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LeaderSea

For Blue Leaders and Grow Thinkers

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ARCADIA
SHIPMANAGEMENT CO. LTD

Fourth Industrial Revolution (4IR):

Laying the foundations for the innovations of tomorrow

Editorial | CEO's Note

In this issue my welcome note will be different. Shortly before the publication of this third issue of the LeaderSea magazine, we were informed of the passing away of Mr. KONSTANTINOS Aggelopoulos.

Many thoughts went through my mind; even the complete change of the material that had already been prepared for publication.

I was thinking of an issue-tribute dedicated to this Great Man; an issue dedicated to his work, to his life path and to his social contribution. But then I wondered if that was what he taught us with his living presence and whether he would wish for his afterlife.

Mr. KONSTANTINOS Aggelopoulos had always been a silent walker of the business world and especially of shipping; a humble man, with morals and natural kindness, but with an undivided passion for creation, for evolution, for Excellence.

I have been privileged and honored to spend a tremendous amount of time with this Man. We have worked together, laughed together, experienced successes and failures together. There are many reasons coping with the loss of a great man can present unique challenges. Founders and employers in general are not always acknowledged for the significant role they play in our lives. Emotions and work are not things that usually go together. Work has long been considered a place to be simply productive.

However, for me and I am sure for most of the people working in Arcadia, we consider this company as a family. Therefore we act as family members and during these last days following his loss of life, we feel like we have lost the Father of this family.

My main article and cover story of this issue was decided to be the 4th Industrial Revolution that heralds a series of social, political, cultural, and economic upheavals that will unfold over the 21st century. Perhaps, it was an omen of the impending changes in Arcadia. And the breadth and depth of these changes may herald the transformation of our entire corporate system.

However, I decided – along with my people, Arcadia team - to keep the memories we had experienced with Mr. KONSTANTINOS Aggelopoulos and based on these foundations the Arcadia family will move on to the next day and build its bright future.

We will continue to believe in his enlightened and inspiring vision with the same passion,

We will continue to faithfully serve his mission,

We will continue to lead the global Shipping under the guidance of his glorious and eternal spirit.

Dimitrios Mattheou

CEO

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Arcadia Shipmanagement Co Ltd provides safe and reliable transportation of oil by sea, through a modern fleet, setting top objectives for Safety, Quality and Environmental protection. To achieve these, Arcadia is dedicated to develop and sustain a strong working relationship with all parties involved in International oil trade, based upon mutual trust and reliability.

Strengthening Safety Culture

Based on IOGP publication

"Safety Leadership in Practice: A Guide for Managers"

By Fanis Chatzikampouris | Vetting Manager / C.S.O. | HSQE & Crew Dept. over-seer

1. It all starts from the top but goes all the way to the bottom

Formation of workplace culture is a complex process, which is influenced by a number of factors.

The culture of any organization is a variation and an unpredictable mixture of leadership, employee involvement and motivation, workforce and national values, beliefs, assumptions, business pressures, and practices. Rules alone don't drive behaviour and even the best trained, most diligent, and well-motivated people can make mistakes. Through the many attempts to define organizational culture, the following terms have been introduced, in order to define "the way things get done".

An informed culture – the organization collects and analyses relevant data to stay informed of its safety performance.

A reporting culture – people are confident they can report safety concerns without fear of blame.

A learning culture – the organization learns from its mistakes and makes changes to unsafe conditions.

A flexible culture – the organization is able to reconfigure the chain of command if faced by a dynamic and demanding task environment.

A just culture – people understand the boundary between behaviours considered acceptable and unacceptable. Unacceptable behaviours are dealt with, in a consistent, just and fair manner.

2. How things should be done

We aim for:

- Personnel to feel accountable for their role and be motivated to fulfill it to the best of their ability.
- Personnel to be open about little problems, and take ownership to fix them before they worsen.
- Personnel to be eager to learn from good practice, near-misses and incidents from anywhere.

We try to avoid:

- Personnel unwilling to speak-up about problems.
- Personnel demotivated and disenchanted.
- Personnel unwilling to learn.

3. The seven safety characteristics

Credibility – what personnel does, is consistent to what the procedures and the industry practice dictate.

Action orientation – unsafe conditions should be identified and be prevented.
Vision – safety excellence is the goal within the organization.

Accountability – personnel take accountability for safety critical activities.

Communication – continuous repetitions about safety, create and maintain the Safety Culture of the organization.
Collaboration – Company encourages active employee participation in resolving safety issues.

Feedback and recognition – recognition is applied over safety results, certain and positive.

4. Latent organizational weaknesses

The first thing we all learned in safety training courses is that humans are held account for 80% (+/-) of accidents. But if we take a look at the detail of these cases, we find that there are many contributing factors in the workplace. Problematic tasks, unclear procedures, difficult equipment, workload, resourcing and training – these difficulties often lead to mistakes and workarounds, which eventually become incidents or accidents.
Safety Management Systems tend to put a lot of effort into imagining and designing how work WILL be done – risk assessments, HAZOPS and mitigation procedures, all describe how we imagine the work will go. But the work REALLY happens on the day, in the circumstances that exist at that time. The workforce always has to do the last part of the design of any task. Employees are the ones faced with the slightly different layout, or an awkward to use tool, or the rain-soaked work surface. They will always have to make adaptations in order to make the imagined work happen. Sometimes these adaptations are real improvements and tips that others can benefit from. Other times they may introduce new hazards or potentials for error or misjudgment.

People interact with each other, plants and process as part of a complex system. Human beings are essential in maintaining our barriers and safeguards. They can and, often do, "save the day". Understanding how mistakes happen can help us prevent or cope with them. We use what we learn to design new plants, tools and activities or to update / revise the existing ones, in order to reduce mistakes and better manage risk.

5. Let's face it and accept it – each one has his/her own perspective

The safety characteristics are fundamental at every level, irrespective of the position in the organization. Nobody is born with all the skills to carry-out a 100% safe activity. Providing feedback and recognition for individuals and teams, is a powerful tool for encouraging safety and building a stronger Safety Culture. Effective communication builds relationships and gets results. The most effective form of communication is a two-way exchange of information between people. Varying communication styles helps to engage and get the support of people and reduces conflict. The objective is to understand and influence behavior.

Preventing serious injuries and fatalities requires operational discipline. This means performing every task the right way every time, from initial hazard assessment through each step of the job, including post-activity review. The first safeguard is ourselves. To reduce the odds for human error, we must address any factors that may interfere with our readiness to perform well and to react effectively to unexpected events or changes.
When seeking to engage a team, there are a few simple steps that will help the conversation:

Engage: Seek to understand the other person's context, put yourself in their shoes, be curious, listen.

Influence: share mistakes, show people that they have been undertstood, show your own vulnerability and show that you care.

Inspire: share your experiences, what you feel, what you value, and be honest and transparent.

Challenge: get commitment from the team for the desired behaviour or values, and stay alert for what obstacles may emerge.

Instead of writing 1.000 words, let's take a look at the following image and realize how many factors affect the way individuals "see" things and under which layers/filters our decisions are made.

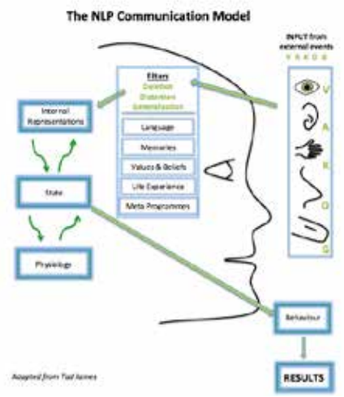
6. The unavoidable terminology

We can't do without terms, which are trying to explain / define "in a simple – down to earth way" all the scientific methodology and management actions, into the process of the strengthening of the Safety Culture within an Organization.

- Goal (Aspiration – what we aim for): An ambitious commitment to address a single challenge. Goals can be qualitative or quantitative.
- Target (Action – what we do): A specific, measurable and time-bound outcome that directly contributes to achievement of a goal.
- Indicator or metric: A way of measuring progress towards a target generally based on available or established data and related to specific targets.
- Lagging indicators (reports and statistics of what has happened) are the traditional safety metrics used to indicate outcomes of our efforts - injury frequency and severity, number of releases, fires, near misses, etc. The major drawback to only using lagging indicators is that they don't tell you how well the Company is doing at preventing incidents and accidents by managing the defenses or barriers.
- Leading indicators (reports and statistics of what is being applied) are measures used to prevent or mitigate an incident. Leading indicators are focused on future safety performance and continuous improvement. These indicators are proactive and report what the Company is doing on a regular basis to prevent accidents.

7. Our Safety Vision

A potential significant hazard is any condition, action or object that may cause an unplanned release of, or unwanted contact with, an energy source that may result in a serious or fatal injury, environmental incident or negative operational consequence. Due to the fact that the nature of our work involves high-risk activities, our vision for everybody on board and ashore, is to go home unharmed. Take care.



"Regarding the Human Element capabilities and mentality:
A) Zero Incidents' Goal can be reached, because we are intelligent creatures.
B) Zero Incidents' Goal cannot be reached, because we are not robots."

Achilleas Stergiou
Master
M/T Aegean Vision

Based on my experience as a Senior Officer, I would easily respond that it is extremely difficult to achieve a Zero Incident Goal. Even the flawless machineries which we call robots, to a very small percentage, can sometimes cause incidents.

Human beings are sophisticated, intelligent and social creatures, but we have also a complex construction, both mentally and physically. With complexion, comes a variety of features that require care and attention, thus, we need to have a relentless intuition on what to be aware of. Being aware, is the first step to approach the Zero Incident Goal and we should have it as a stepping stone, in order to build a safe working environment, both for ourselves and for our fellow colleagues.

To put it in a nutshell, the Zero Incident Goal is a goal that can be hardly achieved, but it can be approached with a continual effort and awareness earned from experience.

Savvas Toussas
Master
M/T Aegean Nobility

"Zero incidents' goal cannot be reached, because we are not robots". If I had the opportunity, I would change the wording as to whether we are robots or not, with that "something you did not expect, will always happen".

Life on a tanker is full of surprises and new professional experiences, even in the simplest everyday things. Taking as an example the action of walking on deck, the seaman should be vigilant for this.

There should always be proper planning for each movement or work on board and the most important mistakes from previous experiences and reckless actions should not be repeated, in order to minimize as much as possible any case of incident. Lessons learned, supervision of tasks, stop work authority, are key methods of proper approach to safety in order to aim for the "Zero" goal.

Nikolaos Karoutsos
Master
M/V Alfios

Zero Incidents' Goal is very difficult to be reached because it includes the human element.

Although all rules and regulations, like ISM, Safe Working Practices, Rest Hours regime etc. point and assist in this goal, unfortunately the human element is unpredictable.

Keeping in mind that some of the younger seamen, with less experience and knowledge, show a lot of times excessive zeal in performing their duties, fatigue or even personal concerns and problems potentially can be disastrous, for the crewmembers and the vessel.

Hence proper and intensive training is required from the beginning of our careers in sea and ongoing, shaping of a safety culture and constant awareness of the hidden dangers through risk assessment, in order to be able to come as closer as we can to the desired goal of Zero incidents.

Alexandros Matthaiou
Chief Officer
M/T Aegean Nobility

Even for the most experienced safety professionals, this goal of zero incidents or accidents can become an overwhelming challenge.

In my opinion, the word 'accidents', should be avoided in occupational health and safety. When people think about accidents, the first thing they think, 'oh it's an accident - you cannot avoid an accident.''

So people have this pre-conceived notion that workplace accidents can't be prevented. That's why you hear the term 'incidents', more and more in occupational health and safety.

A good safety program is similar to an iceberg. Everybody can see the result but not all of the hard work that was put into it is visible.

Nikolaos Koudoumnakis
Master
M/T Aegean Horizon

The human element into shipping business, comes with different kinds of issues that affect maritime security, safety and environmental protection.

It involves human activities performed by ship's crew, management and all other parties concerned, that need full cooperation in addressing human element issues decisively.

As a master mariner with various experiences onboard a ship, I've seen different kinds of factors on how human element, in terms of ship's crew capabilities and mental capacities, affect their performance and how they handle various situations that will affect our safety of life at sea. In today's time, having a vessel with only a single nationality onboard is nearly impossible and as a master mariner who was in charge and sailed with various muti-national vessels, there are different key points that can be emphasized and will affect in achieving Zero Incident's Goal.

Communication proves to be the vital key in providing sufficient information and understanding on how we address safety as our top priority.

Language barrier is one of the factors that can cause misinterpretations in providing proper command, making it an ingredient for incident and will cause to not achieve zero incidents' goal.
That is why in all, at the very least, whether when we are performing operations or in casual communication inside the accommodation, we must encourage our colleagues and subordinates to communicate in a common language, that will better help them convey their opinions and suggestions, making our zero incidents' goal likely to be achievable.

Athanasios Giannakoulakos
Chief Engineer
M/T Aegean Nobility

Shipping is directly and strongly affected by rapid developments of technology.
The target of all these developments is to make life at sea more safe and the environment more protected, resulting to "zero" incidents.

People are intelligent beings and perceive danger based on their instincts, often putting things which they consider insignificant in the background.

