Time Pressures in the Maritime Maritime Industry

Shipboard Guide

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Foreword

Time pressure is present in maritime shipping in many ways. Like all industries, working and delivering on time plays a crucial factor in activities within maritime shipping. Unfortunately, this means that time pressure can sometimes be a contributing factor in the cause of maritime incidents. This focussed guide aims to highlight the presence of time pressure to stakeholders in the maritime sector.

The aim of this guide is to:

- Promote awareness of time pressure within the maritime community.
- Improve understanding of different types of time pressure including self-induced time pressure.
- Emphasise the importance of addressing this issue from top of the leadership chain and developing a visible management commitment in maintaining a safety culture.
- Develop guidance on the importance of repair and maintenance strategy, planned maintenance systems in managing resource issues.
- Emphasise the effect that time pressure can have on safety and well-being on board.

In our daily lives we often recognise the effects of time pressure. When in a hurry we may take risks that we otherwise would not, sometimes even unconsciously. Time pressure has an effect on the way we think. It tends to make us neglect our deeper knowledge and training which sometimes may lead to potentially lethal consequences. It makes us literally, and figuratively, cut corners. One description of this is 'Fast and Slow Thinking'¹. An example of this is linked to enclosed space incidents where, one seafarer collapses in an enclosed space, which may have a hazardous atmosphere, and his/her colleague rushes to assist, without thinking about the consequences. This has resulted in many deaths. Another model is the 'Efficiency Thoroughness Trade Off'² (ETTO) which suggests that, with limited time available, some tasks may be overlooked or compressed.

Time pressure leads to stress and as with most forms of stress, there is a balance. There is nothing wrong with setting a realistic timeframe to complete an action or task, it is when the timeframe is unrealistic that 'excessive' time pressure becomes a problem.

¹ Kahneman, Daniel. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux, 2011.

² https://erikhollnagel.com/ideas/etto-principle/

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Introduction

The varied and conflicting demands on our time, from professional commitments to domestic responsibilities, push us to squeeze the most from every minute (Hochschild, 1997; Perlow, 1998, 1999).

Modern innovations like fast food drive-through's, mobile telephones, microwave ovens, productivity applications etc. continually increase our ability to get more done in less time. Organizations strain to make the most efficient use of their employees, laying off those who can be spared and pushing those who remain to do more in fewer hours (Schor, 1991).

Experts such as Hochschild and Schor recognize the pressure that companies are under and highlight the impacts that can be felt by their employees such as constraining cognitive capacity and impairing performance. The maritime shipping industry is not exempt from these effects with ships being capital intensive assets, and where the operating costs or expenses (OpEx) play a major role in running the ships.

Time Pressure has been recognised in many areas of operation and there are numerous high-profile examples: -

Navigation: The request to meet a 'challenging' Estimated time of arrival/departure (ETA/ETD) can lead to shortcuts being taken or insufficient time available for voyage preparation. Examples of this include the Titanic sinking, Herald of the free Enterprise and the more recently the grounding of Rena³.

Mooring/Unmooring: Pressure may be present to berth a vessel or to unberth to clear the berth. The Hoegh Osaka capsize is a supporting example. **REF**

Cargo operations: Pressure to prepare tanks, holds or cargo itself may lead to incidents in cargo spaces. Incorrect or incomplete lashing of containers plays a part in the eventual loss of containers overboard. There has been a trend of increased containers losses in the recent years.

Maintenance: Pressure to complete repairs may result in rushed repairs causing damage to critical equipment or injury to crew.

Given that the existence of time pressure in general is beyond doubt, and that there is no formal recognition of time pressure within the maritime shipping industry, there is an opportunity to provide industry stakeholders with insight on the subject.

To establish effective management of the risk associated with time pressure, there is a need to:

- Recognise where excessive time pressure is influencing behaviour.
- Identify where existing safeguards may be used to avoid incidents.
- Evaluate where help should be available under ISM.

This guide will detail situations, issues, and subjects to give the reader an understanding of time pressures in the maritime industry, specifically in a context of shipowner and/or manager and share recommendations on how to manage them.

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³ https://www.taic.org.nz/inquiry/mo-2011-204

Time pressure

Time pressure is a stress that a person can experience that may impair his/her ability to make safe decisions. It can be a form of 'commercial pressure' and businesses may struggle to find the balance between maintaining safety on board and maximizing the commercial performance of the ship. In other words, there is a fine balance between conducting operations safely and efficiently. Tilting the balance in favour of one, may negatively affect the other.

