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Improving Safety at Sea Through the Compliance with the International Maritime Safety Codes

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ABSTRACT

There is a number of international instruments that contribute to the improvement and advancement of safety at sea. All international instruments have primarily the task to make sea navigation less dangerous and to reduce, as much as possible, the risks in relation to maritime navigation, and hence the occurrence of maritime accidents and pollution of the sea. In addition to international conventions which are the basic international instruments, the codes adopted by various international organizations are of particular importance in improving the safety of navigation. Certainly in that area, a special place is occupied by IMO as the basic organization which is responsible for improving the maritime safety. Particularly significant is its work which is aimed at the adoption of different codes the observance and application of which are indicated by the author, all in order to improve safety at sea.

1. The Necessity of Acceptance of International Instruments on Maritime Safety

The entire maritime law is more or less codified by a number of international conventions, which the states must accept and incorporate them in their national legal systems. Pursuant to Article 26 ('Pacta sunt servanda') of the Vienna Convention on the Law of Treaties is 1969. '... *every treaty in force is binding upon the parties to it and must be performed by them in good faith*'. This would mean that the obligations of contracting States to incorporate convention provisions into their national legal system and to ensure that standards are observed adequately and in harmony with the actions of the other States. In fact, international conventions are integrated into domestic law or as professor Grabovac points out "nationalization of international regulations" is carried out[2]. International norms integrated in the legal systems of national states form a specific legal system of regulations, which differs from the Continental and Anglo-Saxon legal system, one might say, is the third legal system in the world.[3] Why is the there a need for nationalization of the international regulations in maritime law, in relation to other branches of the law? The answer to this we can find by reference to three facts. First, it is clear that navigation takes place in almost the same way in all countries and the existence of international regulations causes to avoid the existence of different legal regulations, which would lead to dangerous and unsafe shipping. The, international regulations prevent the international shipping industry to meet contradictory national safety regulations for the construction and operation of vessels. And last but not least, international conventions set up minimum standards for regulation of competition between States.

Regulations on maritime safety, by their nature, in all countries have identical way regulate the maritime navigation. So that the whole matter is regulated by international instruments that must be respected strictly and consistently applied by each country. There are many international instruments issued in this sense. For example, international conventions, resolutions,

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[2]Grabovac I. (2009) International contracts as a base for harmonizing maritime law - in relation to the Law on Amendments to the Maritime Code, 2008, Collection of Works of the Faculty of Law in Split, Vol. 46 (2), pp. 261 - 269.

[3]Bolanča, D. (2002) Maritime Law In the Era of Globalisation-Universal Law or A Mixed Legal System? Zbornik radova Pravnog fakulteta u Splitu, 67(3-4), pp. 333-338

codes, guidelines, guides and regulations. In accordance with the provisions of Article 94 of the UNCLOS Convention of 1982 which contain general obligations of the flag state regarding the safety of navigation, in paragraph 3 clearly states "... *every State shall take such measures for ships flying its flag as are necessary to ensure safety at sea with regard, inter alia, to: (a) the construction, equipment and seaworthiness of ships; (b) the manning of ships, labour conditions and the training of crews, taking into account the applicable international instruments; (c) the use of signals, the maintenance of communications and the prevention of collisions*". Then, paragraph 4 contains that "*...such measures shall include those necessary to ensure: (a) that each ship, before registration and thereafter at appropriate intervals, is surveyed by a qualified surveyor of ships, and has on board such charts, nautical publications and navigational equipment and instruments as are appropriate for the safe navigation of the ship; (b) that each ship is in the charge of a master and officers who possess appropriate qualifications, in particular in seamanship, navigation, communications and marine engineering, and that the crew is appropriate in qualification and numbers for the type, size, machinery and equipment of the ship; (c) that the master, officers and, to the extent appropriate, the crew are fully conversant with and required to observe the applicable international regulations concerning the safety of life at sea, the prevention of collisions, the prevention, reduction and control of marine pollution, and the maintenance of communications by radio...*". In the same Article, paragraph 5, it is pointed out that on the occasion of taking over the stated measures "... *each State is required to conform to generally accepted international regulations, procedures and practices and to take any steps which may be necessary to secure their observance.*".

It follows that no state can independently determine these issues. In fact a general rule is that states accept international regulations in this field. However, this does not mean that the states cannot make their national legislation that must strictly follow international regulations.[4]

2. The Role of International Organizations in the Safety of Navigation

There is a number of international organizations whose actions, through the preparation of international conventions, adopt the regulations on maritime safety. But the most important of them is IMO (International Maritime Organization). Certainly the important roles have the ILO (International Labour Organization), UNCTAD (United Nations Conference on Trade and Development), and of regional organizations, in particular place belongs to the EMSA (*European Maritime Safety Agency*). There are other non-governmental organizations, institutions and associations whose members perform navigational activities and various other activities that are directly or indirectly related to maritime safety. [5]

ILO is a specialized agency of the UN, which was founded in 1919. In the area of the maritime sector, it adopted a large number of conventions and recommendations, inter alia, relating to the working and living conditions for sailors. Especially important is the *Maritime Labour Convention, MLC* from 2006 laying down standards with regard to minimum requirements for work on board, conditions of employment, wages, hours of work and rest, medical care.

