Alert!

In the unlikely event…

A Nautical Institute project

The Nautical Institute

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They called him Captain 'Drill', often cursing under their breath, as they hurried along Yodel-filled alleyways to their all-too familiar emergency muster stations. Every week without fail the siren rang out, at varying times and with no apparent thought to the watchkeeping arrangements, whether it was day or night, raining or bright, rough or calm. They cursed but there was no point in complaining. He had fielded the complaints many times and was immovable: "Emergency drills are vital and they must be realistic if they are going to be useful. If they are inconvenient, well, that's hard luck. Maybe you'll thank me one day".

That day occurred when least expected. It had been a hectic period of port visits and cargo work; containers-off, containers-on. They had been looking forward to a few days at sea to recoup, catch-up with their dhobi, write letters and, perhaps, relax. Their elderly ship was punching her way down the Channel into rough head seas; there was a schedule to maintain and shippers to keep happy. There was talk of even worse weather ahead.

"Release the gripes", "Board the boat". Familiar words but now with ominous significance

It was uncomfortable during the soup-slopping meal and worse by the time most of them were thinking about turning-in. The tall superstructure was whipping sharply as the bows dug deeply into the steep, breaking waves. Wedged across their beds and hanging on, most were trying to sleep with limited success when, with slowly dawning perception and not a little disbelief, they heard the alarms. Not again … not now!

Rolling out of bed, nervously noticing the heel of the ship, the lack of vibration and the darkness, they emerged into the alleyways. The dull emergency lighting helped them hurry along the familiar route with growing certainty that this time it was not a drill. Out on the slanting deck the wind whistled the spume filled air around the hunched, busying figures.

Cold now, they grabbed the immersion suits, as they were offered by well-practiced hands. The familiar routine of fumbling for zips, opening out the suits and stepping in was automatic. Lifejackets were donned while moving into position, silent and listening, waiting for the orders. The roll call was made and all were present. Reassuringly, the Captain was there, his lifejacket on, quietly observant but, as in practice, it was the Chief Officer who was shouting the orders: "Release the gripes", "Board the boat". Familiar words but now with ominous significance.

Quiet and orderly they trooped on board, quickly finding their seats and strapping in. They heard the engine start and twenty-six stricken faces focussed on the Chief Officer's right hand which was raised and gripping the steel ring. He looked to the Captain to receive final confirmation. "Abandon ship". He pulled down and the well-oiled mechanisms came to life, the brake released and the lifeboat began to lower, lurching and hitting the side with jarring bangs. Danger lay ahead and the dark heaving seas below offered no promise of comfort or release but there was no time to worry as more orders were barked. "Stand-by the hooks".

The sea rushed to meet them. The crews were ready fore and aft as the boat hit the water. A wave exploded against the starboard bow but the teams, with practiced words announced that the hooks were "released and clear". "Let go the painter". The toggle was pulled and the last connection with the ship was lost as the violently rolling boat pulled clear.

All safe, muffled talk began: "A split in the hull and water rushing in". "Engine room flooded". "Just got off in time". "She won't last long" … and she didn't.

Introduction

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Everyone involved in the design, build and operation of ships has a responsibility for ensuring that accidents do not occur either to the ship or its systems or to the people who are working and living onboard. Survivability is not just about the adequacy of firefighting, damage control, lifesaving and security facilities; it is also about having the correct resources, training and procedures in place to ensure the safety of the ship and to protect the health, safety and wellbeing of its seafarers.

The seafarer needs to be constantly aware of the hazards of working onboard ship, especially the risk of fire or flood, of the dangers of entering enclosed spaces, and of piracy or terrorist attack. The seafarer also needs to be aware of the potential psychological effects of a crisis or traumatic experience at sea, and to know from where he can find advice and support.

Even in a well built and well-run ship, accidents resulting from material or human failure can occur, and lapses in security can result in danger to the ship. Those who work and live on board ships must always be prepared to *expect the unexpected*, the consequences of which can result in fire or flood and possibly a subsequent need to abandon ship and to be rescued; or to be subjected to acts of piracy and terrorism.