What may not be apparent to individuals (or stakeholders) is that their actions and/or instructions may result in time pressure being applied to staff further down the communication line. In other words, any person directly or indirectly involved with ship operations has the potential to influence time pressure, examples include.

- Agents
- Authorities
- Charterers
- Colleagues
- Ports and Terminal managers
- Port and/or cargo workers
- Shipboard managers
- Shore based managers.

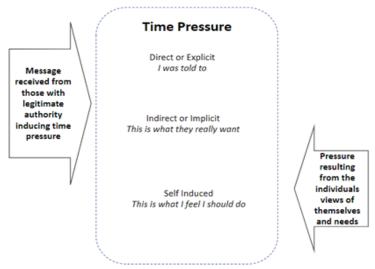


Figure 1 - Types of time pressure

There are three different types of time pressure (described below):

Explicit time pressure

This is sometimes called direct time pressure. A formal instruction, which is time bound, is given by a party with apparent legitimate authority that creates a pressure on the receiving party to carry out the instruction within the assigned time. In some cases, this formal instruction is recorded in some way. The situation is, therefore, visible during audits and investigations.

Example – A voyage instruction sent from a charterer to a shipowner with a tight schedule for a ship. An instruction sent from the office to the ship to prepare the cargo hold for the next cargo however the time allowed is not sufficient.

Implicit time pressure

This is sometimes called indirect time pressure. In the communications between parties, times are not explicitly mentioned but is implied in the way the communication is carried out. In this case the recipient individual's decision making is shaped by implicit messages in the communications and processes.

Sometimes, this affects people's perceptions of what the organisation wants. Implicit time pressure is not easily visible or recordable and will seldom be visible in an investigation or audit.

Example – A instruction to carry out a repair work is sent out from the technical department of a shipowner to a ship with no mention of time. However, in most other cases, such an instruction is carried out with the highest priority.

Self-induced time pressure

This type of time pressure does not originate from a third party but from one's own self. It is the self-perception that a task needs to be carried out within a particular timeframe determined by the individual, that is usually shorter than the desired timeframe.

Example, a vessel/technical manager who must leave the office to complete an important personal errand may choose to approve a safety work permit from the ship slightly more quickly, paying more attention to the time and not the risks involved in the job.

Resources⁴ are available from charities or mental health professionals on self-induced time pressure (stress).

While self-induced time pressure can occur in any part of the organisation, it is mostly found on ships, as ship's staff are the ones that carry out the sharp end of the tasks. Although self-induced time pressure can occur in the shore side of any organisation, this has not been very visible in this analysis as most of the time it has either been a direct or an indirect time-pressure that affects the shore staff the most. Of course, there are difference in personalities in people and this can lead towards time pressure.

What does time pressure look like?

Stress due to time pressure can manifest differently between people. While some may show many physical signs, others may show only some or no signs at all.

Some physical signs may include; decreased energy and insomnia, headaches, weight change and change in appetite, frequent sickness, rapid heartbeat, and sweating.

Non-physical signs may include; irritability and generally acting differently or changed mood. Increased complaints and grievances are another sign that may be an effect of time pressure.

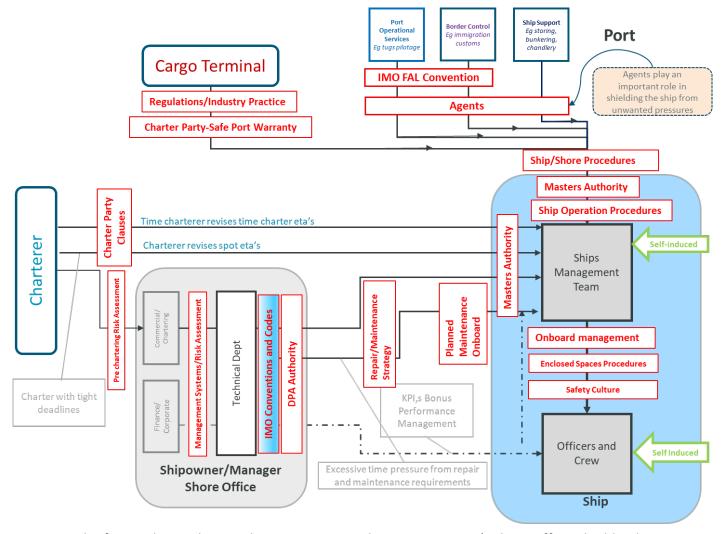
⁴ https://www.itfseafarers.org/en/health/managing-stress

Why does time pressure happen?