Things that seem pointless at first sight, but can lead to danger even from a series of coincidences. For that reason the utilization of aids is necessary.
The main concern is to accentuate that human operator should use technological sources critically, to verify their good operational condition, but not to have overreliance on them.

Georgios Chronopoulos
Chief Officer
M/T Aegean Horizon

It is understood that since people started sailing at sea, accidents have been occurring and for the past years, it is emphasized that human element is the major cause of marine accidents thus, suggesting that human factor is vital for the safety at sea. The human element is known for all seafarers as a key element of safety of life at sea and it is a part of the contributing factor for most of the casualties in the shipping sector.
As a Chief Officer, Zero Incident's Goal is a must onboard a vessel and can be achieved by performing various trainings and familiarizations onboard, as well as understanding that safety comes first no matter what job they perform.

But even though we understand, as competent seafarers, that safety is our top priority, there are still factors that linger on how we may achieve zero incident onboard the vessels. The primary factor, for my understanding, is the ability of a seafarer to maintain their performance within their safety limits, thus introducing fatigue as a main contributing element in reaching zero incidents.
Careful consideration is constantly placed, on how my subordinates perform within safety limits, removing fatigue by providing them sufficient resting hours, so that their mental and physical capabilities will not hinder them in performing their duties, therefore achieving the zero incidents' goal and reducing the possibility of human and organizational error as far as possible.

Nikolaos Anargyrou
Chief Officer
M/T Aegean Unity

Zero Incidents' Goal can be reached, because we are intelligent creatures.

To get to zero, we must be laser-focused on the goal every day, thinking, talking with our fellow Officers and crew about the jobs before (by applying risk assessment) and after we do them (by identifying lessons learned), so we can be aware about the hazards and ways to eliminate or guard against them.

Near-misses must be viewed as gifts, as opportunities to eliminate hazardous conditions or practices revealed in the near-miss before they cause an injury and, we need to share them broadly onboard fleet vessels through the lessons learned program.

Similarly, we need to learn from the experience of others, so we can eliminate the hazards they encountered before they hurt other people.
I read somewhere recently that a smart person learns from his mistakes but a wise person learns from the mistakes of others. So, if we adopt this goal of zero injuries and intensely focus on it together, we can get there.

Dimitrios Koulouris
2nd Engineer
M/T Aegean Vision

As human beings, by default we are not perfect creatures. We may be intelligent, ambitious and competitive, but perfection is not a feature of this world.

Even if talking about robots, there are chances and several examples of mistakes made by artificial intelligence.

I firmly believe that the Zero Incidents Goal cannot be reached due to our very nature. There is a variety of reasons to justify why we are keen to make mistakes.

Specifically, when on board a vessel, there are times where routine kicks-in and the mind could be elsewhere while performing a specific and repetitive task: in those occasions there is a chance to trigger some incident, unintentionally by all means.

To conclude, I would say that our goal is to approach as much as possible the Zero Incident Goal, by being focused on our job/task and by experience to predict and avoid any possible incident.

Panagiotis Sakellaris
Chief Officer
M/T Aegean Myth

Regarding the human element capabilities and mentality, my belief is that despite the fact that we are indeed intelligent creatures, we can never reach zero incidents goal.

But we certainly can and should try to achieve the minimum rate of incidents.

In order to achieve this we have to keep in mind that the most important factor is the efficient corporation between the seamen.

Of course it is also of great importance, to always make sure that seamen keep-up with the latest advanced training and professional developments available.

Another very important factor which will take us closer to our goal of extremely limited incidents is that, a relevant risk assessment should always take place before any task begins.

We should also be careful to always follow the resting hours, as per the prevailing operational conditions, so we can operate at the maximum of our capabilities.

With our continuous concentration and vigilance, it is certain that our goal will be reached.

Vaccine Hesitancy - is it Justified?

Christina Zorzou
HR Dept. | PA to CEO
Arcadia Shipmanagement Co Ltd.

1. Introduction

Vaccine hesitancy is a key driver of under-vaccination. While vaccine hesitancy is as old as vaccination itself, the nature of the challenge changes over time. Digital Communication and social media in particular, catalyze the rapid spread of false information, threatening public health.

In 2019, the World Health Organization (WHO) named 'vaccine hesitancy' among the Top 10 threats to global health.

The novel SARS-Cov-2 virus has triggered two parallel pandemics:

- a biological one which has spread to every country in the world and,

- a social pandemic of misinformation – an infodemic - spreading across social networks.

Vaccines have been sucked into this vortex of confusing information which ranges from the innocently misleading to the intentionally deceiving. Vaccine-critical messaging increased more than 2-fold, compared to pre-COVID-19 Levels.

2. Terms

Vaccine: A biological preparation that elicits immunity to a particular disease. In addition to the antigen, it can contain multiple components, such as adjuvants, preservatives, stabilizers, each of which may have specific safety implications.

Vaccine hesitancy: the reluctance or refusal to vaccinate despite the availability of vaccines, is a context and vaccine-specific phenomenon, which may be influenced by a complex mix of historical, political, social and behavioural determinants.

Immunity: The ability of the human body to tolerate the presence of material "indigenous" to the human body (self) and to eliminate foreign (non-self) material. This discriminatory ability provides protection from infectious diseases since most microbes are identified as foreign material by the immune system.

Immunization: The process whereby a person is made immune or resistant to an infection, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection.

Severe vaccine reaction: Based on its intensity, vaccine reactions can be mild, moderate or severe. The event itself, however, may be of relatively minor medical significance. Severe events do not have regulatory implications unless they are also serious.

3. Misinformation

Due to the uncertainty that arises during a disease outbreak, conflict or natural disaster, crises are fertile grounds for sowing false information. Unverified information can cause harm by sowing confusion and drowning out accurate health information. It can change human behaviour, including panic-buying or consumption of dangerous and unproven treatments and it can shape attitudes (usually negative) to vaccines.

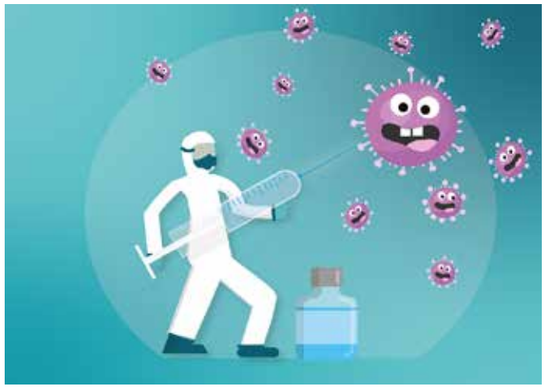
People may be exposed to misinformation through media or voiced opinions and rumours and more and more through online social networks. A reliable way to make people believe falsehoods is frequent repetition, because familiarity is not easily distinguished from truth. Rumours that start online can also spread offline, in printed media and through word-of-mouth. Misinformation can 'stick' in people's minds and continue to influence their thinking even when it seems to have been corrected.

4. Circulation of conspiracy theories against the COVID-19 pandemic

Misinformation may influence some people's vaccination decisions. In periods of uncertainty like a pandemic, people are actively seeking information and, even unintentional falsehoods can increase confusion and erode trust. The risks of misinformation to vaccination programs has never been higher. Anti-vaccine websites and social media accounts use persuasive techniques that tap into peoples' values and lifestyles. They tend to be more emotionally resonant, salient and visual than official communications.

The bedrock of vaccination demand is public trust. Credible information alone is not enough. The information source or communicator must also be credible, expert and trustworthy. Public health agencies and other expert organizations are consistently trusted and accepted as

effective voices and should be encouraged to raise their voice in social media. Health professionals are among the most trusted sources of health information and an expert's recommendation to vaccinate, may significantly increase vaccine uptake.



5. How does a vaccine work

Vaccination is a safe, simple and effective way to protect people from a disease before actual exposure to it. Vaccines stimulate the immune system to produce antibodies and other cells that fight disease, just as if a person was exposed to the disease itself. When a vaccine is given, the immune system responds by:

- Recognizing the germ (bacteria or virus) as foreign and identifying it;

- Producing antibodies. These are proteins produced naturally by the immune system to fight disease;

- Remembering the disease and how to fight it. If the body sees the same germ again, it can recognize it and fight it quickly to stop the illness.

Vaccines only contain killed or weakened germs (bacteria or viruses), or material that mimics the germ. Therefore, a vaccine cannot cause the disease itself. However, it is not uncommon to have a mild reaction after a vaccine as the body responds to the introduction of something recognized as foreign. Most vaccines, including the different COVID-19 vaccines, are given as an injection. Some require just one injection, others need more than one in a short time frame, annual doses, or multiple doses over many years. Additional doses are sometimes referred to as booster doses.

COVID-19 vaccines target the spike protein, the part of the virus that allows it to bind to and then enter human cells. Currently over 50 vaccines are in clinical trials and many more are in the pre-clinical stages.

6. Frequently Asked Questions

6.1. How are we ensuring that the COVID-19 vaccines are safe?

Even though researchers are developing COVID-19 vaccines quickly, they are checking their safety very carefully. Clinical trials assess vaccines in people to see if they work to prevent COVID-19 and are safe. Clinical trials have three parts, called phases. In phase 1, the vaccine is given to a small number of people. In phase 2, the vaccine is given to hundreds of people. Finally, in phase 3, the vaccine is given to many thousands of people. Researchers are able to observe potential reactions by including lots of people in clinical trials.

If the clinical trials show the vaccine is safe, the government regulatory agency checks the safety information. The government regulator is independent, which means they are separate from the researchers who develop the Vaccine and from the manufacturers who make the vaccine. If the government regulator agrees the vaccine is safe, the manufacturer can start supplying doses of the vaccine for those who need it. The government and manufacturers continue to monitor the safety of the vaccine when people are being vaccinated in the community. All these steps have been and will be followed for the development of COVID-19 vaccines to make sure they are safe.

6.2. How are we going to monitor for COVID-19 vaccine safety when they are given to the community?

After the clinical trials are finished, governments, manufacturers and researchers will keep looking for rare or unexpected reactions to COVID-19 vaccines. One way of doing this is to make a list of uncommon health problems that could occur in those that are vaccinated. These problems might happen to someone by chance, or they might be caused by the vaccine. These are called 'adverse events of special interest' (AESIs). These might include things like allergic reactions (anaphylaxis) or other health conditions that may not have an obvious cause.

These health issues might be so rare that researchers can only see if they occur in vaccinated people by looking at very high numbers of people.If researchers find any possible rare reactions, they do specific studies to find out if the vaccine is causing them. If the studies show the vaccine is causing rare reactions, the government regulator will act. They look at benefits of the vaccine, as well as the risks, to make their decision. The decision could include changing advice about how we use the vaccine, or in certain cases, even stopping vaccinations.

6.3. Will it be worth having a COVID-19 vaccine?

COVID-19 can be an extremely serious disease. A vaccine will reduce the risk that you get the disease or pass the infection on to others. Many people with COVID-19 have a fever, dry cough and feel tired, but some people have trouble breathing and need to go to hospital. Some people die from the disease. Older people and people with health problems like high blood pressure or diabetes are more likely to become seriously sick, but anyone can get very sick from COVID-19.

Some people have symptoms that last for many months. The virus can damage your lungs, heart, and brain. Anyone of any age can be infected and spread the virus to others, even if they do not show signs of disease. Vaccinations help stop the spread of the virus, especially those more vulnerable to severe disease or dying.

6.4. I've heard that there are some vaccines using new technologies. How can we know these are safe?

All new vaccine technologies are being put through stringent testing and quality checks to make sure they are safe. This is the same for all COVID-19 vaccines, no matter what technology they use.

RNA vaccines are a new vaccine technology, having a different way of working than traditional vaccines. Traditional vaccines imitate a viral or bacterial infection to train your immune system to rapidly respond if you come into contact with them. RNA vaccines contain instructions (or a code) that direct your body to make the disease antigen itself. Your immune system then responds to that antigen by making protective antibodies against the disease.

RNA vaccines do not introduce any actual parts of the virus into your body. RNA vaccines only deliver instructions that allow your body to make a protective response. These vaccines are sometimes called mRNA or messenger RNA vaccines. This name reflects the RNA vaccine's role in delivering instructions or a 'message', rather than the actual disease antigen.

6.5 Can a COVID-19 vaccine give me COVID-19?

Almost none of COVID-19 vaccines in development are 'live' vaccines. This means they do not include any weakened form of the SARS-COV-2 virus that causes COVID-19. This means you cannot get COVID-19 from the vaccine. COVID-19 vaccines teach your immune system to recognize the SARS-COV-2 virus and make protective antibodies against it. If you are exposed to the SARS-COV-2 virus after getting a vaccine, you will already have protective antibodies in your body to fight the virus.

A small number of COVID-19 vaccines in development use live virus, but this live virus has been weakened (attenuated). This means the live virus in the vaccine is strong enough to teach your immune system to make protective antibodies, but too weak to give you the actual disease.

6.6 Are there any side effects of the COVID-19 vaccine?

Side effects of the COVID-19 vaccines are reported to be mild and short lived, lasting up to 48 hours. Serious side effects are reported to be extremely rare. Side effects can occur after the first or second dose. Local reactions such as pain, redness and swelling are not uncommon, particularly in those under 55 years. Up to 50% may suffer headache, fever or fatigue. These side effects respond well to PARACETAMOL and usually settle within two days.

