



Major Issues in Operational Side of Solas Laws

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Abstract:

The trade and commerce carried out through overseas to various countries has grown and it is estimated that 80 percent of the international trade is carried out through sea. It is a low cost and efficient means of transporting however the perils of the industry is always high compared to any other means of transporting and it is considered to be ‘new normal’ in shipping industry. The research article is all about the international maritime Convention named “Safety of Life at Sea” which is known as SOLAS which established minimum safety requirements of shipping industry. The article is doctrinal which elaborate the salient features, minimum standard of safety equipment including disaster signals and requirements of advancing from SOLAS to next generation safety measures.

Keywords: Solas Convention, Safety at Sea, Maritime Convention,

Introduction:

“Safety of Life At Sea”, an international maritime treaty, also known as SOLAS Convention or International Convention for the Safety of Life at Sea (SOLAS), which establishes the least safety measures in the construction, equipment and operation of merchant ships. IMO SOLAS 74, the last adopted revised convention of 1974, includes a number of regulations under SOLAS, which deals with safety precautions and safety procedures starting from the construction of the ship to real emergency like – “Abandon Ship”. The convention is updated to meet the safety norms in the modern shipping industry from time to time.

Salent Features of Solas:

- 1. Check Lifeboat:** The lifeboat and its equipment (including edibles, pyrotechnics, non-pyrotechnics) should be checked and renewed. The ship’s crew must be strictly instructed on the operation of the lifeboat and purpose of every installation in the lifeboat. Repaint the written information on the lifeboat. Lower the lifeboat and check its movement both ahead and astern. Necessary overhauling and renewal must be done as per requirement.
- 2. Check Davits:** Davits of lifeboats should be de-rusted, repainted, greased along with the winches and the blocks. Check and then recheck so that they don’t jam at the crucial moment.
- 3. Check Inflatable Life rafts:** The inflatable life rafts should be checked if they’ve been serviced at regular intervals. Check the equipment strictly and make any necessary replacements if required. Stickers generally require to be

replaced as they lose their sheen over time easily under the duress of weather.

- 4. Check Handheld Radios, Smoke Signals and Lifebuoys:** The survival craft’s portable handheld radio should be checked and kept in optimum working order. The ship’s crew should know all about the radio including battery backup, operation etc. (the GMDSS handbook would be the right place to search for exact specifications with regard to the handheld radio) The life buoys should be inspected and overhauled as required. Mark conspicuously the ones that are not to be used anymore. The lights and batteries should be replaced if they’ve expired. Check the smoke signals as well as the lifelines. As per the safety plan of the vessel, the lifebuoys should be aptly placed at different locations. Their location should be clearly marked out for clarity.
- 5. Check Lifejackets:** Check All the lifejackets onboard should be rigorously checked. Expired lights and faulty lifejackets must be replaced. Also, the entire crew must be made to practice the wearing and removal of the lifejacket in a stipulated time. Sometimes an oversized/undersized jacket may be required in which case they should be ordered promptly. No surveyor will excuse lesser number of life jackets.
- 6. Check Pyrotechnics:** Pyrotechnics must be functional and those that aren’t must be replaced. Check the LTA as well. The crew must know where the pyrotechnics are kept and how they are to be used. Generally speaking, the

instructions on the cover/front are enough to gather operational information.

7. **Check Fire Control Plans and Systems:** The fire control plans must be checked for legibility. Each of them must be checked and conformed to.
8. **Test Fire Detection Systems and Fire Fighting Equipment:** Test the fire/smoke detection systems if possible. The fire pumps, fire hoses, fire extinguishers, nozzles, couplings should all be checked while at it. The information regarding the fire extinguishers must be promulgated to the ship's crew so they know which on to use for a specific kind of fire (Class A, B, C, D). Overhaul and refill extinguishers (as well as any cartridges) as per the requirement. The fireman's outfit should be inspected for functionality. Again, the ship's crew should practice wearing and removal of the kit (during drills) in order that they know how to do so at the crucial times. All alarms must also be tested.
9. **Check Pilot Ladder:** The pilot ladders along with all ancillary equipment must also be checked. Ensure that they match up to the specifications laid down as per legalities.
10. **Check Other Important Systems According to the Type of the Ship:** The abovementioned points are general and apply to all ships. Tankers have additional checking points that are:
 - The IG system.
 - Piping of the fixed firefighting system in the cargo pump room.
 - The deck foam as well as sprinkler system.