- Some examples of why this happens includes,
- Excessive administrative demands
- Imbalance between resources and workload
- Poorly constructed or non-existent procedures
- Weak safety culture
- Lack of awareness of the effect that instructions and messaging can have on people.
- Reluctance to challenge real or perceived authority.
- Structure of reward programmes for seafarers

Sources of time pressure in the Maritime industry

In a typical shipping company context, time pressure can arise from different sources. To identify the various sources of time pressure and how they interact with the ship and shipowner, an analysis has been carried out, the result of which is demonstrated in the following model.



In the figure above, the grey box represents a shipping company's shore office, the blue box represents the ship, the arrows represent the direction of the flow of communication and in turn, time pressure. The continuous arrows are how direct time pressure travels, and the

broken arrows represents ways in which indirect time pressure travels. The Red boxes represent the already existing safeguards or barriers of time pressure within the system.

It is important to stress that time pressure can originate from within the line of responsibility or from other outside sources.

Time pressure can arise from within the 'Company' (as defined in the International Safety Management Code (ISM)) or from an outside source, which then affects the company both ashore and on board.

Time pressure can arise from Charterers in the form of tight deadlines and/or often amending time required to arrive at a port /berth or changing cargoes and therefore tank/hold combination at tight deadlines etc.

Ports and terminals also create time pressure to the ship. An example of this that a ship which is at anchorage waiting for a berth, is given a very short time to prepare and come alongside. If the ship requests for more time, port may assign the berth to another ship and asks the waiting ship to continue waiting for another berthing opportunity.

Preventing time pressure

Preventing time pressure and managing expectations can go a long way in mitigating circumstances that can cause incidents. Below is a list of mitigations that can be put in place to reduce the adverse effects of time pressure.

- Understanding the sources of time pressure
- o Knowing the visible signs of time pressure
- Planning and prioritising work
- o Having an accessible safety management system
- Confident leaders and a healthy safety culture
- Having a strategic view of workload
- 'STOP the job' practices.
- Supporting the master's authority
- Strong and open communication
- Challenging time pressure (P.A.C.E⁵)

The Shipboard Guide

Life at Sea can be challenging. The work can be demanding, crew work away from home, often for long periods, often with poor lines of communication to family and friends. The added complexity of time pressure can therefore have a very detrimental effect on people in this work environment.

Managing on board

What is Power Balance?

In a professional or personal relationship between two or more people, there will be a power dynamic. The power balance is said to be unhealthy when one person holds most or a lot of the power and it is deemed to be unfairly distributed. Experts suggest that it is healthy to strive for a dynamic where the power is fairly distributed.

⁵ Refer to Annex A for further information.

Power balance

Managing a team can be extremely rewarding and good leaders are of vital importance for the effective operation of a vessel. There is the opportunity to collaborate, assume responsibility and lead, however, such a role must be executed with care. A manager position naturally holds an inherent amount of 'power' and whilst this is an important part of assuming higher levels of responsibility, shipboard managers should be mindful of how their rank and status could influence the actions of the people that they manage. If care is not taken, time pressure may be introduced. Psychology experts recommend striving for a fair power balance in order to promote harmony within a team.

Communication

The Senior Management Team (SMT) on board should seek to instil good communication practices, from themselves and also within the crew more generally. Timely information communicated clearly allows crew members to make advanced preparations for operations, which could avoid an incident caused by time pressure.

Vessel operations and maintenance

The SMT are responsible for analysing the various demands on the vessel and crew and for allocating resources to operations and maintenance tasks. The type of vessel and the operations that it carries out will drive the tempo of the vessel. No two vessels will be the same, this requires a bespoke approach from the SMT.

For example, unscheduled repairs and maintenance to critical equipment that could result in delays to the ship schedule will likely be prioritized, this may sometimes impact the routine inspection and maintenance of less critical items. This has the potential to introduce time pressure if there is a push to catch up with planned maintenance. If the SMT believe that stress could be introduced to achieve this, they should discuss this with the owner/manager and seek assistance and guidance to rectify the situation. Once priorities are set then planning of the selected tasks can be started.