6.7. Can I pass the virus to others once I have had the vaccine?

It is currently unknown whether a vaccinated person can still carry the virus in their nose and throat without any symptoms and whether they can pass it on to others. Until this is clear, it is essential that everybody, vaccinated or not, follows the guidelines for physical distancing, washing hands with soap and water or the use of hand sanitizer, good respiratory hygiene and the use of masks where appropriate. After being vaccinated, everyone needs to observe all quarantine rules and travel restrictions. These may change over time.

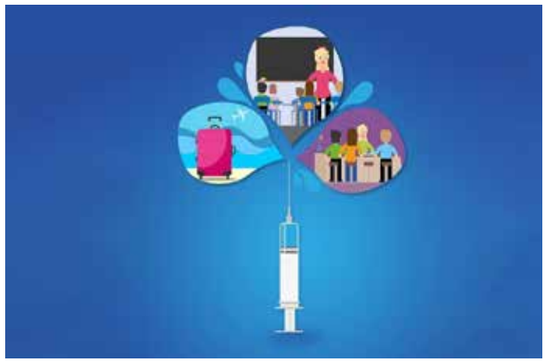
STAY SAFE & COVID-FREE!

Sources

UNICEF: Vaccine Misinformation Management Field Guide

WHO: COVID-19 Vaccines - Safety Surveillance Manual

ICS: COVID-19 Vaccination for Seafarers and Shipping Companies – A Practical Guide



Safety Procedures into Engine Room

Based on ICS publication

“Engine Room Procedures Guide” 1st edition

Arranged by Technical Dept

1. The Basics

The safe and environmentally responsible operation of ships is ensured through strict adherence to established procedures and application of recognized industry best practices in engine rooms.

The Master and the Chief Engineer must work closely to ensure that the ship, crew, the carried cargo as well as the environment are safe from harm.

The engineering team is responsible for the operation and maintenance of the engine room on a ship. The implementation of lessons learnt from incidents and accidents has brought vast improvement on maintenance and watch-keeping standards and procedures.

It is the responsibility of every crew member to protect the environment and strictly comply with on board environmental procedures and instructions. Effective engine room organization is the starting point to ensure that a system is in place to promote, support and monitor best practice and ensure safety of operation. At all times, safe operation of the engine room requires effective command, control, communication and management.

The OOEW (Officer on the Engine Watch) is the Chief Engineer’s representative and is responsible at all times for the safe operation of machinery and the associated equipment and control systems. He/she is also responsible for complying with environmental protection requirements. As the Chief Engineer’s representative, the OOEW is in charge of the engineering team during a watch until properly relieved. In compliance with operational procedures and the Chief Engineer’s standing orders, the OOEW should ensure that manning levels for watch keeping are always adequate for the circumstances and conditions.

OOEW should supervise the main propulsion plant and auxiliary systems until properly relieved and regularly inspect the machinery in their charge. They should also make adequate rounds of the machinery and steering gear spaces in order to observe and report any equipment malfunctions or breakdowns and to perform or direct routine adjustments, upkeep or any other necessary tasks.

The EOOW should not hand over the watch to the relieving officer if there is any reason to believe that the relieving officer is not capable of carrying out their watch-keeping duties effectively, in which case the Chief Engineer should be notified. Relieving officers should ensure that all members of their watch are fully capable of performing their duties effectively.

2. General Principles for Engine Room Safety

Personnel should wear suitable PPE, including coveralls, safety shoes, safety helmets, safety goggles, appropriate hearing protection and safety gloves as a minimum and other PPE relevant to the work and environment. They should carry an intrinsically safe, good quality torch with them at all times.

The policy of “the right person for the right job” should be strictly followed. Only personnel with the appropriate knowledge and skills should be allowed to operate and maintain machinery. This is also true for activities such as chemical handling, operating and handling lifting gear, cleaning and changing filters, etc.

Good housekeeping practices should be maintained by following the essential seamanship procedures at all times. Maintenance is not completed until all guards, handrails, floor plates, etc. have been reinstated, any waste removed, tools and equipment stowed and the work area cleaned of any oils or greases.

Personnel should keep the movement of the ship in mind, when carrying out day-to-day activities in the engine room, such as operating engine room cranes and other lifting appliances, manually transferring oil and chemicals into separate containers, climbing up and down stairs and ladders, etc.

Engine room stairs can be steep, so personnel should take extra care when using them. They should always hold the handrails and face the stair or ladder while descending. If they need to carry anything, one hand should be free and used only for holding the handrail.

All members of the engineering team should be familiar with the general emergency alarm signals, the action to take on hearing or raising an alarm, and the ship’s emergency plans.

They should also be familiar with the location and use of emergency response equipment such as firefighting equipment including breathing apparatus, fire extinguishers and fire extinguishing systems. With respect to fire extinguishing systems, operating procedures must be fully understood.

The engineering team must also be familiar with the location and use of all ship’s lifesaving equipment including survival suits, lifejackets, etc.

While the ship’s Master is responsible for conducting statutory fire, pollution prevention and boat drills, the Chief Engineer should consider holding regular engine room-specific drills on scenarios such as crankcase explosions, scavenge fires, economizer fires, blackouts and failure of essential systems. These should include the use of emergency checklists and communication procedures.

Machinery operating and maintenance manuals are invaluable sources of information on safety precautions, good practices and spare parts. The engineering team should adhere to the instructions on dismantling and assembling and the values of maintenance parameters such as torque measurement for tightening nuts/bolts, otherwise breakdowns and even accidents could result.
These manuals, along with system drawings and machinery trial data, should be safely stored and be readily accessible. They should be kept in a neat and clean condition.

Automation and alarm systems of machines are always helpful in detecting early stage faults; however, it is a known fact that human vigilance is more capable of detecting and interpreting errors more accurately. When on engine room round, all machines on all levels must be examined for proper operation.

3. The “Modern” Threats

As per Company’s policy, mobile phones or other personal electronic devices may only be used in the engine room in circumstances approved by the Chief Engineer.

When devices are allowed, their use should be subject to limiting conditions. Engine room watch-keepers’ use of the internet and e-mail should be limited to out of duty hours or when it is necessary for the safe navigation of the ship.
To protect the security of cyber systems on board:

- Crewmembers should not click unsafe links in emails, as they may lead to phishing attacks.

- Crewmembers should be aware of the risks of using the internet on engine room computers (when applicable), including social media, chat forums and cloud-based file storage.

- Crewmembers should never plug personal devices such as USBs into engine room control systems.

- Nobody should give their usernames or passwords to any third party without the authorization of the Chief Engineer.

- Crewmembers are encouraged to report any potential cyber incidents (for example, unusual connections or someone plugging in an unknown device to the ship's network).

4. Positive Management Techniques

People make mistakes, and so long as they are not intentional or caused by carelessness they should normally be treated as learning opportunities. A well implemented 'no blame' culture gives personnel the confidence to admit any mistakes or 'near misses', which promotes a safer working environment.

A 'just culture' is an atmosphere of responsible behaviour and trust where personnel are encouraged to report information without fear of punishment with the condition that unacceptable behaviour will not be tolerated.

Before starting routine operations, it is good practice to discuss planned work and activities with other personnel in order to paint an imaginary picture of the situation.

This helps the engineering team to reaffirm procedures and encourages engine room personnel to question or raise any concerns about the planned actions.
Engine room personnel should be encouraged to challenge operational decisions. if a decision, proposed action or procedure is being challenged for safety reasons, this is not a challenge to the authority of those personnel who are responsible for making decisions. This does not diminish the ultimate authority of the Chief Engineer in all technical matters, or the authority of the EOOW when on watch or acting as the designated engineer on duty.

A proactive safety culture should be established and maintained. The Chief Engineer should take steps to ensure that everyone in the engineering team clearly understands that safety is always the top priority. Only then can there be a robust structure and systems to avoid fire, flooding or loss of control of the ship. Personnel should be encouraged to report near-misses no matter how small or seemingly insignificant. All members of the engineering team should read and understand accident reports and the lessons learnt from them.

While the Chief Engineer has ultimate responsibility for engine room operations, personnel who operate pollution prevention and control systems and equipment are responsible for ensuring that they comply with relevant environmental regulations. This is also true for crew engaged in cleaning and maintenance in the engine room. This should be reflected in the work culture on board. Everybody in the engineering team should be aware of their responsibilities and the consequences of non-compliance.

The safe, clean and efficient operation of the ship depends on good co-operation between the bridge and the engineering teams. The Master and Chief Engineer should ensure there are open lines of communication and that any issues are resolved as a matter of priority. They should nurture a positive and inclusive culture and promote positive inter-departmental relationships.

An open and transparent dialogue should exist between the bridge and the ECR. This allows both departments to update each other, and to plan and prepare for any situations. For example, a warning from the bridge before imminent bad weather will ensure that engine room spares are properly stowed and secured. Similarly, updates from the engine room about the availability of additional propulsion power will help the bridge make quick decisions.

5. Risk = Danger

A key factor in safe engine room operations and maintenance is risk assessment. It should be understood that risk is established, based on an analysis of hazard, severity and potential consequences associated with the hazard and probability, and should not be conflated with the term hazard.

As per the Code of Safe Working Practices for Merchant Seafarers:

The risk assessment process identifies hazards present in a work undertaking, analyses the level of risk, considers those in danger and evaluates whether hazards are adequately controlled, taking into account any measures already in place.

Risk assessments control work proactivety, reducing the probability and consequences of unexpected events, and ensuring compliance. Used correctly by all involved, they prevent accidents and consequential losses.

The steps in a risk assessment are:

- Identify the hazards
- Decide who might be harmed and how
- Evaluate the risks and decide on precautions
- Record findings and implement them
- Review the risk assessment.

To properly evaluate the likelihood of harm and the potential consequences, some experience and expertise is necessary. If the risk assessment is not effective it could create unnecessary controls or, worse, fail to identify necessary controls. The conduct of risk assessments should involve those who are actually going to do the job. They should be in a good position to identify hazards and suggest what practical steps might control and reduce risks.

Informal, almost subconscious, risk assessments often take place on ships. When safety conscious personnel routinely follow standard operating procedures or comply with safe working practices, they will be assessing the risk as they work.

6. Harmful Substances

Exposure to toxic or poisonous substances is harmful to human health and in extreme cases can cause serious injury or death. Toxicity is an intrinsic property of chemicals and substances. Some substances have immediate health effects, even if exposure is modest, whereas others require prolonged exposure. Some effects on health may be the result of cumulative exposure to small quantities over an extended period, which in themselves are not immediately threatening. Correct medical first aid treatment following exposure can mitigate the consequences.

Chemicals are regularly used in the engine room This includes dosing for boiler water, engine cooling water, evaporators, seawater chests, sewage plants and various cleaning chemicals. Perhaps the most common harmful substances, which engineering team members encounter, are fuel and lubricating oils. The first line of defense against the hazard of toxicity is the material safety data sheet (MSDS). All chemical substances and oils used and stored on board should have an MSDS. Copies of the MSDS should be available near the areas where the chemicals are stored and used. All members of the engineering team should be aware of the hazards of each chemical and the proper precautions (including PPE) when handling them.

7. Keep in mind and constantly apply the following

It is important that the watch keeping procedure, a daily routine that has to be carried out every single day, is done in the most systematic manner to prevent any kind of breakdown. A smooth running ship is a product of efficient handling at the bridge and effective management in the engine room under any seagoing condition.

Engine room operation requires information from other domains of engineering such as mechanical, hydraulic, pneumatic, electrical and electronic systems, refrigeration etc. Knowing these fundamentals makes an Engineer's foundation stronger.

Efficient communication between maritime professionals is an important factor for a safe and efficient operation onboard. A watch keeper must clearly communicate all kinds of operations and problems / suspicions with colleague crew members. An efficient engine room-bridge communication is also very important to make sure that all watch-keeping Officers at the bridge and at the engine can plan their procedures or stay prepared for any kind of situation.

Dangers of ignoring alarms

An oil and chemical tanker was on its way from the port of Klaksvík in the Faroe Islands to Rostock in Germany, in ballast. The vessel was due to stop at Skagen in Denmark to take fuel on board.

On 5 January 2019, a junior Engineer removed one of the main engine's lubricating oil filters for cleaning. Once the cleaning was complete, he reinstated it.

False alarms?

During the evening of 7 January, the oil mist detector sounded an alarm. The oil-mist detector samples the air from the different crankcase compartments of the engine and triggers an alarm should the oil mist exceed a specified level.

Excessive oil mist can occur if parts of the engine are becoming too hot, or if there is a fire within the engine. On investigation, the crew found that the air filter of the oil-mist detector was dirty. The filter was cleaned and throughout the rest of the day no alarm sounded. It was assumed to be a false alarm.
However, at 07.42 on 8 January, the vessel was being navigated through the Skagerrak when another oil-mist detector alarm was heard, together with a lubricating oil low-pressure alarm. The crew again assumed these were false alarms and reset the detector.

However the lubricating oil low-pressure alarm was not investigated and was also dismissed as an error.
At around 11.00 on 8 January, the engine speed was reduced because of heavy seas, and the vessel's speed dropped to 4.5kn. During the afternoon, the oil-mist detector alarm sounded twice more, but on each occasion it was simply reset as it was assumed these too were false alarms.