Regular onboard continuation training and realistic emergency drills are of paramount importance, not simply to satisfy the requirements of SOLAS but to ensure that, in the (hopefully unlikely) event of an incident occurring, the crew are well rehearsed on how to deal with the situation. Our cover story provides an excellent example of how good training and effective drills can pay off in the event of a casualty.

But we should not have to rely simply on good training and effective drills to make survival the most likely outcome, because ships should be designed and managed to achieve that outcome. In a risk assessment world and with gaming technology available it is possible to learn from incidents without having them – albeit the lessons learned from accident investigations should also be factored in - so that physical arrangements and procedures can be designed to facilitate the correct response.

Reports & Studies

On future ship safety – people, complexity and systems
Vaughan Pomeroy, Southampton Marine & Maritime Institute, UK

This paper considers the characteristics of risk and the important influences of the human element, innovative solutions and complex engineering systems on the future of maritime safety. It sets out some of the issues relating to residual risk, and concludes by considering the future of ship safety, and the effective regulation of safety for future ships, taking into consideration people, systems and the management of risk.

Downloadable from:
www.he-alert.org/docs/published/he01280

The Mariners' Alerting and Reporting Scheme (MARS)
The Nautical Institute

MARS is primarily a confidential reporting system run by The Nautical Institute to allow full reporting of accidents (and near misses) without fear of identification or litigation.

MARS reports regularly comprise alerts condensed from official industry sources, so that issues resulting from recent incidents can be efficiently relayed to the mariner on board. The MARS database is a valuable risk assessment, work planning, loss prevention tool and training aid for crew and management.

MARS reports are held in a publicly-accessible database and can be downloaded from:

www.nautinst.org/en/forums/mars/search-all-mars-reports.cfm

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Crisis at Sea – how to move on

Connie S Gehrt, Managing Director,
Seahealth Denmark

Crises are a well-known element of the working environment at sea. Life on board entails risks and as a consequence elaborate safety plans and training exercises are often reviewed and rehearsed in order to address potential crisis situations. On merchant ships and passenger ships all over the world focus is on protecting crew and passengers against any physical injuries. This is naturally the most important concern. Unfortunately not many shipping companies and other maritime organizations are aware of the potential psychological effects of a crisis or traumatic experience at sea.

People who have been involved in a traumatic event usually react to the experience and suffer some kind of crisis condition. A crisis is characterized by rapidly changing feelings, chaotic thoughts and other strong, overwhelming reactions. How to get through the crisis depends on different factors such as personality, the nature and extent of the event and the amount of support from your relatives and colleagues.

No one wants to become involved in a traumatic event. But it can happen to everyone, and when it does, it is important to know how to handle it. The Danish maritime consultancy, SEAHEALTH, has produced a guideline to ship owners, ship management and individual seafarers on how to recognize the symptoms and address the emotions in order to get through a crisis without permanent mental impairment.

The guideline is divided in to different sections. The first part takes you through the different mental stages a person can go through after a traumatic experience; from the immediate state of shock in the first hours after the incident to the repercussions in the days and weeks after. The second part consist of a brief 'how to' section on handling the time after the traumatic incident. Here a variety of effective measures to help the individual return to normal life are mentioned.

The guideline has been developed to call attention to the issue of crisis management. It can both be a tool for people who have experienced something traumatic themselves and therefore need help to help themselves. But it is also meant as a guide for management and relatives on how to help their employee or relative the best way on the aftermath of the crisis.

Guidance to shipowners, ship's management and individual seamen

SEAHEALTH's industrial psychologist Søren Diederichsen is the lead author of the guideline. This is how he describes its purpose:

Even though things have improved, we still see a tendency in the maritime industry that traumatic events are perceived as a 'natural' part of being employed at sea and working in a potentially dangerous environment.

This means, that employees often have to deal with traumatic events on their own and that no psychological debriefing, psycho education or support is initiated. This is often due to a lack of knowledge on what to do. This is why this folder is produced: To create some understanding regarding the nature of a psychological crisis and to give some advice on how to handle a crisis.

The free guideline is available on SEAHEALTH's website:
www.seahealth.dk/en
under **Publications – Crisis at Sea**.

