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EXPLANATORY NOTES FOR THE APPLICATION OF SAFE RETURN TO PORT REQUIREMENTS

Report of the correspondence group

Submitted by Italy

SUMMARY	
Executive summary:	This document provides the report of the Correspondence Group on Explanatory Notes for the Application of Safe Return to Port Requirements
Strategic direction:	2 and 5
High-level action:	2.1.1 and 5.1.1
Planned output:	2.1.1.2
Action to be taken:	Paragraph 17
Related documents:	Resolution MSC.216(82); MSC.1/Circ.1214; FP 53/18, FP 53/WP.1, FP 53/WP.7 and FP 53/23

General

1 The Sub-Committee, at its fifty-third session, established a correspondence group, under the coordination of Italy, to progress work intersessionally on matters related to the development of Explanatory Notes for the application of safe return to port requirements. In this context, the Sub-Committee decided to refer to the correspondence group, for consideration of the aspects under its purview, the discussion held on IACS Unified Interpretation SC 216.

2 The Sub-Committee, at the same session, also decided that the correspondence group should progress intersessionally matters relevant to the development of clarifications of SOLAS chapter II-2 requirements regarding interrelation between central control station, navigating bridge and safety centre.

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3 For matters related to the development of Explanatory Notes for the application of safe return to port requirements the correspondence group (FP 53/23, paragraph 18.12) was instructed to:

.1 further consider document FP 53/WP.7 together with document FP 53/18/1 and prepare the final draft of the Explanatory Notes for the application of safe return to port requirements, for consideration by FP 54; and

.2 submit a report to FP 54.

4 For matters related to the development of clarifications of SOLAS chapter II-2 requirements regarding interrelation between central control station, navigating bridge and safety centre the correspondence group (FP 53/23, paragraph 8.9) was instructed to further consider annex 1 to document FP 53/WP.7, together with the comments contained in document FP 53/8, and prepare the final draft clarifications for the consideration of FP 54, taking into account:

.1 the interrelation between central control stations and safety centres, in particular when the latter are manned;

.2 the hierarchy of control between continuously manned central control stations and safety centres; and

.3 the individual systems listed under SOLAS regulation II-2/23.6 so as to identify to what extent the requirements in respect to alarm, control, monitoring and power supply are related to the navigation bridge, continuously manned control stations and safety centres.

5 Delegates from the following Member Governments participated in the group:

ARGENTINA
BAHAMAS
FINLAND
FRANCE
GERMANY
ITALY
JAPAN
NETHERLANDS
NORWAY
PANAMA
REPUBLIC OF KOREA
SWEDEN
UNITED KINGDOM
UNITED STATES

and observers from the following non-governmental organizations:

INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)
INTERNATIONAL RADIO MARITIME COMMITTEE (CIRM)
CRUISE LINES INTERNATIONAL ASSOCIATION (CLIA)

Explanatory Notes for the application of safe return to port requirements

6 The Group had an extensive exchange of views on the matter on the basis of which a draft text of the Explanatory Notes for the assessment of passenger ship systems' capabilities after a fire or flooding casualty and relevant draft MSC circular have been prepared. The above outcome is annexed to the present document as follows:

.1 Explanatory Notes for the assessment of passenger ship systems' capabilities after a fire or flooding casualty, as set out in annex 1;

.2 relevant draft MSC circular, as set out in annex 2; and

.3 editorial comments to IACS unified interpretation, as set out in annex 3.

7 The following paragraphs highlight some issues to which the attention of the Sub-Committee is particularly addressed.

8 In discussing the Record of ship systems' capabilities (refer to paragraph 7.5.1 of the Explanatory Notes) the group was of the opinion that the ship systems' capabilities (e.g., speed and weather conditions adopted at the design stage, limitations of the duration of voyage in respect to the safe return to port requirements, etc.) should be included in the List of Operational limitations issued to passenger ships as per SOLAS regulation V/30 and that the ship's safety management manual should describe in detail the quantities of operational parameters, arrangements and procedures that are to be applied in each particular case in respect to the possible different areas of operation of the ship. The above opinion is reflected in the draft Explanatory Notes at hand.

9 In discussing the Onboard documentation (refer to paragraph 7.4 of the Explanatory Notes) the group agreed that a documentation of approval should attest the compliance of the ship to SOLAS regulations II-2/22 and 23. A draft form has also been developed. The Sub-Committee may consider whether the Document of Approval, as given in appendix 2 to the Explanatory Notes, could be contained in a non-mandatory instrument or adjustments to its wording are needed.

10 In line with the decision taken by the Sub-Committee (FP 53/23, paragraph 18.9), the Performance standards for the systems and services to remain operational on passenger ships for safe return to port and orderly evacuation and abandonment after a casualty (MSC.1/Circ.1214) have been properly incorporated into appendix 1 to the Explanatory Notes.

11 The Sub-Committee may note that the numbering of the interpretations contained in appendix 1 to the draft Explanatory Notes need to be reviewed when the final list of interpretations are agreed.