Errors with oil-mist detectors were a known issue at the time, with problems plaguing them since their introduction. This likely contributed to the alarms being dismissed as errors and not properly investigated.

Escalation: Smoke warning and engine failure

However, things then took a turn for the worse. At 16.34 the 2nd Engineer, while making a routine inspection of the steering gear area of the vessel, noticed an abnormal change in the sound of the engine.

On entering the engine room, he noticed the engine had stopped and there was significant smoke in the area. The chief engineer was called; together they determined that the crankcase covers were not excessively hot and concluded that there was no fire. They opened the engine-room skylight to allow the smoke to disperse.

At 16.45 the Chief Engineer informed the Master that attempts to restart the engine had failed. With the heavy seas – and the proximity of land – the Master ordered the anchors to be deployed at 17.06. Once anchored, the crew removed the crankcase covers to investigate further.

Their inspection revealed extensive damage. Loose and missing bolts holding the rocker arms were tightened or replaced, but the engine refused to start.

A more detailed investigation the next day revealed that there was serious damage to the big end bearings, and possible serious damage to the crankshaft itself. The owner arranged for an urgent inspection by a service technician who advised that the crankshaft would need replacing, and that a tow to a repair yard in Rotterdam was necessary.

Inspecting the damage

The subsequent inspection in Rotterdam revealed severe damage to the big end bearing shells, damage to the crankshaft pins and several bent valves. All the cylinder heads, some piston crowns and several connecting rods were also damaged.

It was also discovered that the oil filter, which had been removed for cleaning on 5 January, had not been replaced correctly. While the engine had three oil filters, the most important one was at the outlet from the oil pump. This was the filter that had been improperly re-mounted, resulting in inadequate filtration and possibly restricted oil flow to the engine.

The error had pushed the filter cartridge against the inlet pipe to the filter, restricting oil flow. It transpired at this stage that the reinstatement of the filter cartridge had not been supervised, although it would not normally be supervised unless problems were encountered during the process.

Investigation and conclusions

An investigation found that all the crew were experienced and that there were no problems with working hours, drugs or alcohol.

It was suggested that, with the heavy seas, the crew may have been tired or stressed and that this might have compromised the crew's effective monitoring of conditions in the engine room.

But the main concern was the repeated assumption of false alarms from the oil-mist detector.
It is now known that the alarms were almost certainly real, and that the oil mist was the result of components in the engine becoming overheated due to oil starvation caused, in turn, by the faulty replacement of the oil filter.

The fact that the alarm remained silent for quite a long time after being reset may have given the crew a false sense of security.

Safety report recommendations

The recommendations from the safety investigation report stress the importance of having a safety management system manual that addresses the critical importance of the oil-mist detector and the procedures to be followed in the case of an alarm.

The incident also serves as a cautionary tale of repeatedly ignoring warning alarms, no matter how innocuous they may seem.

Fourth Industrial Revolution (4IR):
Laying the foundations for the innovations of tomorrow

Capt. Dimitrios Mattheou
Chief Executive Officer,
Arcadia Shipmanagement Co Ltd.

Prologue

The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution (**4IR**) -also known as Industry 4.0- is building on the Third; the digital revolution.

Industry 4.0 is characterized by a genius combination of technologies that is blurring the lines between the physical, digital, and biological spheres. We actually stand on the brink of a technological revolution that will fundamentally change the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. The main issue is that we are not yet aware of the extent of its evolution, however, one thing is clear: the response to it must be integrated and comprehensive, with the involvement of all stakeholders in global politics, from the public and private sectors to academia and civil society.
It is time to realize that we are already laying the foundations of the innovations of tomorrow. In simple words, we have finally the chance to do the right things the right way, to act smarter and in the most convenient way -efficiently and effectively- aiming to a sustainable future of the human kind.

The backstage story

The person who labeled today's advances as a new revolution was **Klaus Schwab**, Founder and

Graph depicting four Industrial Revolutions, in progression from the 18th century to the 21st.

Executive Chairman of the World Economic Forum and author of the book: **The Fourth Industrial Revolution**.
In a 2016 article, Schwab wrote that "*like the revolutions that preceded it, the Fourth Industrial Revolution has the potential to raise global income levels and improve the quality of life for populations around the world.*" So imagine a future, for example in our industry –shipping- where technological innovation can lead to a supply-side miracle, with long-term gains in efficiency, safety and productivity. Transportation and communication costs will drop, logistics and global supply chains will become more effective, and the cost of trade will diminish, all of which will open new markets and drive economic growth, or, no?

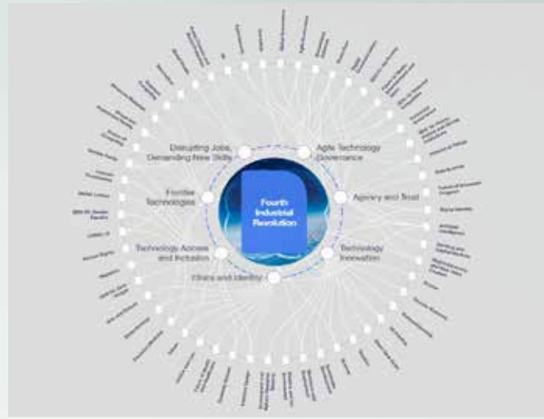
Exploiting new technologies

Artificial intelligence (AI) is already around us; from self-driving cars and drones to virtual assistants and software that translate or invest. Impressive progress has been made in AI in recent years, driven by exponential increases in computing power and by the availability of vast amounts of data, from software used to discover new drugs to algorithms used to predict our cultural interests. Digital fabrication technologies, meanwhile, are interacting with the biological world on a daily basis. Engineers, designers, and architects are combining computational design, additive manufacturing, materials engineering, and synthetic biology to pioneer a symbiosis between microorganisms, our bodies, the products we consume, and even the buildings we inhabit.

Our ability to harness and disseminate these new 4IR technologies will play a key role in ensuring our recovery from the pandemic and the avoidance of future crises. The possibilities for appropriately deployed new Fourth Industrial Revolution technologies should be used as the baseline to reinvent the way we operate in the new context: affecting everything from government services, education and healthcare, to the way shipping interacts with and provides value to the world trade and of course to the people.

Challenges and opportunities

The largest beneficiaries of innovation tend to be the providers of intellectual and physical capital—the innovators, shareholders, and investors—which explain the rising gap in wealth between those dependent on capital versus labor. Technology is therefore one of the main reasons why incomes have stagnated, or even decreased, for a majority of the population in high-income countries: the demand for highly skilled workers has increased while the demand for workers with less education and lower skills has decreased.



Graph1 © World Economic Forum
Strategic Intelligence link: https://intelligence.weforum.org/topics/a1Gb0000001RIhBEAW?tab=publications

Digital technologies and the dynamics of information sharing typified by social media must also be considered a great future challenge. More than 30 percent of the global population now uses social media platforms to connect, learn, and share information.

In an ideal world, these interactions would provide an opportunity for cross-cultural understanding and cohesion. However, they can also create and propagate unrealistic expectations as to what constitutes success for an individual or a group, as well as offer opportunities for extreme ideas and ideologies to spread.

The technologies driving change

The easiest way to understand the Fourth Industrial Revolution is to focus on the technologies driving it. These include the following:

Artificial intelligence

AI describes computers that can "think" like humans. They can recognize complex patterns, process information, draw conclusions, and make recommendations. AI is used in many ways, from spotting patterns in huge piles of unstructured data to powering the autocorrect on your phone.

Blockchain

Blockchain is a secure, decentralized, and transparent way of recording and sharing data, with no need to rely on third-party intermediaries. The digital currency Bitcoin is the best known blockchain application. However, the technology can be used in other ways, including making supply chains traceable, securing sensitive medical data anonymously, and combating voter fraud.

Faster computer processing

New computational technologies are making computers smarter. They enable computers to process vast amounts of data faster than ever before, while the advent of the cloud has allowed businesses to safely store and access their information from anywhere with internet access. Quantum computing technologies now in development will eventually make computers millions of times more powerful. These computers will have the potential to supercharge AI, create highly complex data models in seconds, and speed up the discovery of new materials.

Virtual reality and augmented reality

The difference between virtual and augmented reality is that VR offers immersive digital experiences (using a VR headset) that simulate the real world, while AR merges the digital and physical worlds. Examples that can make women happy for instance would include L'Oreal's makeup app, which allows users to digitally experiment with makeup products before buying them, and the Google Translate phone app, which allows users to scan and instantly translate street signs, menus, and other text.

Biotechnology

Biotechnology harnesses cellular and biomolecular processes to develop new technologies and products for a range of uses, including developing new pharmaceuticals and materials, more efficient industrial manufacturing processes, and cleaner, more efficient energy sources. Researchers in Stockholm, for example, are working on what is being touted as the strongest biomaterial ever produced.

Robotics

Robotics refers to the design, manufacture, and use of robots for personal and commercial use. While we're yet to see robot assistants in every home, technological advances have made robots increasingly complex and sophisticated. They are used in fields as wide-ranging as manufacturing, health and safety, and human assistance.

The Internet of Things (IoT)

The IoT describes everyday items — from medical wearables that monitor users' physical condition, to cars and tracking devices inserted into parcels — connected to the internet and identifiable by other devices. There are also many industrial applications, such as farmers putting IoT sensors into fields to monitor soil attributes and inform decisions such as when to fertilize, also in logistics has been widely adopted in the past decade, mostly in the form of tracking devices and regarding our Industry, Shipping, there is more to what IoT can offer from smart shipping containers to data collection and risk analytics. IoT actually enables ship owners and managers to deal proactively with maintenance, by monitoring shipboard equipment and machinery in real time to pinpoint issues and prevent potential failures. Ensuring continuous and optimal machinery and equipment operation not only reduces costly downtime, it also improves crew safety.

3D printing

3D printing allows manufacturing businesses to print their own parts, with less tooling, at a lower cost, and faster than via traditional processes. Plus, designs can be customized to ensure a perfect fit.

…and many more

Innovative materials, including plastics, metal alloys, and biomaterials, promise to shake up sectors including manufacturing, renewable energy, construction, and healthcare. Energy capture, storage, and transmission represent a growing market sector, spurred by the falling cost of renewable energy technologies and improvements in battery storage capacity.

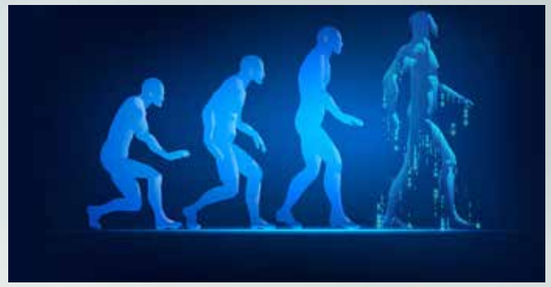
The impact on people

"The changes are so profound that, from the perspective of human history, there has never been a time of greater promise or potential peril."

***Klaus Schwab**, founder and executive chairman of the World Economic Forum, author of The Fourth Industrial Revolution*

The Fourth Industrial Revolution, finally, will change not only what we do but also who we are. It will affect our identity and all the issues associated with it: our sense of privacy, our notions of ownership, our consumption patterns, the time we devote to work and leisure, and how we develop our careers, cultivate our skills, meet people, and nurture relationships. It is already changing our health and leading to a "quantified" self, and sooner than we think it may lead to human augmentation. The list is endless because it is bound only by our imagination.

The Fourth Industrial Revolution's technologies, as mentioned above, are rapidly changing the way humans create, exchange, and distribute value. As occurred in the previous revolutions, this will profoundly transform institutions, industries, and individuals. More importantly, this revolution will be guided by the choices that people make today: the world in 50 to 100 years from now will owe a lot of its character to how we think about, invest in, and deploy these powerful new technologies.



It's important to appreciate that the Fourth Industrial Revolution involves a systemic change across many sectors and aspects of human life: the crosscutting impacts of emerging technologies are even more important than the exciting capabilities they represent. Our ability to edit the building blocks of life has recently been massively expanded by low-cost gene sequencing; artificial intelligence is augmenting processes and skill in every industry; neurotechnology is making unprecedented strides in how we can use and influence the brain as the last frontier of human biology; automation is disrupting century-old transport and manufacturing paradigms; and technologies such as blockchain and smart materials are redefining and blurring the boundary between the digital and physical worlds.

The result of all this is societal transformation at a global scale. By affecting the incentives, rules, and norms of economic life, it transforms how we communicate, learn, entertain ourselves, and relate to one another and how we understand ourselves as human beings. Furthermore, the sense that new technologies are being developed and implemented at an increasingly rapid pace has an impact on human identities, communities, and political structures.

As a result, our responsibilities to one another, our opportunities for self-realization, and our ability to

positively impact the world are intricately tied to and shaped by how we engage with the technologies of the Fourth Industrial Revolution.

This revolution is not just happening to us—we are not its victims—but rather we have the opportunity and even responsibility to give it structure and purpose.

I am a great enthusiast and early adopter of technology, but sometimes I wonder whether the inexorable integration of technology in our lives could diminish some of our quintessential human capacities, such as compassion and cooperation. Our relationship with our smart phones / i phones is a case in point. Constant connection may deprive us of one of life's most important assets: the time to pause, reflect, and engage in meaningful conversation.

