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CONSIDERATION OF ACTIVITIES OF THE INTER-GOVERNMENTAL
MARITIME CONSULTATIVE ORGANIZATION WHICH WOULD
CONTRIBUTE TO THE MINIMIZATION OF ACCIDENTAL
SPILLAGES OF OIL AND NOXIOUS SUBSTANCES
OTHER THAN OIL FROM SHIPS

I. INTRODUCTION

1. The IMCO Assembly at its sixth session in October 1969 decided, by Resolution A.176(VI) to convene, in 1973, an International Conference on Marine Pollution for the purpose of preparing a suitable international agreement for placing restraints on the contamination of the sea, land and air by ships, vessels and other equipment operating in the marine environment. At its seventh session in October 1971 the IMCO Assembly further decided by Resolution A.237(VII) that:

- (a) the Conference should have as its main objectives 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 sea by oil and noxious substances other than oil, and the minimization of accidental spills; and
- (b) the Maritime Safety Committee should direct its appropriate Sub-Committees to give first priority to the problem of achieving these goals.

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2. Since its inception in 1959, IMCO has been actively engaged in the problem of prevention of pollution of the sea, but the activities in early years were primarily directed towards the measures for controlling the operational discharge of oil from ships, their principal aim having been the protection of amenities, such as beaches, from pollution by oil discharged from ships, especially tankers, during routine tank washing and ballasting operations.

3. In 1967 the stranding of the "Torrey Canyon" brought to light the immense threat of massive pollution which could result from accidental discharge of oil in the event of strandings, collisions and other maritime accidents. Prompt action by the IMCO Council, immediately after the accident resulted in an eighteen point programme of action which was pursued as a matter of urgency by the Maritime Safety Committee and its subsidiary bodies and also by the Legal Committee. Such action was designed to prevent accidents to ships (but also related to general safety at sea) and to promote rapid and efficient action to deal with them should they occur.

Modern trends of shipping

4. In considering the problem of accidental pollution from ships, account should be taken of the developments in modern industrial practices of shipping which have introduced the need for action on a much larger scale and considerably broader in scope than has hitherto been required. The principal features may be summarized as follows:

- (a) continuing and rapid growth of the world's merchant fleet both in numbers of ships and total tonnage, bringing about a corresponding increase in the probability of accidents particularly in narrow and congested areas;
- (b) changes in ship types and service characteristics such as the increasing demand for bulk cargo carriers, tankers (oil, chemical and liquefied gas) and other specialized ships;

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- (c) developments in modern equipment, devices and associated services for aids to navigation, such as radar and other electronic equipment, maritime navigation satellites and the introduction of new practices such as traffic control systems and advisory services;
- (d) automation in ships and consequential reduction in number of crew;
- (e) dramatic increase in the size of individual ships, in particular tankers, which has introduced a threat of massive accidental pollution on a scale which had not previously been envisaged;
- (f) increasing number of unconventional craft such as air-cushion vehicles, hydrofoil boats, catamarans, many of which operate at high speeds;
- (g) increasing diversity and quantity of petroleum derivatives and other chemical cargoes carried by ships, which has introduced a threat of pollution by substances, some of which are more harmful to the environment (though perhaps less obvious and offensive in the aesthetic sense) than oil;
- (h) increasing installation and operation of fixed or floating off-shore structure and incidence of other marine activities which may interfere with safe navigation.

Accidents to ships which have given rise to pollution

5. Various data have been published on casualties to ships and to a limited degree on pollution of the sea as a result of maritime casualties. The data on the latter aspect are related only to oil pollution incidents, and no data is available on the pollution caused by substances other than oil.

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6. The Statistical Tables published by Lloyd's Register of Shipping show that during 1965-1971 the world's merchant ships totally lost are as follows:

<u>Year</u>	<u>No.</u>	<u>Tons gross</u>	<u>Percentage</u>	
			<u>No.</u>	<u>Tons</u>
1965	273	739,047	0.65	0.46
1966	312	822,538	0.73	0.48
1967	337	832,803	0.76	0.46
1968	326	760,447	0.68	0.39
1969	327	824,978	0.65	0.39
1970	352	612,619	0.67	0.27
1971	377	1,030,560	0.69	0.42

It appears from the table that during the past years there has been a steady decrease in the casualties to ships in terms of the percentage of tonnage (with the exception of 1971 when there was a substantial increase in casualties) whereas the number of ships expressed as a percentage of the total number of ships remains more or less the same.