UNCTAD is a permanent body of the General Assembly of the UN in the field of trade and development. It was founded in 1964 with its headquarters in Geneva. The primary objective of UNCTAD is to define the rules that apply to all aspects of development, including transportation. UNCTAD Committee on Shipping, which specifically takes into account the commercial and economic aspects of maritime affairs. The publication, entitled *Review of Maritime Transport* has a major contribution to maritime safety. This magazine has been published every year from 1968. The publication analyzes the changes that are happening in the maritime trade and port sector, which are displayed through the appropriate statistical information.

EMSA based in Lisbon, was established in 2002, after a major maritime accident of the tanker *Erica* in order to contribute to the safety of maritime navigation in the European Union, by taking a number of measures and actions aimed at reducing the risk of maritime accidents, prevention of pollution caused by ships, taking care of human lives at sea. EMSA has an important role in assisting the candidate countries for EU membership (in the implementation of regulations in their national legislation) in the field of maritime safety and preventing pollution of the sea.

2.1. IMO and Safety of Navigation

The role of IMO has been defined in the Article 2 of the *Convention on the International Maritime Organization (IMO Convention)* which was adopted on 6 March 1948 in Geneva, Switzerland, and was entered into force on 17 March 1958.[6]

[4] Each country has its own national regulations (laws and bylaws), in the field of safety of navigation which must be fully in line with international regulations. In Montenegro, the main legislation governing the subject matter is the Law on Safety of Maritime Navigation of 2013 ('Official Gazette of Montenegro', No. 62/2013)

[5] These are different organizations: Ship-owners Associations - ICS (International Chamber of Shipping International Chamber of Shipping), INTERTANKO (International Association of Independent Tanker Owners), INTERCARGO (International Association of Dry Cargo Shipowners), BIMCO (Baltic and International Maritime Council), ISMA (International Security Management Association); Seafarers Associations - ITF (International Transport Workers' Federation), IFSMA (International Federation of Shipmasters' Associations), IMPA (International Maritime Pilots' Association); Shippers and Cargo Owners Associations - OCIMF (Oil Companies International Marine Forum), CEFIC (European Chemical Industry Council); Insurers Associations - IUMI (International Union of Marine Insurance), IG P&I Clubs (International Group of P&I); Regulatory Organizations and Classification Societies - IACS (International Association of Classification Societies), ISO (International Organization for Standardization), IEC (International Electrotechnical Commission); Ports,Terminals and Port Services Associations - IAPH (International Association of Ports and Harbors), SIGTTO (Society of International Gas Tanker & Terminal Operators) and Navigational Services Associations different organizations that provide navigation services - IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities)

[6] Article 74 of the IMO Convention reads as follow: '... The present Convention shall enter into force on the date when 21 States, of which seven shall

Article 1 of the IMO Convention sets out the purposes of the Organization, establishes the global scope of IMO's safety and antipollution activities. It also refers to other tasks such as the promotion of efficiency of navigation and the availability of shipping services based upon the freedom of shipping of all flags to take part in international trade without discrimination. Article 2 says that IMO shall: '*... a) consider and make recommendations upon matters*' (within its attributions), '*... b) provide for the drafting of conventions ..., and recommend these to governments... and convene such conferences as may be necessary*'...'*c) provide machinery for consultation among Members and the exchange of information among Governments...*'

Almost 50 international conventions and hundreds of guidelines and codes have been adopted under the auspices of the IMO. These instruments are constantly refined and updated, and constitute the regulatory framework of international shipping.

The vast majority of IMO international conventions are in force, and several of them have a large, almost universal acceptance. Additionally, they cover almost all the world fleet tonnage to which they apply. Today it is virtually impossible for a ship to sail, unless its flag State is party to the principal IMO conventions.

The IMO governing bodies are Assembly, which meets every two years and is open to participation by all Member States, and the Council, which meets every six months. The Council is the only elected body and has 40 Members[7].

The technical and legal work of the Organization is carried out in committees and sub-committees, which are open to participation by all Members. Intergovernmental and non-governmental organizations, with specific competence and know-how, take active part in the work of the Organization. Committees meet at regular intervals, on average every six months. The main committees are the Maritime Safety Committee (MSC), the Marine Environment Protection Committee (MEPC), the Legal Committee (LC), the Facilitation Committee (FC) and the Technical Co-operation Committee (TCC). In order to be implemented, the international conventions adopted by the IMO must be accepted by States and incorporated by them into their national legislation. From a legal perspective, it is then for the national administrations to make sure that ships flying their flags comply with the requirements contained in the IMO treaties and non-treaty instruments. Nonetheless, the IMO, by means of various techniques, actively encourages flag States to take the necessary implementing action.

each have total tonnage of not less than 1,000,000 gross tons of shipping, have become parties to the Convention in accordance with Article 71...'