One of the greatest individual challenges posed by new information technologies is privacy. We instinctively understand why it is so essential, yet the tracking and sharing of information about us is a crucial part of the new connectivity.

Debates about fundamental issues such as the impact on our inner lives of the loss of control over our data will only intensify in the years ahead.

Similarly, the revolutions occurring in biotechnology and AI, which are redefining what it means to be human by pushing back the current thresholds of life span, health, cognition, and capabilities, will compel us to redefine our moral and ethical boundaries.

Redefining the human capital serving Global Shipping

Executives and Leaders of the maritime world will need to ensure they have the right mix of skills in their people to keep pace with changing technology. A study shows that 59% of hiring managers believe that AI will impact the types of skills their companies need. Seafarers and shore based employees will more than likely need to update their skills and go through an upskill/reskill training process not just once but many times throughout their careers. As AI begins to impact the human capital and automation replaces some existing skills in the shipping industry, an increased need for specific interpersonal skills will rise, such as flexibility, emotional intelligence, creativity, problem solving and critical thinking.

Being a vital link of this global maritime-community-chain and taking under serious consideration this radical change and digital transformation, I feel obliged to commit myself along with many other Shipping leaders to start building the Shipping workforce of the future, while bringing along the Shipping workforce of today, and this shall be the greatest challenge we have ever faced as seamen.

Shaping the future

Neither technology nor the disruption that comes with it is an exogenous force over which humans have no control. All of us are responsible for guiding its evolution in the decisions we make on a daily basis. We should thus grasp the opportunity and power we have to shape the Fourth Industrial Revolution and direct it toward a future that reflects our common objectives and values.

To do this, however, we must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural, and human environments. Today's decision-makers, however, are too often trapped in traditional, linear thinking, or too absorbed by the multiple crises demanding their attention, to think strategically about the forces of disruption and innovation shaping our future.

In the end, it all comes down to people and values.

We need to shape a future that works for all of us by putting people first and empowering them. In its most pessimistic, dehumanized form, the Fourth Industrial Revolution may indeed have the potential to "robotize" humanity and thus to deprive us of our heart and soul. But as a complement to the best parts of human nature—creativity, empathy, stewardship—it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny. It is incumbent on us all to make sure the latter prevails.

The Fourth Industrial Revolution is therefore not a prediction of the future but a call to action. It is a vision for developing, diffusing, and governing technologies in ways that foster a more empowering, collaborative, and sustainable foundation for social and economic development, built around shared values of the common good, human dignity, and intergenerational stewardship. Realizing this vision will be the core challenge and great responsibility of the next 50 years.

The Fourth Industrial Revolution is more than a technological leap forward; it brings along a learning revolution and every leader can have a direct role in creating economic opportunity for millions of people by investing in learning and development programs for existing and potential talent.

I wish to conclude my article by restating the words of **Klaus Schwab:**

"We must develop a comprehensive and globally shared view of how technology is affecting our lives and reshaping our economic, social, cultural, and human environments. There has never been a time of greater promise, or greater peril."

Therefore we must be proactive and cautious in shaping this technology and disruption. This requires global cooperation and a shared view of how technology is reshaping our economic, social, cultural, and individual lives.
It is one of these critical moments in the history of the human kind that we are called to utilize our multidimensional intelligence with prudence and wisdom for the sake of our lives and the future of our planet.

Gaining experience vital for future fuels

Fresh thinking by shipowners is needed ahead of new orders

Dr Christos Chryssakis
Business Development Manager
DNV Maritime

Given that the lifetime of newly-ordered ships will be 20-25 years, the internal combustion engine will likely remain ships' dominant power source for two decades and probably longer. However, shipowners should seize the opportunity to decide which fuel types will be considered acceptable in future and prioritise gaining experience with as many as possible.

Shipowners looking to order a new ship today are still more likely to opt for a conventional oil-fuelled diesel engine to power it than anything else, but they should take account of the ambitions of the International Maritime Organization and of the world at large.

Given that the lifetime of those ships will be 20-25 years, Christos Chryssakis, Business Development Manager at DNV Maritime, says that implies the internal combustion engine will remain the dominant power source for ships for a further two decades and probably longer.

However, Mr Chryssakis also believes that to meet the environmental demands being made on shipping, shipowners should now seize the opportunity to decide which fuel types will be considered acceptable in future and should prioritise gaining experience with as many of them as possible.

Like many within the shipping industry, he believes there will be a transition to more environmentally friendly fuels even if for the short term the current mix of fossil fuels, including oil and liquefied natural gas, along with liquefied petroleum gas, methanol and ethane, will inevitably persist. But that needs to be changed and Mr Chryssakis thinks the only way to do this at present is to introduce synthetic or bio variants of these fuels.

The chemistry to do that is well understood but the economic case needs to be improved. It is important that the energy needed to produce these new fuels does not itself come from polluting fossil fuels. Methanol, for example, which is already in limited use, is only more environmentally friendly if it is produced sustainably.

LNG has long been a favourite to replace oil fuels as a cleaner fuel choice and it is clear that more and more ship operators are committing to using it. That said, some other alternatives are also available. LPG is a relative newcomer for shipping but is an established fuel in the automotive sector, so Mr Chryssakis says there is a pool of experience and most problems applicable to shipping will be quite easy to overcome. The first commercial vessel planned to run on LPG is nearing completion and in two to three years a further 20 or 30 vessels are expected to be operational.

In addition, for new fuels, building a bunkering infrastructure is vital. LNG and LPG are already widely stored and distributed, while for methanol, surplus oil storage tanks could be cleaned and repurposed.

For some of the other options — hydrogen for example — bunkering infrastructure is much more limited.

Carbon-free may not be problem-free

Hydrogen as a fuel for engines or fuel cells has been promoted but has many challenging characteristics, not least the need to store at extremely low temperatures or very high pressures. Being less dense than alternatives, it also needs a lot of tank space. Mr Chryssakis believes that these are obstacles that might be difficult to overcome for large vessels, but less of a problem for small vessels for which hydrogen could prove a good fuel option for short voyages.

Ammonia is a good carbon-free hydrogen carrier and in terms of handling and storage need, is quite similar to LPG. On the downside it is toxic and corrosive. As a fuel it is considered difficult to ignite and the combustion process needs careful control. The two leading engine makers and others are currently engaged on various projects to fully test its potential.

One aspect that needs to be better understood is the composition of the exhaust emissions under normal working conditions. When used as a fuel, ammonia has the potential to produce nitrous oxide — a potent greenhouse gas. However, whether this will prove a problem in operation requires more testing.

As a novel fuel, there are currently no international regulations in place for ammonia as there are for LNG. This means individual flag states would have to approve its use in ships on a case by case basis, a process that can add cost and complexity to the newbuilding process. However, some flags are on track to do this, and several national and European Union- funded projects have already been launched or are soon to begin.

M/T AEGEAN DIGNITY Seafarers welcome Potentia World team
-A special live session on board-

On Thursday 3rd of June at 1300 hrs, Athens time, Potentia World team experienced a different and truly special session on-board with the team of M/T Aegean Dignity of Arcadia Shipmanagement offering significant value to our mission.

Madam President of **The Nautical Institute**, Mrs. **Jillian Carson-Jackson**, warmly accepted the invitation of Potentia World Business Development Manager (ASIA), Mr. Girish Kumar, and attended the session.

We had the honor to experience her powerful but yet noble presence on this Potentia voyage; we shared unique moments all together.

On behalf of the Potentia World team, it is crucial to let our seafarers know that: "*We Thank You for continuing to provide for us while we sit at our homes with our families. You make the world move. You have gained our respect. We are very proud of you. We have committed ourselves to this mission and we will keep supporting you by all means to continue Rise, Grow and Lead*".

We sincerely wish to thank for their vital presence during this special session: Dimitrios Mattheou, CEO at Arcadia Shipmanagement Co Ltd.

"*Captain, thank you for giving us this opportunity, trusting in us and letting us support your seafarers*." and Mr. Lambros A. Chahalis Chairman of the Maritime Committee of The International Propeller Club- Port of Piraeus.

"*Mr. Chahalis, kindly accept our warmest appreciation to you personally, to the President Mr. Costis Frangoulis, Vice Presidents and Governors of the Propel Club for embracing our initial idea and for positively evaluating our innovative project Potentia On-Board® having recognized the potential of our team as sufficient and capable people to respond to such challenge. Your encouragement motivates us to stand by our mission to empower the people –women and men- serving Global Shipping.*"

As part of our mission to empower seafarers worldwide, Potentia Onboard is a people-centered, innovative project dedicated to the constant personal improvement provided via tele-sessions as we believe that sailors require maximum support onboard. Under the sponsorship of The International Propeller Club of the United States-Port of Piraeus we have been successfully executing our sessions in more than 80 Greek vessels. Especially during the pandemic, we have received positive responses from the sailors and their participation and enthusiasm have been exceptional.

Dimitrios Mattheou |
CEO Arcadia Shipmanagement note:

"*Dear Madam President of the Nautical Institute Mrs Jillian Carson-Jackson, Dear Potentia World and Arcadia team, Dear Lambros Chahalis.*
As the CEO of Arcadia Shipmanagement and on behalf of Aegean Dignity officers' team allow me to congratulate one more the protagonists of this initiative, Chrysoula Vasiliki Patrikiou Founder & CEO of Potentia World and her team of experts, Naoum Karaminas, Spyros Kottoris, Girish Kumar and Mitalee Sharma.
In Arcadia Shipmanagement we are committed to improving the health and quality of life of our people serving Global Shipping especially during critical and challenging moments for humanity, such as the pandemic.

We have embraced the innovative project ON-Board powered by Potentia World and we have joined the program- as a company- since its beginning, aiming to empower and support our seafarers through coaching, wellness sessions and psychological counseling provided live on board with great success.
Potentia team has definitely proven their commitment and has already accomplished their mission having received excellent feedback from more than 400 seafarers who have experienced these sessions.

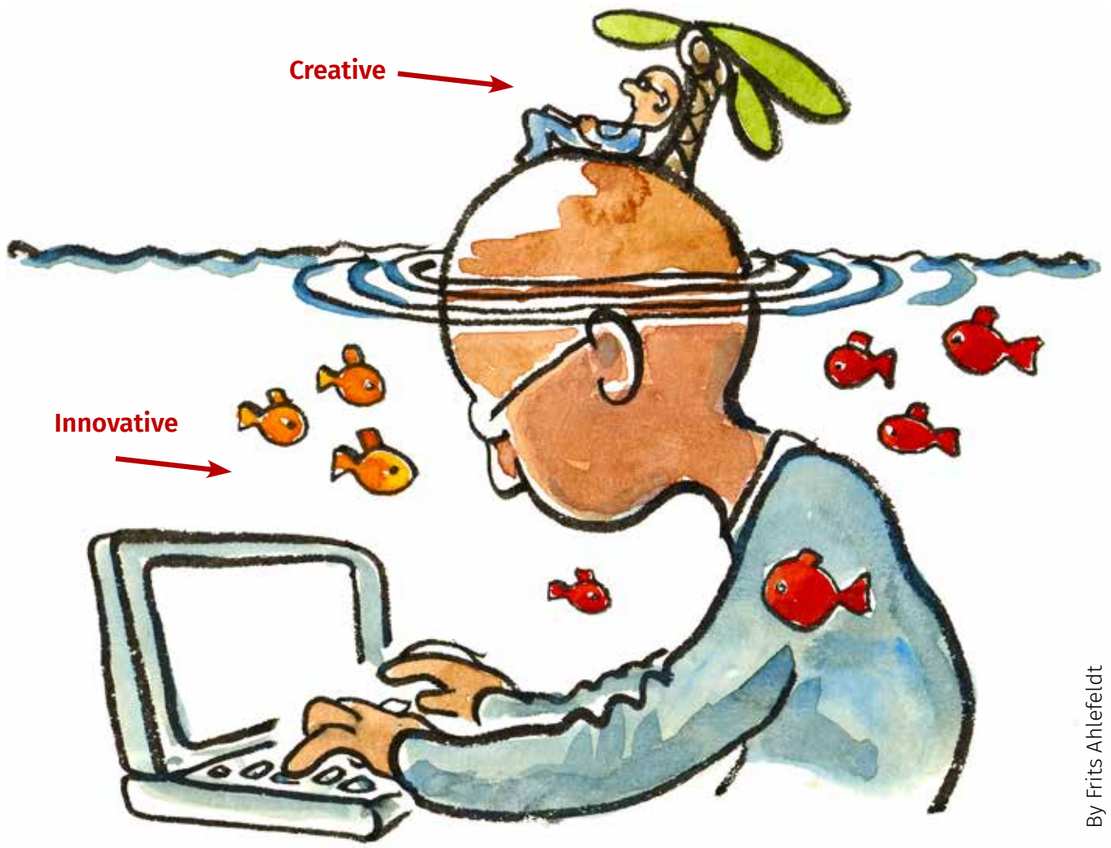
We strongly believe that this initiative should be considered as an investment in the human capital -our seafarers- serving Global Shipping. Thank you".

Dimitrios Mattheou

What is Innovative Work Behaviour

and how can it be incorporated?

