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**BRIEF SUMMARY OF ACTIVITIES OF THE
INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION
CONCERNING SHIP DESIGN AND CONSTRUCTION**

by

the secretariat of the
Inter-Governmental Maritime Consultative Organisation
(IMCO)

1. OBJECTIVE, FUNCTIONS AND STRUCTURE OF IMCO

1.1 Objective and functions

.1 The Inter-Governmental Maritime Consultative Organization is a Specialized Agency of the United Nations whose activities are entirely in the maritime field. The Organization's objectives, as provided for in Article 1 of its Convention (as amended in 1975) are, inter alia, to provide machinery for co-operation among governments in the field of governmental regulations and practices relating to technical matters of all kinds affecting shipping engaged in international trade, to encourage the general adoption of the highest practicable standards in matters concerning maritime safety and efficiency of navigation and the prevention and control of marine pollution from ships, and to deal with legal matters related thereto.

.2 One of the important functions of IMCO is to provide for the drafting of conventions, agreements or other suitable instruments, and to convene conferences to adopt such instruments. At present there are fifteen conventions and similar instruments (see 1.4.2) related to ship design, construction and equipment, for which IMCO performs depositary functions.

.3 In addition, there are a number of codes, recommendations and guidelines, which relate also to ship design, construction and equipment, including stability and subdivision requirements.

1.2 Membership

.1 IMO is open to membership by all State Members of the United Nations and by other States in accordance with the admission procedures contained in the IMO Convention. There are at present 107 full Members of the Organization and one Associate Member, which include practically all nations in the world interested in maritime affairs.

1.3 Principal Organs of IMO

.1 The following are the principal organs of IMO:

- Assembly
- Council
- Maritime Safety Committee (MSC)
- Marine Environment Protection Committee (MEPC)
- Legal Committee
- Facilitation Committee
- Committee on Technical Co-operation.

.2 The Assembly is the supreme governing body of the Organization. It determines the policy of the Organization, decides upon the work programme and votes the budget to which Members of the Organization contribute. It recommends to Member States the adoption of regulations concerning maritime safety and prevention and control of marine pollution. The Assembly is composed of all Member States and normally meets once every two years.

.3 The Council consists of twenty-four Member States elected by the Assembly for a term of two years. Subject to the authority of the Assembly, it supervises the execution of the work programme of the Organization and performs the functions of the governing body between sessions of the Assembly.

.4 The Maritime Safety Committee (MSC) is open to all Member States of the Organization as well as to States which are Parties to conventions in respect of which the Committee performs functions. It is responsible for administering and co-ordinating the activities of the Organization relating to the technical work of the Organization,

concerning maritime safety and in particular ship design and construction, efficiency of navigation and safe carriage of cargo. The Committee performs its functions mainly through its Sub-Committees and other subsidiary bodies.

.5 At present there are twelve Sub-Committees of the Maritime Safety Committee, as follows:

- Sub-Committee on Ship Design and Equipment (DE)
- Sub-Committee on Fire Protection (FP)
- Sub-Committee on Subdivision, Stability and Load Lines (STAB)
- Sub-Committee on Safety of Fishing Vessels (PFV)
- Sub-Committee on Bulk Chemicals (BCH) (which is also a subsidiary body of the MEPC)
- Sub-Committee on Life Saving Appliances (LSA)
- Sub-Committee on Radiocommunications (COM)
- Sub-Committee on Safety of Navigation (NAV)
- Sub-Committee on Containers and Cargoes (BC)
- Sub-Committee on the Carriage of Dangerous Goods (CDG)
- Sub-Committee on Standards of Training and Watchkeeping (STW)

.6 The Committee further looks seriously into the question of sub-standard ships and their control and has adopted for this purpose procedures for the control of ships (Resolution A.321(IX)). The Committee also looks in depth into serious casualties of ships and has established a permanent working group on casualty statistics.

.7 The Marine Environment Protection Committee (MEPC) is a permanent subsidiary organ of the Assembly whose membership is open to all Member States of IMCO as well as to States which are Parties to the conventions in respect of which the Committee performs functions. It is responsible for administering and co-ordinating the activities of IMCO relating to the prevention and control of marine pollution from ships, vessels and other equipment operating in the marine environment.

.8 The Legal Committee is a subsidiary body of the Council and is charged with the consideration of legal matters of concern to the Organization. The Legal Committee is open to participation by all Member States of IMCO.