The guideline has been developed to call attention to the issue of crisis management

Survivability - Resolutions and Circulars and Industry

Conventions, Codes and Guides

Firefighting and Damage Control
- SOLAS Chapters II & XII A
- FSS Code
- FTP Code
- IS Code
- ISM Code
- STCW Code
- Industry Guides

Livesaving
- SOLAS Chapter III
- LSA Code
- ISM Code
- STCW Code
- Industry Guides

Personal Survival/Medical
- STCW Code
- IMO Revised Recommendations for Entering Enclosed Spaces
- Industry Guides

Communications /Search and Rescue
- SOLAS Chapter IV
- SAR Convention
- IAMSAR Manual
- GMDSS Manual
- IMO SMCP
- International Code of Signals
- Industry Guides

Crisis Management
- ISM Code
- STCW Code
- Industry Guides

Security
- SOLAS Chapters XI-1 and XI-2
- ISPS Code
- SUA Convention
- Industry Guides

Guides

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Training and Drills

- SOLAS Chapter II-2 Part E Regulation
- SOLAS Chapter II-2 Part E Regulation 16
- ISM Code Section 8
- STCW Code
- IMO Model Courses

- SOLAS Chapter III Part B Section 1 Regulation 19
- SOLAS Chapter III Part B Section 1Regulation 30
- SOLAS Chapter III Part B Section V Miscellaneous Regulation 35
- ISM Code Section 8
- STCW Code
- IMO Model Courses

- STCW Code
- IMO Model Courses

Lessons Learned

- Marine Accident Investigation Reports
- IMO Lessons learned for seafarers
- Confidential Hazardous Incident Reporting Programme (CHIRP)
- Mariners' Alerting and Reporting Scheme (MARS)
- MAIIF Investigation Manual
- IMO Model Course

- STCW Code
- IMO Model Courses

- STCW Code Section 8
- STCW Code
- IMO Model Courses

For a comprehensive list of Industry Guides and relevant sections of SOLAS and STCW go to: www.he-alert.org/docs/published/he01300 or scan the QR Code

- STCW Code
- IMO Model Courses

Enclosed Spaces – management and training

Adam Allan, Managing Director, Mines Rescue Marine
www.minesrescue.com

The safety of persons entering and working in enclosed spaces at sea is always of critical importance

The safety of persons entering and working in enclosed spaces at sea is always of critical importance; it therefore follows that any new concepts relating to the subject merit discussion. Two such new concepts, relating to training and management have been developed.

The Enclosed Space Management (ESM) System

The methods for coping with enclosed spaces on ships and installations are in many cases based around a risk assessments ranging from one created for every space to just one generic risk assessment created regardless of the space.

It is very rare that any assessments exist, which give consideration to design problems or particular areas of concern relating to the degree of difficulty to enter and work in that space. It would seem that in the majority of cases, intimate knowledge of individual spaces rests with that gained experientially by those on board and when they leave, that knowledge goes with them.

The ESM System is designed to:

- Offer protection to all
- Provide knowledge for the initial entry of all enclosed spaces regardless of their type
- Contain all relevant information
- Deal with the responsibility issues
- Cope with a disparity of ships and installations

Although comprehensive in design it is simple to implement having downloadable audit sheets with Hints and Tips for support. The audit itself covers an assessment of Entry Points, the Space (internally) and Rescue Requirements.

On completion of the physical audit, the information is uploaded into the ESM System which automatically categorises the space by colour (Green, Amber, Red) based on the degree of difficulty to get into, operate inside and effect a rescue from that space. Provision is also made for uploading current procedural documentation i.e. risk assessments, action plans, permits and rescue plans, as well as photographs, relevant ships drawings and specific notes, making each individual enclosed space record a living document and compliant with the latest SOLAS enclosed space recommendations.

Having this high degree of simplicity and flexibility, the ESM System caters for all personnel either on-board, in the company office or contractors ashore who need to enter enclosed spaces, by providing them with accurate up to date information at the click of a button.

Gaming Technology

Employing gaming technology can bridge the gap between knowledge and practical application of processes and procedures with the aim of creating a pressurised environment where the user makes a series of critical decisions using their existing knowledge to successfully complete a task.