Mitalee Sharma
Potentia World Human Capital Manager
Certified ICF Coach |Counsellor & Consultant



By Frits Ahlefeldt

In today's world, it is the capability to innovate that would decide the sustainability of any organization.

Innovation will help to be relevant and adaptable in this volatile and unpredictable market. But for innovation to happen, it is equally important to understand behaviours that drive it in first place.

Innovative Work Behaviour (**IWB**) is a broad behavioural construct that derived its origin from the concept of 'Innovation'. It is a multi-dimensional concept and a work in progress. Every new research keeps adding a new perspective to its understanding.
However, for this article, I would stick to a definition that is comprehensive and will help me get my point across.

Technically, **IWB** is "*individuals' behaviour that is directed towards the initiation and intentional introduction -within a work role, group or organization- of new and useful ideas, processes, products or procedures.*" (Dr Jeroen De Jong, 2007).

This definition implies that individuals should generate, promote, and realize innovative ideas around them and help organizations move away from the status quo intending to improve.

From an organizational perspective, it is about creating a culture where there is a continuous flow of individual innovation and its employees are motivated and willing to innovate.

But how feasible is it to incorporate such a culture when we have **BAU** (Business As Usual) at hand? Our daily work is equally demanding, isn't it? How much bandwidth can we expect our employees to have to think and suggest out of the box?

Let us explore if we can still dare to get this thought onboard and envision having workplaces that breathe **IWB**:

• For starters, **let's just take innovative behavior as something incremental**. It need not be something radical or big enough to be seen and celebrated; it could be as simple and as naive as possible.

For example: Once a Chief Engineer shared his experience of introducing board games during daily tea breaks. This small initiative not just helped him build better rapport with his team but on a whole increased the team efficiency.

• Secondly, **just give it some time**!!! We need to realize that the essence of innovation also lies in its promptness and creativity, which won't flow if demanded from outside. Let us do our bit in building workplaces that incubate innovation and not demand it; workplaces that reward their people to innovate and give them an open platform to share their ideas.

• Thirdly, **de-link the results of innovation with the idea to innovate**. This delinking is very critical for any behaviour to be inculcated.

The desperation to see quick and quantified results kills the long-term goal of innovating, e.g. gaining competitive advantage through innovation can surely be a goal to pursue but should not be a mandate for giving any innovative idea the credit it deserves.

• Lastly, **nurture leaders who stimulate innovation**. This would surely be a gateway to a future that is adapting and inculcating innovation in the blood of organizations' future generation.

This exploration is not something organizations don't do or realize. I think the hurdle remains about how to incorporate **IWB** in something that already exists. It is easy to get comfortable with the status quo. But, that won't change the reality of the **VUCA** (Volatility, Uncertainty, Complexity, and Ambiguity) world we are living in.

"*The only thing permanent is change*." Heraclitus said and the way to live through that change is to keep innovating and moving towards a better efficient system, process, role, culture, etc.

In the end, all it matters
is our pursuit of Excellence!

Will the next generation of tankers be gas fueled?

Filippos Nikolatsopoulos
Manager,
Business Development, ABS

As the maritime industry prepares for the emerging regulatory changes driven by IMO's sustainability goals, shipyards and designers are seeking for an optimum design that will bring us to 2030 and then to 2050.

Every type of vessel will have to undergo changes in order to improve her carbon footprint, however tankers seem to change faster and we already have glimpses of their next generation.

Conventional oil fueled tankers may remain the most popular choice for new orders, but there is a remarkable increase in the orderbook of dual fuel tankers. Current tanker orderbook counts 85 dual fuel tankers, excluding any "LNG fuel Ready" vessels.

After Gas Carriers, tankers and containerships appear to be the most popular types of vessels been ordered as dual fuel, with tankers leading in terms of total number of vessels.

This turn towards gas fueled tankers is a result of several different factors, but there are some key aspects that make tankers more attractive and prepared to adopt gas fuels, against other type of vessels.

Tanker market is quite demanding and tanker Owners will very soon need to find ways to remain competitive in the years to come, complying or even exceeding the sustainability requirements from charterers, oil majors, ports and terminals, which are becoming stricter. Almost every important stakeholder in the tanker industry has already adopted an environmental friendlier policy and de-carbonization strategy, requiring tankers participating in their fleets to achieve superior environmental performance.

Compared to conventional oil fueled, a gas fuel vessel can easier improve her environmental performance, without significant changes to the rest of the design.

Taking the example of the CII measure, currently the IMO is considering two sets of annual reduction rates factor, the Demand Based and the Supply Based. In MEPC76, IMO is expected to adopt one or the other. Vessel are going to be given a rating from A to E depending on how far below or above they are from the required annual carbon intensity target.

IMO also encourages Administrations, port authorities and other stakeholders as appropriate, to provide incentives to ships rated as A or B. A VLCC with supply-based attained CII of 1.924 for year 2020 is projected to be in category B until 2025 and then fall into cat-

egory C until 2030, considering similar operational profile each year. If the same vessel was LNG fueled, it would be projected in category A until 2030.

Technical benefits can be another reason that gas fuel propulsion appear to be popular for the tankers. Spatial constrain is not an issue for tankers, compared to other type of vessels, since main deck usually provides sufficient space for the installation of fuel tanks and fuel equipment, without the need for re-arranging existing equipment and structures. Another important factor making gas fuels attractive to tankers is the fact that gas hazardous zones already exist due to the nature of their cargo and their crew are experienced and familiar on working with hazardous cargoes, making it easier to adopt into the safety requirements that the gas fueled propulsion will bring onboard.

Although no one can precisely predict how the next generation of tankers will be, what is certain is that today's conventional oil fueled designs may soon not be sufficient to fulfill tanker industry's demands. Technology related to oil fuels does not seem to have much space for improvement, while only small upgrades may be feasible to the hydro and aero dynamics of a tanker, at a reasonable cost.
Renewable sources of power, such as wind and solar, can only supplementary be implemented onboard, as the available technology cannot produce the amount of energy that would be needed for the propulsion. Similarly, economically feasible energy saving devices and technologies can improve vessel's fuel consumption but not enough in order to achieve sustainability goals of the next decade.

All these lead to a single element which could be the key factor for the next generation of tankers: New fuels. Future proofing will involve the exploration of technological solutions and enhanced electrification, however the biggest contribution to the reduction of a tanker's carbon footprint is expected to come from the adoption of a low carbon fuel.

LNG appears as a mature solution and is the fuel currently chosen for most of the dual fuel tankers, however other fuels such as LPG, Ammonia and Methanol appear to have great potential and tankers are already investigating possible designs for the use of these fuels, while manufacturers develop new equipment for the utilization, handling and storage of these fuels.

ABS, as the leading Classification Society in tanker sector, is already extensively involved in research as well as the construction of tankers implementing new fuels and new designs, such as LNG-Fueled VLCC and world's first Ammonia-Ready Suezmax, as well as conventional oil fueled VLCC meeting EEDI Phase III requirements.

During the journey to de-carbonization of tanker maritime industry, we at ABS can provide assistance and technical expertise to owners, shipyards, designers and operators, for the evaluation and feasibility of new fuels and new technologies.

Global shipping fleet to sound horns on 25 June with a #ShoutOutForSeafarers

The International Chamber of Shipping (ICS), along with industry and social partners, is encouraging ships in ports around the world to sound their horns at 12 noon local time on 25 June, in honor of the International Maritime Organizations' 'Day of the Seafarer', to remind the world of the urgent need to vaccinate all seafarers.

Last year's campaign brought the crew change crisis to the world's attention. Almost a year on, the number of crew impacted by the governments' border restrictions have halved to 200,000. However, deadly second waves in India and other countries are seeing a return to travel bans for seafarers. Access to vaccines is also a pressing issue; over half of the international seafarer workforce is from developing nations that have limited vaccine supplies.

Guy Platten, Secretary General of the International Chamber of shipping, said: '*We know just how important last year's Heroes at Sea Shoutout was in raising the attention about the crew change crisis. Unfortunately, with the new variants and the dreadful outbreaks in India, seafarers are once again being forgotten. The Ever Given incident showed just how important shipping and our seafarers are to global supply chains. Therefore, we are once again calling for ships at port across the globe to sound their horns at 12 noon local time on 25 June to mark the Day of the Seafarer and ensure that seafarers' voices are heard*.' ICS, along with industry and social partners are calling on ships to sound their horns when in port at 12 noon local time on the 25 June, as long as it is safe to do so, to draw attention to the plight of seafarers, and ensure that they are prioritized for the vaccine. If this unique population is left unvaccinated, it risks further enflaming 'crew change crisis'.

Some countries, including Singapore, the United States, and the Netherlands, have begun seafarer inoculation programmes utilizing their ports as vaccine hubs. Vitally they are vaccinating both native and non-native seafarers that enter their ports. But many countries are shutting off their borders to travelers due to fears of emerging variants and the threat they will pose to domestic vaccination efforts.

ICS urges ships to take part in the **#ShoutOutForSeafarers** campaign on 25 June to remind the world of the essential need to allow crew changes in their country and prioritize seafarers of all nations for vaccinations in their ports. ICS is also encouraging crews to share their experiences on the day via social media using the **#ShoutOutForSeafarers** and **#FairFuture4Seafarers** hashtags.

Watch the message of Esben Poulsson, Chairman International Chamber of Shipping: https://vimeo.com/549298838

REFLECTIONS OF SHIPPING

A human-centred approach to ship & system design

Alert!

Mitigating risk to the Human Element

Identify need
Owner / Operator

- Build / buy / charter
- Class
- Flag
- Ship Management
- Crew Management
- Crew nationality

Define concept
Owner / Operator

- Operational role
- Operating pattern
- Trading routes
- Political & economic constraints
- Cost
- Fuel economy

Define requirements
Operator / End Users

Class notation:
- Type
- Special features
- Service restrictions

Specify functions
Integrator

- Specialist cargo
- Electrical power
- Machinery
- Main structure
- Navigation, communication & control
- Propulsion & steering
- Safety
- Stability & watertight integrity

Design
Shipyard, Suppliers
Trainers

- Hull
- Accommodation
- Machinery
- Systems

Build
Shipyard, Suppliers
Trainers

- Habitability
- Maintainability
- Workability
- Controllability
- Manoeuvrability
- Survivability

Environment:
- Weather
- Sea conditions
- Temperature
- Humidity
- Light
- Noise
- Vibration
- Ship movement

Context of use:
- Business
- Task
- User
- Software
- Hardware
- Organisational environment
- Physical environment

- System ergonomic requirements
- Human v technology

Liveware:
- The human element
- Personal capabilities & limitations

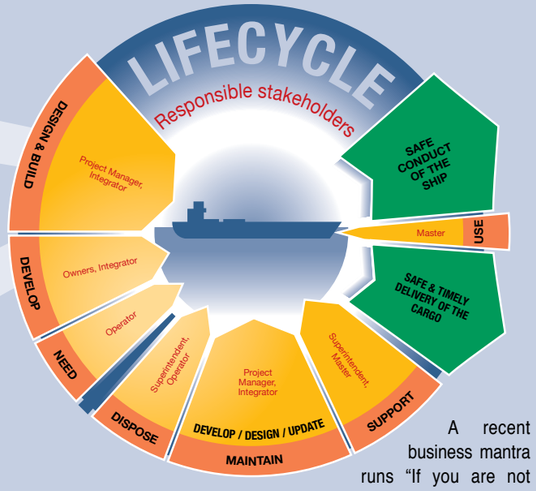
Human factors:
- Job, person, organisation & management

Human-human interactions:
- Management
- Supervision
- Crew interactions
- Communications
- Training

Hardware:
Workstations
Displays
Controls
Accommodation
Galleys
Recreational spaces

Software:
Organisation
Policies
Procedures
Manuals
Checklists
Charts
Drawings
Publications
Information Technology

- Automation
- Manning levels
- Crew capabilities
- Training specification



An A to Z of Ergonomics
(Alert! issue 3)

Exploring Human Factors
(Alert! issue 2)

Mind, body & spirit
The 7 needs of the mariner
(Alert! issue 4)

The development and maintenance of the human component of ship systems
(Alert! issue 6)

A recent business mantra runs "If you are not managing risk, you are managing the wrong thing". System engineering is the process by which systems are decomposed and specified to a point where they can be acquired with acceptable risk.

Human-centred design is the means by which the risks arising from a mismatch between seafarers, their ship, its systems and operational procedures are mitigated. Being human-centred entails early and continued focus on the requirements of people who are going to use a system throughout its life.

User requirements are derived from human factors data considered in the context of the particular ship, its manning, outfitting and operation. A large amount of human factors data is already captured in Regulation, Standards and organisational knowledge.

This centrespread includes a set of checklists for the type and location of human factors data required during the planning and specification of a new ship or ship system. For novel situations, new equipment or unusual manning, new data may be needed. Who collects this data depends on what it is about and how it can be most beneficial. For example, manufacturers are best placed to collect information on the use of equipment, owners for workspaces, and operating companies for training and manning.

In the next issue:
Shipbuilding

Photo: Harrit & Sørensen a/s

Reproduced courtesy of Alert! - the international maritime human element project.