[7]The following States are Members of the Council for the 2014-2015 biennium. Category a): 10 States with the largest interest in providing international shipping services: China, Greece, Italy, Japan, Norway, Panama, Republic of Korea, Russian Federation, United Kingdom, United States. Category b): 10 other States with the largest interest in international seaborne trade: Argentina, Bangladesh, Brazil, Canada, France, Germany, India, Netherlands, Spain, Sweden. Category c): 20 States not elected under (a) or (b) above which have special interests in maritime transport or navigation, and whose election to the Council will ensure the representation of all major geographic areas of the world: Australia, Bahamas, Belgium, Chile, Cyprus, Denmark, Indonesia, Jamaica, Kenya, Liberia, Malaysia, Malta, Mexico, Morocco, Peru, Philippines, Singapore, South Africa, Thailand, Turkey.

The IMO international conventions can be broadly divided into three main groups: those concerning safety of navigation, those dealing with preventing and combating marine pollution, and those regulating liability and compensation issues and other legal matters. In more recent years, security has also been the focus of IMO treaties.

3. Safety Conventions [8]

Among the most important conventions adopted at IMO on safety and security of navigation are the International Convention for the Safety of Life at Sea, SOLAS 1974, which has been accepted by 162 States with a combined merchant fleet represent 98.60 per cent of the world tonnage (the International Ship and Port Facilities Security Code, ISPS was adopted in 2002 as an integral part of SOLAS); the Load Lines Convention, LL 1966, which has been accepted by 161 countries, whose fleets represent 98.59% of the world tonnage; the International Regulations for the Prevention of Collisions at Sea, COLREG 1972, accepted by 156 States with 98.59% of the world tonnage; the Convention on Standards of Training Certification and Watchkeeping for Seafarers, STCW 1978, with 159 States Party and 98.55% of the world tonnage; and the Convention on Maritime Search and Rescue SAR 1979, which has been accepted by 105 countries with 82.13% of the world tonnage.[9]

Other important legal treaties in the field of liability and compensation for damage at sea are the Convention on Limitation of Liability for Maritime Claims, 1976, LLMC and the Athens Convention relating to the Carriage of Passengers and their Luggage by Sea, 1974, PAL. IMO legal treaties also include the International Convention on Salvage, 1989 (Salvage), the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, 1988, SUA and the Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf 1988, SUA PROT 1988. Both SUA and the Protocol were substantially amended by IMO's Legal Committee following the events of 11 September 2001. The amendments were considered and adopted by an international legal conference convened by IMO from 10 to 14 October 2005.

4. Safety Codes

In addition to international conventions special importance to maritime safety have other legal instruments adopted by IMO. Different terminology is adopted for their identification. These are various resolutions, codes, standards, protocols, etc., which discuss about various issues such as: design, construction and equipment of ships, issues related to the stability of the ship, fire protection, radio communication, and transportation of cargo

[8]Nikčević Grdinić, J., (2015) Legal regulations in the function of ensuring ship safety, Pomorstvo: Scientific Journal of Maritime Research, Vol.29 No.1 pp. 34-38.

[9]As per data as of 5 June 2015.

(including dangerous goods), security management and maritime safety. These legal instruments are different from international conventions (that contain principles, norms, standards, or other statements of expected behaviour) and fall within the domain of soft law.[10]

There is a large number of codes on maritime safety which was adopted under the auspices of IMO. Particularly important are the codes for the safe transport of cargo which regulate in detail issues concerning the safe transport of cargo. In this respect particularly interesting are the general codes, such as: *CSS Code (Code of Safe Practice for Cargo Stowage and Securing)* and *IMSBC Code (International Maritime Solid Bulk Cargoes Code)*. In contrast to the above codes, the codes relating to the safe carriage of certain types of cargo by sea are also important. These are primarily: carriage of grain, timber, as well as carriage of dangerous goods. These are the codes issued in this sense: *International Grain Code (International Code for the Safe Carriage of Grain in Bulk)* and *Code of Safe Practice for Ships Carrying Timber Deck Cargoes*. In relation to the carriage of dangerous goods by sea, the most important ones are: IMDG code *(International Maritime Dangerous Goods, IBC code (International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk), IGC Code (International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk), INF Code (The International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High Level Radioactive Wastes on Board Ships)*. Also, we should not avoid ISM code *(International Management Code for the Safe Operation of Ships and for Pollution Prevention)* adopted by IMO in order to impact more efficiently on human factor, and to provide higher maritime safety and to avoid maritime accidents.[11]