7. Various studies have been reported on casualties to ships and resulting oil pollution. Although the results of these studies vary considerably in some respects there is an indication that the major causes of accidental pollution are grounding, collision and structural failures and that the likelihood of such incidents increases with ship age.

8. There is also some variation in data on the amount of oil discharged or released into the sea according to causes, but it seems reasonable to say that ship casualties would constitute between 15-25 per cent of the total oil pollution of the sea caused by ships. Although ship casualties do not appear to be a major source of pollution, such incidents, when they occur, undoubtedly have a very serious local effect because of the spillage of large quantities of substances with high concentrations.

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II. MAIN PROBLEM AREAS RELATING TO THE MINIMIZATION OF ACCIDENTAL POLLUTION

9. There appears to be a variety of measures which would contribute to the minimization of accidental pollution by oil and other noxious substances. These may be divided into the following broad categories:

- (a) Prevention of accidents to ships which would give rise to significant pollution

This aspect might include such matters as:

- safe navigational procedures.
- traffic separation schemes,
- crew training and watchkeeping,
- provision of modern navigational equipment,
- manoeuvrability of large ships,
- construction and equipment of ships carrying oil or other dangerous chemical substances,
- safe carriage of dangerous goods in packages and containers,
- safe operational procedures for ships carrying oil or other dangerous chemical substances.

- (b) Minimization of the risk of escape of oil and other noxious substances in the event of maritime accidents

This aspect might include such matters as:

- survival capability of ships after collision or stranding damage,
- limitation of size and arrangements of cargo tanks in ships carrying oil or other noxious substances to minimize their escape in the event of accidents,
- facilitation of transfer of cargo in the event of accidents, its recovery after release into the sea.

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- (c) Minimization of damage to the marine environment in the event of accidental escape of oil and other noxious substances

This aspect might include such matters as:

- development of appropriate clean-up, retrieval and other similar procedures,
- providing appropriate powers to enable States to take action to mitigate or eliminate pollution damage as a result of maritime accidents,
- providing the means of redress for damage caused by pollution (liability and compensation).

III. MEASURES TAKEN BY IMCO

10. As mentioned in paragraph 2, IMCO has, since 1967, intensified its activities on the prevention of accidents to ships and the mitigation and abatement of pollution damage resulting from such accidents. These activities have culminated in the establishment of new Conventions, amendments to existing Conventions and recommendations to governments. These are summarized in the following:

A. PREVENTION OF ACCIDENTS TO SHIPS

Revision of the Regulations for Preventing Collisions at Sea

11. In October 1972 IMCO convened a Conference for revision of the Regulations for Preventing Collisions at Sea which were drafted in 1960 and came into force in 1965. The new Regulations constitute a marked improvement in establishing safe navigational procedures and fully recognize the rapid technological evolution in the field of shipborne navigational aids, such as the use of radar; they encourage mariners to take early action and they set out the responsibilities of different categories of ships; they ensure that very large ships which are less manoeuvrable in certain circumstances

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are not hampered by other ships in confined areas. The new Regulations have also adopted the practice of traffic separation in congested waters and deal with the conduct of ships navigating in such areas. An amendment procedure incorporated into the new Regulations will allow up-dating as necessary so that the Rules are kept in step with technological developments.

Routeing of ships in congested or converging areas.

12. A measure very much intended to prevent collision accidents with possible ensuing outflow of oil or other noxious cargoes, is the establishment of schemes to separate traffic in congested or converging areas. The schemes' primary objective is to separate traffic proceeding on opposite or nearly opposite courses, thus minimizing the probability of head-on collisions.

13. A significant number of schemes and areas to be avoided by certain classes of ships, mainly those carrying noxious cargoes, have been established (Resolutions A.161(ES.IV) 1968, A.186(VI) 1969, A.226(VII) 1971, A.227(VII) 1971), and surveillance in some of the most congested waters, e.g. the English Channel, has shown that the majority of the ships were complying with the traffic separation measures even when these were of purely recommendatory nature.

14. In 1971 the Organization invited Member Governments to make it an offence for ships under their flags to proceed against the general direction of traffic flow in a traffic lane when navigating in a traffic separation scheme (Resolution A.228(VII).) Legislation to this effect has been or is in the process of being enacted by many countries. The conduct of ships when navigating in traffic separation schemes is a feature of the revised Regulations for Preventing Collisions at Sea.