Passage planning needs to take account of whether the ship programmes allow time for major non navigational tasks. If not, then the speed may need to be adjusted or a different course taken to ensure that the ship arrives at its destination, ready and with a rested crew. Alternatively, the ship could arrive at an anchorage and not declare readiness.

In some cases, simultaneous operations (SimOps) can be used during the normal working pattern of a vessel to maintain the schedule. However, SimOps should be avoided if there are not enough personnel and/or resources to conduct them safely. Trying to achieve a lot within a short space of time can promote a stressful working environment and may introduce hazards.

A model such as the Eisenhower Matrix can assist with prioritising work.



Figure 2 - The Eisenhower Matrix

The right crew member for the job

In the interest of safe and successful shipboard operations, it is important to consider the individuals that are being assigned to a task, some aspects for consideration include;

- a) **Physical**: are the persons involved physically fit to carry out the task?
- b) Fatigue: Are the persons involved well rested and not fatigued?
- c) **Mental**: Do the crew feel comfortable performing the task that they have been assigned? Do they have a tendency to rush jobs or are there any personal or social pressures that may influence them?
- d) **Competence**: Are the persons suitably trained, knowledgeable and experienced to carry out the task on this vessel? Would some form of on board briefing or training be required, or should another person be substituted or brought in to supervise?
- e) **Familiarity with systems and procedures:** In some cases, the persons involved may be new to the vessel and not be familiar with the detail of the systems and procedures in place on board the ship.

Task briefing

Once a work plan has been established and the various tasks assigned, the next step is to perform a task briefing⁶. This must include a clear description of the task, any precautions to be taken and the completion of a risk assessment and the issue of Permits to Work, where necessary. A briefing may also include 'toolbox talks' and other safety briefings as well as highlighting relevant procedures. Ensuring there is clarity of the task can avoid a person becoming stressed if they do not understand what is expected of them or they do not have the skills to perform the task safely.

⁶ Refer to Annex B for further information

Master's authority

The Safety Management System (SMS) should have a clear statement within it that describes the master's overriding authority in respect of maintaining the safety of crew, the environment, the vessel and the cargo.

Whilst some masters will have no reservation to exercise this authority, others may be reluctant to, for fear of possible repercussions. Masters are encouraged to use their authority where there are genuine concerns as this could prevent a life changing incident from occurring.

This authority afforded to masters under The International Convention for the Safety of Life at Sea (SOLAS) has been done so in recognition that these professionals are experts in their field and should be trusted to make difficult decisions in the interest of safety. Company leaders, in addition to the Designated Person Ashore (DPA), should be expected to support masters when this special authority has been used in legitimate circumstances. Leaders and shore managers can proactively assure masters that they will be supported, in accordance with the SMS and without the threat of consequence.

SOLAS (Chapter V 34-1) specifically states that persons or organisations '..shall not prevent or restrict the master from taking or executing any decision which in the masters professional judgement is necessary for safety of life at sea and protection of the marine environment.'

Conversely it should be clearly understood that the master's authority should not be regarded as the only barrier to excessive time pressure being imposed on the vessel. The master's overriding authority may be required to deal with issues concerning the general operation of the vessel, however where time pressure is originating with, or transmitted through the company it is the company's responsibility to endeavour to deal with these issues before the master is put in a difficult position.

Control of access to the vessel

There have been numerous cases where shore workers have arrived on board a vessel and entered a hazardous space with fatal consequences. It is important to remember that the vessel is responsible for the safety of third-party persons whilst they are on board.

It is not unusual for stevedores and other third parties to be keen to board as soon as the vessel is all fast. However, if the vessel is not properly prepared to receive them, there is the possibility that the crew and those third parties could feel the impact of time pressure.

Crew should ensure that safety critical tasks such as preparing cargo spaces and work sites is completed before work commences by third parties to help with managing risk. Where appropriate in relation to a vessel arrival in port, this should be carried out when all fast but before the gangway is landed to ensure that crew is prepared to receive visitors or shore workers safely.

The International Maritime Organisation (IMO) Convention on Facilitation of International Maritime Traffic (FAL)

The FAL Convention aims to define standards, recommended practices and rules for simplifying formalities. Including documentary requirements and procedures in relation to a ships' arrival, stay and departure at a port. The IMO has developed standardised forms (known as FAL Forms) for use by Governments and Authorities.

The Convention promotes the single window concept, encouraging agencies and Authorities involved in the ship's visit to a port, to exchange information via a single point of contact, for example the ship's agent. Since 2019 the FAL Convention has mandated that exchanges should be electronic.

