Compliance Requirements

The Consequences Of The 13th Passenger

It is now widely known throughout the yachting industry that yachts can only charter with a maximum of 12 guests if certified in accordance with LY2 (the MCA Code) or another large-yacht code. Probably 95% of all charter yachts are LY2-compliant, so why do so few carry more than 12 passengers?

THE current edition of the International Convention for the Safety of Life at Sea (SOLAS) defines 'passenger' as "... every person other than the master and the members of the crew or other persons employed or engaged in any capacity on board a ship on the business of the ship [and] a child under one year of age". It defines 'passenger ship' as "a ship that carries more than 12 passengers". Therefore, every yacht that charters with more than 12 guests is a passenger ship, and must therefore comply with the passenger ship requirements of SOLAS. (The reader should note that there is no mention of 'chartering', 'engaged in trade' or 'for hire' in relation to passenger ships – please see the box below for further clarification.)

So, where does this mystical figure of '12' come from? Its origins are not well known, but it has certainly been in legislation since the 1928 Edition of SOLAS and it would appear to be with us for the foreseeable future.

As a rough approximation, all yachts in excess of 55 metres in length could be built to comfortably carry more than 12 passengers. There are over 200 yachts of this size already in service but less than 10 are certified for 13 or more passengers. The figures published in Issue 71 of *TYR* show there are more than 30 yachts currently under construction of this size but probably less than three of these will be certified for more than 12 passengers. So why is this the case? Is it because there is no demand for charter yachts that can carry this many passengers? Is it because passenger ship certification is perceived to be prohibitively difficult to obtain and maintain? Or is it for another reason? This article looks at the differences between the requirements for yachts carrying more than 12 passengers (SOLAS Passenger Yachts) and those carrying 12 and less passengers (LY2 Yachts) to find out how challenging they really are.

What Are the Problems With Certifying A Yacht To Carry 13 Or More Passengers?

No Equivalent Codes To SOLAS's Passenger Ship Requirements

Whereas LY2 is an alternative set of requirements to SOLAS's cargo ship requirements and the International Convention on Load Lines for yachts carrying 12 or less passengers, there are currently no alternatives for yachts carrying 13 or more passengers, leaving SOLAS's passenger ship requirements as the only option. (Note: The MCA is currently conducting a feasibility study into the carriage of yachts carrying more than 12 passengers, but it is still very much in its infancy.)

ISM & ISPS

All passenger ships must comply with the ISM and ISPS Codes regardless of their tonnage, and the Document of Compliance for the yacht's management company must include 'Passenger Ships', not just 'Other Cargo Ships' for which most managers are presently certified.

Manning

Crew who possess MCA yacht qualifications simply cannot work on a yacht carrying more than 12 passengers unless they upgrade their certificates to full STCW levels of competency and take additional courses and modules to permit them to work on passenger ships. Also, as a SOLAS Passenger Yacht crew would probably be not paid

Pleasure Yachts Carrying More Than 12 Guests

The domestic legislation of some countries' Flag Administrations has slightly different definitions for 'passenger' from SOLAS, but if they are signatories to the Convention then the SOLAS definition should take priority over their own definitions for the purpose of applying SOLAS's requirements. Therefore, individual Flags cannot interpret SOLAS's definition of 'passenger' for those ships to which SOLAS applies.

Several well-known Flags permit pleasure yachts to carry more than 12 non-fee-paying guests subject to meeting various conditions. This is on the premise that if the yacht is not chartering it is a 'pleasure yacht not engaged in trade', which SOLAS exempts. However, as we have already seen, SOLAS clearly defines 'passenger' and 'passenger ship', so a pleasure yacht carrying 13 or more non-fee-paying guests is a passenger ship and a pleasure yacht not engaged in trade. Therefore, the more onerous of the two rules should be applied, that is those for a passenger ship. It is neither the author's intention nor his desire for this article to stir up a hornets' nest on this topic, but be warned – a yacht operating internationally carrying 13 or more guests, whether they are charterers or the owner and his friends, should according to SOLAS be certified as a passenger ship!

much more than an LY2 Yacht crew, there is little incentive for them to attend the far more difficult, time-consuming and expensive courses to obtain the higher qualifications.