.9 The Facilitation Committee is a subsidiary body of the Council established to advise the Council on matters relating to the facilitation of maritime traffic. It also provides advice to the Secretary-General of the Organization in relation to his functions under the Convention for the Facilitation of International Maritime Traffic, 1965. Membership to this Committee is open to all Members of IMCO as well as to States Parties to the Facilitation Convention.

.10 The Committee on Technical Co-operation is a subsidiary body of the Council and performs advisory functions in respect of IMCO's programme of technical assistance to developing countries. Membership of the Committee is open to all Member States of IMCO.

.11 Other Bodies

In addition, IMCO provides secretariat services for the following bodies:

- Consultative Meeting of Contracting Parties to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC)
- Preparatory Committee on the International Maritime Satellite Organization (INMARSAT).

.12 It should be noted that most of the Conventions and other instruments referred to in paragraph 2 above contain provisions which call upon IMCO organs to perform functions in relation to such instruments. For instance, the IMCO Assembly, MSC or MEPC is designated as an organ to adopt amendments to the relevant Convention. Thus there is a close link between the activities of the IMCO organs and the administration of Conventions.

1.4 Functions and Responsibility of the Secretariat

1.4.1 The main functions and responsibility of the Secretariat are to provide services to carry out the work programme of the Organization, which include the following:

- .1 to provide the normal Secretariat and other facilities required in the preparation for conferences, meetings of IMCO bodies and other meetings convened by IMCO and for the work of those meetings. These facilities include, in particular, the provision of background documentation and conference facilities of all kinds;
- .2 to organize the necessary follow-up action arising from the work of these meetings;
- .3 to perform depositary and other functions conferred upon the Secretary-General in respect of Conventions and other international instruments;
- .4 to provide appropriate information and services to governments in connexion with consequential action necessary to implement decisions or recommendations by, or arising from the work of IMCO organs, bodies and conferences;
- .5 to represent the Organization at meetings and conferences of the United Nations and other specialized agencies, as well as inter-governmental and non-governmental organizations in consultative status with IMCO, when matters of mutual interest to both organizations are under consideration;
- .6 to organize and execute the technical co-operation programme either by securing and co-ordinating contribution of experts, and donor agencies and governments or, where necessary or appropriate, by providing the required technical, legal or administrative expertise to governments and institutions on request.

1.4.2 Status of Conventions and other international instruments relating to Ship Design, Construction and Equipment, for which ILO performs Depositary and Secretariat Functions and their Amendments (as at 31 December 1976).

1.4.2.1 Conventions

- .1 The International Convention for the Safety of Life at Sea, 1948 - Entry into force 19 November 1952.
- .2 The International Convention for the Safety of Life at Sea, 1960 - Entry into force 26 May 1965.
 - (1) 1966 Amendments Not yet in force
 - (2) 1967 Amendments "
 - (3) 1968 Amendments "
 - (4) 1969 Amendments "
 - (5) 1971 Amendments "
 - (6) 1973 Amendments (General) "
 - (7) 1973 Amendments (Grain) "
- .3 The International Convention for the Safety of Life at Sea, 1974 - Not yet into force.
- .4 Protocol of 1978 relating to the International Convention for the Safety of Life at Sea, 1974 - Not yet in force.
- .5 The Convention on the International Regulations for Preventing Collisions at Sea, 1972 - Entry into force 15 July 1977.
- .6 The International Convention on Load Lines, 1966 - Entry into force 21 July 1968
 - (1) 1971 Amendments Not yet in force
 - (2) 1975 Amendments "
- .7 The International Convention for the Tonnage Measurement of Ships, 1969 - Not yet in force.
- .8 The Special Trade Passenger Ships Agreement, 1971 - Entry into force 2 January 1974.

- .9 The Protocol on Space Requirements for Special Trade Passenger Ships, 1973 - Entry into force 2 June 1977.
- .10 The International Convention for Safe Containers, 1972 - Entry into force 6 September 1977.
- .11 The Torremolinos International Convention for the Safety of Fishing Vessels, 1977 - Not yet in force.
- .12 The International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended - Entry into force 26 May 1958; 1962 Amendments 18 May and 28 June 1967.
 - (1) 1969 Amendments 20 January 1978
 - (2) 1971 (Great Barrier Reef) Amendments Not yet in force
 - (3) 1971 (Tanks) Amendments "
- .13 The International Convention for the Prevention of Pollution from Ships, 1973 - Not yet in force.
- .14 Protocol of 1978 relating to the International Convention for the Prevention of Pollution from Ships, 1973 - Not yet in force.
- .15 International Convention on the International Maritime Satellite Organization (INMARSAT), 1976 - Not yet in force.