The benefits of the Convention should translate into improved efficiencies that can alleviate the number of people that need to visit the vessel and the volume of paperwork to be completed. The agent will be able to assist the master and other senior managers with such administration, in support of controlling access to the vessel.

Management oversight of the vessel

Without effective shore side management oversight, vessels are at risk of being subject to a variety of time pressure sources.

A crucial safeguard which can prevent crew from being impacted by stress is the SMS and how successfully it is implemented. The scope of a SMS should include aspects that are only relevant to the vessel in question and should be written in an accessible format to encourage crew to engage with it. If done properly, crew will view their SMS as a tool that will assist them with resisting time pressure, in the event that they experience it. To assist further, it is good practice for the SMS to address time pressure as a risk and highlight the safeguards that exist to support preventing it.

An important part of successfully implementing the SMS is the master's periodical review. This is an opportunity for the SMT and crew to provide feedback to the company about what improvements can be made to the SMS, or any other company policies and processes in place. Management of Change should be executed as a closed loop communication system, so that crew are aware of how their feedback has been considered.

Implementation of the SMS is also closely linked with leadership and organisational culture. If leaders and managers, on board and ashore, do not lead by example and are not approachable, then crew may be reluctant to speak up in the event of a non-conformity or raise the issue of time pressure.

Leaders should be expected to demonstrate the importance of safety and its interaction with operational issues if external parties that are applying explicit pressure on the vessel or when addressing implicit pressure originating on board.

The leadership should be approachable, encourage dialogue and be prepared to change or review plans based on legitimate concerns.

Some key qualities and characteristics of good leaders are:

- Leads by example
- > A mentor to team members
- Approachable
- > Flexible
- Doesn't necessarily have all the answers
- Provides constructive feedback
- > Encourages people to take ownership
- Recognises success of the individual or the team

- > Authoritative but always fair
- Doesn't always have to tell people what to do

The safety leadership should promote all on board to be active in identifying hazards and taking action to prevent incidents and support the concerns, observations and ideas raised by crew. The organisation should encourage a safety culture that gives high priority to individual safety with an emphasis on the right and responsibility to speak up if there is a problem or complaint.

In addition to challenging operational pressure imposed by the commercial environment, leaders also need to be alert to staff who are putting themselves under pressure. Some of this pressure may be domestic due to things such as mealtimes or shore leave, but it may also be due to a desire to impress.

Within the principles of the International Safety Management Code (ISM), the following safeguards should create a safe operating environment that would manage a wide variety of risks including excessive time pressure:

- 1. Pre-Chartering Risk Assessment
- 2. 'Technical' Management Systems and Risk Assessments
- 3. Designated Person Ashore (DPA)
- 4. Masters Authority

Pre-chartering assessment

ISM requires that all "...identified risks are adequately managed..." one such risk is time pressure. In respect of vessel operations, it is important therefore to properly understand the vessel suitability to perform a charter from the outset as this may help to avoid or limit time pressure being imposed.

Ashore, a pre-chartering assessment, should be undertaken to confirm that the vessel is technically and operationally capable and approved to perform the scope of work required. This assessment will be completed by a competent person and should also involve input from the technical department, a designated Person Ashore (DPA) and the master, perhaps others too. Masters that do not currently take part in the pre-chartering assessment are encouraged to ask to participate. The master will be very well placed to comment on the vessel's capability to perform a given charter and have valuable insight to contribute.

Whilst pre-chartering assessments may not be explicitly covered within the SMS, the SMS is a safeguard, a tool that can be used to justify why a vessel is or is not suitable for a given charter.

It should be recognised that the decision based on this assessment is critical and could prevent a situation where the master needs to exercise his overriding authority and require shore manager intervention to protect the crew from undue time pressure.

Charter-party wording

Nothing contained within a chartering agreement (charter-party) is intended to negatively impact the safe operation of the vessel, nor undermine the master's authority. Whilst terms such as 'utmost despatch' and 'discharging as quickly as possible' are used to ensure the promptness of the vessel, there is no precedence which should lead crew to believe that

contractual requirements outweigh the importance of the provisions in the SOLAS Convention.		

Annex A

Annex B

The PACE model and assertiveness

Assertiveness from more junior team members could potentially lead to conflict if it is not used in the correct manner. However, if the assertiveness is graded, the risk of confrontation within a team can be minimised.

