from an easily accessible position outside the machinery spaces.
 - (xvi) Skylights to machinery spaces of Category A and cargo pump rooms shall comply with the provisions of sub-paragraph (a)(iii) of this Regulation in respect of windows and port lights and in addition shall be so arranged as to be capable of being readily closed from outside the spaces which they serve.

- (b) Within the accommodation, service and control spaces the following conditions shall apply:
- (i) Corridor bulkheads including doors shall be of "A" or "B" Class divisions extending from deck to deck. Where continuous "B" Class ceilings and/or linings are fitted on both sides of the bulkhead, the bulkhead may terminate at the continuous ceiling or lining. Doors of cabins and public spaces in such bulkheads may have a louvre in the lower half.
 - (ii) Air spaces enclosed behind ceilings, panelings, or linings shall be divided by close-fitting draught stops spaced not more than 14 metres apart.
 - (iii) Ceilings, linings, bulkheads and insulation except for insulation in refrigerated compartments shall be of non-combustible material. Vapour barriers and adhesives used in conjunction with insulation as well as insulation of pipe fittings for cold service systems need not be non-combustible, but they shall be kept to the minimum quantity practicable and their exposed surfaces shall have resistance to propagation of flame to the satisfaction of the Administration.
 - (iv) The framing, including grounds and the joint pieces of bulkheads, linings, ceilings and draught stops, if fitted, shall be of non-combustible material.
 - (v) All exposed surfaces in corridors and stairway enclosures and surfaces in concealed or inaccessible spaces shall have low flame-spread characteristics.
 - (vi) Bulkheads, linings and ceilings may have combustible veneer, provided that such veneer shall not exceed 2.0 millimetres within any such space except corridors, stairway enclosures and control stations where it shall not exceed 1.5 millimetres.
 - (vii) Stairways which penetrate only a single deck shall be protected at least at one level by "A" or "B" Class divisions and self-closing doors so as to limit the rapid spread of fire from one deck to another. Crew lift trunks shall be of "A" Class divisions. Stairways and lift trunks which penetrate more than a single deck shall be surrounded by "A" Class divisions and protected by self-closing steel doors at all levels. Self-closing doors shall not be fitted with holdback hooks. However, holdback arrangements fitted with remote release fittings of the failsafe type may be utilized.
- (c) Ducts provided for ventilation of machinery spaces of Category A shall not in general pass through accommodation, service spaces or control stations, except that the Administration may permit relaxation from this requirement, provided that:
- (i) the ducts are constructed of steel, and each is insulated to "A-60" Class, or
 - (ii) the ducts are constructed of steel and are fitted with an automatic fire damper close to the boundary penetrated and are insulated to "A-60" Class from the machinery space of Category A to a point at least 5 metres beyond the fire damper.
- (d) Ducts provided for ventilation of accommodation, service spaces or control stations shall not in general pass through machinery spaces of Category A except that the Administration may permit relaxation from this requirement provided that ducts are constructed of steel and an automatic fire damper is fitted close to the boundaries penetrated.

Regulation 8

Cargo Tank Protection

- (a) For crude oil tankers of 100,000 tons deadweight and over and crude oil combination carriers of 50,000 tons deadweight and over, the protection of the cargo tanks deck area and cargo tanks shall be achieved by a fixed deck froth system and a fixed inert gas system in accordance with the requirements of Regulations 9 and 10 of these Regulations except that in lieu of the above installations the Administration, after having given consideration to the ship arrangement and equipment, may accept other combinations of fixed installations if they afford protection equivalent to the above, in accordance with Regulation 5 of Chapter I of the Convention.
- (b) To be considered equivalent, the system proposed in lieu of the deck froth system shall:
- (i) be capable of extinguishing spill fires and also preclude ignition of spilled oil not yet ignited; and
 - (ii) be capable of combating fires in ruptured tanks.
- (c) To be considered equivalent, the system proposed in lieu of the fixed inert gas system shall:
- (i) be capable of preventing dangerous accumulations of explosive mixtures in intact cargo tanks during normal service throughout the ballast voyage and necessary in-tank operations; and

- (ii) be so designed as to minimize the risk of ignition from the generation of static electricity by the system itself.

Regulation 9

Fixed Deck Froth System

- (a) The arrangements for providing froth shall be capable of delivering froth to the entire cargo tank area as well as into any cargo tank, the deck of which has been ruptured.
- (b) The deck froth system shall be capable of simple and rapid operation. The main control station for the system shall be suitably located outside of the cargo tank area, adjacent to the accommodation spaces and readily accessible and operable in the event of fire in the areas protected.
- (c) The rate of supply of froth solution shall be not less than the greater of the following:
 - (i) 0.6 litre per minute per square metre of the cargo deck area, where cargo deck area means the maximum breadth of the ship times the total longitudinal extent of the cargo tank spaces, or
 - (ii) 6 litres per minute per square metre of the horizontal sectional area of the single tank having the largest such area.