Of these, the two major problems are with manning and meeting SOLAS's passenger ship requirements, the former being potentially a huge problem, especially as there is currently no provision, and little demand for that matter, for the MCA or any other Flag to grant equivalencies. Let us be optimistic and assume that given time a mechanism will be formulated for converting yachting qualifications into small passenger ship qualifications. The remainder of this article concentrates specifically on SOLAS's requirements.

Weathertight Integrity

The main deck and above are to be weathertight where "Weathertight means that in any sea conditions water will not penetrate into the ship" and not one of the many vague and inconsistent definitions of weathertight currently in circulation, especially when used in relation to LY2. The requirements of Load Lines must also be met, but whereas there are some formal equivalent arrangements to Load Lines for LY2 Yachts, there are none for SOLAS Passenger Yachts. Therefore, if a designer or builder wishes to deviate from the requirements of SOLAS or Load Lines for weathertight, they must approach the relevant Flag Administration or Classification Society

Superyacht mini slide

Meeting SOLAS's Passenger Ship Requirements

What additional steps does it take for designers and builders to produce certified yachts that can carry more than 12 passengers? The good news is that the requirements for a SOLAS Passenger Yacht and an LY2 Yacht are largely very similar, even identical in parts, but the bad news is that there are a few areas in which the requirements differ significantly.

The Fairly Significant Differences

Double Bottom

All passenger ships must have a double bottom, the extent of it depending on the ship's length. However, if meeting the requirements is deemed 'not practicable' then there are provisions for them to be relaxed by the relevant Flag Administration or Classification Society. There is therefore some flexibility for SOLAS Passenger Yachts.

on a case-by-case basis, with a reasoned argument for why the alternative arrangements should be accepted. On a practical note, conventional sliding salon doors cannot be used on a SOLAS Passenger Yacht due to their intrinsic non-weathertightness.

Emergency Power

The emergency power system on a SOLAS Passenger Yacht must supply the emergency (essential) sources for a minimum of 36 hours, whereas LY2 requires only 18 hours.

Bilge Pumping

Three or four bilge pumps are required on a SOLAS Passenger Yacht, compared with only two in LY2.

Containment Of Fire

LY2 permits combustible materials to be used for construction whereas SOLAS does not for passenger ships. (LY2 uses SOLAS's 'Method IIIC' for a cargo ship where bulkheads can be combustible but a fire detection system must be fitted throughout and spaces are not bigger than 50 m2, or 'Method IIC' which is similar without the restriction of size but additionally requires a sprinkler system.) All bulkheads, linings and grounds on a SOLAS Passenger Yacht must therefore be constructed from an approved non-combustible

material, thus preventing the traditional use of wood for supporting bulkheads and ceilings. Incidentally, and perhaps surprisingly, the familiar matrices for fire rated boundaries (A-60, B-15, etc) are exactly the same for a SOLAS Passenger Yacht as an LY2 Yacht.

Emergency Escapes

Emergency escapes are almost without exception very poorly marked on yachts due to the mutual exclusivity of keeping guest areas looking beautiful (not filling them with signs, low-level lighting, neon 'EXIT' signs and all the other bells and whistles) whilst clearly identifying the escape routes. Most inspectors of LY2 yachts are satisfied with a basic identification and illumination of the escape routes. However, SOLAS Passenger Yacht escape routes must fully comply with the International Maritime Organization's Fire Safety Systems (FSS) Code for the low-location lighting and escape route (including stairway) minimum widths. A practical example is dead-end corridors being permitted on LY2 Yachts, whereas corridors on SOLAS Passenger Yachts must have stairways at each end. Nevertheless, with some intelligent design and careful planning the requirements of SOLAS and the FSS Code can be met without a significant impact on the layout and aesthetics.