12 The group felt that, in addition to interpretations 15 and 69 already referred to the SLF Sub-Committee (FP 53/23, paragraph 18.10), other interpretations contained in appendix 1 of the Explanatory Notes may need to be reviewed by other sub-committees. These interpretations are the following:

.1 17, 18 and 30, to be considered by the SLF Sub-Committee; and

.2 29, to be considered by the NAV Sub-Committee.

However, it was the opinion of the group that the above request should not delay the approval of the Explanatory Notes by the Maritime Safety Committee, at its next session.

13 As requested by the Sub-Committee (FP 53/23, paragraph 3.34), the group considered the IACS Unified Interpretation SC 216 in the context of the safe return to port requirements. As a general consideration, the group felt that IACS developed the unified interpretation as applicable to all ships, including cargo ships and small passenger ships, and that, therefore, this interpretation does not ensure that the water mist system will remain operational as per SOLAS regulation II-2/21. Analysis of the specific installation is necessary for that purpose, based on both the requirements in regulation II-2/21 and the applicable Explanatory Notes and interpretations developed by the group (e.g., interpretations 37, 38, 45 and 59 given in appendix 1 to annex 1).

14 Despite the above, the group discussed the unified interpretation as contained in annex 16 to document FP 53/WP.1, with the following results:

.1 items relevant to the safe return to port:

.1 the sentence in paragraph b) reading "Back-up arrangements are not required for the remote release controls. However, alarms for typical faults in the power and control system shall be provided in a continuously manned control station" seems to imply that the loss of the space containing the remote release controls would result in a lack of availability of the system(s). Therefore, it may need to be revised for meeting the safe return requirements: as follows: "Back-up arrangements are not required for the remote release controls, provided the local controls are located in a different area. However, alarms for typical faults in the power and control system shall be provided in ~~a continuously manned control station~~. the safety centre"; and

.2 regarding paragraph d) reading "redundant arrangements for power and water supply shall be located in different compartments separated by A class divisions", the group noted that if the compartments where the redundant arrangements are located are adjacent one to the other and are not protected by a fixed fire extinguishing system then a fire casualty in one of such spaces would affect the functionality of all systems addressed by the Unified Interpretation. Also, the effect of a flooding casualty should be taken into account in this respect.

.2 general comments:

The group revised the text of the unified interpretation by introducing editorial changes (other than the ones described in subparagraph .1, above) as reported in annex 3. The Sub-Committee may consider forwarding this annex to the Working Group on Performance Testing and Approval Standards for Fire Safety Systems that is expected to be established at FP 54. Other substantive comments provided by members of the group were not processed as the revision of the UI SC126 for its general application was considered outside the remit of the correspondence group.

Clarifications of SOLAS chapter II-2 requirements regarding interrelation between central control station, navigating bridge and safety centre

15 The group prepared the text of clarifications, as set out in annex 4, and relevant draft MSC circular, as set out in annex 5.

16 In discussing these clarifications it was noted that SOLAS regulation II-2/23.6.15 requires the functionality of atrium smoke extraction system is to be available at the safety centre. However, since no current regulation requires operation, control, monitoring, alarm or any combination thereof at a central location for this system, there might be the necessity for amending either SOLAS regulation II-2/8.5 or II-2/23.6.15.

Action requested of the Sub-Committee

17 The Sub-Committee is invited to approve the report of the correspondence group and its annexes in general and, in particular, to:

.1 concur with the group's view that the ship systems' capabilities should be included in the List of Operational limitations issued in accordance with SOLAS regulation V/30 and that the quantities of operational parameters, arrangements and procedures to be applied in respect to the possible different areas of operation of the ship should be described in detail in the ship's safety management manual (paragraph 8);

.2 consider whether the "Document of approval" as set out in appendix 2 to the annex could be contained in a non-mandatory instrument or adjustments to its wording are needed (paragraph 9);

.3 concur with the opinion of the group that the fact that some interpretations given in appendix 1 to annex 1 should be considered by the SLF and NAV Sub-Committees, this should not delay the approval process of the relevant Explanatory Notes by the Maritime Safety Committee, at its next session (paragraph 12);

.4 consider which working group established at the fifty-fourth session of the Sub-Committee should deal with comments raised by the group in respect to the suitability of IACS UI SC 126 in the light of the safe to port requirements (paragraph 14.1);

.5 consider whether annex 3 should be forwarded to the Working Group on Performance Testing and Approval Standards for Fire Safety Systems for consideration (paragraph 14.2);

.6 consider the view of the group that a possible inconsistency between SOLAS regulations II-2/8.5 and 23.6.15 in respect to availability of the functionality of atrium smoke extraction system at the safety centre (paragraph 16); and

take action as appropriate.

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ANNEX 1

ANNEX
[Note by the coordinator of the correspondence group: Annex to the relevant draft MSC circular]

EXPLANATORY NOTES FOR THE ASSESSMENT OF PASSENGER SHIP SYSTEMS CAPABILITIES AFTER A FIRE OR FLOODING CASUALTY

Introductory notes

The requirements relevant to the safe return to port for passenger ships, as contained in resolution MSC.216(82), entering into force on 1 July 2010, have shown to be challenging.

These Explanatory Notes have been developed in the light of the experience gained so far in the early application of the aforementioned requirements, taking into account the guidance contained in the Performance standards for the systems and services to remain operational on passenger ships for safe return to port and orderly evacuation and abandonment after a casualty (MSC.1/Circ.1214).