4.1. Code of Safe Practice for Cargo Stowage and Securing, CSS Code

CSS Code was adopted by IMO Assembly on 6 November 1991. 74 CSS Code was adopted by the Resolution A.714 (17). The use of CSS Rules is required since 1997. Almost all IMO recommendations on cargo stowage were consolidated there. CSS Code consists of 7 chapters and 14 annexes. It applies to ...'*cargoes carried on board ships (other than solid and liquid bulk cargoes and timber stored on deck) and, in particular, to those cargoes whose stowage and securing have proved in practice to create difficulties.*'[12]

Considering the specific matter that was dealt with in the Code, it was relatively early amended. The first significant amendment to the CSS code was made in 1994[13] which introduced a new Annex 13 on Methods to assess the efficiency of securing arrangements for non standardized cargo[14]. Amendments to Annex 12, on safe stowage and securing of unit loads, were made by MSC/Circ.740, in June 1996. The next amendments of CSS Code were made by MSC in 2010. MSC.1/Circ.1352. These amendments include the Annex 14 Guidance on Providing Safe Working Conditions for Securing of Containers on Deck. The objective of the new Annex 14 is that persons who are responsible for the performance of providing and taking security measures on the containers transported on the deck of the ship, have safe working conditions, and in particular, access to safe and appropriate equipment.

4.2. International Maritime Solid Bulk Cargoes Code, IMSBC code

IMSBC code is the basic code that regulates the transport of bulk solids. The Code does not apply to grain. IMBC Code was first published in 1965 and since then it has been published for several times. The original name of IMSBC Code was Code of Safe Practice for Solid Bulk Cargoes BC Code).[15] However, on 4 December 2008, IMO[16] adopted new code for carriage of solid bulk cargoes - IMSBC Code. The primary objective of IMSBC Code is to enable safe stowage and shipment of solid bulk cargoes, providing information about the dangers certain shipments are exposed to and instructions on procedures when sending such shipments. All ships are required to adhere to IMSBC Code, regardless of the date of laying the keel and its gross register tonnage. IMSBC Code became mandatory on 1 January 2011. The period between 1 January 2009 and 1 January 2011 was left as a period to comply with the BC Code, and during this period the IMSBC Code was applied on a voluntary basis.[17] IMSBC Code, as well as BC Code categorizes the cargoes into three groups A, B, and C. The more detailed requirements for each type of cargo are given in some parts of this paper. In June 2013, IMO, namely MSC, adopted Resolution 354 (92) laying down amendments of IMSBC Code. The Contracting Parties of the SOLAS Convention are able to apply

[10] The notion of soft law means not legally binding rules, as opposed to hard law relating to legally binding acts. But we cannot apply this rule strictly in terms of codes that adopted by IMO, because many international conventions in their particular provisions point to the mandatory application of the codes

[11] Experience shows that the human factor, that is, human error is one of the main causes of the accidents at sea. When it comes to accidents and incidents at the sea, except in rare cases of force majeure, human activity is almost always included. The omissions in the management of the ship were the main causes of accidents. It is believed that human factor (error of the crew) is involved in 75% to 96% of maritime accidents. Rothblum, A., Human Error and Maritime Safety, Maritime Human Factors Conference, Linthicum, MD, March 13-14., 2000.

[12] Chapter 1 Article 1.1. of CSS Coda.

[13] MSC/Circ.691

[14] In May 2002 important amendments were made in Annex 13, MSC/Circ 1026. Circular 1026 also includes an extension on the scope of application recommending all lashing assemblies to be fixed to strong or fixed points, a new table on friction coefficients and new texts on an advanced calculation method and an alternative method on balance of forces.

[15] BC Code provides guidelines to maritime administration, shipowners, shippers and other parties in relation to standards applied to safe stowage and carriage of solid bulk cargoes, excluding grains which are subject to specific rules. The primary purpose of the BC Code is to improve boarding and lodging of bulk cargoes in a way: to point out the dangers which arise when loading, providing guidelines on the procedures to be applied, when it is intended to embark bulk cargo, citing a list of cargo, which is regularly carried in bulk, description of the testing procedures, to determine the properties of the cargoes carried in bulk.

[16] Resolution MSC.268 (85)

[17] However, shipping companies are aware that the Port State Control and port authorities of many states require the proof of compliance with IMSBC Code, which should be available on board.

amendments in whole or in part from 1 January 2014 on a voluntary basis, while their mandatory application started from 1 January 2015.

4.3. International Code for the Safe Carriage of Grain in Bulk, International Grain Code

International Grain Code is applied to grain. International Grain Code was adopted in May 1991 and contains detailed regulations on the carriage of grain in bulk. Its application is mandatory. Each cargo ship carrying grain shall comply with the requirements of the International Grain Code and must have the necessary documentation (approval) for such carriage. The ship without such a document shall not be loaded with grain, until the commander does not receive such approval from the authorities or until the government of the country in whose port the loading is done, confirms that the ship meets the requirements of the International Grain Code. International Grain Code replaced the Chapter VI SOLAS 1974, which regulated grain carriage in more detail.