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Unification of buoyage systems in international waters - wreck marking

15. The Organization, in co-operation with the International Association of Lighthouse Authorities, the International Hydrographic Organization and other bodies concerned has decided to examine the possibility of unifying the buoyage systems which are at present in use bearing in mind that such unification will be of great significance for enhancing the safety of navigation.

16. As a matter of priority the question of marking of wrecks in international waters has already been considered and an agreed system has been proposed by IALA and recommended to the Maritime Safety Committee for approval. The recommended system (expanded Cardinal System) is of particular significance in European waters where the possibility of confusion exists since both the Lateral and the Cardinal Systems are used for wreck marking. A number of European countries have already agreed to introduce the system in their areas of responsibility after due promulgation.

Measures relating to the prevention of accidents to off-shore mobile units

17. IMCO has developed several recommendations relating to the prevention of accidents involving off-shore mobile units deployed for the exploration and exploitation of the sea-bed mineral resources. The recommendations which would contribute to the prevention and minimization of accidental pollution by such units are:

- Establishment of fairways through off-shore exploitation areas (A.179(VI), 1969)
- Dissemination of information, charting and manning of drilling rigs and production platforms and similar units (A.180(VI), 1969)
- Fire safety of mobile off-shore units (MSC/Circ.86, 1970)

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Crew training and watchkeeping

18. Early attention was given to the need for improving and standardizing training of masters, officers and mariners in general (A.188(VI) 1969). Relevant recommendations intended to serve as guidance particularly for developing countries wishing to bring up-to-date their training facilities and methods were issued.

19. It was further recognized that it is necessary to specify minimum standards and professional qualifications for mariners and in particular for masters and officers in charge of navigational watch. The Organization has therefore initiated a relevant study which has as its first aim the identification of basic principles to be observed in keeping a safe navigational watch and subsequently the establishment of international standards of training and certification of mariners.

20. In specifying training and qualifications for officers and crews particular reference is made to those serving on ships carrying hazardous chemicals in bulk and the need, if any, for special provisions concerning watchkeeping at sea and in ports, cargo handling and related operations of such ships. The ultimate aim of the whole project is to prepare an international convention establishing qualifications, training standards and related requirements for masters, officers and crews.

Radiocommunications

21. Recent shipping disasters have emphasized the need for more reliable communications for safety purposes. Consequently, the Organization adopted Recommendations and amendments to the 1960 Safety Convention and took other measures intended to improve communications for distress, search and rescue and radio navigational warnings. (A.217(VII), A.218(VII), A.219(VII), A.220(VII), A.221(VII), A.222(VII), A.223(VII) and A.225(VII) 1971.) They cover, inter alia, the following subjects:

- (a) improving the existing distress system (radiotelephone and radiotelegraph distress networks and inter-linking of those networks);

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- (b) the carriage and use of emergency position indicating radio beacons;
- (c) the reliability of radiotelegraph auto alarms;
- (d) equipment to be carried in SAR-aircraft for facilitating a rapid location of survival craft and ships in distress;
- (e) use of shore-based direction-finding stations for SAR purposes;
- (f) portable equipment for internal communication on board ship for emergency situations;
- (g) selective calling equipment for speedy and direct connexions with ships;
- (h) safety radio requirements for manned ocean data acquisition systems, novel types of craft, drilling platforms and special purpose ships.

Shipborne navigational equipment

22. As a result of the effort to strengthen safety at sea the relevant Convention was recently amended to require the carriage of navigational equipment which up to now was carried for the most part on a voluntary basis, (A.146(ES.IV),1968). Extensive reference was also made in the revised Regulations for Preventing Collisions at Sea to the use of radar and the information provided by it as effective means of assessing the risk of collision and deciding on evasive action.

23. The Convention includes only general technical requirements for each item of equipment. These have been supplemented by the establishment of detailed performance standards for the navigational equipment which is carried on a mandatory basis or is considered as important to safety. Member Governments have been recommended (A.224(VII),1971) to take these performance standards into account when exercising their prerogative of approving the shipborne navigational equipment for ships under their flags.

Manoeuvring capabilities of ships

24. Administrations have been recommended to ensure that the masters and officers have readily available on the bridge, all necessary data concerning the manoeuvring capabilities of the ship and stopping distances under various conditions of draught and speed (A.160(ES.IV)). An appropriate format of a booklet to contain information on these and other aspects relating to the safe handling of the ship has been developed (A.209(VII),1971).

