SURPRISES AND SURVIVAL: LIFEBOATS AND LEARNING

Lifeboat crews have saved hundreds of thousands of lives worldwide, and for many of these events survival depends on how crews handle surprises. **Adrian Woolrich-Burt**, a former B737-800 Captain and current Lifeboat Commander, recounts one such event, and the implications for human performance.

The launch bell rang just after 10:00 in the morning. Daily boat checks were complete and the duty crew were sitting down to their second, and probably favourite breakfast of the day. The Coastguard Watch Officer at the other end of the red telephone requested the lifeboat assist a team from London Fire Brigade recover a person stuck in the mud on the foreshore. This is a routine call for any of the four Royal National Lifeboat Institution (RNLI) lifeboat stations on the River Thames between Teddington and the sea in England.

The situation that the crew encountered when they arrived on scene was significantly different to what was expected. The casualty was not in the mud. He was immersed in 15 metres of fast-flowing water and attempting to end his own life by drowning. Shouts from the skipper of a nearby workboat

indicated that there was another person in the water who – seconds before – had disappeared under the surface, and not re-emerged.

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The crew's mental workload increased rapidly. What had been briefed en route as a relatively low stress supporting role changed in an instant. Time pressure, previously framed by how many hours before the tide reached the mud, immediately compressed into how many seconds before the casualty suffered a hypoxic cardiac arrest.

The casualty trying to end his own life needed to be assisted, but getting close in a powerful lifeboat without causing harm had to be risk assessed, briefed, and carried out with care. The tidal flow, river conditions, water temperature, rescue plan, and allocation of tasks had to be considered, checked, and implemented in a short time. The Thames is the UK's busiest river, and traffic had to be stopped in both directions. The physical workload increased too. Removing a person from fast-flowing water can be a challenge, especially when wearing a thermal dry suit, face mask, and helmet. To do it safely and speedily requires strength and effort from all the crew. Removing two casualties halves the available space, and more than doubles the workload.

The extraction plan also had to be revised. A conscious person stuck in the mud could probably be walked out on fire service load spreaders, but recovering an unconscious casualty with a stretcher may interrupt effective CPR and prove fatally slow. In this instance, it was better to arrange to meet an ambulance at a nearby jetty or wharf. However, there are hundreds to choose from on the Thames, and those easily accessible by lifeboat may be impossible to access by road. Considering the direction from which an ambulance will arrive would cut down transit time and improve the casualty's chance of survival. Getting the ambulance moving towards the casualty even before their removal from the water had taken place would improve survival chances further.

In this case, the person was recovered to the lifeboat, given medical attention, and handed over to the London Ambulance Service at a nearby causeway. This was a life saved.

Training

The fact that the crew on the Thames that day was able to absorb the pressure and react to a radically different situation in a coherent and co-ordinated way did not come about by chance. The Institution's training and assessment environment prepare crews for these challenges from the first day of their induction.

Photo: RNLI/Nathan Williams

The unofficial motto of the RNLI is 'With courage nothing is impossible'. To some extent that is true. Crews still need to have the courage, both physical and mental, to deal with all that maritime search and rescue may throw at them. But as in aviation and other safety-critical disciplines, we know that while courage may be necessary, it is not sufficient. It is only through a sophisticated package of non-technical (NOTECH) training that an otherwise disparate group of individuals – many of whom are volunteers – learn to function as a team greater than the sum of its parts.

Lifeboat crews are trained and assessed in leadership, teamwork, decision-making, and situational awareness. However, recent research has demonstrated how much the shock and startle effect can be a factor in crew performance.

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Shock and startle can be the result of a kinetic event, such as the boat capsizing, or it can be the result of a rapid escalation of cognitive demand, such as in the rescue described above. In both cases the RNLI has found preparation to be the key.

Deliberately startling crews during training sessions is counterproductive. After all, few people can concentrate on a training scenario when they are trying to second-guess where the next explosion is coming from. It is more productive to develop a graduated programme to educate and expose crews to the feelings and emotions they might experience when they are suddenly confronted by a new challenge, or when their certainties are rapidly undermined. For lifeboat crews much of this is done at the RNLI College in Poole, and in particular in the cold-water tank in our Sea Survival Centre. Crews are required to step from high platforms, capsize operational lifeboats, and overturn life rafts in the dark.

The RNLI teaches crews to expect a physical response. Pulses quicken, breathing shallows, and muscles tense. Traditionally, these automatic responses were regarded as negative influences, ones that reduce performance and impair effective search and rescue. However, crews are now taught that these readily identifiable physical effects are tangible manifestations of other less obvious threats – tunnel vision, task fixation, decision inertia, and confusion. Helpfully, the presence of one indicates the likely presence of the other.

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Self-awareness is key to success. Crews are taught that when undergoing periods of high stress, they can expect to make simple arithmetical mistakes, become confused, and suffer cognitive dissonance or even disbelief. Some crew members will feel an overwhelming need to isolate themselves from the outside world. These are hidden dangers that creep up on the individual at the worst possible time, and we find the only effective countermeasure is to get crews to actively strengthen the team dynamic even more.

Collaboration for Survival

When stress levels rise, RNLI crews are expected to share their mental model, verify safety critical tasks, and check for gross errors. Taking a loud roll call when the crew have wedged their heads into a small air space under a capsized lifeboat can kick-start this process, as well as confirming that no-one is trapped. It is a high energy and purposely collaborative process that helps prevent panic. Importantly, it gets four or more highly stressed individuals back functioning as a team.

While the operating environment may be very different, the parallels with aviation, especially on the flight deck, are noticeable. In aircraft, small teams of mutually dependent individuals – flight and cabin crew – may be faced with a multitude of physical responses to sudden onset stress. Taking a loud roll call may not be a suitable response to an in-flight non-normal condition, but using a known physical response as an indicator that cognitive ability may be diminished could pay dividends.

The RNLI is a charity, but it also the UK and Ireland's principal maritime search and rescue asset. Operating state-of-the-art boats from 238 lifeboat stations, it provides 24-hour cover out to 100 nm offshore in all weathers, all day, every day, since 1824. The RNLI has saved more than 144,000 lives. It is something we are enormously proud of.

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