

Resolution A.796(19)
adopted on 23 November 1995
(Agenda item 10)

**RECOMMENDATIONS ON A DECISION SUPPORT SYSTEM
FOR MASTERS ON PASSENGER SHIPS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.596(15) concerning safety of ro-ro ships,

NOTING STCW regulation V/2 on additional training and qualification requirements for masters, officers, ratings and other personnel of ro-ro passenger ships,

NOTING ALSO resolution A.741(18) on the International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code),

BEING AWARE that the aforementioned instruments do not provide for bridge-based monitoring of sensor signals or standards for the layout and organization of a decision support system for masters on passenger ships to be used in emergency situations,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-fifth session,

1. ADOPTS the Recommendations on a Decision Support System for Masters on Passenger Ships set out in the annex to the present resolution;
2. INVITES Governments to implement the said Recommendations as soon as possible for all passenger ships;
3. REQUESTS the Maritime Safety Committee to consider the development of respective amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, on the basis of the provisions of these Recommendations, as appropriate;
4. INVITES ALSO Governments to submit to the Organization information on the development and use of the computer-based decision support system.

RECOMMENDATIONS ON A DECISION SUPPORT SYSTEM FOR MASTERS ON PASSENGER SHIPS

1 BACKGROUND

1.1 The basis for decision-making in emergency situations on board modern high-tech passenger ships today consists of some potential for situation monitoring and a number of manuals for use in case of emergencies such as collisions, groundings, capsizing/sinking, or fire.

1.2 Monitoring functionalities are limited, and the digital non-standardized instrument displays situated on the navigation bridge make it difficult to detect critical trends.

1.3 The decision-maker on the navigation bridge today has to consult and retrieve information from several emergency procedures and contingency plans with different layouts depending on the type of emergency while the emergency is developing. The current retrieval of information is often time-consuming, and the distribution of instrument displays on the navigation bridge is sometimes irrational, adding to the confusion during emergencies.

2 GENERAL

In order to improve capacity for rapid decision-making in emergency situations, it is recommended that the following functions are implemented on board the ship:

- .1 integrated monitoring system; and
- .2 decision support system for emergency management.

The requirements for each of the two systems are specified below.

3 INTEGRATED MONITORING SYSTEM

3.1 It is recommended that a computer-based monitoring system with a graphical interface is provided on the navigation bridge.

3.2 The system should be able to present time series and alarm levels of sensor signals. If a critical trend is detected or the alarm level is exceeded, the system should alert the master/officer of the watch by audible alarms, and a visual indication of the sensor signal in question should be provided. The timing aspect is crucial, and the early warning provided by the monitoring system will, in most emergency scenarios, significantly limit the consequences.

3.3 The following sensor signals should be monitored, where applicable:

- .1 draught, trim and heel (low pass filtered signals should be derived in order to facilitate trend detection);
- .2 liquid/water level indicators in all compartments below the main deck;
- .3 water level indications in all compartments on the main deck at positions where water might be trapped in case of flooding (e.g. space between bow door and inner ramp, corners of a subdivided ro-ro cargo space, etc.);
- .4 status of all watertight and fire doors;
- .5 status of bow doors and any other shell doors;
- .6 status of shell door locking devices;

- .7 stress levels in bow door locking devices;
- .8 temperature and smoke concentrations in all compartments;
- .9 status of all control devices for emergency management (pumps, valves, doors, ventilators and dampers); and
- .10 water depth.

3.4 Alarm modes for status of bow door locking devices should be integrated with propeller RPMs (or a similar "at sea indicator") such that the master is alerted if locking devices are not locked when the ship is at sea.

4 DECISION SUPPORT SYSTEM FOR EMERGENCY MANAGEMENT

4.1 A co-ordinated decision support system for emergency management should be provided on the bridge.

4.2 The system should, as a minimum, be based on user-friendly paper-based emergency plans.* Emergency shipboard situations should be identified within, but not limited to, the following main groups of emergency shipboard situations:

- .1 fire;
- .2 damage to ship;
- .3 pollution;
- .4 acts threatening the safety of the ship and the security of its passengers and crew;
- .5 personnel accidents;
- .6 cargo-related accidents; and
- .7 emergency assistance to other ships.

4.3 The emergency procedures should also provide decision support for handling any combined situation.

4.4 Emergency procedure manuals should have a common format and should be easy to use, and the procedures should cover all likely emergency scenarios. It should be required that damage control procedures use the actual loading condition as calculated for the ship's voyage stability.

4.5 The Administration may accept the use of a computer-based decision support system which would comprise all the information in the paper manuals, procedures, checklists, etc., on the navigation bridge, and would be capable of presenting a list of recommended actions to be carried out in case of emergencies.

* Refer to the ISM Code, chapter 8, and to the guidelines for a structure of an integrated system for shipboard emergency plans (scheduled to be finalized in 1996).