25. A further recommendation (A.210(VII),1971) has been made to guard against the possibility that a large ship proceeding at full speed with other ships in the vicinity, might suddenly be deprived of the ability to operate the steering gear. For this purpose the Administration should ensure that, in all new ships of over 70,000 tons gross tonnage and in existing ships of similar tonnage as far as reasonable and practicable, the navigating officer will at all times have adequate and direct control over the rudder movements by such provisions as:

- (a) the duplication of the steering gear mechanism;
- (b) the provision of an alternative supply of power from the emergency generator; and
- (c) alternative control arrangements from the bridge to the steering gear.

Safe transport of oil and other dangerous chemical substances in bulk

26. A Recommendation on fire safety requirements for the construction and equipment of new tankers has been developed (A.213(VII),1971). The Recommendation contains, inter alia, requirements for a fixed inert gas system for the protection of cargo tanks against explosion. The revised Recommendation has been approved by the Maritime Safety Committee in March 1972 for submission to the eighth IMCO Assembly.

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27. A Code for the Construction and Equipment of Ships carrying dangerous chemicals in bulk has been developed (A.212(VII),1971). The Code provides suitable design criteria, construction standards and other safety measures for ships transporting chemical substances in bulk so as to minimize the risk to the ship, its crew and the neighbourhood with respect to fire, health, water pollution, air pollution and reactivity hazard. It contains requirements for such matters as construction and arrangements of ships, pumping and piping systems, electrical installations, fire protection, ship operation, etc. Depending on the degree of their hazards, chemicals are required to be carried in one of three types of ships; Types I and II ships are of double hull construction and capable of survival after collision or stranding damage specified for each type of ship. The Code also lays down the maximum quantity of products permitted to be carried in one tank.

28. The International Chamber of Shipping has developed a Tanker Safety Guide (Petroleum) and a Tanker Safety Guide (Chemicals) which set out procedures for the guidance of masters and crew for the safe operation of oil tankers and chemical tankers. IMCO has recommended to governments that they use these Guides in conjunction, as appropriate, with national regulations of their own (MSC/Circ.88, 1970 and MSC/Circ.134, 1972). Similarly, IMCO has recommended to governments the use of the International Oil Tanker Terminal Safety Guide developed by the International Oil Tanker and Terminal Safety Group (IOTTSG) (MSC/Circ.114, 1971).

Carriage of dangerous goods in packages, portable tanks and containers

29. Provisions for the safe carriage and handling of dangerous goods in packages, portable tanks and containers are given in the International Maritime Dangerous Goods Code which has been developed by the Organization and accepted by a considerable number of Member Governments. The Code classifies the dangerous substances in

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accordance with the system accepted by the UN Committee of Experts and is kept under continuous review by adding any new substance which may be proposed by Member Governments.

30. For each substance the Code gives all the data required to assess the degree and nature of danger, provides advice on safe stowage and handling on board and specifies the method of packaging, type of marking and labelling and any special precaution which may be required. The specifications for methods of packaging are in conformity with those agreed by the UN Committee of Experts.

B. MINIMIZATION OF OUTFLOW OF POLLUTANTS FOLLOWING ACCIDENTS TO SHIPS

31. The IMCO Assembly in 1971 adopted an amendment to the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (A.246(VII), 1971). The requirements set out a limitation of hypothetical oil outflow in the event of collision or stranding of oil tankers to a value in cubic metres of 400 times the cubic root of the deadweight of a ship, in metric tons, with a minimum of 30,000 m³ and a maximum of 40,000 m³. The requirements apply to tankers for which the building contract is placed on or after 1 January 1972 and also to any other tanker which will be delivered after 1 January 1977.

C. MINIMIZATION OF DAMAGE TO THE MARINE ENVIRONMENT WHEN ACCIDENTAL POLLUTION OCCURS

Reporting of incidents

32. Governments have been recommended that they require masters of all ships to report all incidents to their ships which have given or may give rise to significant spillages of oil (A.147(ES.IV), 1968). Such reports should include details on the nature and degree of pollution, the movement of the slick and other useful information as appropriate. It was also recommended that governments appoint an appropriate officer or agency to whom such information should be referred and who should be responsible for the transmission of relevant details to all other governments concerned.

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33. By Resolution A.189(VI) 1969, the Assembly invited governments to inform the Secretary-General of all reports received in accordance with Resolution A.147(ES.IV). As requested by the Assembly, the Maritime Safety Committee has reviewed the existing arrangements for the reporting of spillages and has approved a procedure (MPS/Circ.39) in order that:

- (a) governments concerned can be informed of such incidents, and
- (b) the Organization can compile a record of them for the furtherance of its own work and for the information of Member Governments.

