IP 88

Agenda Item: ATCM 11

Presented by: IAATO

Original: English

Survival Craft on Passenger Vessels: An Overview

Survival Craft on Passenger Vessels: An Overview

An Information Paper Submitted by the
International Association of Antarctica Tour Operators (IAATO)

Summary

In ATCM XXXII WP16 *Lifeboats on Antarctic Tourist Vessels*, the USA makes several proposals with the aim of improving safety with regard to evacuating passenger vessels operating in Antarctica. In an effort to assist the debate, this information paper provides background information on the benefits of various types of survival craft currently used onboard passenger vessels, suggesting that consideration be given to alternative forms of survival craft, including life rafts and marine evacuation systems, which have an important role in a fast, safe and successful passenger evacuation, and also offer additional benefits in polar environments.

IAATO welcomes ATCM XXXII WP16 *Lifeboats on Antarctic Tourist Vessels* which proposes the use of Totally Enclosed Lifeboats (TELB) and Partially Enclosed Lifeboats (PELB) in polar waters. To assist with discussions on this topic, IAATO would like to offer the following background information on survival craft for passenger vessels.

Life-saving appliances and procedures come under the International Convention for the Safety of Life at Sea (SOLAS). Since its first version in 1914, SOLAS has been revised numerous times. The current version, SOLAS (1974), was adopted with provisions for its continuous improvement through amendments instead of having to diplomatically adopt a new convention each time changes were needed. Since 1974, it has been updated and amended on an almost continuous basis with major amendments published approximately every four years.

The requirements of life-saving equipment and how to ensure people survive if they have to abandon ship are covered in Chapter III of SOLAS. This chapter comprises general requirements, but also separates out additional requirements for passenger vessels. Chapter III of SOLAS was last updated in the SOLAS 2006 Amendments, Resolution MSC 216 (82), Annex 3.

It was during the 1960 SOLAS revision that the Convention first took into account developments in life raft technology and allowed for some lifeboats to be replaced by life rafts. Currently passenger vessels are required to have a total survival craft capacity for 125% of maximum number of souls onboard. This must comprise of a sufficient number of partially or totally enclosed lifeboats on each side to accommodate not less than 50% of total number of persons onboard (in other words, the two sides together must equal at least 100%). As noted, since 1960 SOLAS has allowed for some of these lifeboats to be substituted by life rafts, and under the latest revisions the requirements state that sufficient lifeboats must be carried on each side of the ship to accommodate 37.5% of the total number of persons on board with the remainder accommodated in life rafts.

To augment Chapter III of SOLAS, the International Life-Saving Appliance (LSA) Code provides the technical requirements for life-saving appliances. Chapter IV of this Code relates to Survival Craft and gives minimum specifications and definitions of life rafts and lifeboats. This sets out in minute detail the requirements as to carrying capacity, launching requirements, accessibility, stability requirements, self-righting properties, fittings, insulation properties, air circulation, additional life-saving equipment to be carried, survival rations (including specifications for quantities and packaging), medication, survival manuals, etc.

In addition, the IMO has adopted numerous recommendations and guidelines related to survival at sea, in the form of Resolutions and Circulars. To illustrate the extent of these codes, guidelines, recommendations and instructions, a sample of relevant agreements can be found in Appendix 1.

These examples illustrate the extensive mandatory requirements that underlay the considerable effort, resources and work that go into preparing for a disaster and survival in an abandon-ship scenario. They also illustrate the level of deliberation which goes into every SOLAS requirement.

An important further requirement under SOLAS is that all survival craft are required to provide for the safe abandonment by the total number of souls within 30 minutes from the time the abandon-ship signal is given. This requirement needs to be coupled with one crucial factor when considering evacuation of passenger ships: the fact that while crew are required to be regularly trained in the launching and use of life-saving appliances, there is a potentially large number of only minimally trained – and sometimes physically challenged – persons who are involved in the evacuation. Therefore, it is important to ensure that the system is simple, reliable and quick.

Davit-launch life rafts and in particular Marine Evacuation Systems[1] (MES) (both with self-righting life rafts) offer some key benefits for evacuating passenger ships. For example, they are very easy to operate as they are deployed by a single-release mechanism. Not only does this system require little specialized training, but it also frees up additional crew to assist with the passenger evacuation and boarding. The MES system, in particular, offers a speed of operation which cannot be rivalled by lifeboats as the evacuation system is fully operational within 90 seconds of deployment. Life rafts also offer a fully dry-shod embarkation – indeed, the chute system employed in the MES offers a totally sheltered evacuation as the evacuees are transferred directly from the ship into the life raft without exposure to the harsh marine environment. Of critical importance, however, should any persons need recovered from the water, it is considerably more viable to recover someone from the water into a life raft than into a lifeboat – particularly a totally enclosed lifeboat.

From an operator's perspective, MES and life raft systems also offer the advantage that they can be retrofitted on existing vessels without the same significant stability issues that can plague lifeboat retrofits. Equally, the MES and life raft systems are also compact enough that, it is potentially possible on existing vessels to provide additional spare capacity for the full complement of souls onboard on each side of the vessel.