West Africa
Increased Piracy & Armed Robbery Threat

To raise world attention on the threats to shipping in the Gulf of Guinea and take the first steps to improve security, a task force of stakeholders from across the shipping industry launched the Gulf of Guinea Declaration on the Suppression of Piracy.

Nearly 100 organizations signed the declaration before it was publicly announced, including flag state administrations, ship-owners, charterers and shipping associations.

The new declaration says the situation is unacceptable both for the human toll and the economic cost to business in the region and the negative effect on regional economic growth.

They believe the attacks are preventable but that the current model of depending on locally sources commercial protection services will not resolve the problem. They note that the scope and sophistication of the attacks on shipping have continued to grow, increasing in violence and spreading to an area more than 200 nautical miles from the coast.

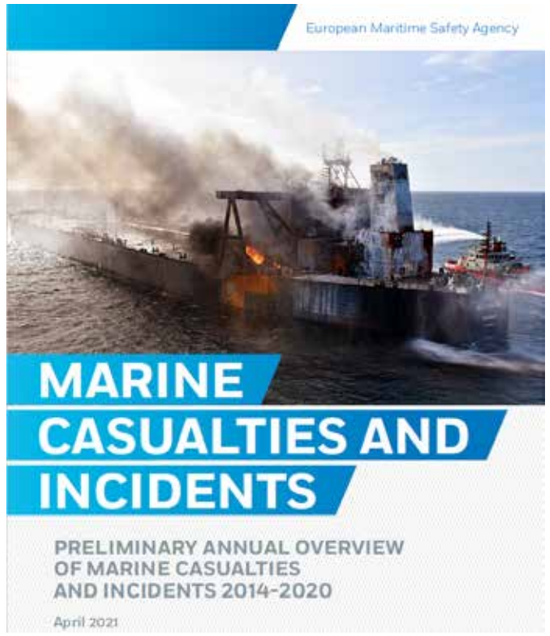
The Declaration does not aspire to provide the long-term solution to the piracy problem but to help make seafarers safe today. The document expressed the belief that piracy and attempts at kidnapping are preventable through active anti-piracy operations and that by the end of 2023 the number of attacks by pirates can be reduced by at least 80%.

The MDAT-GoG has released a General Alert, based on an increased threat of piracy in the immediate future in the area defined by the following points:

05°00.00 N - 002°30.00 E
05°00.00 N - 005°00.00 E
02°30.00 N - 005°00.00 E
02°30.00 N - 002°30.00 E

They have also added that they strongly recommend that the seafaring community and ships transiting this area should increase their vigilance and retain enhanced local surveillance and apply BMP WA procedures.

EMSA Preliminary Annual Overview of Marine Casualties and Incidents | April 2021



Based on casualties reported by the national accident investigation bodies of the EU, the total number of casualties in 2020 has reduced 18% in comparison with 2019.
Such positive result should be considered within the context of the on-going Coronavirus (COVID-19) pandemic, which has been impacting the intensity of global shipping.

The most positive results were found in the number of lives lost (reduction of 48% in 2020 compared to the year 2019) and the number of injured persons (drop of 36%). Between 2019 and 2020, figures indicate a reduction of occurrences for almost all ship types, with a greater reduction for cargo ships (15%) and passenger ships (44%).

However, the number of fishing vessels involved in marine accidents remained at a similar level in 2020, as fishing activity was likely much less impacted by the COVID-19 pandemic.

Navigational events (collisions, groundings and contacts) represented the biggest part of casualties with a ship (43%). A reduction of 15% of casualties with a ship was noted.

Accident to persons represented 37% of all marine casualties. In comparison with 2019, a drop of 28% was noted. In 2020, 7 vessels were lost, 5 of them being fishing vessels. The number of pollutions resulting from marine casualties continued decreasing in 2020. Since 2014, an overall reduction of 68% was noted.

Accident Investigation bodies of the European Union have launched 923 investigations during the past 6 years, among them 757 were concluded. 74 investigations were initiated in 2020. The overall number of investigations led to 2011 safety recommendations and actions taken, targeting mainly Ship Related Procedures / Operations and Human Factors /Training, skills and experience.

Overview of key figures for 2020

This publication is based on EMSA's activities in the field of accident investigation. EMSA's role begins with support to the accident investigation bodies of the Member States, but it also goes much further. At the heart of EMSA's support role is EMCIP, the database of accidents that is populated by the accident investigation bodies since 2011.

ABOUT THE EUROPEAN MARITIME SAFETY AGENCY

The European Maritime Safety Agency is one of the European Union's decentralised agencies. Based in Lisbon, the Agency's mission is to ensure a high level of maritime safety, maritime security, prevention of and response to pollution from ships, as well as response to marine pollution from oil and gas installations.The overall purpose is to promote a safe, clean and economically viable maritime sector in the EU.

Get in touch for more information
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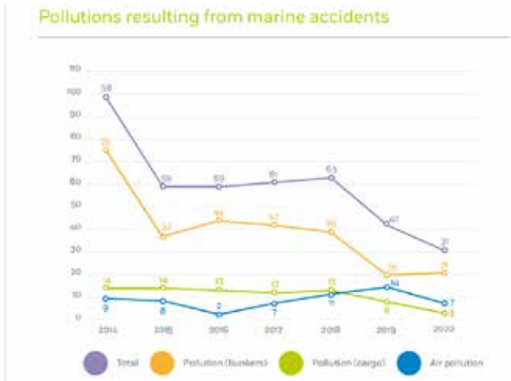
Twitter EMSA_Lisbon

Severity of marine casualties and incidents

Ship types involved

Consequences to persons

Grounding of M/V Rinella M near Barbarinac Island (Croatia) on 06/02/2020. Photo credit: HR/AIN



Common Information Sharing Environment (CISE)

The Common Information Sharing Environment (CISE) is an EU initiative which aims to make European and EU/EEA Member States surveillance systems interoperable to give all concerned authorities from different sectors access to the classified and unclassified information they need to conduct missions at sea.

Enhancing information exchange between maritime surveillance authorities is one of the key strategic objectives of the Union. Member State authorities carry out many different operational surveillance tasks, in various fields such as maritime safety, security and prevention of pollution by ships, fisheries control, marine pollution preparedness and response, marine environment, customs, border control, general law enforcement and defense.

CISE is an initiative uniquely designed to meet these needs and has the following main characteristics:

- CISE is a **voluntary** collaborative process in the EU seeking to further enhance and promote relevant information exchange between authorities involved in maritime surveillance;
- CISE is promoting a **decentralized** framework for these exchanges;
- CISE should bring **added value and complementarity** to existing maritime data systems, services and sharing processes, while avoiding duplication. It should be seen as part of a more comprehensive information and exchange framework across the EU and its implementation should work towards coherence with this framework;
- CISE **should neither have an impact on the administrative structures of the Member States, nor on the existing EU legislation**.

The development of CISE was proposed in 2009 and has been refined and developed since then. Following interoperability projects such as BlueMassMed, MARSUNO and CoopP, the project "European testbed for the maritime Common Information Sharing Environment in the 2020 perspective" (EU-

CISE2020) was launched in 2014. EUCISE2020 developed a pre-operational network for information exchanged to pave the way for a fully operational CISE. The project was concluded in March 2019.

As from April 2019, EMSA is engaged in the setting up and enabling, in close coordination with the Member States, the Transitional Phase, ensuring a coherent evolution of the CISE network and to achieve an operational CISE.

WHAT IS CISE?

The Common Information Sharing Environment (CISE) is an EU initiative which aims to:

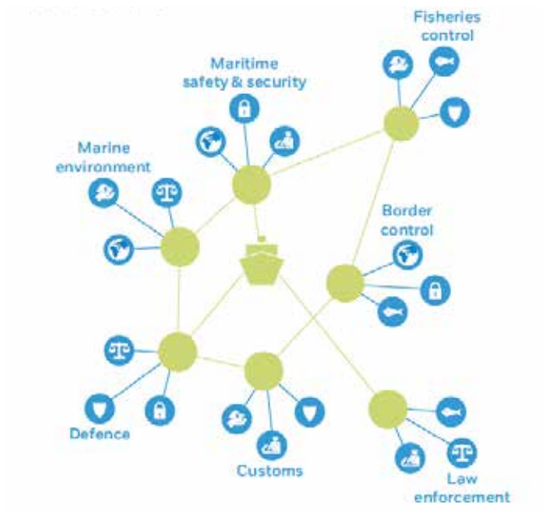
- make existing European and EU/EEA member state surveillance systems interoperable
- enhance classified/unclassified information sharing among public authorities from different sectors through a voluntary and decentralized network
- foster cooperation and create synergies among the stakeholders involved, including civil-military cooperation
- avoid duplication of data acquisition, and increase the complementarity of the information and services delivered.

HOW WILL CISE BE USED?

CISE will enable maritime surveillance information – collected by one maritime authority and considered necessary for the operational activities of others - to be shared and be subject to multiuse. The timely and

CISE Stakeholder group

quick access to relevant data provides national authorities and EU agencies with the relevant information to conduct maritime operations at strategic, operational and tactical level. In this context, maritime surveillance covers the following seven domains:



TRANSITIONAL PHASE

The development of CISE was first proposed in 2009 and has since been refined and developed with the overall legal and policy context laid out in the EU Maritime Security Strategy (EUMSS).
In April 2019, EMSA was entrusted by the European Commission (DG MARE) with the

implementation of the Transitional Phase, in close coordination with the member states. The idea is to ensure a coherent evolution of the CISE network and to achieve an operational CISE. The activities are defined and coordinated by the CISE Stakeholder Group, whose members are designated by the EU/EEA member states. Other members of the group include the Commission, EDA, EEAS, EFCA, EMSA, Frontex and SatCen.

MAIN OBJECTIVES

The main objectives of the transitional phase of CISE include:

- transforming an EU research project into an EU-wide operational network for exchanging maritime surveillance information

- widening participation to all EU/EEA member states and interested EU agencies

- evaluating, and if appropriate streamlining, maintaining and consolidating the existing CISE network and nodes

- working towards the complementarity of information sharing and interoperability with existing EU maritimes urveillance systems

- preparing the baseline for the CISE operational phase.

CISE Stakeholder group (CSG)

CISE Working Group on the Pre-Operational Services kicks off its activities

Work towards the setup of the first pre-operational services in CISE has reached the next level. After the stakeholders had identified and analysed possible services during a series of brainstorming sessions and workshop end of 2020, the Pre-Operational Services Working Group (WG) was formally established to further intensify the work. The WG met on 7 May for the first time to discuss the necessary steps to design and implement the three types of services to be exchanged in the CISE network: Vessels of interests list, incidents report and risk profile.

Following the discussions among the CISE stakeholders, the three selected services were considered as the data exchange services with the most added value for the maritime surveillance. The objective now is to set up a fully operational version and to start the information exchange among the surveillance centres before the end of the CISE Transitional Phase in 2023.

The Pre-Operational Services WG will work on different aspects necessary to ensure the proper implementation of the services: defining the extent of the services, namely, how the flow of the information for each service is organized and the pieces of information that should

be shared, harmonizing the services with the Standard Operational Procedures (SOP) of the maritime operation centres (MOC) and finalizing the strategy for development of the adaptors.

To this end, a funding mechanism will be put in place by DG MARE (European Commission) to support the upgrading of the adaptors and to enable the testing and then the use of the three selected services.

The first results of the WG's efforts will be submitted for the CISE Stakeholder Group members' endorsement during the next meeting on 2 and 3 June 2021.

EMSA Remotely Piloted Aircraft Systems (RPAS) Services: Where are we flying?

The EMSA RPAS services have been developed to assist in maritime surveillance operations to support authorities involved in Coast Guard functions undertaken by Member States.

Used as a complementary tool in the overall surveillance chain which includes satellite imagery, vessel positioning information and surveillance by manned maritime patrol aircraft and vessels, the RPAS service will increase the maritime situational awareness with additional sources of data.

Remotely Piloted Aircraft Systems (RPAS) can be used as aerial platforms for sensors such as optical cameras in the visible and infrared (IR) spectral range for night and day maritime surveillance, IR sensors for oil slick detection and analysis, radar for maritime surveillance, and oil spill detection, and gas sensors ("sniffers") to measure the amount of SOx in a plume emitted by a ship to be able to calculate the percentage of sulphur used in the fuel burned by the ship.

Additionally all RPAS are equipped with AIS sensors to have a complete picture of vessel movements and distress sensors to be able to react in emergencies.

Who can benefit and how?

The RPAS services are offered by EMSA free of charge to EU Member States, Candidate Countries and EFTA Member States. The areas of operation can be all sea areas surrounding the European Union with an EU or EFTA country as a starting point of the service.

The request for RPAS services can be made by Maritime Authorities of the European Union (EU) Member States, Candidate Countries and EFTA Member States, or other Member State Authorities through the European Agencies FRONTEX and EFCA.

IMO Pollution Prevention and Response

The IMO Sub-Committee on Pollution Prevention and Response (PPR) held its 8th session from March 22 to 26, 2021. Here is an overview of the more significant issues progressed at this session.