34. As an extension of the recommendation on reporting on accidents involving significant spillages of oil (A.147(ES.IV) 1968), governments have been recommended that they require masters of all ships to report all incidents to their ships which have given or may give rise to significant spillages of dangerous goods or any loss of packages or containers containing such substances (MSC/Circ.130, 1972).

Methods of dealing with spillages of oil

35. A manual on oil pollution has been prepared and published (1973). The manual contains practical information for the guidance of governments on methods, both mechanical and chemical, for dealing with oil spillages on the sea or beaches. It has been compiled to assist governments, particularly those of developing countries, which are concerned with the implementation of contingency plans for dealing with spillages of oil not only from ships but from all sources.

Legal measures

36. The Conferences convened by IMCO in Brussels in 1969 and 1971 adopted the following three Conventions relating to the legal aspects of prevention and mitigation of oil pollution damage as well as compensation for its effects:

- International Convention Relating to the Intervention On the High Seas in Cases of Oil Pollution Damage

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- International Convention on Civil Liability for Oil Pollution Damage
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage

37. The first Convention regulates the measures which a State directly threatened or affected by a casualty which takes place outside its territorial sea may take to protect its coastline, harbours, territorial sea or amenities when such measures may affect the interests of shipowners, salvage companies or even a flag government.

38. The second Convention provides for compulsory liability and insurance for a ship for damage caused to third parties by oil which has escaped or been discharged from a ship as a result of a maritime casualty. Under the Convention the owner of a ship is liable for any one incident of an oil pollution damage up to \$134 for each ton of the ship with the maximum of \$14 million for each incident.

39. The third Convention establishes an International Fund for compensation for oil pollution damage. Under the Convention, victims of oil pollution damage may be compensated beyond the level of the shipowner's liability under the 1969 Liability Convention, up to \$30 million for each incident. Contributions to the Fund are made by all persons who receive oil by sea in Contracting States.

IV. MEASURES TO BE INCORPORATED IN THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION FROM SHIPS, 1973

40. The draft text of an International Convention for the Prevention of Pollution from Ships, 1973, which is being prepared by the Maritime Safety Committee and its subsidiary bodies, is the principal basic document to be submitted to the 1973 Conference for consideration and adoption. The Convention deals with all aspects of pollution, both intentional and accidental, by oil and noxious

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substances other than oil from ships, with the exception of the disposal of shore-generated wastes from ships by dumping and the pollution directly arising out of the exploration and exploitation of sea-bed mineral resources. The draft Convention contains certain provisions directed towards the minimization of accidental spillages. These are summarized in the following:

- (a) Chapter III of Annex I of the draft Convention, which deals with the requirements for minimizing oil pollution from oil tankers due to side and bottom damage, contains provisions for:
 - limitation of size and arrangements of cargo tanks on the same lines as the amendments to the 1954 Oil Pollution Convention (A.246(VII), 1971),
 - survival capability of oil tankers which requires new oil tankers to comply with subdivision and damage stability standards at fully and partially loaded conditions,
 - pumping and piping arrangements for cargo transfer in the event of damage to cargo oil tanks,
- (b) The segregated ballast tankers which will be provided for in the draft Convention either as a mandatory requirement for new ships above a certain size or as one of the alternative methods, are primarily intended for the prevention of operational pollution by oil from oil tankers, but would undoubtedly contribute also to the minimization of accidental spillages;
- (c) Regulation 15 of Annex II sets out provisions whereby Contracting Governments are required to issue detailed regulations for the design, construction and operation of ships carrying noxious substances in bulk in order to minimize the uncontrolled release of such substances in the event of an accident. For this purpose reference is made to the Bulk Chemical Code (A.212(VII), 1971);

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- (d) Annex III of the draft Convention lays down the conditions for the carriage of noxious substances in packages and containers with a view to preventing and minimizing the hazard to the marine environment. Detailed requirements will be included in the International Maritime Dangerous Goods Code to which reference is made in the draft Convention.
- (e) Article 7 of the draft Convention contains provisions for reporting incidents involving harmful substances. Detailed reporting procedures are included in the relevant Annexes.