1.4.2.2

Codes

- .1 Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (Res. A.212(VII)).
- .2 Code for the Construction and Equipment of Ships Carrying Liquified Gases in Bulk (Res. A.328(IX)).
- .3 Code for Existing Ships Carrying Liquified Gases in Bulk.
- .4 Code of Safety for Dynamically Supported Craft (Res. A.373(X)).
- .5 Code of Safety for Mobile Off-Shore Drilling Units (to be adopted).
- .6 Code of Safety for Nuclear Merchant Ships (under development).
- .7 Code of Safety for Fishermen and Fishing Vessels, Part B.

2. THE IMPACT OF IMCO REQUIREMENTS ON THE DESIGN, CONSTRUCTION AND EQUIPMENT OF CERTAIN TYPES OF VESSELS

In the following reference is made to a number of types of vessels on which requirements adopted or contemplated by IMCO could be considered influential on their design, construction or equipment.

2.1 Passenger Ships

.1 Not so long ago a series of severe fires occurred in passenger ships, involving heavy loss of life. This prompted IMCO in 1967 to improve and complement to quite a considerable extent the fire protection provisions of the 1960 Safety Convention by requiring in new passenger ships carrying more than 36 passengers, by the addition of Part II to Chapter II, inter alia, either the installation of automatic sprinkler and fire detection systems or the extended use of non-combustible material in accommodation spaces. Other requirements are those on separation of spaces such as control rooms, machinery, cargo and service spaces from accommodation spaces, as well as arrangements for flammable oils and protection of special category spaces, i.e. spaces into which and from which cars can be driven by means of their own propulsion. These provisions are now embodied in Chapter II-2 of the 1974 Safety Convention as Part B. Although these requirements are not in force so far, the necessity for improved fire safety to modern standards in the interior design of ships is clearly recognized and new passenger ships are normally built to the new IMCO standards, which has greatly contributed to the prevention of major fire casualties in such ships.

.2 Following a recommendation by the Safety Conference in 1960, IMCO reviewed the subdivision and damage stability requirements for passenger ships with a view to improving these standards in the light of modern scientific approaches. After extensive research and consideration, in 1973 the Regulations on Subdivision and Stability of Passenger Ships as an Equivalent to Part B of Chapter II of the International Convention for the Safety of Life at Sea, 1960, were adopted. These regulations are completely different from those stipulated in the 1960 Convention in as much as the philosophy of probability of survival is the governing factor for evaluating the

built-in safety provided by the various compartments instead of applying, as hitherto, minimum requirements uniformly to all compartments of the vessel. It is said that a special feature of this new set of requirements is that it provides designers with more freedom in respect of the arrangements of watertight bulkheads in the vessel. The new regulations are in particular drafted also to take account of longitudinal subdivision in the design of roll-on/roll-off car ferries.

.3 In order to provide the necessary design flexibility in a particular type of roll-on/roll-off passenger ship for the transport of commercial vehicles including their drivers in excess of 12, IMCO recently issued a recommendation to ensure uniform treatment of the SOLAS requirements for such ships in respect of providing watertight doors between cargo spaces. In order to achieve an equivalent level of safety, a number of additional safety requirements have to be complied with, such as the fitting of the watertight doors as near as possible to the centre line, closing of the doors before leaving port together with remote indications that the doors are closed at sea and fire protection to standards laid down in Part II, Chapter II of the 1960 Safety Convention.

2.2 Oil Tankers

.1 Around the beginning of this decade a number of explosions in very large crude tankers pointed to the need for precautionary measures to be taken to prevent, if possible, such accidents. Following quite extensive research in which the industry also participated through the International Chamber of Shipping, in 1971 IMCO adopted a recommendation concerning fire safety measures for new tankers which, to cope with the risk of explosions, provided for the installation of inert gas systems, as well as fixed deck foam systems, for the protection of the cargo tank deck area. This recommendation also relates to structural fire protection for accommodation and other spaces which was developed using the philosophy adopted for the passenger ships in Part H, referred to above.

However, emphasis was given to particular hazards which could be expected for tankers in as much as, amongst other things, the front bulkhead and part of the side walls of accommodation spaces aft are required to be of high fire resisting capability.

.2 The recommendation was under constant review, taking into account any further results of on-going research and in 1973 a complete revised text was adopted. In 1975 additional requirements on cargo tank protection in respect of vessels smaller than those referred to in the original recommendation were adopted.