1 GENERAL

1.1 These Explanatory Notes are intended to outline the process of verification and of approval of ship's design, as well as describing the necessary documentation required, when requirements relevant to safe return to port (regulations II-1/8-1, II-2/21 and 22 of the 1974 SOLAS Convention, as amended by resolution MSC.216(82)) are applied.

1.2. These Explanatory Notes are also intended to support safe engineering design with guidance on all three scenarios to be considered in the light of the above mentioned regulations:

.1 availability of essential systems after a flooding casualty, according to SOLAS regulation II-1/8-1; and

.2 availability of essential systems to support a ship's safe return to port after a fire casualty, according to SOLAS regulation II-2/21; and

.3 availability of essential systems to support a ship's evacuation and abandonment after a fire casualty, according to SOLAS regulation II-2/22.

In light of the above, general and specific interpretations to regulations II-2/21 and 22 of the 1974 SOLAS Convention, as amended by resolution MSC.216(82) are given in appendix 1.

1.3 Within these Explanatory Notes a system-based approach is primarily intended to be performed. Where a system approach will outline potential weaknesses, a compartment or space-by-space-based approach may also be applied. In the latter case, part of or all the spaces subject to individual consideration may be subject to operational restrictions on access, use and installations as one element of the overall system of protection. All such spaces and their restrictions should be identified on drawings or in manuals as appropriate (see paragraph 7.4). For the application of these Explanatory Notes to be successful, all relevant Parties, including the Administration or its designated representative, owners, operators, designers and classification societies, should be in continuous communication from the onset of a specific proposal to utilize these Explanatory Notes.

1.4 A pre-requisite and starting point for these studies is that the owner of the ship has defined the operating pattern or patterns of the ship (for instance: worldwide liner/cruise ship or point-to-point ferry operations, maximum number of passengers and crew for required routes, foreseeable area of operation and routes, etc.). The capabilities that will be needed to be built into the ship will depend on the above.

1.5 The Administration may (as per SOLAS regulation II-2/21.4.14) determine any system to remain operational after a casualty in addition to those identified.

1.6 The outcome of these assessments should confirm that the ship is designed and constructed to provide the capabilities required by SOLAS regulations II-1/8-1, II-2/21 and 22.

2 DEFINITIONS

For the purpose of these Explanatory Notes, the following definitions apply:

2.1 *Passenger ship systems' capabilities after a fire or flooding casualty (short: ship systems' capabilities)* are those required for passenger ships according to SOLAS regulations II-1/8-1, II-2/21 and II-2/22. The ship systems' capabilities are addressing:

.1 availability of essential after a flooding casualty, according to SOLAS regulation II-1/8-1;

.2 availability of essential systems to support a ship's safe return to port under its own propulsion after a fire casualty, according to SOLAS regulation II-2/21.4 (including functional requirements for safe areas according to SOLAS regulation II-2/21.5); and

.3 availability of essential systems to support a ship's evacuation and abandonment after a fire casualty, according to SOLAS regulation II-2/22.

2.2 *Passenger ship systems' design (short: ship systems' design)* is a design description of systems intended to be installed, including all essential information showing how to achieve the ship systems' capabilities after a fire or flooding casualty according to SOLAS regulations II-1/8-1, II-2/21 and II-2/22.

2.3 *Passenger ship systems' functionality (short: ship systems' functionality)* is part of the passenger ship systems' design and defines how the onboard systems achieve the functional requirements defined in SOLAS regulations II-2/21 and II-2/22.

2.4 *Fire casualty* is any possible fire case on board the ship under consideration. Fire casualties may or may not exceed the casualty threshold stipulated in SOLAS regulation II-2/21.3.

2.5 *Flooding casualty* is any possible flooding case~~s~~ on board the ship under consideration. Flooding casualties may or may not exceed a single watertight (WT) compartment as stated in SOLAS regulation II-1/8-1.2.

2.6 *Essential systems* are all systems and those sections of systems in spaces not directly affected by the casualty that need to remain operational after a fire or flooding casualty, according to SOLAS regulations II-2/21.4 and II-2/22.3, and as referred to in SOLAS regulation II-1/8-1.2.

2.7 *Critical systems* are essential systems that were identified in the overall assessment of essential systems to have a possibility to fail to operate adequately as a consequence of one or more fire casualty case, each not exceeding the fire casualty threshold, or as a consequence of one or more flooding case, each not exceeding a single WT compartment. The failure of the system may be caused by a failure of the whole system, of one component or of a connection between system components or by any other failure causing unsatisfactory operation of the essential system under consideration.

3 SHIP'S DESCRIPTION

3.1 The owner or owner's representative has to provide all necessary design information for the ship under consideration.