41. The draft Convention does not include matters directly relating to the prevention of accidents to ships, since this aspect, although being a major contributing factor for the prevention or minimization of accidental pollution, could more appropriately be dealt with within the framework of Conventions relating to ship safety, such as the International Convention for the Safety of Life at Sea, 1960, the International Convention on Load Lines, 1966, and the International Regulations for Preventing Collisions at Sea, 1972.

42. A draft Protocol on the extension of the 1969 Intervention Convention to cover substances other than oil, which is also to be submitted to the Conference for consideration and adoption, is considered to be a further contribution to the prevention or mitigation of pollution damage caused by ships carrying substances harmful to the marine environment.

V. MEASURES UNDER CONSIDERATION OR CONTEMPLATED BY IMCO

43. IMCO continues its efforts towards improvement in the safety of ships and prevention of pollution. Some of the measures under consideration or contemplated relate to the prevention, mitigation or elimination of pollution caused by accidents to ships. The work in this field is carried out by the Maritime Safety Committee and its relevant Sub-Committees in respect of the technical aspects and by the Legal Committee in respect of the legal aspects. The main features of such work are summarized in the following:

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Amendments to the Bulk Chemical Code

44. The Bulk Chemical Code (A.212(VII), 1971), is being amended to take into account the pollution aspect. This subject is dealt with in more detail in a separate document to be submitted to the Conference (MP/CONF/...).

Development of new Codes on Bulk Chemicals

45. The Bulk Chemical Code will be extended to cover ships carrying hazardous gases (compressed or liquefied) in bulk and non-propelled vessels engaged in international sea-going and inland water navigation. This subject is also dealt with in some detail in a separate document for the 1973 Conference (MP/CONF/...).

Manoeuvrability of large ships

46. A study is being carried out on various design and constructional features of ships to improve their manoeuvring capability and stopping distance. One aspect is the formulation of a proposal for amendments to Part C of Chapter II of the 1960 Safety Convention in respect of the steering gear.

Amendments to the International Maritime Dangerous Goods Code

47. Pursuant to the provisions of Annex III of the draft 1973 Convention, the International Maritime Dangerous Goods Code will be amended, expanded and modified as necessary, to include cargoes which present a serious hazard to the marine environment, whether or not they also present a hazard to ship and crew, and in addition, to its present function the Code would provide guidance for the carriage in packaged form and handling of all kinds of noxious goods which may be polluting agents. The presentation of the information in a consolidated document would be helpful to masters, handling personnel, administrations and all other parties concerned.

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Improvement in the existing traffic separation schemes and establishment of new schemes

48. Continuous effort is being made to improve the existing traffic separation schemes, and as and when need arises, additional schemes will be formulated.

Crew training and watchkeeping

49. The Maritime Safety Committee in 1971 established a new Sub-Committee on Standards of Training and Watchkeeping. The main items to be considered by the Sub-Committee are as follows:

- (i) Basic principles to be observed in keeping a safe navigational watch;
- (ii) operational guidance for officers of the watch;
- (iii) mandatory minimum requirements for certification of masters and officers in charge of a safe navigational watch;
- (iv) qualifications of ratings forming part of a navigational watch;
- (v) standards of training and certification of engineer officers in charge of a watch;
- (vi) training and qualifications of officers and crews of ships carrying hazardous chemicals in bulk;
- (vii) operational guidance for officers of the watch in port;
- (viii) mandatory minimum requirements for chief mates and masters and for officers serving in very large ships;
- (ix) qualifications of engineer ratings forming part of a watch;
- (x) standards of training and certification of radio officers;

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- (xi) refresher and updating courses;
- (xii) revalidation of certificates subsequent to substantial occupation ashore.

Shipborne navigational equipment

50. The provisions of the Safety Convention for shipborne navigational equipment and the related performance standards are kept under review. The performance standards so far prepared cover general requirements for electronic navigational aids and specific requirements for radar equipment, radio direction-finding systems, echo-sounding equipment, radar reflectors and gyro compasses. Performance standards for automatic pilot equipment and racons are under consideration.

Radiocommunication

51. Among the subjects currently under consideration are:

- a study for a future distress system;
- a study for an auto alarm device, suitable for all ships;
- a study, in conjunction with the IHO, on the promulgation of radio navigational warnings to shipping;
- performance standards for ships' radio equipment.

52. Since 1966 the Organization has taken a considerable interest in the development and application of space techniques for maritime purposes. This interest is based mainly on the need to improve safety communications and to meet certain operational needs of the maritime mobile service which are beyond the scope of existing resources and methods. At present the relevant effort is concentrated in specifying operational and other technical requirements and preparing an organizational plan for an international maritime satellite system. The studies include consideration of the means by which such a system should be established, its legal and financial status and various other factors. It is envisaged that an international conference will be convened in 1974 to reach preliminary agreement on these subjects.