.3 Of considerable impact on the design of oil tankers will be the requirements for minimizing oil pollution due to side and bottom damage. These requirements are intended to be as flexible as possible in the arrangements of tanks since the main parameter is the amount of oil considered to be released in the sea in the event of damage. They were adopted in 1971 as amendments to the 1954 Oil Pollution Convention and incorporated in the 1973 Marine Pollution Convention. This latter Convention also requires that a new oil tanker be so designed as to remain afloat after certain assumed damage to its hull. All these provisions will influence arrangement of tanks and other watertight compartments, but the biggest impact on tanker design could be the requirements of the 1973 Marine Pollution Convention for tankers of 70,000 tons deadweight and above to be provided with segregated ballast tanks, which means that considerable additional tank spaces have to be set aside for clean water ballast to be used during the ballast voyage, thus increasing the size of the ship, perhaps up to the order of 30%.

.4 Under the 1973 Marine Pollution Convention, all oil-carrying ships will be required to be capable of operating with the method of retention on board of oil residues in association with the 'load-on-top' system or discharge to reception facilities. To effect this, all new and existing oil tankers and other ships will, with certain exceptions be required to be fitted with appropriate equipment, which will include an oil discharge monitoring and control system, oily-water separating equipment or filtering system, slop tanks, sludge tanks, piping and pumping arrangements.

2.3 Chemical Tankers

Having regard to the particular hazards associated with the transport of dangerous liquid chemicals in bulk, in 1968 I CO began drawing up a code for the construction and equipment of such ships, which was adopted in 1971 by the IMCO Assembly. This code introduced quite a number of new features, the most outstanding probably being the ship type concept. According to this concept, chemicals most hazardous to the crew and environment have to be transported in Type I ships, those with properties less harmful in Type II and those which would have little effect on crew and environment in Type III ships. In essence chemical tankers have to be designed so that the release of cargo in case of stranding or collision is most unlikely in Type I vessels, with lesser degrees of probability in respect of ship Types II and III respectively.

2.4 Gas Carriers

Since 1971 IMCO has concentrated on the development of a code for the construction and equipment of ships carrying liquified gases in bulk. This code is much more comprehensive than the Bulk Chemical Code as it caters not only for the safety of the crew and the vessel but also includes to a larger extent requirements for the prevention of pollution of the environment due to operational mishaps or by accident. The carriage of liquified gases at very low temperatures also necessitated the introduction into this code, to a considerable extent, of requirements for the material of cargo tanks and associated piping and other equipment which is unique as regards international safety requirements. This code was adopted by the IMCO Assembly in 1975 and is supplemented by a code dealing with minimum safety requirements for existing gas carriers.

2.5 Dynamically supported craft

.1 The rapid increase of short distance high-speed passenger ferry services by novel types of craft such as hydrofoil boats and air-cushion vehicles urged the Organization to look into the matter of providing uniform safety standards for these vehicles. An essential factor for the design is that the weight of the craft has to be kept as low as possible since it has to be lifted above the surface by hydrodynamic forces or compressed air under the body of the craft. This feature,

which is quite different to surface vessels, makes the application of the provisions of the Safety and Load Line Conventions difficult or impracticable.

.2 It was therefore decided to develop a code for vehicles carrying more than 12 but less than 450 passengers with all passengers seated, which do not proceed in the course of their voyage more than 100 miles from their place of refuge and which may carry motor vehicles with fuel in their tanks in special category spaces. The content of the code, which is now finalized, is comprehensive covering such items as fire safety, life saving appliances, machinery and electrical installations, radio communication and navigation equipment, remote control and warning systems, steering compartment layout, stabilization systems, handling controllability and performance and operational and maintenance requirements. In order to provide an appropriate level of safety for the craft and realizing that not all traditional methods of regulating conventional ships would be acceptable, other approaches, such as using the probability concept and safety features hitherto not applied to ships, such as strict control of operations, frequent maintenance and inspection terminals, had to be introduced, which in many respects may be comparable with those applied in the aircraft industry.

2.6 Mobile Off-shore Drilling Units

.1 The rapid expansion of the exploitation of the Continental Shelves, in particular the oil drilling activities under adverse weather conditions, in waters like the North Sea and the increasing international employment of mobile off-shore drilling units forced IMCO to consider the draft of safety standards for such units.