The PACE model is a way of using graded assertiveness in shipboard operations to help someone reconsider the instruction that they have given. It comprises of four steps, although it may not be necessary to use all of them. An example is given below for explanatory purposes.

1. Probe - For better understanding

Chief Officer: "OK, Bosun, please could you enter the freshwater tank and start cleaning it."

Third Officer: "Chief, why are you asking the Bosun to enter the freshwater tank before we have tested the atmosphere inside?"

Chief Officer: "The tank only had fresh water in it, and it is now empty. It will be safe in there."

2. Alert - To the potential consequences if the instruction is carried out as intended.

Third Officer: "But if we don't test the atmosphere, there may not be sufficient oxygen and the Bosun may be unable to breathe."

Chief Officer: "The tank doors have been open already for 12 hours for ventilation, so it should be fine, besides, we only have a couple of hours to finish this work. We need to hurry up."

3. Challenge - Offer an alternative solution.

Third Officer: "As per procedures, we should not enter any space before testing the atmosphere and completing the pre-entry checklist."

Chief Officer: "Departure is in two hours; we don't have time and we need to get this tank cleaned and closed up before then. I don't want any delays."

4. Escalate - Contact higher authority.

Third Officer: "OK, I don't think this is safe, I am going to contact the Master."

Annex C

Effective Team Briefings

Team Briefings are vital before any major operation takes place on board the ship. They may seem counter-intuitive to solving the time pressure issue that the modern-day seafarer faces, but a well briefed team will not only perform with a higher degree of safety, but also in a more time efficient manner. Team briefings ensure that everyone knows the plan for the operation. If this is not done and there is a deviation from the plan, team members will not be in a position to voice their concerns, as they were not aware of what the plan was in the first place.

Briefings are still vital even for routine operations that have been completed many times before. The maritime environment is very dynamic, and key aspects that may affect the operation could have changed since the last time the operation was conducted.

Structure of an effective team briefing

The team briefing should be conducted with sufficient time prior to conducting the operation so that it is not necessary to rush. It is vital that as many team members as possible are present at the briefing before the operation begins. However, the brief should be just that, brief. The briefing is the time when the team is formed that will conduct the operation and should be conducted by the person in charge of the operation. An effective team briefing could include:

- ✓ Specifics of the task. For example, for an enclosed space, this could be:
 - The space or spaces that are being entered.
 - o Any pertinent information from the OOW or the EOOW.
 - Contents of adjacent spaces to the enclosed space.
 - o Any specific hazards identified in the space.
 - O Who is going to enter the space?
 - Status of enclosed space permit to work.
 - Previous contents of the space that is being entered.
- ✓ Assignment of duties designated to each team member, so that they are aware of what is expected of them, and that the workload is spread evenly. Proper task allocation ensures that human resources are used effectively.
- ✓ Duration of the job and any specific time frames to be aware of.
- ✓ Contingency response plans in case of an emergency.
- ✓ Give the team the opportunity to ask questions in case they need clarification.
- ✓ Finally, it is important that the person in charge of the brief encourages team members to be assertive at this point, and to challenge any orders or decisions they think are not correct or unsafe, and to encourage a culture where people can speak up. It should also be made clear that no team member will be ridiculed/disciplined for challenging an order that they deem to be incorrect.



Emergency checklist

An emergency situation will inevitably result in crew feeling under pressure and so, before an emergency occurs effort should be made to prepare a response process to minimize stress. Preparing tools to support decision making in a given situation can assist with this. Prioritise actions in an emergency contingency checklist. An example is given below using the context of an enclosed space rescue (please note this example is not exhaustive and has been prepared only to demonstrate the prioritizing of actions).

Initial actions		
Stop work		
Evacuate team members inside space		
Inform the bridge		
Ensure nobody enters the space		
Verify the gas concentration in the space		
Ensure adequate ventilation to the space		
Follow on actions - If the space has been successfully evacuated		
Provide first aid as necessary		
Secure the work site against re-entry		
Brief the master		
Follow on actions - If the space has not been successfully evacuated		
Set up BA control point and rescue team		
Check that the tank rescue equipment is ready for use		
Ensure that the lighting provided adequate		
Continue to monitor the gas concentration in the space		
Prepare resuscitation equipment		
Brief the team for entry		
If safe to do so, retrieve the casualty		
Provide first aid as necessary		