4.4. Code of Safe Practice for Ships Carrying Timber Deck Cargoes, TDC code

TDC Code was adopted by the IMO in 1972 and amended in 1978. The introduction of new techniques and technologies in the maritime industry, the emergence of sophisticated ships imposed the need to revise this Code. New code was adopted during the IMO seventeenth session in November 1991, by Resolution A.715(17), in response to continuous victims that occurred when moving wood and frequent losses of wood which are transported as cargo. The new Code revised TDC Code from 1972. During its adoption special attention was paid to the construction of larger and more sophisticated ships, as well as the introduction of new techniques for handling cargo. The Code contains four chapters. Chapter 1 contains general provisions, Chapter 2 contains data on the stability, Chapter 3 contains provisions on stowage and the last Chapter 4 contains provisions concerning securing of timber deck cargoes. Although TDC Code was directed primarily at providing recommendations for the safe transport of wood on the deck, it also contains an appendix that consists of recommendations related to the stowage of wood under the deck. The Code was amended by IMO Resolution A.1048-a (27), which was adopted on 30 November 2011.

4.5. International Maritime Dangerous Goods, IMDG code

At the SOLAS conference held in 1960, it was decided to regulate the carriage of dangerous goods by the new international regulations that have been adopted by the IMO. In 1965 IMO for the first time published the IMDG Code, which has become mandatory for all Member States of the SOLAS Convention, from 1 January 2004. IMDG Code is an international act for the carriage of dangerous goods by sea, which regulates their packaging, transport in containers and stowage, with particular reference to the segregation of incompatible substances. This is a unique international Code, which comes in addition to the rules of the SOLAS Convention. Although it was adopted primarily for maritime carriage, it has a significant impact in other branches of carriage as well. This Code is the basis for the adoption of the law and recommendations for the carriage of dangerous goods. The goal of adoption of the IMDG Code is to improve safe carriage of dangerous goods, to protect the marine environment, improve the free unlimited flow of dangerous goods with the appropriate supporting documentation.
[18]

IMDG Code is constantly updated, which means its constant evolving and amending. However, its basic structure remains unchanged.

At its amending it was taken into account to include new dangerous goods, as well as new technologies and methods of operation or handling of dangerous goods. Cargoes listed in the IMDG regulations are dangerous goods. However, although some cargo is not listed in it, it does not mean that it is not dangerous cargo. It is possible that states in their national legislation extend the list of dangerous cargoes by other cargoes and thus include them in the regime of dangerous goods. In addition, national legislation may provide for extra requirements to be met by ships carrying dangerous goods when entering the port of the respective states. In any case, the existing national regulations must be based on the IMDG Code. Given the fact that certain states prohibit the carriage of certain dangerous goods through its territory or allow such a carriage, but in limited quantities, it is very important for every shipping company to be familiar with the regulations of the countries their ships sail to or pass through their sea. [19]

In May 2000 MSC made amendments to the IMDG Code, which significantly changed its form. The changes came into force on 1 January 2001. Pursuant to the amendments, IMDG Code now consists of seven parts, two appendices and index. The parts IMDG regulations are: Part 1 - General principles, definitions and training; Part 2 - Classification; Part 3 - Dangerous Goods List - DGL exceptions to the limited amounts. DGL is the core of the IMDG Code and presents information on the transport requirements in the coded form; Part 4 - Packing and tank provisions; Part 5 - The consignment procedures; Part 6 - Construction and testing of packaging, medium sized bulk containers, large packaging, portable tanks and road cisterns; Part 7 - Requirements relating to transport operations. Appendices to IMDG Code are: Appendix A - contains the list of generic goods and commodities that are not specified in other way and proper shipping names; Appendix B - contains a brief glossary of terms.

According to IMDG Code dangerous goods are divided in nine classes: Class 1- Explosives substances and articles; Class 2- Gases, compressed, liquefied or dissolved under pressure; Class 3- Flammable liquids; Class 4- Flammable solids, liable to spontaneous combustion, or which, in contact with water,

[18] Nikčević Grdinić, J., (2012) Safe Transport of Dangerous Goods by Sea, Import Part of the Maritime Transport, Proc.of the 5th International Conference on Maritime Transport, 27th-29th June, Barcelona, Spain, pp.1038-1056.

[19] For example, the Port of Singapore is known for its sensitivity to the passage of ships with dangerous cargo and therefore has the strict rules contained in its port acts (Port of Singapore Authority Act Code).

emit flammable gases. Class 5- Oxidizing substances (which provoke combustion) and organic peroxides which are subject to violent or explosive decomposition; Class 6- Toxic and infectious substances; Class 7- Radioactive materials; Class 8- Corrosive materials; Class 9- Miscellaneous dangerous substances and articles such as aerosols, some ammonium nitrate fertilizers, asbestos, safety matches and substances designed as marine pollutants. The purpose of the classification given in the IMDG Code is the distinction between cargo that may be considered dangerous for transporting and those which is not; detection of the risks that are described in the transport of dangerous goods; provision of taking the necessary measures to effect the safe transport of dangerous goods, without risk to people and property (during transport, as well as during the stay in port and on board).