3.2 For the purpose of the ship's description, any necessary information regarding the design of the ship should be provided, along with description of ship essential systems' design and functionality following a fire or flooding casualty. As a minimum, such information and description should include:

.1 the design criteria for each individual essential system or group of essential systems, to achieve compliance (e.g., separation, duplication, redundancy, protection, or a combination of the above);

.2 the basic layout of the vessel including boundaries of compartments subject to the casualty (watertight or "A" class boundaries), e.g., in the form of plan views and cross-sections, including, but may not be limited to: General Arrangement plan, Capacity plan, Watertight Subdivision plan, Space Fire Categorization plan (or Structural Fire Protection plan), plan of spaces protected by fixed fire-extinguishing system, arrangement of safe areas, etc.;

.3 criteria adopted for the selection of safe areas;

.4 a list of all systems that are intended to be submitted for assessment. It should be noted that although such a list would include, in the first instance and as a minimum, all essential systems referred to in SOLAS regulation II-2/21.4, their actual number and identification may vary depending on the size, type, arrangements, design, etc. (e.g., propulsion systems: shaft or podded propulsion units, etc.) of the ship;

.5 drawings/documents describing the location, arrangement and connections of essential systems (including any of their components) mentioned in SOLAS regulation II-2/21 or II-2/22;

.6 the description of the power generation concept intended to supply the essential systems;

.7 data regarding the minimum speed vs weather and sea conditions (e.g., results of model tank tests in sea keeping conditions including consideration of wind forces); and

.8 any additional design detail intended to ensure or support the ship systems' capabilities.

3.3 Additional information about the purpose of the ship, the intended area of operation of the ship, the operating pattern or patterns (which may be used to define any intended speed/maximum distance for safe return to port) should be included in the ship's description.

3.4 Interpretations as contained in paragraph 1 of appendix 1 to these Explanatory Notes may be used when completing the ship's description.

4 ASSESSMENT OF REQUIRED SHIP SYSTEMS' CAPABILITIES

4.1 The assessment of ship systems' capabilities should follow the process described in these Explanatory Notes. The assessment should be based on structured methods and should document the intended essential systems functionality after a fire or flooding casualty defined by SOLAS regulations II-1/8-1, II-2/21 and II-2/22.

4.2 Each assessment should be divided in two steps.

4.2.1 The first step is an overall systems' assessment. The systems' assessment is addressing all essential systems and functional requirements mentioned in SOLAS regulations II-2/21 and II-2/22. This step should include a structured assessment of all essential systems after a fire or flooding casualty, as defined in SOLAS regulations II-1/8-1.2, II-2/21.4 or II-2/22.3.1.

4.2.2 The second step is a detailed assessment of critical systems identified in the systems' assessment. The detailed assessment is only required if any critical system was identified in the previous systems' assessment.

4.3 Regulations II-1/8-1, II-2/21 and 22 do not include reference to quantities or performance limits. The ability of the ship to return to port should be linked to the area and conditions of operation. The capability available for each system in the worst case (e.g., minimum propulsion power for return to port, electrical generating capacity, heating capacity, ventilation capacity, food and water storage/availability, etc.) should be reported in the documentation issued to the ship (see paragraph 7.4).

5 OVERALL ASSESSMENT OF ESSENTIAL SYSTEMS

5.1 Assessment of all essential systems

5.1.1 A structured assessment of all essential systems should be conducted. The systems' assessment can be performed in qualitative terms. Quantitative analysis may be required as part of the detailed systems' assessment as described in paragraph 6. A systems' assessment report should be prepared according to paragraph 7.

5.2 Identification of critical systems

5.2.1 Essential systems identified to be fully redundant for all fire and flooding casualty cases not exceeding the threshold (e.g., when runs of cables, pipes and equipment are duplicated and adequately separated), need not to be further analysed as described in paragraph 6.

5.2.2 For the arrangement of equipment, components or connections reference may be made to relevant interpretations contained in paragraph 2 of appendix 1 to these Explanatory Notes. Where other solutions are adopted, equipment, components or connections should be further analysed as described in paragraph 6.

5.2.3 Manual action by the crew, to provide ship systems' capabilities, may also be possible but should be assessed in detail taking into account that:

(a) manual action should only be acceptable in connection with an agreed defined number of fire and flooding casualties and should be clearly described in the documentation that should be prepared as per paragraph 7;

(b) compliance with the return to port criteria should be based on the assumption that any manual action that may be required for the ship to return to port, or for any essential system to remain operational, following a casualty:

.1 is pre-planned and instructions as well as necessary materials are available on board (for example, these may include, depending on systems, pipe spool pieces, additional valves, emergency electrical connections, etc.);

.2 is performed on systems designed to ensure that the required manual action can be completed within one hour from the time the action started (referring to the example materials mentioned above, this may be represented respectively by their fitting, opening/closing, operation at switchboard, etc.);

.3 emergency lighting and a means of communication is demonstrated available in the area where manual actions are to be taken.

(c) In general, feasibility of manual actions should be demonstrated by tests or drills, as applicable.

5.2.4 Performance requirements applicable to any essential system may be analysed and documented separately; however, any relevant information should be included in the overall assessment of essential systems' report.

5.3 Results of overall assessment

5.3.1 Should no critical systems be identified it can be considered acceptable without the need for a detailed systems' assessment as described in paragraph 6, to be carried out. The systems' assessment report can be used for the preparation of documentation and approval submission, as referred to in paragraph 7.