Pyrotechnics:

Pyrotechnics is the science of using materials capable of undergoing self-contained and self-sustained exothermic chemical reactions for the production of heat, light, gas, smoke and/or sound. Used under extreme emergency situations (such as distress), these are provided onboard ships to grab the attention/inform ships within range so as to seek help and assistance of the vessels for rescue. Basically, it is a visual method of sending SOS signals. In the unfortunate event (such as an 'abandon ship' situation) wherein one's own ship is beyond saving, pyrotechnics can be one of the last resorts for the ship personnel's survival and rescue out at sea.

The Minimum Carriage Requirement As Per Solas

1. Bridge

- Hand Flares (06 nos)
- Rocket Parachute Flares (12 nos)
- Buoyant smoke signal (02 nos; 01 on each side, port, and starboard)
- Line throwing appliance (at least 01 no)

2. Lifeboat (each)

- Hand Flares (06 nos)
- Rocket Parachute Flares (04 nos)
- Buoyant smoke signal (02 nos)

Different Types Pyrotechnics Available Onboard Ships

Hand flare

A hand flare is a small cylindrical stick which when activated, produces an intense red smoke or light without an explosion. It should be held out leeward when activated. It can be used by

Rocket parachute flare.

As the name suggests, the equipment is designed to fire a single red star to a height of approximately 300m; this flare, launched at the minimum height of 300m in the air, self-activates to produce intense red smoke. A parachute opens up and reduces the rate of descent which gives more time to the flare to remain at a height and to provide a clear view to nearby ships or help.

Buoyant smoke signals

This pyro tech equipment is held in a compact container with a buoyant nature so that it can float on the water surface to signal distress situation. Mostly for use by the day, this can indicate the position of distress with the bright orange smoke as well as for determining the wind direction for rescue.

Line Throwing Appliances

A line throwing appliance is not a distress signalling equipment but is counteracting equipment in distress situations. It is used so that a connection is made in terms of a strong line between the distressed ship and the safe ship (to create a bridge) to pass on towing lines or another kind of help.

Maintenance and Disposal

- All pyrotechnics must be kept in safe storage with the cases properly shut. This is especially important after safety brief to the personnel on board with regard to pyrotechnics usage
- Keep flares away from fuel or combustibles and store in an accessible dry place
- Carry out maintenance work (cleaning, expiry date check etc) weekly as well as monthly as per the LSA maintenance schedule of the ship as instructed under the company's ISM requirements
- In case of expiry of the pyrotechnics out at sea, hold on to them for disposal to an authorized entity once in port. Do not throw them out at sea or use them after expiry; being a product that produces an exothermic, usage after expiry can be risky
- A distress signal is typically a call for help sent out by a person or ship. But since the travel through waterways is one that has been around the longest, most frequent uses of emergency signals are made by ships in danger.

Types of Distress Signals:

- A distress signal is essentially something that will attract attention to attain some help. The nature of these signals has changed a lot over the time. Today, most commonly used distress signals are radio-based signals that are interpreted through satellite systems, making them much more efficient, quick and precise.
- But even though complex technology is available, the old forms of these marine signals like marine flares and flags are still used.