In May 2002 amendments to Chapter VII of the SOLAS Convention were adopted, according to which from 1 January 2004, the IMDG Code was binding for all Member States of the SOLAS Convention. In fact, from a legal standpoint, the IMDG Code is mandatory for all Member States of the SOLAS Convention, but the fact is that some of its provisions are in the form of recommendations. Specifically, the Code very often uses the word "should", instead of the word "must".

4.6. International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk, IBC code

IBC Code provides for the international standards for the safe carriage by sea of dangerous and harmful liquid chemicals in bulk. In order to reduce the risks for ships, the crew and the marine environment IBC Code prescribes the international requirements that must be met when it comes to the design and construction of ships, as well as equipment which must be provided. IBC Code is applied to all tankers carrying chemicals regardless of their size. Risks of chemicals are provided therein, such as: fire danger, threat to human health, the risk of pollution of the sea, air and marine environment, the risk of reactions with other chemicals and water. IBC Code provides that, after examining the ship, she will be issued the international certificate for the carriage of dangerous chemicals in bulk. The international certificate contains the information on the type of ship according to the Code, cargoes that can be carried, additional requirements, exemptions, etc. All dangerous liquids are classified into four categories: Category A - chemical substances that can cause considerable danger to marine resources and human health; Category B - substances that can cause certain dangers; Category C - substances that might cause less risk; Category D - substances that can cause barely noticeable danger.

Ships built after 1986, carrying dangerous chemicals established by IBC Code, must comply with its requirements in terms of design, construction and operation of ships.

4.7. International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, IGC code

IGC code was adopted by IMO Resolution MSC.5(48) on 17 June 1983. IGC code applies to gas carriers constructed on or after 1 July 1986. Gas carriers constructed before that date should comply with the requirements of the Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk or the Code for Existing Ships Carrying Liquefied Gases in Bulk.[20] The purposes of these codes is to provide an international standard for the safe transport by sea in bulk of liquefied gases and certain other substances, by prescribing the design and construction standards of ships involved in such transport and the equipment they should carry so as to minimize the risk to the ship, its crew and to the environment, having regard to the nature of the products involved.

The basic philosophy is one of ship types related to the hazards of the products covered by these codes, each of which may have one or more hazard properties. A further possible hazard may arise owing to the products being transported under cryogenic (refrigerated) or pressure conditions. Severe collisions or standings could lead to cargo tank damage and uncontrolled release of the product. Such release could result in evaporation and dispersion of the product and, in some cases, could cause brittle fracture of the ship's hull. The requirements in the codes are intended to minimize these risks as far as is practicable, based upon present knowledge and technology.

According to section C of the Chapter VII of the SOLAS Convention, provisions of the IGC Code are mandatory for all members of the SOLAS Convention. Taking into consideration the development of techniques and technologies its amendments are taken into account as well. Its amendments were adopted by the Resolution MSC.30 (61) on 11 December 1992. The IGC Code published in 1993 has included the said amendments.

4.8. International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High Level Radioactive Wastes on Board Ships, INF code

Ships carrying packaged irradiated nuclear fuel, plutonium and high-level radioactive waste such products must be made in accordance with the requirements of the INF code. INF code determines loads covered, also performs specification of ships carrying such cargo.[21] The Code was adopted by the Resolution MSC.88 (71) on 27 may 1999. Its application became mandatory from 1 January 2001 based on amendments adapted to the Chapter VII SOLAS entitled Carriage of dangerous goods.

The INF code applies to all ships regardless of the date of construction and size, including cargo ships of less than 500 gross tonnage, engaged in the carriage of INF cargo. The INF

[20] Gas carriers constructed before that date should comply with the requirements of the Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk or the Code for Existing Ships Carrying Liquefied Gases in Bulk.

[21] According to the Code, INF cargoes are packaged irradiated nuclear fuel, plutonium, high-level radioactive wastes in accordance with the class 7 of the IMDG Code. Irradiated nuclear fuel - material containing uranium, thorium and/or plutonium isotopes which has been used to maintain a self-sustaining nuclear chain reaction. Plutonium - the resultant mixture of isotopes of that material extracted from irradiated nuclear fuel from reprocessing. High-level radioactive wastes - liquid wastes resulting from the operation of the first stage extraction system or the concentrated wastes from subsequent extraction stages, in a facility for reprocessing irradiated fuel, or solids into which such liquid wastes have been converted.

Code does not apply to warships, naval auxiliary or other ships used only on government non-commercial service, although Administrations are expected to ensure such ships are in compliance with the Code.