Rescue Boats

A SOLAS Passenger Yacht must carry two fully SOLAS-compliant rescue boats. LY2 yachts are only required to carry one, and depending on the Flag Administration this may have 'equivalent' certification to SOLAS. (Please also see 'Survival Craft' below.)

The Very Significant Differences

Subdivision

The topic of passenger ship subdivision and stability in a damaged condition is very difficult to broach in an article of this size due to the complex and highly mathematical nature of SOLAS's subdivision requirements. However, the main issue is that for a yacht to carry 13 or more passengers without the provision of lifeboats, it must be able to withstand damage to two adjacent compartments whilst meeting some basic stability criteria. With strategically placed sliding watertight doors and some ingenious joinery this need not be such a large hurdle.

Alternatively, if a yacht is prepared to carry lifeboats then these 'special standards of subdivision' need not be met, although the bigger a yacht gets, the more likely it will need to meet the two compartment damage requirements regardless of the provision of lifeboats.

Fire Growth Potential

LY2 permits fire-rated divisions to be faced with combustible materials, whereas the surfaces of a SOLAS Passenger Yacht can only be covered with limited amounts by complying with the following:

• Using surface coverings with a combustible loading limitation, to cap the amount of heat given off in the event of a fire (45 MJ/m^2). Test data must be available for the coverings to demonstrate compliance. These requirements do not apply to the surfaces of furniture fixed to linings or bulkheads.

And...

• Limiting the volume of combustible facings, mouldings, decorations and veneers to a volume equivalent to a 2.5-mm veneer on the combined area of the walls and ceiling linings. Again, this does not apply to fixed furniture. Alternatively there is a simplified method (detailed in IMO MSC/Circular.1003), which gives a maximum mass of combustible materials in accommodation spaces of 35 kg/m^2 based on the floor area of the space.

Additionally, a Flag may permit an increased volume of combustible materials based on mitigating measures (for example a sprinkler system and/or an addressable fire detection system), but this route may require a formal assessment as permitted by SOLAS Regulation II-2/17. This approach gives the designer and builder much more freedom and alleviates the need to use standard solutions in order to meet SOLAS's regular prescriptive requirements, but it does mean that a formal technical justification must be conducted to demonstrate that equivalent fire preventing measures will be achieved. Although this approach has yet to be widely employed in the construction of cargo ships because of the increased cost and demands on design and engineering resources, it can be truly beneficial to the designers and builders of one-off and specialist ships, such as yachts.

Survival Craft

SOLAS requires lifeboats to be carried by passenger ships over 500GT, which approximately equates to a yacht over 50 metres in length. Therefore:

• SOLAS Passenger Yachts on long international voyages are

SOLAS Regulation II-2/17

Introduced by the IMO in the SOLAS 2000 amendments, SOLAS Regulation II-2/17 permits a performance-based approach to fire safety, allowing 'alternative design and arrangements' to meet the functional requirements of SOLAS II-2. Meeting the fire safety objectives and the functional requirements permits deviation from the prescriptive requirements of SOLAS II-2 by using a mechanism of engineering analysis, evaluation and approval.

After being submitted to and approved by the Flag Administration, the alternative arrangements are then forwarded to the IMO for circulation to all Contracting Governments. This process is sometimes used for cruise ships but rarely for yachts.

required to have lifeboats of a capacity to carry everyone on board (the ship's complement), but this may be reduced to 75% of the ship's complement by substituting with liferafts.

• SOLAS Passenger Yachts on short international voyages (those in the course of which a ship is not more than 200 miles from a port or place in which the passengers and crew could be placed in safety) only need lifeboats for 30% of the ship's complement if they comply with the special standards of subdivision, with the remaining capacity made up by liferafts. Otherwise the requirements for passenger ships on long international voyages apply.

