GUIDELINES ON THE LAYOUT AND ERGONOMIC DESIGN OF SAFETY CENTRES ON PASSENGER SHIPS

Submitted by the Cruise Lines International Association (CLIA)

SUMMARY

Executive summary: At a previous NAV Sub-Committee meeting, CLIA suggested that our industry may be able to provide commentary into the subject debate based on experience gained in the actual construction of Safety Centres on newer ships. This document provides this commentary.

Strategic direction: 5

High-level action: 5.2.4

Planned output: 5.2.4.2

Action to be taken: Paragraph 8

Related documents: MSC 81/WP.6; NAV 53/22; MSC/Circ.982 and SN.1/Circ.265

1. This document responds to a request by NAV 53 for information from CLIA regarding aspects related to the construction and layout of Safety Centres.

2. Members will recall that during the discussion at NAV 53 (amendments to Chapter II-2, Construction – Fire Protection, Fire Detection and Fire Extinction), the Sub-Committee considered regulations relating to Safety Centres on passenger ships in the context of development of Guidelines on the layout and ergonomic design of Safety Centres on passenger ships.

3. During that discussion it was noted that no documents had been submitted and thus the discussion was quite limited and members were invited to submit proposals for consideration. In this regard, the CLIA observer indicated that CLIA members were building new ships, many of which include Safety Centres. Accordingly, we agreed to work with the CLIA members to see if there were any design issues, lessons learned or other matters of relevance that we could provide to the Sub-Committee for information.

4. We have reviewed MSC/Circ.982 on Guidelines on Ergonomic Criteria for Bridge Equipment and Layout and SN.1/Circ.265 on Guidelines on the Application of SOLAS regulation V/15 to INS, IBS and Bridge Design. In general, and applied in the context of the
Safety Centre, we believe the concepts and the guidelines, as may be applicable to the equipment, function, layout and procedures in the Safety Centre, provide excellent guidance.

5 With regard to MSC/Circ.982, we believe the following sections provide salient information and guidance:

1. Section 4 – Description of the workstations [on the bridge];
2. Section 5 – Ergonomic requirements with the exception of:
   - 5.1 Bridge layout
      - 5.1.1 Sight (all sections)
      - 5.1.2 Arrangement (the following sections)
         - 5.1.2.2 View of the area in front of the bridge superstructure
         - 5.1.2.3 Position of the workstation for navigating and manoeuvring
         - 5.1.2.4 Position of the workstation for manual steering
         - 5.1.2.5 Position of the workstation for monitoring
      - 5.1.3 Accessibility and Movement
         - 5.1.3.1 Clear route
         - 5.1.3.3 Passageway dimensions
3. Section 5.1.2.6 – Bridge Wing Communication – should be considered in terms of communication between the Safety Centre and Bridge
4. Appendix 1 – Definitions
5. Appendix 2 – Proposed Equipment for Workstations
   - Table 6 Workstation for Safety with the exception of:
      - Controls for anti-rolling device
      - Keys and control-elements for lights and signals (navigation lights, signal lamps, bridge lighting, deck lighting searchlights, as well as all fuses)
      - Status of indication for bow-, rearflap
   - Table 7 Workstations for communications where GMDSS equipment is fitted within the Safety Centre.

6 With regard to SN.1/Circ.265, we believe that the principles in general, with the exception of section 7 addressing Traffic Awareness, provide valuable guidance with regard to the Safety Centre if the terms Safety Centre, Safety Centre Team and similar words were to be substituted for the terms bridge, and bridge team and pilot and Bridge Resource Management. Additionally, terms regarding essential information such as heading, rudder or azimuth angle, and propeller RPM would be substituted with terms that are applicable to the Safety Centre.

7 Additional information regarding Safety Centre layout and design is provided at annex.

**Action requested of the Sub-Committee**

8 The Sub-Committee is invited to consider this information in the development of Guidelines on the Layout and Ergonomic Design of Safety Centres on Passenger Ships.