.2 Although some work had been done previously in the Organization, such as providing recommendations on fire safety, on life-saving appliances and on radio communications, efforts are being made to prepare a comprehensive code covering all safety aspects of mobile off-shore drilling units. At the present stage, it is envisaged that this code will be applied to all new units whether self-propelled or not, which are capable of engaging in drilling operations for the exploration or

exploitation of resources beneath the sea bed. Following the present day designs, distinction is made between the surface type units, self-elevating units and column stabilized units. The code will cover items laid down in the Safety and Load Line Conventions and in addition will deal with industrial systems and equipment, cranes and other lifting appliances, prevention of marine pollution, temporary mooring equipment, towing arrangements and mooring considerations for supply vessels.

2.7 Off-shore Supply Vessels

Simultaneously with the consideration of drilling units, priority is given to safety considerations for off-shore supply vessels. The characteristics of off-shore supply vessels are, as is well known, low freeboard and comparatively large deck area for the carriage of extended deck loads, such as pipes. These features make such vessels vulnerable to trapping large amounts of water on deck, in particular in and between pipes. It is therefore essential that besides adequate stability for such circumstances, an adequate minimum freeboard at the stern of the vessel is also maintained under all trim conditions. The watertight closing arrangements on the deck have to be given particular consideration. Such considerations are of particular importance for operation in the rough weather conditions likely to be encountered in the North Sea. Consideration has, furthermore, to be given to maintaining sufficient buoyancy in case of minor side damage to keep the supply vessel afloat, as the probability exists of collision between supply vessel and drilling rigs due to heavy winds and seas. Another feature is that these craft may be used for transporting large numbers of workers employed on the drilling rigs from the rig to shore and vice versa, and it is being debated whether or not in these circumstances full compliance with the passenger ship requirements laid down in Chapter II of the 1960 Safety Convention has to be assumed.

2.8 Fishing Vessels

Fishing vessels, particularly in high latitudes such as in North European waters, have to operate under rough and adverse weather conditions, away from the normal shipping routes and therefore the business of fishing often becomes especially hazardous both for the fishermen and the vessels. Yet it is only recently that international requirements on the safety of fishing vessels have been agreed. In 1968 the International Labour


Organization (ILO), the Food and Agricultural Organization (FAO) and IMCO adopted an operational safety guide which was supplemented by detailed safety requirements for the construction and equipment of fishing vessels, developed in IMCO, and adopted at a tripartite meeting of the three organizations in 1974. Both documents form the FAO/ILO/IMCO Code for Safety of Fishermen and Fishing Vessels.

2. As a second step towards enhancing the safety of fishing vessels, IMCO decided to convene a conference in March 1977 for the purpose of adopting an International Convention on this subject. The draft for this convention contains requirements similar to those to be found for cargo ships in the Safety Convention. On the other hand the Sub-Committee on Safety of Fishing Vessels which prepared the draft text took advantage of the latest IMCO recommendations related to cargo ships concerning fire safety and requirements for machinery and electrical installations including requirements for basic machinery and unattended machinery spaces. The Sub-Committee, when drafting the convention, also broadly included the provisions concerning watertight integrity of the Load Line Convention but no tabulated freeboard for fishing vessels is envisaged. It is believed that if minimum stability requirements are maintained in all operating conditions, adequate freeboard for fishing vessels can be assured together with reasonable safety for men working on deck and from the entry of water into enclosed spaces.

