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Agenda item 19

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GENERAL CARGO SHIP SAFETY

Identification of problem areas for general cargo ships

Submitted by the Republic of Korea

SUMMARY

<i>Executive Summary:</i>	This document, in response to the invitation by MSC 84, provides further information on general cargo ship safety to facilitate the identification of the problem areas for such ships.
<i>Strategic Direction:</i>	2, 5 and 12
<i>High-level Action:</i>	2.1.1, 5.2.1 and 12.1.2
<i>Planned output</i>	12.1.2.2
<i>Action to be taken:</i>	Paragraph 19
<i>Related Documents:</i>	MSC 83/20/5; MSC 83/28, paragraphs 20.1 to 20.5 and MSC 85/19

INTRODUCTION

1 The Republic of Korea submits this document to provide further information to assist the assessment of the adequacy of current safety requirements of general cargo ships. Based on the report on the study undertaken and the document (MSC 83/20/5) which introduced general cargo ships' casualty statistics that compares dry bulker casualty statistics, as well as the common patterns of casualty associated with general cargo ships,

2 This document is submitted in accordance with the provisions of paragraph 4.10.4 of the Guidelines on the Organization and method of work of the MSC and MEPC and their subsidiary bodies (MSC-MEPC.1/Circ.2).

PROBLEM AREAS IDENTIFIED THROUGH CASUALTY STATISTICS

3 Document MSC 83/20/5 identified that, according to casualty type, the loss rates of general cargo ships showed a typical feature of the type of casualty in general cargo ships and it is described as follows:

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- .1 probability of foundering/missing of general cargo ships is 5 times higher than that for dry bulkers and 3 times higher than that of all type of ships. It can be compared with other mishaps, i.e. fire/explosion that were 1.2 (dry bulkers) and 1.4 (all ships) times higher, respectively;
 - .2 in the analysis of the initial cause of foundering/missing of the 42 ships totally lost during the period of 6 years (2000-2005), only 8 ships were identified with the cause of foundering (i.e. sustained damage, shift wet cargo to gradually tilted to sinking). All other 34 ships identified with “took water in hold”, “developed list” or “foundered to sinking but the cause unknown”. The exact reason of taking water in hold/engine room is still unknown; and
 - .3 document MSC 83/20/5 also mentioned that there would be a direct or indirect relation of the foundering of general cargo ships with the carriage of lengthy and heavy cargoes. Thirteen (13) out of 42 ships were identified with carriage of heavy cargoes such as iron ore, cement etc. Seven (7) ships were carrying log or timber and 8 ships had unknown cargoes.
- 4 Based on the above casualty statistics, the following questions should be answered in relation with the general cargo ships’ foundering or missing:

- .1 Are general cargo ships inherently designed weak and therefore susceptible to take water in hold or is the design so complicated in its structures that latent defects are difficult to be identified by inspectors?
- .2 Are general cargo ships designed and built without paying much attention to the risks involved with the carriage of lengthy or heavy cargoes, or are sufficient precautions not taken by the operator and ship’s crew to carry lengthy and heavy cargoes?

In general,

- .3 Are general cargo ships built strong enough to its general features and carrying cargoes safely, especially for lengthy and heavy cargoes?
- .4 If the current safety requirements applicable to the building and operation of general cargo ships, are they adequate to prevent accidental taking water in hold?

FURTHER STUDY UNDERTAKEN

5 The Republic of Korea, as mentioned in its previous document (MSC 83/20/5, paragraph 8), endeavored to undertake further study for a more detailed analysis of the cause of accidents of general cargo ships. However, it was hard to get more detailed information on the 42 ships from their sources of origin.

6 Therefore, the Republic of Korea carried out a different study, which was called “Study for the measures to strengthen the safety of general cargo ships”, in order to assess the adequacy of current safety requirements applied to general cargo ships in an effort to partly answer the above-mentioned questions.

7 In that study, the general features of the general cargo ships as well as requirements and practices applied on such ships were reviewed for both new and existing ships. In particular, the following aspects were examined at great length:

- .1 subdivision and stability requirements of the general cargo ships; and
- .2 survey requirements on general cargo ships in comparison with other type of ships.

GENERAL FEATURES OF GENERAL CARGO SHIPS

8 General cargo ships vary in their shapes and cargoes carried. However, the following two typical types of general cargo ships are distinguished from other non-standardized general cargo ships such as heavy cargo carrier and open bulk type carrier.

- .1 multi-purpose cargo ships; and
- .2 general dry cargo ships.