6 DETAILED ASSESSMENT OF CRITICAL SYSTEMS

6.1 When performing a detailed assessment of critical systems, additional information may be necessary. The ship's description, described in paragraph 3, should be supplemented, for each identified critical system, with the following, as applicable:

.1 details of pipes, cables or other connections connecting the components of the critical system, or connecting different critical systems;

.2 details of any manual action providing the required ship systems' functionality (see also paragraph 5.2.3); and

.3 details of any operational solution forming part of the design criteria.

6.2 Where acceptable to the Administration, a quantitative stage of the detailed assessment of all critical systems can be carried out. As an example, the following may be performed:

.1 quantitative analysis of fire load within a space, supplemented by fire engineering analysis and/or fire testing where necessary (e.g., to assess consequences of a fire casualty on a system or system component);

.2 Failure Mode Effect Analysis (FMEA) of a system or system component analyses in accordance with standard IEC 60812, *Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA)* or resolution MSC.36(63), annex 4 (Procedures for Failure Mode and Effects Analysis), would be acceptable; and

.3 detailed analysis of possibility of flooding of internal watertight compartments and of consequences of flooding on system components, given the location of the compartment and arrangement of piping within the compartment.

7 DOCUMENTATION

7.1 Design of ship and ship's systems

7.1.1 Different design criteria may be followed in the design of the ship and in the design of the ship's systems and arrangements to achieve the passenger ship systems' capabilities after a fire or flooding casualty and to comply with the requirements. The chosen design criteria should be well documented. This is to form the basis for the preparation of all ship's operational procedures to be adopted by the crew for the case of any such casualty.

7.2 Documentation for future design changes

7.2.1 The documentation to be presented for approval is described in detail in the paragraphs below. Such documentation should also be referred to in case design changes to the ship are proposed and may also be used as evidence of compliance should the ship transfers to the flag of another State.

7.3 Documentation of the assessment of required ship systems' capabilities for approval

7.3.1 The documentation of the assessment to be presented for approval should include the design criteria followed to reach ship systems' capabilities and summarize the whole process of assessment including methods and assumptions. The following information should be provided for approval of ship systems' capabilities:

.1 ship's description (see paragraph 3);

.2 overall assessment of essential systems' report (see paragraphs 3.3.1 and 5);

.3 detailed assessment of critical systems' report (see paragraphs 3.3.2 and 6), if any critical system is identified; and

.4 additional information:

.1 list of manual actions (see paragraph 5.2.3);

.2 sea-trials and testing requirements;

.3 maintenance plan and requirements; and

.4 references.

7.4 Onboard documentation

The onboard documentation should provide all essential information for the case of fire and flooding casualty and for safe return to port operation. The documentation should include:

.1 documentation, as per paragraphs 7.3.1, 7.3.2 and 7.3.3 above;

.2 operational manual for fire and flooding casualty cases and safe return to port operation, including details of any manual action required to ensure operation of all essential systems, availability of safe areas including provision of basic services therein (e.g., closing/opening of valves, shutting down/start of equipment/fans, etc.);

.3 description of operation of essential systems after a fire casualty exceeding the casualty threshold;

.4 list of spaces or compartments requiring manual actions in a casualty situation, if any;

.5 list of spaces considered having negligible fire risk, if any;

.6 list of watertight compartments considered having no possibility of being flooded, if any;

.7 test, inspection, and maintenance requirements; and

.8 documentation of approval (an example is given at Appendix 2).

7.5 Record of ship systems' capabilities

7.5.1 The ship systems' capabilities should be included in the List of Operational limitations issued to passenger ships (reference SOLAS regulation V/30). The ship's safety management manual should describe in detail the quantities, arrangements and procedures that are to be applied in each particular case. (For example, food/drink/fuel carriage requirements may be different for a ship cruising in the Aegean to one cruising in the Antarctic.) Example of wording concept for this purpose may be as follows:

"Safe return to port voyage planning should be based on:

.1 habitable conditions for passengers and crew is provided according to "Owners document xyz" dated yyyy-mm-dd (the operational area will determine maximum possible distance to a safe location and the maximum numbers of persons that can be supported during the safe return voyage).

.2 the ship systems' capabilities of returning to port following a fire casulaty is contingent upon the conditions/assumptions given in onboard document xyz, yyyy-mm-dd.

.3 ships "port"/aft/main propulsion and steering system is capable of x knots in Beaufort x with a consumption of x tonnes of fuel.

.4 ships "starboard"/forward/emergency propulsion and steering system is capable of x knots in Beaufort x with a consumption of x tonnes of fuel.".

8 FLOW CHART AND EXAMPLE OF THE DEVELOPMENT OF AN ASSESSMENT

8.1 Appendices 3 and 4 containing respectively:

(a) Assessment of passenger ship systems' capabilities process flowchart; and

(b) Example of the development of an assessment,

are provided for information purposes only.

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ANNEX 2

DRAFT MSC CIRCULAR

EXPLANATORY NOTES FOR THE ASSESSMENT OF PASSENGER SHIP SYSTEMS' CAPABILITIES AFTER A FIRE OR FLOODING CASUALTY

1 The Maritime Safety Committee, at its [eighty-seventh session (12 May to 21 May 2010)], approved the Explanatory Notes for the assessment of passenger ship systems' capabilities after a fire or flooding casualty, set out at annex, to provide additional guidance for the uniform implementation of SOLAS regulations II-1/8-1, II-2/21 and II-2/22, which were adopted by resolution MSC.216(82) and are expected to enter into force on 1 July 2010.