Expected learning outcomes include an understanding of:

- Company written procedures
- Equipment selection
- Correct entry procedures
- Emergency procedures

Relying upon previous training and knowledge, users are tasked with carrying out an urgent repair job in an enclosed space and are expected to conduct all necessary safety checks and preparations before moving into the space in addition to operating safely whilst working within the space.

As with all gaming technology the user points and clicks to make selections with critical decision making employed throughout the game resulting in realistic outcomes on the safety of the user.
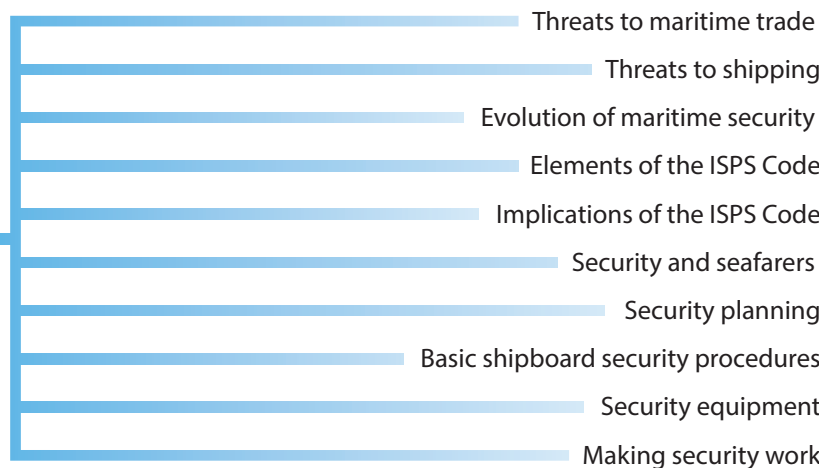
This novel and realistic training concept allows the user to control all aspects of enclosed space entry and experience the results of their own decision making process whilst in the safety of a controlled environment.

A more comprehensive paper on the ESM System can be downloaded from:
www.he-alert.org/docs/published/he01285

Making maritime security work

Steven Jones, Maritime Security Consultant

- Threats to maritime trade
- Threats to shipping
- Evolution of maritime security
- Elements of the ISPS Code
- Implications of the ISPS Code
- Security and seafarers
- Security planning
- Basic shipboard security procedures
- Security equipment
- Making security work

Simply ensuring compliance with maritime security legislation does not make a vessel secure

Maritime Security - A practical guide is purchasable from the Nautical Institute at:

www.nautinst.org/en/shop/checkout/shop-product-details.cfm/maritime-security

Maritime security is a complex issue to manage; the requirement of vessels to trade commercially means that at some point there does have to be a balance struck between complete security and the realistic demands of operations.

The threats and risks posed by maritime security come in many different forms – and while piracy is probably the most high profile issue currently, the problems of theft, stowaways, terrorism, smuggling, fraud, and cyber security all affect vessels to differing levels dependent on trading patterns.

The most obvious starting point when assessing how security is managed onboard is the International Ship and Port Facility Security (ISPS) Code, and the vulnerability assessment and plans which are performed as part of gaining certification.

The ISPS Code imposes a range of responsibilities, from designating roles within the company and onboard, through to requirements to act in certain ways, to control access to and around the ship, while anticipating the threats being faced.

Simply ensuring compliance with maritime security legislation does not make a vessel secure. It takes more, and all involved (whether on the ship or ashore) must constantly consider security, and should be knowledgeable and confident to act.

Security has been seen, by some, as a burden – but protecting vessels is vital, so we need to find ways of making security work. The first rule is to **ACCEPT** security. This acronym, as detailed in the Nautical Institute guide on Maritime Security, covers the key elements of providing proper and effective security within a ship, port or company.

Apply risk management: It is vital to identify and respond to threats, and so adequate risk management intelligence is key. Relevant personnel should continually assess security and apply similar risk management techniques as they would for safety. Ask what can go wrong, and do all possible to ensure it cannot.

Contemporary security knowledge: Security knowledge has to be kept up-to-date. In the same way that navigational charts that are thought to be corrected are more dangerous than ones that are known to be out-of-date, threat awareness must be corrected and updated.

