The elephant in the room

Equipment and procedures in enclosed space rescue

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Enclosed space accidents, although not eliminated on ships, have almost certainly been reduced in the last five years by increased training and awareness of the dangers. Despite this, though, unnecessary injuries and deaths are still occurring. This article aims to help mariners understand and address one of the elements of the IMO requirements that I have called the 'elephant in the room': checking and use of rescue equipment and procedures.

The regulations

But first, let's review how all of this came to be. In 2015, SOLAS was amended to mandate enclosed space entry and rescue drills every two months. According to the regulation, the drills should include:

1. Checking and use of personal protective equipment required for entry
2. Checking and use of communication equipment and procedures
3. Checking and use of instruments for measuring the atmosphere in enclosed spaces
4. Checking and use of rescue equipment and procedures
5. Instruction in first aid and resuscitation techniques.

Since 2016, SOLAS also requires the carriage of portable atmosphere testing equipment. This is certainly a good addition to SOLAS, but how were mariners supposed to enter an enclosed space without one? Be aware that just measuring for oxygen is not enough! The regulation further specifies that the equipment, at a minimum, is capable of measuring concentrations of oxygen, flammable gases or vapours, hydrogen sulphide and carbon monoxide.

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The IMO website on enclosed spaces includes this note:

'Enclosed spaces covered by the regulation include, but are not limited to, cargo spaces, double bottoms, fuel tanks, ballast tanks, cargo pump-rooms, cofferdams, chain lockers, void spaces, duct keels, inter-barrier spaces, boilers, engine crankcases, engine scavenge air receivers, sewage tanks, and adjacent connected spaces. The list is not exhaustive and enclosed spaces should be identified and listed on a ship-by-ship basis.'

The last sentence is critical. As an important risk reduction measure, make sure you have pre-identified all of the enclosed spaces on your ship and have listed them as such in your procedures. Another tip is to have each space identified at the site of entry as a reminder. On my ship we have plaques at each enclosed space that read 'Attention – Enclosed Space! Follow the procedure.'

Where to focus

Certainly all five points specified in the SOLAS regulation are important. From personal experience, I can say that points 3 and 4 were the most problematic, as they introduced new areas of expertise into the arena. Point 3, checking and use of instruments for measuring the atmosphere in enclosed spaces, is a specialised and unintuitive skill. Thankfully, it is easily addressed because most companies can organise in-house training for the proper use of these devices, which are, for the most part, quite user-friendly. But point 4, checking and use of rescue equipment and procedures, is what we may call the 'elephant in the room'.

All cords, pulleys carabiners and slings

Body-wrap stretcher

Semi-flexible body stretcher

Asking the experts

As Master on a vessel, I have long agonised over the problem of how to train our crew in enclosed space rescue when no one on board had the training and we didn't have the all the specialised equipment. We didn't even know what equipment we really needed. Some evacuations are a simple vertical lift, but other spaces would need horizontal movement through a series of manholes. The head office was informed of the situation and to their credit, they immediately put the wheels into motion. A specialised firm was contracted. First it made an inventory of all the enclosed spaces and then it drafted the evacuation manoeuvre for each space. Subsequently, a cohort of the crew, including myself, were sent on a specialised enclosed space training course. Four days of increasingly complex evacuation manoeuvres gave us the knowledge of the equipment and techniques needed. It also gave us the confidence we could rescue a victim anywhere on the ship. I can truly say that the training was an eye-opener. I can also attest that the techniques we learned are not easily improvised; you need the specific training and equipment!

An additional outcome of the training was the decision to add the requirement for all personnel entering an enclosed space to wear a body harness with lifting eyes. This simplifies an evacuation as any potential victim is 'ready to lift' if need be. Another was to fabricate two 'bridge-boards' that allow rescuers to slide the victim through a manhole during horizontal movement within enclosed spaces such as dry-spaces or tanks. The bridge-boards are placed either side of the manhole and are connected to each other with straps, thus forming a ramp, making it possible to slide the victim up, through and then back down.

What 'fully prepared' looks like

The company also purchased the specialised equipment adapted for enclosed space rescue. The picture top right shows the equipment purchased for our vessel, with the exception of the rescue tripod and winch. One of the most useful items is the compact and semi-flexible body-stretcher. We purchased the Yates Spec Pac, but other manufacturers surely exist.

An 'exploded' view of all the equipment can be seen in the second photo including lines, carabiners, anchor and wrist strops, to name just a few. The equipment and training are not cheap but, in essence, this is the cost of being in harmony with the letter and spirit of the SOLAS requirement for enclosed space entry and rescue drills.

In our case, not all deck and engine room crew were sent on the training, but those that were have formed a cluster of onboard rescue experts that will share the training with crew mates via rescue scenarios. Our goal is eventually to hold rescue drills in all our enclosed spaces. And notwithstanding the SOLAS requirement for drills every two months, our frequency goal is one training every six weeks (we have a two-crew system of six weeks on, six weeks off). So, every crew will have a drill at every on period. As with any skill, practice makes perfect.

In summary, if you don't have most of this equipment you probably cannot do a proper enclosed space rescue in all of the spaces on your ship. And, if you don't have the specific training on the techniques of enclosed space rescue, you can't use the equipment correctly even if you have it on board.

Further reading: Enclosed space equipment, Seaways, September 2012, p23.

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