2 Member Governments are invited to bring the annexed Explanatory Notes to the attention of passenger ship owners, shipbuilders, designers and other parties concerned.

3 This circular revokes circular MSC/Circ.1214.

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ANNEX 3

(IACS UI 216 AS EDITORIALLY COMMENTED BY THE CORRESPONDENCE GROUP ON EXPLANATORY NOTES FOR THE APPLICATION OF SAFE RETURN TO PORT REQUIREMENTS)

FSS CODE – Water-based fire-extinguishing systems

SOLAS regulations II-2/10.5.1.1, 10.5.2.1, 10.5.6 and 10.6 require the installation of fixed pressure water-spraying fire-extinguishing systems or water mist systems for the protection of different areas of the ship. These systems are to comply with the performance standards set out in the FSS Code and to the requirements set out in the above regulations ~~itself~~, which do not specifically address combining systems which protect different types of spaces.

Water mist systems protecting accommodation (including cabin balcony) and service spaces, control stations, machinery spaces (total flooding and local application), and other specific fire hazards (such as deep fat fryers) using ~~the same~~ a common pump unit~~s~~ may be accepted provided that:

(a) the performance standards required for each ~~single hazard~~ system (i.e. resolution A.800(19), as amended by resolution MSC.265(84), MSC/Circ.1165, MSC/Circ.913, ISO 15371:2000) are met.

(b) Failure of any one component in the power and control system should not result in a reduction of the total pump capacity below that required by any of the areas the system is required to protect (e.g., MSC/Circ.1165, annex, ~~Definitions~~ paragraph 20: "In all cases the capacity and design of the system should be based on the complete protection of the space demanding the greatest volume of water" or ~~IMO/Res A.800(19)~~ resolution A.265(84), annex, paragraph 3.22: ~~"Pumps and alternative supply components should be sized so as to be capable of maintaining the required flow to the hydraulically most demanding area of not less than 280 m^2"~~ "Pumps and alternative supply components should be capable of supplying the required flow rate and pressure for the space with the greatest hydraulic demand" except that for sprinkler systems such a failure should not result in a reduction of the automatic release capability or reduction of sprinkler pump capacity by more than 50%[1].). Pump units arranged as 2 x 100%, 3 x 50%, etc., with a dedicated starter cabinet or equivalent arrangements will be accepted. Back-up arrangements are not required for the remote release controls. However, alarms for typical faults in the power and control system shall be provided in a continuously manned control station. Means shall be provided to ensure that the system can be operated manually from positions outside the protected area(s) in case of such faults.

(c) the system shall be arranged to avoid a single failure (including pipe rupture) in one protected area resulting in the system being inoperable in another protected area.

(d) redundant arrangements[2] for power and water supply shall be located in different compartments separated by A class divisions.

[1] Hydraulic calculations shall be conducted for sprinkler systems to assure that sufficient flow and pressure are delivered to the hydraulically most remote 140 m^2 in the event of the failure of any one component.

[2] The term "redundant arrangements for power and water supply" identifies the need to guarantee the function of the system by means of separate source of power and water inlets.

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ANNEX 4

ANNEX
[Note by CG coordinator: annex to the relevant MSC circular]

CLARIFICATIONS OF SOLAS CHAPTER II-2 REQUIREMENTS REGARDING INTERRELATION BETWEEN CENTRAL CONTROL STATION, NAVIGATING BRIDGE AND SAFETY CENTRE

1 The functionality of the safety systems listed in SOLAS regulation II-2/23.6 should be available from the Safety Centre systems under any envisaged emergency situation (other than casualty affecting the safety centre itself) and should efficiently managed from the Safety Centre without distracting the bridge team*. The functionality of these systems within the safety centre is specified in Appendix 1.

*__Note__: For the purpose of these clarifications the term "bridge team" identifies the team on the bridge in charge of the navigation of the ship, i.e. performing navigational duties.

2 The Safety Centre may be part of the Navigating Bridge or not a part of the Navigating Bridge. The safety centre may be considered as part of the Navigating Bridge when it is arranged as examples indicated in diagrams (a), (b) and (c) of the illustration in Appendix 4. In case of arrangements such as in diagram (d) in Appendix 4, the Safety Centre should be considered as not being part of the Navigating Bridge.

3 Where the safety centre is part of the bridge:

(a) it is acceptable to consider nearby members of the bridge team as being sufficient to make the safety centre "continuously manned";

(b) alarms in the Safety Centre should be audible by responsible members of the bridge team to make them aware of an alarm condition;

Alternative text

[(b) alarms in the Safety Centre should be audible at the control location on the bridge to make bridge team members aware of an alarm condition;]

(c) at least one member of the on watch bridge team should be properly trained and authorized to take appropriate initial and interim actions in the event of an emergency or in response to an alarm, until the safety centre is fully manned.

4 Where the Safety Centre is not part of the Navigating Bridge it may or may not be continuously manned.

4.1 When the safety centre is continuously manned the functionality of the systems listed in Appendix 2 should be duplicated on the Navigating Bridge.