Create a security culture: All personnel must be involved in the security processes and understand the benefits for themselves. The ship is a seafarer's home and needs to be protected as such. All have a role to play and a right to live and work within a secure environment. Compliance is not the end of the process, it is the beginning.

Enhance policies and procedures: Rules have to be in place to make a vessel secure and these have to apply directly to the vessel, the hazards faced and take due regard to the resources available to deal with them.

Protective measures: Safeguards will lower security risks to an acceptable level, but any measures require careful planning. They have to be effective and all seafarers have a vital role in making sure they work. Safeguards may be increased patrols, monitoring, escorts or guarding of restricted areas. They may involve technology, such as cameras, lighting or alarms.

Training commitment: For personnel to make maritime security work requires knowledge and confidence. This only comes through training, so it is vital to embrace a commitment to education and continuous improvement.

Survivability and Emergency Preparedness – the 3Ps

The key to survivability and emergency preparedness is in the **3Ps - Prevention, Preparation** and **Practice**.

Prevention

is about ensuring that that a ship is 'fit for purpose' - designed and built with the user and the operational task in mind, taking into account the environmental and security conditions that it is likely to encounter during its working life; and ensuring that the correct resources, training and procedures are in place to ensure the safety of the ship and to protect the health, safety and wellbeing of its seafarers.

It should be a routine part of the design process to identify hazardous/high threat environments as part of the context of use; and the potential for emergency situations should be analysed for hazards and existing mitigations, as part of the risk assessment process.

The overriding Convention concerning the safety of life and for ensuring that a ship is 'fit for purpose' is SOLAS - backed up by many other international Conventions and Codes and industry best practice guides. One added operational dimension is that of the Maritime Labour Convention 2006 (MLC 2006); Standard A4.3 includes a requirement for the adoption and effective implementation and promotion of occupational safety and health policies and programmes on ships, including risk evaluation, training and instruction of seafarers.

Preparation

is about being ready to *expect the unexpected*, because even though a ship may be well-built and well-run, with a well-trained crew, accidents resulting from material or human failure can still occur; even the best design solutions or operational procedures cannot entirely mitigate the risk of an emergency occurring.

Lifeboat safety (primarily in relation to launching systems) has been a cause for concern for a number of years. In 2007, at a Lifeboat Safety Conference in London, Heike Hoppe from the Maritime Safety Division at the IMO, presented an overview of IMO's work on lifeboat safety:
www.imo.org/blast/blastDataHelper.asp?data_id=18778
Annexes 1 to 10 of his paper provide a useful chronology of extant and proposed lifeboat safety Circulars up to the end of May 2007. In an article for *Seaways*, in 2008 - Lifeboat safety solutions: A unified industry approach:
www.nautinst.org/download.cfm?docid=BB3ED9D3-A3EF-4CF6-A2ACF00089D5EBB3
Harry Gale, Technical Manager at The Nautical Institute highlighted a number of concerns about lifeboat safety. Subsequently, the IMO has issued a number of Resolutions and Circulars relating to lifeboat safety. For a full list of extant Resolutions and Circulars, go to:
www.he-alert.org/docs/published/he01290
or scan the QR Code below.

IMO Resolution A.1072(28) contains guidance to assist in the preparation of an integrated system of contingency planning for shipboard emergencies. These guidelines advise that emergency preparedness and pollution prevention should form part of the company's ship safety management, in accordance with the ISM Code, specifically para 8 – *Emergency Preparedness* - which requires the Company to identify potential emergency shipboard situations and establish procedures to respond to them; and to establish programmes for drills and exercises to prepare for emergency actions.

Practice

No matter what material measures are put in place to mitigate the risk of an emergency occurring, all seafarers must be properly trained and regularly drilled in emergency preparedness. The STCW Code is the starting point for emergency training, and the SOLAS Convention for emergency drills and exercises. For a list of STCW and SOLAS references to training and drills in emergency preparedness go to
www.he-alert.org/docs/published/he01300
or scan the QR Code below.

*Preparation is about being ready to **expect the unexpected***