INTERNATIONAL MARITIME ORGANIZATION

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GENERAL CARGO SHIP SAFETY

FSA study – step 2 (Risk Analysis) by IACS

Submitted by the Islamic Republic of Iran

SUMMARY

Executive summary:	This document provides a summary of the risk analysis (FSA Step 2) from the FSA study that was conducted by the Iranian maritime administration regarding general cargo ships between 500 and 1500 GT
Strategic direction:	5 and 12.1
High-level action:	5.2.1 and 12.1.2
Planned output:	12.1.2.2
Action to be taken:	Paragraph 17
Related documents:	MSC 87/20/1, MSC 87/20/2 and MSC 88/19

Introduction

1 The Committee will recall that, at MSC 87, the issue of the incident/accident of non-IACS classed vessels (general cargo ships) was brought to the attention of the Committee by IACS and the Islamic Republic of Iran, where it was proposed that a comprehensive study would be essential to find the causes of incident/accident of this type of vessels.

2 In this context, MSC 87 invited Member Governments and international organizations to make casualty data available, including data on non-IACS classed vessels.

3 The vast majority of Iranian non-IACS general cargo vessels are within 500<GT<1500 and therefore, the number of casualties for this type of vessels is relatively high.

4 The study was conducted by the Ports and Maritime Organization of the Islamic Republic of Iran for the period of 2004-2009.

The risk model

5 The risk model has been developed for the ship accident categories of collision, contact, foundering, fire/explosion, machinery damage, wrecked/stranded by the format of event trees.

6 The risk model considers the risk in context of maritime safety and marine environment.

7 The consequences to property are not quantified in this report.

8 The most important findings about the above accident categories are as follows.

Collision

9 These scenarios represent about 11.14% of all identified accidents. This accident category is mostly observed in harbours, rivers, coastal waters and areas located between the Persian Gulf islands. The consequences to property vary between slight damage to the ship structure and total loss of the ship. On average 3.5% of collision accidents result in fatalities and probability of an oil release in this type of accident calculated to be 4.2%.

Contact

10 Contact scenarios represent about 2.3% of all identified accidents. These accidents mostly occur in harbours and channels. The consequences vary, with the majority leading to small damages to the ship structure. The average number of fatalities per accident is 0.1 and two accidents with release of oil were reported for the period of study.

Foundering/flooding

11 These scenarios represent about 27.7% of all indentified accidents and occur mostly in open sea or coastal waters. This category of accident is one of the most frequent causes of casualties in this type of vessel, which accounted for nearly 60% of all fatalities reported for general cargo ships on non-IACS. Total number of fatalities per accident is 4.3, with 3 cases of oil spill, with minor amounts reported. Most probable root causes are as follows:

.1 non-weathertight/loss of weathertightness, for cargo hold hatch covers;

.2 bilge system for cargo hold/engine-room, defective/non-operational; and

.3 inefficient/accident and powerful submersible pump, to pump out the water, overboard, and control the ingress of water.

Fire/explosion

12 These scenarios represent 5.8% of all identified accidents, which mostly happened in engine-room, cargo holds and accommodation. The average number of fatalities per accident has been calculated as 1.4 and two accidents recorded with spill quantity of 83 and 112 M/T of bunker oils in each tank.

13 The probable root causes are as follows:

.1 oil leakage;

.2 overheating;

.3 cable failure;

.4 cargo properties; and

.5 explosion in engine-room are associated with crankcases (main engines) and boilers, whereas explosions in cargo holds are related to lack of knowledge of exact documentation of cargo content and which precautions should be taken into account for transported cargo.

14 Fire fighting available on board was successful for 52% of cases.

Machinery failure/breakdown

15 These scenarios account for nearly 34.4% of all identified accidents. Average number of fatalities per accident has been calculated as 0.92 and most probable cause could be attributed to wear-out of the equipment (as well as sub-standard engines or spare parts) and maintenance procedures not being carried out properly (efficiently planned maintenance programme is not followed).

Grounding/stranding/wrecking

16 These scenarios represent about 4.6% of all identified accidents similar to factors affecting collision, which are human error, steering, anchor and machinery failures, as well as reasonable causes, can be failure on navigational equipment, such as "echo sounder" to ascertain the depth, anchoring in the proximity of navigational hazards, such as shoals, banks and rocks. The average number of fatalities per accident, calculated as 0.22, which increases with the extent of the damage (3.5 for total losses). In total, 8% of all reported accidents caused environmental pollution.

Action requested of the Committee

17 The Committee is invited to consider the information provided and take action as appropriate.