4.2 When the safety centre is not continuously manned, there should be the capability on the Navigating Bridge to alert the bridge team to developing shipboard emergencies, to respond to them appropriately by taking initial and interim actions and to allow necessary monitoring functions after the Safety Centre is manned by properly trained persons. Therefore, the functionality of the systems listed in Appendix 3 should be duplicated on the Navigating Bridge:

5 The hierarchy of control between the Navigating Bridge and Safety Centre should be specified within the Shipboard Safety Management System. In this respect,

(a) An adequate number of properly trained personnel should be available for immediate response to the Safety Centre in an emergency [without affecting the on watch bridge navigation team] [**alternative:** while maintaining an effective navigational watch];

(b) The duties of the safety centre personnel and Navigation Bridge personnel should not overlap; and

(c) Coordination of emergency management actions and communications should be assured through established emergency procedures, harmonized with the onboard decision support system required by regulation III/29.

6 The use of appropriate integrated computer technology* is recognized and should be encouraged. This technology permits the monitoring and control of systems from different locations and depending on the nature of current operations and the nature of any particular alarm or emergency situation. Computer stations in various locations and which are not in control of the systems can continue to monitor all actions. This type of system is such that any major emergency may be dealt with by the safety centre, however, a computer station located in the Navigating Bridge would allow the Officer of the Watch to control or monitor the safety systems, as appropriate, from a single terminal.

7 When such a system is utilized:

(a) The hierarchy of control of the various computer stations and locations should be clearly [established through emergency procedures] [**alternative:** documented]; and

(b) The computer system and programming should be designed to assure that failure of the system does not cause the loss of any of the ship's safety systems.

(c) The operational status and failures of the computer system or its communications should be indicated.

8 Controls and monitoring of safety and security related systems other than those listed under regulation II-2/23.6 may also be located in the safety centre.

* * *

* Reference may be made to ISO 17894 (2005) on Ships and marine technology – Computer applications – General principles for the development and use of programmable electronic systems in marine applications.

APPENDIX 1

FUNCTIONALY OF SYSTEMS TO BE LOCATED IN ONBOARD SAFETY CENTRE FUNCTIONAL REQUIREMENTS

System	Operation and control	Monitoring	Alarm
Powered ventilation systems	X	X	X*
Fire doors	X	X	
General emergency alarm system	X		
Public address system	X		
Electrically-powered evacuation guidance systems	X		
Watertight and semi-watertight doors	X	X	X
Indicators for shell doors, loading doors and other closing appliances		X	X
Water leakage of inner/outer bow doors, stern doors and any other shell door		X	X
Television surveillance system	X	X	
Fire detection and alarm system	X	X	X
Fixed fire-fighting local application system(s)		X	X
Sprinkler and equivalent systems		X	X
Water-based systems for machinery spaces		X	X
Alarm to summon the crew	X		
Atrium smoke extraction system	X	X	X
Flooding detection systems			X
Fire pumps and emergency fire pumps	X	X	

* For ro-ro ships (regulation II-2/20.20.3.1.3 applies).

Note by the CG coordinator: it appears that the request for fire pumps and emergency fire pumps to be monitored and the emergency fire pump to be operated at/from the navigating bridge or a continuously manned safety centre is above the current SOLAS requirements. Also, the requirement for remote starting is applicable only to a passenger ship of less than 1,000 grt for at least one fire pump unless automatic start is arranged (regulation II-2/10.2.1.2.1.2).

APPENDIX 2

DUPLICATION ON NAVIGATING BRIDGE OF FUNCTIONALY OF SYSTEMS LOCATED IN CONTINUOUSLY MANNED ONBOARD SAFETY CENTRE

System	Operation and control	Monitoring	Alarm
Powered ventilation systems			X*
Fire doors		X	
General emergency alarm system	X		
Public address system	X		
Watertight and semi-watertight doors	X	X	X
Indicators for shell doors, loading doors and other closing appliances (ro-ro ships)		X	X
Water leakage of inner/outer bow doors, stern doors and any other shell door (ro-ro ships)		X	X
[Television surveillance system (ro-ro ships)]	[X]	[X]	
Fire detection and alarm system	X**	X	X
Sprinkler and equivalent systems		X	X
Alarm to summon the crew	X		
Flooding detection systems			X
Fire pump (ships less than 1000 GT)	X	X	
Fire doors leading to or from the special category spaces (ro-ro ships)		X	X
Ventilation systems for vehicle, special category and ro-ro spaces		X	X

* For ro-ro ships (regulation II-2/20.20.3.1.3 applies).

** Activation of the fire alarm should be possible from the navigating Bridge.

Note by the CG coordinator: see my note in Appendix 1.