Sufficient froth concentrate shall be supplied to ensure at least 20 minutes of froth generation when using solution rates stipulated in sub-paragraph (i) or (ii) of this paragraph, whichever is the greater. The froth expansion ratio (i.e. the ratio of the volume of froth produced to the volume of the mixture of water and froth-making concentrate supplied) shall not generally exceed 12 to 1. Where systems essentially produce low expansion froth but at an expansion ratio slightly in excess of 12 to 1, the quantity of froth solution available shall be calculated as for 12 to 1 expansion ratio systems. When medium expansion ratio froth (between 50 to 1 and 150 to 1 expansion ratio) is employed the application rate of the froth and the capacity of a monitor installation shall be to the satisfaction of the Administration.

- (d) Froth from the fixed froth system shall be supplied by means of monitors and froth applicators. At least 50 per cent of the required froth rate shall be delivered from each monitor.
- (e)
 - (i) The number and position of monitors shall be such as to comply with paragraph (a) of this Regulation. The capacity of any monitor in litres per minute of froth solution shall be at least three times the deck area in square metres protected by that monitor, such area being entirely forward of the monitor.
 - (ii) The distance from the monitor to the farthest extremity of the protected area forward of that monitor shall not be more than 75 per cent of the monitor throw in still air conditions.
- (f) A monitor and hose connection for a froth applicator shall be situated both port and starboard at the poop front or accommodation spaces facing the cargo deck. Applicators shall be provided for flexibility of action during fire-fighting operations and to cover areas screened from the monitors.
- (g) Valves shall be provided in both the froth main and the fire main immediately forward of every monitor position to isolate damaged sections of these mains.
- (h) Operation of a deck froth system at its required output shall permit the simultaneous use of the minimum required number of jets of water at the required pressure from the fire main.

Regulation 10

Inert Gas System

- (a) An inert gas system shall be capable of providing to the cargo tanks on demand a gas or mixture of gases, so deficient in oxygen that the atmosphere within a tank may be rendered inert, i.e. incapable of propagating flame.
- (b) The inert gas system shall eliminate the need for fresh air to enter a tank during normal operations, except when preparing a tank for entry by personnel.
- (c) Empty tanks shall be capable of being purged with inert gas to reduce the hydrocarbon content of a tank after discharge of cargo.
- (d) The washing of tanks shall be capable of being carried out in an inert atmosphere.

- (e) During cargo discharge, the system shall be such as to ensure that the volume of gas referred to in paragraph (g) of this Regulation is available. At other times sufficient gas to ensure compliance with paragraph (h) of this Regulation shall be continuously available.
- (f) Suitable means for purging the tanks with fresh air as well as with inert gas shall be provided.
- (g) The inert gas system shall have a capacity of at least 125 per cent of the maximum rated capacity of the cargo pumps.
- (h) Under normal running conditions, when tanks are being filled or have been filled with inert gas, a positive pressure shall be capable of being maintained at the tank.
- (i) Exhaust gas outlets for purging shall be suitably located in the open air and shall be to the same general requirements as prescribed for ventilating outlets of tanks in tankers, referred to in paragraph (a) of Regulation 6 of these Regulations.
- (j) A scrubber shall be provided which will effectively cool the gas and remove solids and sulphur combustion products.
- (k) At least two fans (blowers) shall be provided which together shall be capable of delivering at least the amount of gas stipulated in paragraph (g) of this Regulation.
- (l) The oxygen content in the inert gas supply shall not normally exceed 5 per cent by volume.
- (m) Means shall be provided to prevent the return of hydrocarbon gases or vapours from the tanks to the machinery spaces and uptakes and prevent the development of excessive pressure or vacuum. In addition, an effective water lock shall be installed at the scrubber. Branch piping for inert gas shall be fitted with stop valves or equivalent means of control at every tank. The system shall be so designed as to minimize the risk of ignition from the generation of static electricity.
- (n) Instrumentation shall be fitted for continuously indicating and permanently recording at all times when inert gas is being supplied the pressure and oxygen content of the gas in the inert gas supply main on the discharge side of the fan. Such instrumentation should preferably be placed in the cargo control room if fitted but in any case shall be easily accessible to the officer in charge of cargo operations. Portable instruments suitable for measuring oxygen and hydrocarbon gases or vapour and the necessary tank fittings shall be provided for monitoring the tank contents.
- (o) Means for indicating the temperature and pressure of the inert gas main shall be provided.
- (p) Alarms shall be provided to indicate:
 - (i) high oxygen content of gas in the inert gas main;
 - (ii) low gas pressure in the inert gas main;
 - (iii) low pressure in the supply to the deck water seal;
 - (iv) high temperature of gas in the inert gas main; and
 - (v) low water pressure to the scrubberand automatic shut-downs of the system shall be arranged on predetermined limits being reached in respect of (iii), (iv) and (v) of this paragraph.
- (q) Ships equipped with inert gas systems shall have an instruction manual covering operational, safety and occupational health requirements.

Regulation 11

Cargo Pump Room

Each cargo pump room shall be provided with a fixed fire-fighting system operated from a readily accessible position outside the pump room. The system shall use water spray or another suitable medium satisfactory to the Administration.

Regulation 12

Hose Nozzles

All hose water nozzles provided shall be of an approved dual purpose type (i.e. spray/jet type) incorporating a shut-off.