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53. The measures described above are aiming at preventing a distress or emergency situation developing into an accident as well as providing assistance to survivors and saving life when the accident has occurred.

Development of a comprehensive Manual on Oil Pollution

54. As a continuation of the work on the Manual on the practical information on means of dealing with oil spillages (see paragraph 35 above), a comprehensive Manual on Oil Pollution is being prepared which will also contain information on other aspects of the problem such as prevention of pollution, contingency planning and salvage.

Extension of the 1969 Liability Convention to cover substances other than oil

55. It is envisaged that the 1969 Convention relating to Liability for Oil Pollution Damage will be extended to cover substances other than oil.

Long-term work programme of IMCO

56. The seventh IMCO Assembly in 1971 approved a long-term work programme of the Organization which indicates future conferences envisaged during the period 1974-1978. Some of these conferences are pertinent to the subject under consideration; these are:

- Revision of the 1960 Safety Convention.
- Formulation of a convention on standards for certification and training.
- Extension of the 1969 Liability Convention relating to substances other than oil.

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VI. PLANS FOR FUTURE WORK

57. The foregoing paragraphs may illustrate that a considerable amount of work has been achieved in the past and is in progress or planned in the future in the Organization on the prevention, mitigation or minimization of marine pollution as a result of accidents to ships. While some of this work will have concrete results in the form of provisions in the International Convention for the Prevention of Pollution from Ships, 1973, a considerable amount of work leading to possible amendments to the International Convention for the Safety of Life at Sea, 1960 and other Conventions, has yet to be accomplished.

58. Improvement in maritime safety in general, and the prevention of accidents to ships carrying oil or other noxious substances in particular, is one of the most important aspects of the prevention and abatement of marine pollution. With this in view, the Conference may wish to examine the work which the Organization has so far accomplished, or has in progress or planned, as mentioned in the foregoing, and recommend to the IMCO Assembly that the work in this field should proceed on a priority basis. Certain suggestions on the directions in which such work should proceed are indicated in the following:

Revision of the 1960 Safety Convention

59. At present a Conference to revise the 1960 Safety Convention is envisaged for 1976, although this Conference might take place in 1974 if the scope of the revised Convention is limited. In any event, there will be a need for a constant review of the provisions of the Convention leading to subsequent amendments thereto. The basic aim of the Safety and Load Line Conventions is the safety of ships and human life at sea, including the prevention of accidents to ships, whereas the 1973 Marine Pollution Convention will have as its objective the protection of the protection of the marine

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environment from pollution arising out of maritime activities, including maritime accidents. To this extent, the objectives of the Safety and Load Line Conventions and of the Marine Pollution Convention may be complementary and occasionally overlapping. Examples are the survival capability of ships, the intention to include pollution aspects in the International Maritime Dangerous Goods Code and the Bulk Chemical Code, etc. The Conference may wish to consider the relationship between the Safety and Load Line and Marine Pollution Conventions so that the main objectives of, and general matters to be covered by, these Conventions may be clearly defined. For example, such consideration would be particularly useful if it enabled the Safety Conference to determine the extent to which the Bulk Chemical Code or International Maritime Dangerous Code should be made mandatory under the Safety Convention.

Review of Assembly Resolutions

60. The fourth extraordinary session of the IMCO Assembly adopted a series of Resolutions on matters which were brought to light by the "Torrey Canyon" accident. In most cases these Resolutions set out recommendations to governments in general and broad terms. Some of the Resolutions have been incorporated in the draft Marine Pollution Convention or further expanded by the Maritime Safety Committee with a view to assisting governments in taking more specific measures.

61. There appear to be, however, a number of Resolutions which would require review in order that more specific and detailed measures may be formulated or that existing measures may be extended to cover substances other than oil. Examples are:

- National arrangements for dealing with significant spillages of oil (A.148(ES.IV), 1968).
- Regional co-operation in dealing with significant spillages of oil (A.149(ES.IV), 1968).

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- Research and exchange of information on methods of disposal of oil in cases of significant spillages (A.150(ES.IV), 1968).

Review of the work programme of the Organization

62. Section V of this document describes the main items under consideration or contemplated by the Organization which directly or indirectly relate to the prevention and abatement of accidental pollution. The Conference may wish to examine this work programme and make suggestions or recommendations as appropriate with regard to any additional work to be undertaken or priorities to be given to various items.