APPENDIX 3

DUPLICATION ON NAVIGATING BRIDGE OF FUNCTIONALY OF SYSTEMS LOCATED IN ONBOARD SAFETY CENTRE NOT CONTINUOSLY MANNED

System	Operation and control	Monitoring	Alarm
Powered ventilation systems	X		X*
Fire doors	X**	X	
General emergency alarm system	X		
Public address system	X		
Watertight and semi-watertight doors	X	X	X
Indicators for shell doors, loading doors and other closing appliances		X	X
Water leakage of inner/outer bow doors, stern doors and any other shell door		X	X
[Television surveillance system]	[X]	[X]	
Fire detection and alarm system	X***	X	X
Sprinkler and equivalent systems		X	X
Alarm to summon the crew	X		
Flooding detection systems			X
Fire pump (ships less than 1000 GT)	X	X	
Fire doors leading to or from the special category spaces (ro-ro ships)		X	X

* For ro-ro ships (regulation II-2/20.20.3.1.3 applies).

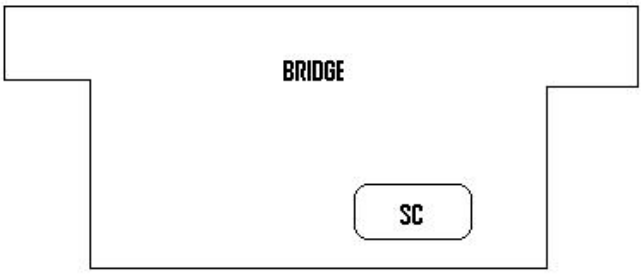
** Operation and control of the systems from the navigating bridge when the safety centre is unmanned, until the management of the emergency situation is transferred to the safety centre. This implies duplication of the systems and a function to transfer the commands and controls (bridge ↔ safety centre).

*** Activation of the fire alarm is to be possible from the navigating Bridge.

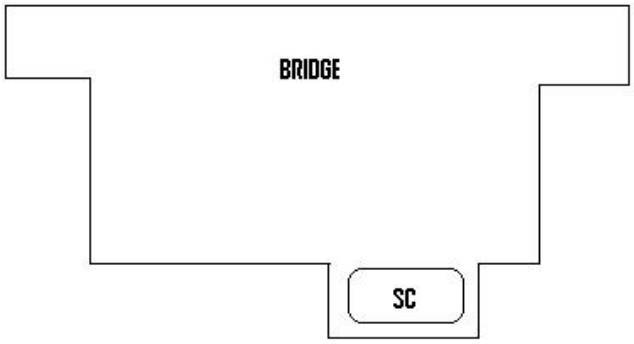
Note by the CG coordinator: see my note in Appendix 1.

APPENDIX 4

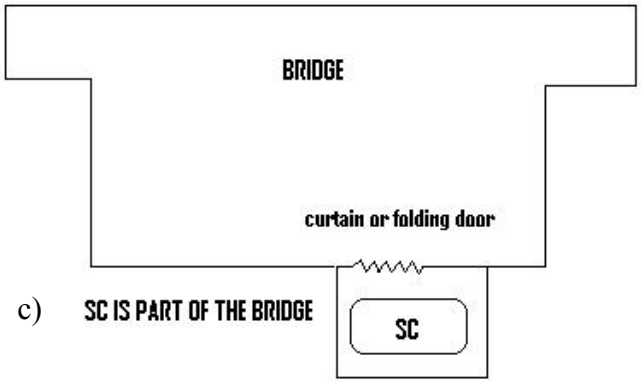
ILLUSTRATIONS AS TO WHEN A SAFETY CENTER MAY OR MAY NOT BE CONSIDERED AS PART OF THE NAVIGATING BRIDGE



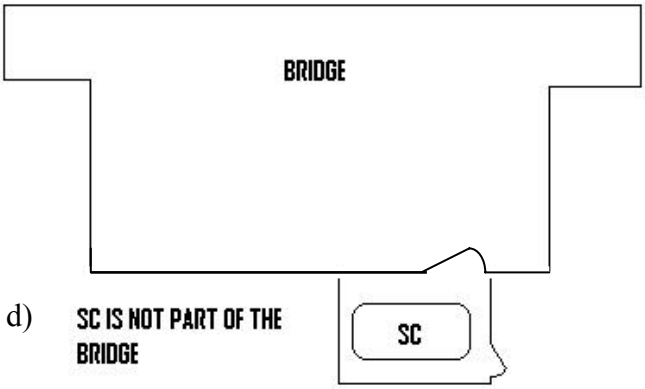
a) SC IS PART OF THE BRIDGE



b) SC IS PART OF THE BRIDGE



c) SC IS PART OF THE BRIDGE



d) SC IS NOT PART OF THE BRIDGE

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ANNEX 5

DRAFT MSC CIRCULAR

CLARIFICATIONS OF SOLAS CHAPTER II-2 REQUIREMENTS REGARDING INTERRELATION BETWEEN CENTRAL CONTROL STATION, NAVIGATING BRIDGE AND SAFETY CENTRE

1 The Maritime Safety Committee, at its [eighty-seventh session (12 May to 21 May 2010)], approved the Clarifications on SOLAS chapter II-2 requirements regarding interrelation between central control station, navigating bridge and safety centre, set out in the annex, to provide additional guidance for the uniform implementation of SOLAS regulation II-2/23, which was adopted by resolution MSC.216(82) and are expected to enter into force on 1 July 2010.

2 Member Governments are invited to bring the annexed Clarifications to the attention of passenger ship owners, shipbuilders, designers and other parties concerned.