Special provisions of the Code relate to issues, including: damage stability, fire protection, temperature control of cargo spaces, structural consideration, cargo securing arrangements, electrical supplies, radiological protection equipment and management, training and shipboard emergency plans.

Ships carrying INF cargo are classified into one of three classes, depending on the level of radioactive cargoes carried. According INF Code there are ships classified as Class INF 1, INF 2 and INF 3.[22] Before the start of the journey those ships must undergo a basic examination, which includes a detailed examination of its structure, equipment, appliances and built-in materials. Once the authorized body announces the satisfactory results of the conducted inspection, it will issue to the ship International Certificate of Fitness for the Carriage of INF Cargo.

INF Code regulates the issue of ship's stability under the load. It, also, prescribes the duty of every INF ship to have the Shipboard Emergency Plan. The plan must have: worked out procedure for reporting an accident involving a ship carrying INF cargo, and the master or the officer on duty must comply with it; the list of authorized persons to be informed of the accident; a detailed description of the activities to be taken urgently by the person on board, in order to prevent, reduce or control the release of hazardous substances; method of contacting the ship to facilitate coordination of work between the ship and the local authorities.

4.9. International Management Code for the Safe Operation of Ships and for Pollution Prevention, ISM code

In October 1989 IMO adopted by Resolution A.647(16), Guidelines on Management for the Safe Operation of Ships and for Pollution Prevention. The purpose of the Guidelines is to provide security, protect people from harm or loss of life and to avoid possible damage as much as possible. The guidelines are based on general principles, with the aim to support the development and management practices within the industry as a whole. The Guidelines have recognized the importance of the existence of international instruments for safe operation of ships, as one of the most important factors in preventing maritime accidents and pollution of the sea.

After a short experience in the application of the Guidelines, in 1993 IMO adopted by the Resolution A741 (18) the ISM Code. After several years of practical experience, its importance was recognized and it was considered that it should be mandatory. It was decided that the best way to ensure it shall be through the amendments to the SOLAS Convention. Thus, on May 24, 1994 it was added a new chapter IX of SOLAS Convention entitled Management for the Safe Operation of the Ship, which consists of six rules. The Chapter IX does not include ISM Code is not included, but it also states the obligation of its application.[23] ISM Code entered into force in 1998 and it became mandatory for ships. In order to ensure uniformity in the application of the ISM Code, in 1995 IMO adopted by the Resolution A. 788 (19) the Guidelines on the Implementation of the International Safety Management (ISM) Code by Administrations. These are the guidelines for implementing the requirements of Chapter IX of SOLAS and ISM Code. The guidelines were revised first in November 2001 by the Resolution A.913 (22), and then again in December 2009 by the Resolution A.1022 (26).[24]

The ISM Code provides that its requirements can be applied to all ships.[25] However, Rule 2 of the Chapter IX of the SOLAS Convention states that the ISM Code applies to the following ships: cruise ships, including high speed cruise ships, which were built before 1 July 1998; tankers, chemical tankers, gas carriers, bulk cargo carriers and high speed carriers of 500 gross tonnage or more, which were built before 1 July 1998; other cargo ships and mobile offshore drilling units (MODUs) of 500 gross tonnage or more, which were built before 1 July 2002.

The ISM Code has introduced a system for the safe operation (conduct) of ships (Safety Management System), so called SMS system. This system needs to be established by a shipping company, and it means to take all actions aimed at planning, organizing and carrying out of the tasks of the shipping company and ship on the mainland and at sea. SMS system, for the first time covered the ship and the company in accordance with the ISM Code.

The ISM Code clearly states that the SMS system should ensure the observance and compliance with the rules, regulations, the guidelines; the applicability of many regulations (the Codes); taking into account the recommended standards of various organizations, administrations, classification societies and the entire maritime industry.

The ISM Code includes the functional requirements for the SMS system. It is pointed out that every company should develop, implement and enforce the SMS system, which includes the following requirements: a policy of safety of navigation and protection of the environment; guidelines and procedures for the ship's safe navigation and protection of the environment; determining the level of authority and means of communication between the coast and the crew on board; procedures for reporting accidents and non-conformities of the established system

[22] Class INF 1 ship - Ships which are certified to carry INF cargo with an aggregate activity less than 4,000 TBq (TeraBecquerel=measurement of radioactivity), Class INF 2 ship - Ships which are certified to carry irradiated nuclear fuel or high-level radioactive wastes with an aggregate activity less than 2 x 106 TBq and ships which are certified to carry plutonium with an aggregate activity less than 2 x 105 TBq and Class INF 3 ship - Ships which are certified to carry irradiated nuclear fuel or high-level radioactive wastes and ships which are certified to carry plutonium with no restriction of the maximum aggregate activity of the materials.

[23] The Rule 3.1. of the Chapter IX of the SOLAS Convention.