History of Distress Signals:

- The need for a system for an endangered ship to seek help while it is stranded in the middle of an ocean has been felt ever since the first voyage happened. Sailors, since long, have used one or the other form of such emergency signals, the earliest one being use of a flag.
- In much older times, a ship in trouble would hoist a flag, upside down so that any ship in the distance would see it and realize that there is a ship that needs help. Later, the flag and ball version of this method came, along with use of any object that would attract attention from by passers. Other most commonly used distress signals include maritime signal flares where a flare is let up in the sky from a troubled ship, for ships or people on shore or on nearby ships to notice and send help.
- As per the international rules set later, these flares when fired at an interval of a minute indicate a ship in extreme danger and asking for help. This, however, is the form used today, earlier version of which was developed by Martha Coston.
- She developed an elaborate flare system which was colour-coded to allow even more clarity to maritime signal flares. Somewhere around the 1850s, she improved a system whose framework had been laid by her deceased husband.
- The system underwent many modifications and was later taken up by the American marine services and standardized to be used all over America. However, Martha Coston made a huge contribution to the world of marine signals which meant ships in distress now had much more to rely on. But this is not the only emergency signals that existed.

The Radio Help:

- Among the various types of distress signals available, apparently, the most important ones are the radio-controlled signals which include the ever-famous Morse code and CQD.
- It is believed first radio signal for help was sent by a ship somewhere in 1890s, few years later of which the Morse code came into existence. The beginning of SOS can be dated back to somewhere around 1909 when it was first used to ask for help. Some are of the opinion that SOS is an abbreviation for 'save our ships' or even 'save our souls' but those who have studied it in detail believe it was just a preferred form of signal because of its ease in being

transmitted especially in times like wars, where it was most commonly used. Later the "mayday" signal also came into existence.

- Today, use of flashlights for night or large reflecting mirrors to focus a beam of light are used instead of marine flares but both are equally effective and crucial to life of a ship.
- Marine signals are the most intriguing and also the most useful distress signals as they can save a lot of damage if used appropriately, a fact recognized by the naval units of countries all over the world. That is why the international regulation of rules regarding distress signals has been immensely helpful as that allows ships all over the world to seek help, in case of an emergency using similar emergency signals.
- Survival radios are radios for communication which help ships and ships' crew during emergencies. A survival radio forms one of the most essential parts of the survival tools of the marine industry. The emergency radio operation is approved internationally under the Global Maritime Distress Safety System.
- An emergency radio is mainly used to send signals to international radio channels or frequencies. The survival radio came into application in the marine industry after the Titanic incident in 1912. From that time onwards, the technology of survival radios has been constantly developing and improving.
- As survival tools, in the early days, Morse code was transmitted over the survival radio frequencies at the time of emergencies. But the survival radios of that time were limited by accessibility problems over long distance areas. This is why the VHF radio technology was adopted into the survival radio system at the time of World War II.
- However, in today's times the technology of survival radios has developed even further. Survival radios are built-in with GPS (Global Positioning System) so as to enable the person receiving the emergency signal to correctly pinpoint where the ship sending the distress signal is located on the water.
- In addition to the GPS fitted in the survival tools, other modern technologies are also equipped in the survival radios. Two of the other technologies include a Distance Measuring Equipment and communicators which can be used with the help of satellites.
- Applying the technology of survival radios to a ship is advantageous especially if the ship's route is tricky and through dangerous waters. Dangers include not just unpredictable winds, tides and currents but also the threat of pirates.
- The threat of piracy has increased manifold in present times. By using survival radios as survival tools, the crew of the ship can effectively alert not just other ships about the danger but also indicate the coast guard about the location and position of the threat in the water.

- Survival radios are not very expensive.
- Survival radios have been a part of the marine industry for some decades now and the major features – efficiency and reliability make the emergency radio very popular in the present era. Even in the days to come, with multiple developments in the marine communication technology, the survival radios will continue to be the best.

Conclusion:

Maritime Law play an important role in the levels of safety and environmental protection seen present across the industry today. These standards would not be possible without a mutual, global effort to uphold the Conventions and drive further improvements. To monitor for compliance of each of the four pillars, Port State Controls (PSCs) of member flags may inspect a ship from a different flag state (and MoU) if there are clear grounds for believing that the ship, its crew, equipment or certification do not comply with the requirements of the SOLAS, MARPOL, STCW and MLC Conventions.

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