9 Further, the general features of the multi-purpose cargo ships can be distinguished from those of the general dry cargo ships as follows:

- .1 containers can be carried on deck and in the hold; and
- .2 in most cases, cargo gears have been installed on board.

On the other hand, most of the general dry cargo ships have the following typical features:

- .1 no pillars in the cargo hold; and
- .2 non-subdivided long one cargo hold or two cargo holds.

10 A captain with lengthy service in various types of general cargo ships reiterated that such a ship with only one long cargo hold is extremely vulnerable to foundering, and that the occasional carriage of timbers, especially logs, in the hold of general cargo ships aggravate the already damaged/slightly corroded side hull in such a way that the cracks are developed during rough sea voyages. Hull damage, additionally, is often caused during loading of a lengthy cargo, especially when the ship's own cargo gears are in use.

SUBDIVISION AND STABILITY OF GENERAL CARGO SHIPS

11 The damage stability requirements in SOLAS chapter II-1, Part B-1, adopted by resolution MSC.19(58), apply to all general cargo ships of 100 m in length and greater for ships constructed after 1 February 1992 and ships between 80 m-100 m constructed after 1 July 1997.

12 However, general cargo ships constructed before the adoption of the above resolution were not administered the same damage stability requirements. Those ships applied the classification rules, such as the arrangement of the watertight bulkhead in general cargo ships which ensure the safety of ships in case of flooding, summarized as follows:

- .1 a collision bulkhead (0.05L away from the fore) will be installed in all ships;

- .2 a watertight bulkhead will be installed at fore and after engine room; and
- .3 number of bulkhead required in a ship according to ship's length with distance between bulkheads of less than 30 m was recommended (e.g., 6 EA for ships of 102 m-123 m).

13 Based on the result of the study for total 308 general cargo ships, it was found that 69 ships (43 ships are over 100 m) were applied with the damage stability requirements, and 239 ships (included 11 ships which is less than 500 GT) were not applied. This means that about 3/4 of the general cargo ships, which are not satisfied with the damage stability requirements, are in operation.

14 In conclusion, it was identified that general cargo ships of 100 m in length and greater from the ship constructed before 1 February 1992 and ships in between 80 m-100 m constructed before 1 July 1997 without the application of damage stability requirements may be categorized as general cargo ships and may need additional safety measures.

SURVEY REQUIREMENTS ON GENERAL CARGO SHIPS

15 It is noted that the enhanced survey program (ESP) was adopted in November 1993 in order to strengthen the survey requirements, in tankers and bulk carriers, as adopted by resolution A.744(18) and implemented on 1 January 1996. It was estimated that this ESP implementation contributed greatly to the reduction in the number of bulk carriers foundered to totally lost in casualty statistics.

16 One research report presented at an international seminar on bulk carriers organized by RINA in 2006, indicated that 28 bulk carriers foundered to totally lost during a 6-year period (1993-1998) while 14 bulk carriers foundered to totally lost during another 6-year period (1999-2004). The report indicated that 3 years after the implementation of ESP, i.e. from 1999, the ESP contributed to the actual reduction in the number of bulk carriers that have been foundered to totally lost to one-half.

17 It is our understanding that the concepts of ESP, which is not the same as the program applied to bulk carriers, has voluntarily been applied to some general cargo ships by the industry since a couple of years. However, our study could not identify the effect of the program applied by that industry.

SUMMARY AND RECOMMENDATIONS

18 The purpose of this document is to recommend that a working group be established to consider the outcome of the results of the study carried out by the Republic of Korea and in particular to:

- .1 carry out an FSA study to identify accident frequency, risk levels, the causes and to recommend the risk control options;
- .2 collect more information on the general features of general cargo ships in order to find appropriateness in design of its features, especially on the number of cargo holds/compartments, cargo carriage pattern of general cargo ships (especially

multi-purpose general cargo ships) including the use of its own cargo gears to load/discharge the heavy and lengthy cargo, if experienced any side hull damage during cargo loading;

- .3 agree on the high risk level of general cargo ships due to their general features of less compartments, poor maintenance because of their short voyage pattern and cargo carriage, especially of alternate loading of light cargoes and heavy cargoes, and to develop safety measures;
- .4 agree on the assumption that flooding in the hold is the main cause of foundering to totally lost, and to identify what is the main cause of foundering in hold of general cargo ships and what safety measures to prevent such foundering should be taken; and
- .5 consider the need of applying an ESP program on general cargo ships.

ACTION REQUESTED OF THE COMMITTEE

19 The Committee is invited to consider the above information and take action as appropriate.