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ANNEX

The following items may be considered development of Guidelines on the Layout and Ergonomic Design of Safety Centres on Passenger Ships:

1. Instrumentation should be grouped by functional workstation such that the necessary activity can be performed by stationary personnel. A single operator’s workstation may be comprised of a number of functional workstations, the number provided is dependent upon the emergency organization and manning of the vessel; however, as a guideline the following table may be used. The use of an overarching computerized management system that allows the integration of all the listed systems allows for simplified control and monitoring and allows the operators in the Safety Centre to support each other.

<table>
<thead>
<tr>
<th>Workstation</th>
<th>Systems</th>
<th>Equipment</th>
<th>Activity</th>
<th>Commands</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Fire Workstation</td>
<td>Fire detection Fire containment Fire fighting</td>
<td>- Fire detectors and fixed firefighting system (sprinkler, drenchers, etc.), fire doors</td>
<td>- Monitoring of the alarms occurring, identification of their location - Plotting of the fire extent on a suitable hanging fire plan or electronically on large screen – monitoring of the status of the elements of the equipment listed – controlling fire spread</td>
<td>- Controlling of the fire spread via fire doors, dampers, etc. - Fire fighting systems - Emergency shut down system</td>
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<tr>
<td>B) Damage and flooding workstation</td>
<td>Stability and damage control</td>
<td>- Monitoring of the flooding via flooding sensor and/or internal communication - Stability computer - Machinery automation workstation - Watertight doors/splash-tight doors</td>
<td>- Plotting of the flooded area on a suitable drawing on screen showing the flooding extent - Online intact/damage stability calculation - Control of flooding</td>
<td>- Bilge and ballast pumps - Active damage control system - Heeling tanks - Watertight doors - Splash-tight doors</td>
</tr>
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| C) Internal communication workstation |                               | Telephone system, VHF/UHF system, radiating antenna system, PA and intercoms | - Maintaining the flow of info between the emergency organization control posts and the Safety Centre  
  - Commands and instruction to muster stations and lifeboat parties  
  - Commands and instructions to the emergency response posts | - Telephone system  
  - VHF/UHF  
  - PA  
  - Intercom systems |
| D) External communication workstation | Aerial communication systems | Satellite phone  
  - VHF's, Fax  
  - Internet  
  - Covert phone  
  - High-speed data systems | Maintaining communication with Company and Authorities and responding to SAR assets | - Satellite phone  
  - VHF's  
  - AX-Internet  
  - Covert Phone  
  - High-speed data systems |
| Command and decision post         | Personnel Accountability systems  
  - DDS | Hanging Fire plan  
  Hanging damage control plan  
  NAV display, Accountability Systems, DDS | Overall in charge of the emergency control strategy | - DSS  
  - Accountability  
  - Systems |

2 The workstation console design could consist of:

- a lower section (base) with a flat top;
- an upper inclined section; and
- an overhead section or equivalent.

(See Diagram A)

3 Workstations should conform to the ISO standard 8367.

4 An adjustable armchair should be provided at each workstation.

5 The monitor should be fitted in the inclined part of the console with the most used command][element] [controls] arranged so that they are in easy reach of the seated operator. The lesser used equipment and controls and should be arranged in the overhead section so that they are reachable by the operator when standing.
6 The progression of events (fire/flood) should be marked on posted plasticized plans fitted in such a way that are on view to all the operators of the Safety Centre team. These plans may be replaced by electronic display with this information on a large size LCD screen.

7 Telephone and internal communication lists must be available.

8 The power supply of the Safety Centre and connected equipment should be redundant with a separate feeder and a dedicated uninterruptable power supply. Rechargeable emergency torches (flashlights) should be provided at each workstation.

9 The arrangement of the console should be such that functional workstations A and B are adjacent (see above table and Diagrams B and C).

10 Arrangement of the console is to be such that operator workstations are adjacent to each other so as to permit the operators to work as a team, but sufficiently spaced to allow for comfortable work areas. Where a computerized management system is used, a redundant operator workstation should be provided to allow for the failure of one of the primary workstations.

11 Behind each workstation’s operator chair, there should be a clear walking space of at least 1,000 mm. Where workstations are arranged back to back, this walk space should be increased to 1,500 mm.

12 Lighting of the SC should be independently dimmable and, where night vision must be maintained, should include a suitable number of red spot lights serving each workstation which are also independently dimmable.

13 [There should be an intercom between the SC and the bridge with microphone at each workstation.]