In the polar environment, life rafts also offer effective protection – and potential additional benefits. Under SOLAS requirements life rafts are designed to deal with temperatures of -30º C. In addition, there are also specialized life rafts on the market that are designed for Arctic conditions and able to deal with temperatures of -45 º C. While lifeboats may appear to have advantages in thermal protection, it is perhaps useful to note that lifeboats casualties from heat prostration – even in frigid waters – is a documented problem[2] Thermal protection on life rafts is provided through inflatable chambers and double layering. While there is merit in assessing the value of thermal protective aids for life raft occupants in polar environments, in general terms the thermal protection provided in life rafts themselves has been shown to be effective, even in polar waters, since by the time a life raft is occupied with entrances sealed, it does not take long for interior temperature of the life raft to rise significantly. In fact it is expected that there will be a need for temperature regulation (and air exchange) through ventilation.

Furthermore, lifeboats are usually constructed from glass reinforced plastic (GRP) and thus potentially vulnerable to ice damage. Conversely, if inflatable life rafts get among ice or encounter a growler, they are more inclined to 'give' and so are considerably less likely to be damaged by ice. Life rafts are also comprised of several inflatable chambers as a redundancy against punctures. Repairs to holes or rips up to six inches in length can be made using special sealing clamps and they are equipped with a hand pump to "top-off" pressure should a puncture occur or when temperatures drop and internal air pressure decreases. Relief valves are also installed in each tube to prevent overpressure when temperatures rise.

[1] MES use an enclosed fire retardant protection chute mechanism for boarding life rafts which both protects the evacuees from severe weather conditions and compensates for ship and sea movement during evacuation

2 E.g. - MSC.1/Circ.1278

While life rafts do not have an independent means of propulsion, they are designed to work in conjunction with the mother ship's rescue boats. The rescue boats are intended to tow the life rafts into position where they raft up together and are subsequently used to manoeuvre the life rafts away from any potential dangers.

And, finally, should the worst case scenario occur, and the life raft gets into heavy ice – or indeed if the mother ship get into difficulties while surrounded by ice and so is unable to launch lifeboats – life rafts also offer the flexibility of being light enough and flexible enough to pull onto a floe and continue to provide shelter for its occupants whether on water or on ice. Indeed, that many naval and fishing vessels working in Polar Regions rely on life rafts rather than lifeboats is a further testament to their suitability.

Given the benefits listed above, IAATO would suggest that should ATCM XXXII request consideration by the IMO on these issues, that there would be significant advantage in asking for consideration on the suitability of all survival craft in polar environments as alternative or supplemental evacuation systems.

APPENDIX 1: IMO Assembly Resolutions, and Marine Safety Committee Circulars

A.689 (17)	Recommendation on testing of life-saving appliances
A.602 (15)	Revised guidelines for marine portable fire extinguishers
A.657 (16)	Instructions for action in survival craft
A.760 (18)	Symbols related to life-saving appliances and arrangements
A.658 (16)	Recommendation on the use and fitting of retro-reflective materials on life-saving appliances
A.520 (13)	Code of practice for the evaluation, testing and acceptance of prototype novel life-saving appliances and arrangements
A.809 (19)	Recommendation on performance standards for survival craft two-way VHF radiotelephone apparatus
A.802 (19)	Recommendation on performance standards for survival craft radar transponders for use in search and rescue operations
A.691 (17)	Safety instructions to passengers
MSC/Circ.570	Recommendation on maximum stowage height of survival craft on passenger ships
MSC/Circ.544	Fire drills and on-board training
A.624 (15)	Guidelines on training for the purpose of launching lifeboats and rescue boats from ships making headway through the water
MSC/Circ.614	Guidelines on inspection and maintenance of lifeboat on-load release gear
A.656 (16)	Guidelines for fast rescue boats
A.771 (18)	Recommendation on training requirements for crews of fast rescue boats
A.229 (VII)	Merchant Ship Search and Rescue Manual (MERSAR) - which is being updated and incorporated in the joint ICAO/IMO SAR manual ... added
MSC/Circ.760	Guidelines for the structure of an integrated system of contingency planning for shipboard emergencies
A.690 (17)	Periodical inspections of abandon ship and fire drills on passenger ships
A.657 (16)	Instructions for action in survival craft
MSC/Circ.587	Fumes from totally enclosed lifeboats
MSC/Circ.1248	Minimizing Delays in Search and Rescue Response to Distress Alerts
MSC1/Circ.1245	Guidelines for Damage Control Plans and Information to the Master
MSC1/Circ.1238	Guidelines for Evacuation Analysis for New and Existing Passenger Ships
MSC1/Circ.1206	Measures to Prevent Accidents with Lifeboats
MSC1/Circ.1205	Guidelines for Developing Operation and Maintenance Manuals for Lifeboat Systems
MSC1/Circ.1185	Guide for Cold Water Survival
MSC1/Circ.84	Enhanced Contingency Planning Guidance for Passenger Ships Operating in Areas Remote from SAR Facilities
MSC1/Circ.1182	Guide to Recovery Techniques
MSC/Circ.1167	Functional Requirements and Performance Standards for the Assessment of Evacuation Guidance Systems
MSC/Circ.1079	Guidelines for Preparing Plans for Co-operation between Search and Rescue Services and Passenger Ships - (in accordance with SOLAS regulation V/7.3)
MSC/Circ.1046	Guidelines for the Assessment of Thermal Protection
MSC/Circ.1047	Guidelines for Monthly Shipboard Inspection of Immersion Suits and Anti-Exposure Suits by Ships' Crews