

SUB-COMMITTEE ON SHIP DESIGN AND
CONSTRUCTION
3rd session
Agenda item 5

SDC 3/5/1
12 November 2015
Original: ENGLISH

GUIDELINES ON SAFE RETURN TO PORT FOR PASSENGER SHIPS

Proposal for further consideration of outstanding matters related to survivability and the safe return to port for passenger ships

Submitted by the International Transport Workers Federation (ITF)

SUMMARY

Executive summary: This document proposes that matters identified in the revised action plan for long-term work on passenger ship safety, as set out in table 1 of document MSC 95/6/1, which are critical to survivability and the safe return to port, be fully considered

Strategic direction: 5.1

High-level action: 5.1.1

Planned output: 5.1.1.1

Action to be taken: Paragraph 11

Related documents: MSC 92/6/3; MSC 92/6/7; MSC 92/WP.8/Rev.1; MSC 94/6; MSC 95/6/1 and SDC 2/3/9

Introduction

1 Following the **Costa Concordia** incident, the Maritime Safety Committee (MSC) has been considering passenger ship safety matters through its ad hoc Working Group on Passenger Ship Safety. In its report to MSC 92 (MSC 92/WP.8/Rev.1), the working group, having identified a link between the vital equipment and electrical distribution system and the findings in the **Costa Concordia** accident investigation report, decided to include the issue in the revised action plan, as set out in table 1 of document MSC 92/WP.8/Rev.1. The Committee has also identified a link between emergency power generation and the **Costa Concordia** accident investigation report, and this was confirmed in the outcome of III 1 on consideration of the casualty report on the **Costa Concordia** (MSC 94/6), which identified the need to:

"Consider the protection of propulsion and electrical production compartments, the functional integrity of essential systems, the improvement and redundancy of emergency power generation, the detection and monitoring system interfacing with on-board stability computer."

2 The ITF is of the opinion that these proposed new outputs identified in document MSC 95/6/1 are a continuation of the work undertaken by this Sub-Committee to ensure that a passenger ship can survive a major fire or flooding and return safely to port. The specifics considered were:

- .1 discontinuity between compartments containing ship's essential systems;
- .2 more detailed criteria for the distribution, along the length of the ship, of bilge pumps and requirement on capacity; and
- .3 relocation of the main switchboard above the bulkhead deck.

The recommendations regarding emergency power generation were:

- .1 increasing the emergency generator capacity;
- .2 a second emergency diesel generator located in another main vertical zone; and
- .3 dual independent power distribution systems.

Survivability and safe return to port

3 At MSC 72, the Committee, having considered the IMO Secretary-General's proposal (MSC 72/21) to undertake a global consideration of passenger ships' safety issues with particular emphasis on large cruise ships, agreed to establish a new work programme item on the safety of large passenger ships, primarily due to concerns at the ability to rescue increasingly large numbers of passengers and crew from future passenger ships, particularly, in remote areas. Considerations ultimately were extended to all passenger ships and the concept of "safe return to port" after a major fire or flooding was introduced. In 2006, the Committee adopted amendments to SOLAS (MSC 82/24, annex 2) that stipulated requirements for the survival of cruise ships in excess of three hours and the criteria for ships deemed capable of retaining passengers on board and safely returning to port. The disaster that resulted in the loss of the **Costa Concordia** raised questions, particularly, regarding the casualty threshold for retention of power, electrical and bilge and ballast systems.

4 Since adoption of the aforementioned SOLAS amendments, there appears to be some confusion as to the requirements for the survival and safe evacuation over a three-hour period and the retention of systems for a safe return to port with passengers on board. One may be a matter primarily of damage stability and emergency power, and the other the capability to understand and address flooding or fire problems and the retention of sufficient power to facilitate operational and service systems. To enable a safe return to port, the master and crew must have a complete understanding of the ship's capabilities and equipment such as flood detectors and stability computers fully integrated – available on all passenger ships.

Discontinuity between compartments containing ship's essential systems to preserve functional integrity

5 The segregation and redundancy of vital equipment for propulsion, steering and navigation was highlighted in documents MSC 92/6/3 (Italy) and MSC 94/6 (Secretariat). In document SDC 2/3/9, the United States proposed amendments to SOLAS regulation II-1/8-1 that would give more protection to main engine-room(s), including a double hull in way of the main engine-rooms. The ITF supports this proposal; however, recognizing that the configuration and various propulsion systems of modern vessels are complex, ITF considers that more clarity is needed as to what elements of the power system needs protection. Particularly with diesel electric systems and Azipod type propulsion, there may be a number of generator rooms, with separate auxiliary rooms, propulsion spaces and no steering gear. This is, generally, a good situation giving more options regarding safe positioning of the engine spaces. Combined with effective discontinuity between engine-rooms allows for retaining a percentage of the propulsion or generator sets following a fire or flooding and is probably the preferred option for a safe return to port capability.

6 In document SDC 2/3/9, the United States' suggests the following three options for potential engine-room arrangements be considered:

- .1 Option 1: double sided protection of the engine-room;
- .2 Option 2: a redundant port and starboard main engine-room; and
- .3 Option 3: redundant main engine-rooms separated a minimum distant longitudinally.

Whilst the ITF supports these options, it would require further details as to the extent the auxiliary systems are duplicated and separated, and the manner electrical and water supply and distribution is protected.

Criteria for the distribution and bilge pumps along the length of a passenger ship

7 Ultimately, as acknowledged in document SDC 2/3/9, the goal is to retain ships power supply, pumping power and the integrity of at least 50% of the electrical and ballast or bilge system, even where distribution is through vertical zones damaged by fire or flooding. This requires switchboards above the bulkhead deck that can be separated when vertical spaces are damaged, such as raking along one side, protected by interrupting supply power. Maximum protection of essential systems and duality of distribution is essential, particularly, in a return to port situation. The availability of at least one pump having the capacity to drain huge quantities of water as recommended in document MSC 92/6/3 is not realistic with most emergency power systems and is generally dependent on retaining ships power supply.

Emergency power redundancy on existing ships

8 The introduction of a second emergency generator, primarily to facilitate the high-capacity pumps as proposed in document MSC 92/6/3, could be warranted on existing ships that wish to comply with safe return to port criteria. This could also be achieved by a large diesel driven pump situated above the bulkhead deck. It is probably more important to ensure the emergency power distribution is not compromised in a partially flooded condition.

On board damage stability system

9 In document MSC 93/6/7, CLIA proposed that all cruise ships, on a voluntary basis, should be equipped with an approved damage stability system connected to remote tank sounding systems, flood detection system and draught reading system. The ITF, however, proposed that the provisions of SOLAS regulation II-1/8-1 be extended to cover all passenger ships. Clearly from the casualty analysis outcome of the **Costa Concordia** and the recommendations in document MSC 92/6/3, delay in assessing the damage to the ship was critical to the timely decisions to evacuate the ship.

Proposal

10 The ITF is of the opinion that to enhance all aspects of survivability of a passenger ship and enable it to be classified as capable of a safe return to port, the above comments should be fully considered. This Sub-Committee should seek to encompass within its current work programme all issues outstanding within the revised action plan on survivability of a passenger ship and the issues affecting the safe return to port after a major fire or flooding.

Action requested of the Sub-Committee

11 The Sub-Committee is invited to consider the above comments, and in particular paragraph 10, in its considerations on survivability and take action as appropriate.