[24] In order to better understand and implement the ISM Code, certain guidelines have been adopted, such as: Guidelines for the operational implementation of the International Safety Management Code by Companies, MSC-MEPC.7/Circ.5; Guidance on the qualifications, training and experience necessary for undertaking the role of the designated person under the provisions of the International Safety Management Code, MSC-MEPC.7/Circ.6; Guidance on near-miss reporting, MSC-MEPC.7/Circ.7. ISM Code and Guidelines on implementation of ISM Code, IMO, 2010

[25] The Rule 1.3. of the ISM Code.

with the ISM Code; procedures for emergency situations; procedures for internal control and inspections of the functioning of the established ISM Code; registration system for passenger data.

To ensure the safe operation of each ship and to provide a link between the company and the persons on board each ship company, if necessary, should determine the specific person or persons ashore having direct access to the highest levels of management (Designated Persons Ashore-Dpa). This person is responsible for monitoring the safety and protection of the environment of each ship, and the establishment of appropriate supporting resources from the mainland.

The ISM Code provides for the company to be responsible for the implementation of its requirements. In this case the term "Company" means the owner of the ship or any other organization or person such as the Manager, or the Bareboat Charterer, who has assumed the responsibility for operation of the ship from the Ship-owner and who on assuming such responsibility has agreed to take over all the duties and responsibility imposed by the Code. In this sense it is pointed out that:

The Company should ensure:

- That the shipmaster is properly qualified for commanding and fully aware of the SMS system of the company. Also, the company must give adequate support, to the shipmaster in order he can perform safely his duties.
- That each ship is managed by a qualified, authorized and medically fit crew, according to the national and international requirements.
- Procedures to provide new staff and staff who are transferred to the new duties are familiar with the subject of security and protection of the environment. Basic guidelines to be established and implemented prior to departure and the appropriate documentation should be issued in relation to the same.
- That the personnel involved in the Company's SMS fully understands the rules, regulations, policies and guidelines.
- Implementing the procedures, identifying the additional training in order to improve the SMS system, as well as ensuring the implementation of appropriate training and involvement of all staff in them.
- The procedures by which the ship staff will receive the necessary information regarding the SMS system in the working language or a language they understand.
- The staff of the ship to be capable and efficient in carrying out their duties, which relate to the SMS system.

The ISM Code set forth the obligations of the flag State of the ship. Namely, when it is determined that the shipping company or the ship, met the requirements of the ISM Code, i.e. the SMS system in accordance with the ISM Code, the competent administration of the flag State or other recognized authority (it is possible to delegate authority or organization, more commonly it is a classification society), issues to the ship: DOC (Document of Compliance), which a shipping company receives as evidence that the SMS complies with the ISM Code; Certificate of safe operation of the ship, SMC (Safe Management Certificate) which confirms that the ship carries out all operations in accordance SMS system.

The amendments to the ISM regulations were carried out in December 2000 by the Resolution MSC.104 (73). The amendments came into force on 1 July 2002. In December 2004 by the Resolution MSC. 179 (79). The amendments came into force on 1 July 2006. In May 2005 by the Resolution MSC. 195 (80). The amendments came into force on 1 January 2009. ISM Code was amended in December 2008 by the Resolution MSC. 273 (85). The resolution was adopted on January 1, 2010 and the amendments entered into force on 1 July 2010.

5. Conclusion

From the perspective of law, the safety security is a condition without which it is not permitted to perform the navigation. From its establishing until now, IMO as a leader in providing safe navigation tries to ensure the minimum conditions necessary for safe navigation and safe stay of people at sea by taking numerous actions and measures. It is neither easy nor simple task, but on the contrary. Providing the existence of safety at sea is a multidisciplinary problem, which implies a certain degree of security for ships, both cargo and human factor (the crew) on board. Although it is noticeable that there are permanent development and progress in the field of safety at sea, which largely affects and incorporates the changes in both, the individual and collective behaviour of all those involved in maritime activities, we cannot talk about safe navigation, if these three conditions are not satisfied cumulatively.

The observance and consistent application of international instruments is one of the basic requirements for providing and improving the safety of navigation. The maritime legal regulations in the field of safety of navigation are quite specific because they largely contain the technical rules, as well as various measures to be taken in order to avoid maritime accidents and to provide the safety of navigation. In this regard, in addition to the international conventions as the basic legal instruments, the numerous international codes have a special importance. We can say that international codes constitute additions to international conventions. The codes discuss various issues such as: design, construction and equipment of ships, issues related to the stability of the ship, fire protection, radio communication, cargo transportation, security management and maritime safety. Particularly important are the codes relating to the safe transport of cargo which is necessary to have good knowledge about, with the aim of improving safety of navigation, protecting of the marine environment and reducing the risk of potential maritime accidents. Otherwise, non-compliance of them would result in a huge catastrophe with incalculable damage.

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