Scientific and technical research on marine pollution

63. In order to achieve the effective control of marine pollution, it would be desirable to collect scientific and technical data on the basis of which suitable control measures could be taken. Under other agenda items the Conference will be invited to consider the establishment of suitable machinery such as to enable the list of noxious substances to be continuously reviewed and updated. This example illustrates the need for a close link between scientific research and the development and implementation of legal measures.

64. Although some effort has been made in the Organization towards the collection of scientific and technical data, there might be a need to intensify work in this respect so that the relevant Convention could be continuously updated. Such information might include the amount of oil and other noxious substances released into the sea, data on ship casualties resulting in major pollution, identification of spilled oil or other substances, analysis of casualty data, particularly those relating to very large tankers and the assessment of the inter-relationship of average tanker size and age with incidents and magnitude of pollution casualties.

VII. ACTION INVITED OF THE CONFERENCE

65. The Conference is invited:

- (a) to take note of the information provided above;

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- (b) to review the nature of the work being carried out in the Organization to improve maritime safety in the interest of pollution prevention and abatement, the progress made to date and plans for future work;
- (c) to recommend to the Organization that the work in this field should proceed on a priority basis; and
- (d) to adopt a Resolution or Resolutions.

A draft Resolution to this effect is attached at Annex II for consideration by the Conference.

ANNEX I

BIBLIOGRAPHY ON
MARITIME ACCIDENTS AND OIL POLLUTION INCIDENTS

Oil in the Marine Environment

P.G. Jeffery,
Warren Spring Laboratory,
Department of Trade and Industry, U.K.

A Survey of Marine Accidents
(with particular reference to Tankers)

C. Grimes,
A Paper presented at a Conference on Marine Traffic Engineering
sponsored by the RIN and the RINA and held in London on 24-25 May 1972.

Increased Costs Reflected in Total Loss Figures, POLICY, March 1972.

Routeing Systems and the Freedom of the Sea

J.N.F. Laneyer,
Safety at Sea International, March 1972.

Tankers and the Ecology

J.D. Porricelli,
V.F. Keith, L. Storch,
A Paper presented at the Annual Meeting of the Society of Naval
Architects and Marine Engineers, New York, 11-12 November 1971.

La Pollution Accidentelle des Mers par Hydrocarbures
Ministère des Transports, Secrétariat général de la Marine Marchande.

Lloyds Registry Casualty Returns.

The Liverpool Underwriters Association Casualty Returns.

Polluting spills in US waters - 1970 (MP XIII/6 - USA).

Research on prevention of accidental spills (MP XII/6/2 - France).

Summary of study on accidental marine pollution by oil
(3 vols. in French only) (MP XIII/2(a)/9 - France).

Analysis of casualties to tankers in the Baltic, Gulf of Finland
and Gulf of Bothnia in 1960-1969 (OP IX/4/5 - Finland).

Tanker casualty analysis (OP X/2/10 - USA).

An analysis of oil outflows due to tanker accidents (DE IX/3/2 - USA).

ANNEX II

MINIMIZATION OF ACCIDENTAL SPILLAGES OF OIL AND
OTHER NOXIOUS SUBSTANCES FROM SHIPS

Draft Resolution

INTENTIONAL POLLUTION OF THE SEA AND ACCIDENTAL
SPILLAGES

THE CONFERENCE,

NOTING that it was assigned the two following objectives by
Resolution A.237(VII), adopted by the Assembly of the Inter-Governmental
Maritime Consultative Organization on 12 October 1971,

- (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 primarily, it has been as a result of extensive
preparatory work within the Organization that the Conference has been able to
prepare and open for signature

- (a) the International Convention for the Prevention of
Pollution from Ships, 1973; and
- (b) the Protocol relating to Intervention on the High Seas in
Cases of Marine Pollution by Substances other than Oil,

the implementation of which should result in the achievement of the first objective but which only deals partially with the second objective;

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 accident and mitigation of damages 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;
- (b) collection of ship casualty statistics particularly those relating to very large tankers; and
- (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 a 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 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 other noxious substances;
 - (v) manoeuvrability of large ships;
 - (vi) construction and equipment of ships carrying oil or other noxious substances; and
 - (vii) safe carriage of dangerous goods in packages and containers;
- (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 development of appropriate cleaning, retrieval and other similar procedures;

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.