As most SOLAS Passenger Yachts would only operate with guests on board on short international voyages, and could in theory meet the special standards of subdivision, let us concentrate on how the latter requirements can be met:

With lifeboats. Lifeboats of a capacity between 15% and 50% of ship's complement would be provided each side, with the remainder up to 100% made up with inflatable liferafts. The lifeboats need not be the stereotypical crude devices seen hanging off the sides of merchant ships – as long as they meet the applicable requirements of the IMO's Life-Saving Appliance (LSA) Code any boat can be used. Whilst this does not permit a traditional yacht tender to be used, there is scope to design and build a small lifeboat that would have both form and function, perhaps a more refined, luxurious and compact version of a modern cruise ship tender.

Without lifeboats. Under the general provisions of SOLAS, a Flag may accept an equivalent to any prescriptive requirement of SOLAS provided their decision is communicated to the IMO for circulation to other governments – it was by these means that the MCA Code was introduced as equivalent to SOLAS's cargo ship requirements. There is scope therefore for alternatives to lifeboats to be proposed, which would probably include a further restricted service, increased survivability, and the use of 'dry shod evacuation' (either davit launched liferafts or a Marine Evacuation System).

VELS SMS in a snow storm

Summary

Whilst this has been by no means an exhaustive study into the differences in requirements for an LY2 Yacht and a SOLAS Passenger Yacht, it has shown that designing, building and certifying yachts for the carriage of more than 12 passengers in comfort and true luxury is by no means impossible with the right attitude, approach and expertise. Now all we have to do is find some solutions to the manning problems!

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THE MAIN DIFFERENCES BETWEEN THE TWO SETS OF REQUIREMENTS

Item/Area	SOLAS Passenger Yacht (<36 passenger) requirements	LY2 Yacht >500GT (12 passenger) requirements
Subdivision and stability	One or two compartment damage survivability required depending on whether lifeboats are carried or not.	One compartment damage required, two if the provision oflifeboats is to be avoided.
Double bottom	Required unless not practicable.	Not required.
Weathertight integrity	Main deck and above to be weathertight. Windows not permitted on main deck without reasoned technical justification. Internal deadlights required for sidescuttles on main deck. Load Lines to be complied with.	Storm shutters required for windows on main deck or extra thick toughened safety glass. Equivalent requirements to Load Lines permitted, subject to damaged stability requirements being met.
Bilge pumping	At least three pumps required, a fourth independent pump sometimes required.	At least two pumps required.
Emergency source of electrical power	Emergency services to be supplied for 36 hours.	Emergency services to be supplied for 18 hours.
Fire growth potential	Limited amounts of combustible materials (paints, varnishes,veneers, facings, mouldings, decorations, etc) permitted on“A”, “B” and “C” class fire divisions in accommodation and service spaces subject to not generating smoke or toxic byproducts of combustion in accordance with the IMO’s Fire Test Procedures (FTP) Code. Exposed accommodation bulkheads to have low flamespread characteristics as per the FTP Code.	All “A”, “B” and “C” class fire divisions in accommodation and service spaces may be faced with combustible materials. Exposed accommodation bulkheads *need not* have low flamespread characteristics.
Containment of fire	Matrix of “A”, “B” and “C” class fire divisions for accommodation, service spaces and control stations.	Matrix of “A”, “B” and “C” class fire divisions for accommodation and service spaces and control stations.
Fire fighting	Two independent fire pumps providing at least 0.30 N/mm^2 at any hydrant.	Two independent fire pumps providing at least 0.20 N/mm^2 at any hydrant.
Means of escape	Escape routes are to be marked by lighting and photoluminescent strip indicators complying with the Fire Systems Safety (FSS) Code.	Aids for escape to be provided as necessary to ensure accessibility, clear marking and adequate design for emergency situations.
Lifeboats	Under 500GT not required, over 500GT one partially or fully enclosed lifeboat each side or alternative arrangements to be proposed to Flag.	Not required under 85m, one totally enclosed each side for 85m and above unless two compartment sub-division.
Rescue boats	Two SOLAS rescue boats. The lifeboats may be accepted as rescue boats.	SOLAS rescue boat required or Flag-approved equivalent.

Note: Please refer to the SOLAS Convention and LY2 for the exact requirements – the above are extensively abbreviated for formatting purposes.