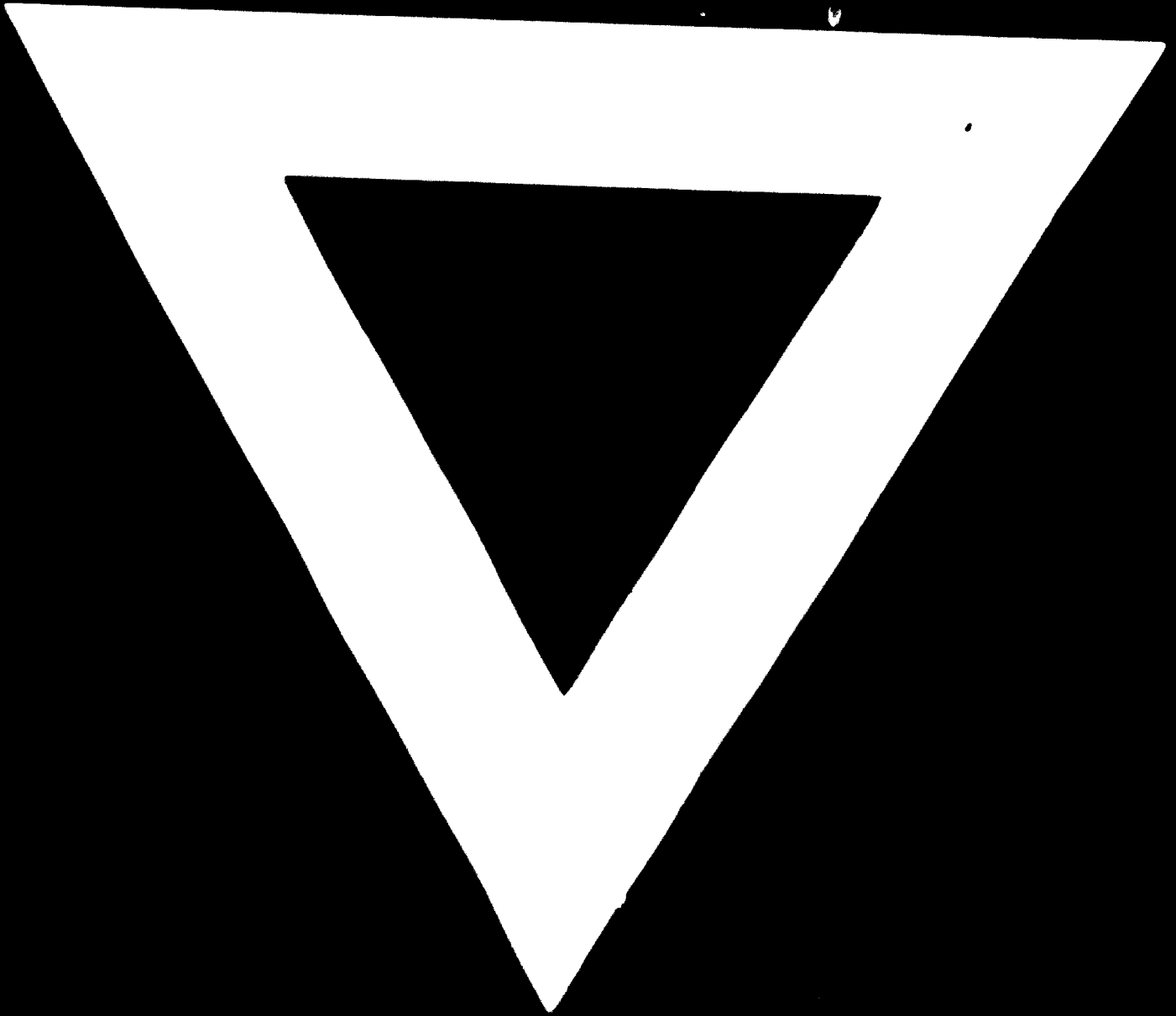
3. Some problems may arise with vessels at the lower end of the size range concerning stability requirements on the one hand and fire protection on the other, particularly if, in the latter case, such vessels are built of materials other than steel. A number of other requirements such as those for machinery and electrical installations may also not be practicable for small vessels and therefore distinctions are made in the requirements for different sizes of fishing vessels. A general clause for exemptions in particular cases, carefully drafted, was also included in the draft convention to provide the necessary flexibility to permit the practicable design and construction of all types of fishing vessels.

3. CONCLUSIONS

This paper outlines briefly the IMCO machinery for formulating international standards of ship safety and the prevention of marine pollution from ships. In particular, reference is made to requirements having an impact on the design, construction and equipment of vessels. The IMCO bodies take into account the design principles established at the time of drafting such provisions, but also attempt to provide reasonable flexibility of the texts in order to avoid hampering the use of different concepts of design. Nevertheless, in the maritime field, technical progress is going on all the time and it is quite possible that new design concepts or entirely new types of vehicles such as submersibles and catamaran ships will not be appropriately covered by current requirements. To accommodate such cases a clause is included in all IMCO conventions and codes which provides for administrations to allow any other fittings, material, appliances for the vessel, or any other provision to be made, if they are satisfied that they are equivalent to the requirements of the convention or code. When the innovations are well established and applied internationally, however, IMCO follows suit in drafting provisions to be applied uniformly worldwide. Particular examples of such developments are the Recommendation on roll-on/roll-off vessels carrying commercial vehicles and their drivers in excess of 12, the Codes for Dynamically Supported Craft for Mobile Off-shore Drilling Units and for Nuclear Merchant Ships, the latter being under development at present.



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