HEAVY FUEL OIL IN ARCTIC WATERS

Measures to Reduce Risks of HFO in Arctic Waters

The Sub-Committee considered developing guidelines which will be linked with the draft amendments to MARPOL Annex I which prohibit the use and carriage for use of HFO in Arctic waters. The Guidelines will be taken into account by Administrations of Arctic coastal states when considering issuance of waivers from the ban on use/carriage for use of HFO in Arctic waters, as permitted under the new MARPOL Annex I / Regulation 43A. The Guidelines contain a set of practical recommendations for operators planning voyages in the Arctic using HFO and for Administrations of the Arctic coastal States regarding what mitigation measures should be taken to minimize the risk of an HFO spill.

The draft Guidelines also provide recommendations to ship operators as well as Maritime Administrations on measures to reduce navigational risks for avoiding oil spills and to improve crew preparedness during navigation and bunkering operations for avoiding and responding to spills.

REDUCTION OF IMPACT ON THE ARCTIC OF BLACK CARBON EMISSIONS FROM INTERNATIONAL SHIPPING

Development of a Standardized Sampling, Conditioning and Measurement Protocol

The Sub-Committee considered the development of a standardized sampling, conditioning and measurement protocol for Black Carbon (BC) emissions from Marine Engines, for determining compliance with a control policy and also assessing the effectiveness of that control policy. Of the three previously identified BC measurement methods (Filter Smoke Number (FSN), Photo Acoustic Spectroscopy (PAS) and Laser Induced Incandescence (LII)), FSN was supported as the most consistent BC measurement method, although it may not be suitable for continuous monitoring equipment. Individual research projects regarding BC emissions are ongoing and could support development of a standardized BC measurement protocol in the future. The conditioning aspect of the protocol aims to reduce differences arising in BC instrument results, due to different trapping efficiencies in the amount of organics in the particle phase.

Research on Fuel Oil Quality and Black Carbon Emissions

The Sub-Committee also discussed the results of an inspection campaign for assessing the impact of fuel oil quality on BC emissions. Among the variables investigated, the findings indicated that aromatic content and hydrogen-to-carbon (H/C) ratio of the fuel were the most significant factors in predicting BC emissions.

While the study submitted to this Sub-Committee session utilized a single cylinder 4-stroke medium-speed research engine during testing of fuel variables, 2-stroke engines are more widely used in international shipping. Additionally, more research is needed to better understand BC emissions from large, low-speed marine diesel engines at various engine load conditions, to ensure that any BC control policy would be effective.

BALLAST WATER MANAGEMENT

Verification of Ballast Water Compliance Monitoring Devices

As an important issue identified during the Experience-Building Phase of the implementation of the BWM Convention, the Sub-Committee opened discussion regarding standards for verifying the effectiveness and accuracy of ballast water compliance monitoring devices (CMDs). CMDs may be used during BWMS commissioning testing, compliance testing by Port State Control authorities, data-gathering during the Experience-Building Phase, or self-monitoring by shipowners. These devices are typically used for indicative analysis, which is relatively quick but less precise than detailed analysis. Despite this varied use of CMDs, and the various water conditions in which they may be used, there is no widely accepted protocol for validating such devices. A proposed protocol includes verification pa-

rameters of accuracy, precision and detection limits of CMDs, while also varying the salinity and the size of microbes of the laboratory-prepared challenge water.

There was disagreement that verification testing of CMDs should include onboard testing. Laboratory testing is preferable because microorganism concentrations in the challenge water could be controlled and varied in a laboratory environment, while testing of such a device could not simulate the challenging and varying conditions seen in ballast water treatment onboard ships.

REVIEW OF THE 2011 BIOFOULING GUIDELINES

Progress on Revision of the Biofouling Guidelines

The Sub-Committee considered reviewing the 2011 Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Resolution MEPC.207(62)). In certain regions, the primary mode of transport for invasive species is biofouling, and therefore consideration is now being given to improve the consistency and increase the application of these Guidelines. The majority of Correspondence Group participants were in favor of restructuring the Guidelines to follow the logical sequence of ship management (from start to finish of service life).

Quantitative definitions of microfouling and macrofouling could be made in terms of thickness and substances / species and simple and practical definitions could be relevant in providing consistent approaches to biofouling management. The revised Guidelines should include acceptable hull inspection procedures for measurements of biofouling.

LIFETIME PERFORMANCE OF SEWAGE TREATMENT PLANTS

Draft Amendments to MARPOL Annex IV

The Sub-Committee considered the progressive revisions to MARPOL Annex IV with the objective of enhancing and monitoring the performance of sewage treatment plants (STPs). Amendments to MARPOL Annex IV which have been drafted by the Correspondence include both STP commissioning requirements as well as periodic performance evaluations via sampling and testing. New regulations would also require ships equipped with STPs to maintain onboard a Sewage Management Plan and a sewage record-keeping book for recording all discharges, incinerations and sampling related to the STP. Sampling points for the STP effluent would also be required to be fitted to facilitate performance monitoring. A new Appendix II to MARPOL Annex IV would provide testing standards for STP effluent, and a new Appendix III would provide a format of the Sewage Record Book.

Regarding the scope of application of these draft amendments, measures which are developed should not require replacement of existing STPs and should not increase the administrative burden of ships' crews. The number of persons onboard a ship is directly related to sewage production and scale of potential untreated discharge and therefore this should be taken into account with any changes to MARPOL Annex IV.

Development of Consequential Guidance related to MARPOL Annex IV Draft Amendments

In support of the draft amendments to MARPOL Annex IV discussed above, the Sub-Committee has recognized that certain consequential guidance will be required in order to facilitate implementation of the proposed new regulations on sewage treatment plant (STP) performance monitoring. The Correspondence Group on this subject identified several areas where consequential guidance would be needed. These included:

1) Guidance for the development of Sewage Management Plan;

2) Guidance for the Commissioning Testing for Sewage Treatment Plants;

3) Guidance for the Performance Testing for Sewage Treatment Plants;

4) Guidance for the Indicative Monitoring Performance;

5) Guidance for Installation Requirements (for related equipment); and

6) Reviewing the current guidelines with sections addressing maintenance, familiarization and survey and certificates.

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TECHNICAL AND REGULATORY NEWS No. 14/2020 – Statutory

IMO AND EU REQUIREMENTS FROM MARCH 2020 TO DECEMBER 2021

Relevant for design offices, shipyards, suppliers, owners/managers and flag states.

JULY 2020

This statutory news summarizes the most important IMO and EU requirements entering into force after 1 March 2020 to 31 December 2021.

CONV./ CODE	REGULATION	ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
MARPOL	Annex VI, Reg.14	2020-03-01	All cargo vessels, HSC/ DSC and passenger vessels. Not applicable to ships with scrubbers.	Fuel oil used or carried for use on board a ship shall not exceed a sulphur limit of 0,50% m/m. The supplement to the IAPP certificate is updated accordingly.	MEPC.305(73)
MARPOL	Annex VI, Ch. 4/ Reg. 22A (new reg.) & Appendix IX (new)	2020-03-31	All cargo vessels, HSC/ DSC and passenger vessels, GT >= 5000.	Final date of the first fuel consumption report to be submitted for verification. Data as specified in Appendix IX.	MEPC.278(70)
MARPOL	Annex VI, Ch.2/ Reg.6 & Appendix X (new)	2020-05-31	All cargo vessels, HSC/ DSC and passenger vessels, GT >= 5000.	Final date of the first issuance of the Statement of Compliance after the annual report is verified and submitted to the Administration. Validity date to be 31 May the next year.	MEPC.278(70)
MARPOL	Annex I, II, IV and V	2020-10-01	All cargo vessels, HSC/ DSC and passenger vessels.	Electronic Record Books (eRB) as an alternative method to hard copy record books approved by the Administration in accordance with Guidelines, Res. MEPC.312(74) is accepted. This applies to the MARPOL record books.	MEPC.314(74)/ MEPC.316(74)
NOx Technical Code 2008	Reg. 1.3	2020-10-01	All cargo vessels, HSC/ DSC and passenger vessels, GT >= 400.	Electronic Record Books (eRB) as an alternative method to hard copy record books approved by the Administration in accordance with Guidelines, Res. MEPC.312(74) is accepted. This applies to the Record Book of Engine Parameters (NOx Technical Code).	MEPC.317(74)
BWM	A-1 (new para.8) & D-3	2020-10-28 Installations on or after.	All cargo vessels and passenger vessels. Also applicable to floating platforms, FSUs and FPSOs. If with ballast water capacity and subject to Article 3 of the BWM Convention.	Ballast water management systems installed on or after 2020-10-28 shall be in compliance with the BWMS Code (Res. MEPC.300(72)). An UI of Appendix I clarifies that the 'installed' means the contractual date of delivery of the ballast water management system. In absence of this date, actual date of delivery may be used.	MEPC.296(72)

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CONV./ CODE	REGULATION	ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
EU Ship Recycling Regulation	Article 5.2	2020-12-31 Implementation date.	All cargo vessels, HSC/ DSC and passenger vessels, GT >= 500. If non-EU/EEA flag.	Non-EU-flagged/ third-country flagged vessels calling at a port or anchorage of an EU member state shall have on board a Statement of Compliance on Inventory of Hazardous Materials (IHM) by 31 December 2020.	EU (1257/2013)
EU Ship Recycling Regulation	Article 5.2	2020-12-31 Implementation date.	All cargo vessels, HSC/ DSC and passenger vessels, GT >= 500. If EU/ EEA flag.	Vessels in operation and flying the flag of an EU/ EEA member state shall have on board Certificate on Inventory of Hazardous Materials (IHM) by 31 December 2020.	EU (1257/2013)
IBC Code		2021-01-01	Chemical tankers, keel-laid >= 1986-07-01. Tankers holding NLS Certificate or International Certificate of Fitness.	The carriage requirements for all IBC products will change, consequently vessels holding a certificate of fitness or a NLS certificate will need to be provided with a new certificate and corresponding product list based on the new carriage requirements. The new certificate will be issued prior to 1 January 2021 and will supersede the existing certificates on this date.	MEPC.318(74)
BCH Code		2021-01-01	Chemical tankers, keel-laid <= 1986-06-30. Ships holding Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk.	The carriage requirements for all IBC products will change, consequently vessels holding a certificate of fitness or a NLS certificate will need to be provided with a new certificate and corresponding product list based on the new carriage requirements. The new certificate will be issued prior to 1 January 2021 and will supersede the existing certificates on this date.	MEPC.319(74)
MARPOL	Annex II, Reg. 13 (new para. 7.1.4 & 9)	2021-01-01	All chemical tankers.	A prewash will be mandatory in North Europe ports when unloading certain high viscosity or low melting point persistent floating products. The affected products, mainly vegetable oils and paraffin was, will be identified in Ch. 17 og the revised IBC Code due to enter into force of the same date.	MEPC.315(74)
MARPOL	28.6 (new para.)	2021-01-01 Final date for complying.	Oil tankers, keel-laid <= 2015-12-31.	All ships shall be fitted with an approved stability instrument, capable of verifying compliance with intact and damage stability requirements. Existing instruments needs no replacement if satisfactory to the Administration. There are some conditions for exemptions. Paragraph 5.7.5 and 5.7.6 of the IOPP Certificate and Supplements, Form B are inserted accordingly.	MEPC.248(66)
GC Code	Ch. II/2.2.4 & .5 (new sub-para.s)	2021-01-01 Final date for complying.	Gas carriers, keel-laid <= 1986-06-30.	All ships shall be fitted with an approved stability instrument, capable of verifying compliance with intact and damage stability requirements. Existing instruments needs no replacement if satisfactory to the Administration. There are some conditions for exemptions. Paragraph 6 of Certificate of Fitness is updated accordingly.	MSC.377(93)
IBC Code	2.2.6 & 2.2.7 (new sub-para.s.)	2021-01-01 Final date for complying.	Chemical tankers, keel-laid >= 1986-07-01, keel-laid <= 2015-12-31.	All ships shall be fitted with an approved stability instrument, capable of verifying compliance with intact and damage stability requirements. Existing instruments needs no replacement if satisfactory to the Administration. There are some conditions for exemptions. Paragraph 6 of Certificate of Fitness is updated accordingly.	MEPC.250(66)/ MEPC.369(93)

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CONV./ CODE	REGULATION	ENTRY INTO FORCE	APPLICABLE TO	SUBJECT	IMO RES.
BCH Code	Ch.II, 2.2.1 (replaced)	2021-01-01 Final date for complying.	Chemical tankers, keel-laid <= 1986-06-30.	All ships shall be fitted with an approved stability instrument, capable of verifying compliance with intact and damage stability requirements. Existing instruments needs no replacement if satisfactory to the Administration. There are some conditions for exemptions. Paragraph 6 of Certificate of Fitness is updated accordingly.	MEPC.249(66)/ MSC.376(93)
2011 ESP Code	June 2019	2021-01-01	All bulk carriers and oil tankers.	The complete text of the Code is replaced to align the Code with the survey an certification requirements of the IACS UR Z Series.	MSC.461(101)
IMSBC Code	June 2019	2021-01-01 Implementation date.	All cargo vessels, GT >= 500.	Amendments providing updated information on the shipment of certain types of solid bulk cargoes. Consequential amendments to MSC.1/ Circ.1395/Rev.3 on 'Lists of solid bulk cargoes for which a fixed gas fire-extinguishing system is effective' where approved accordingly.	MSC.462(101)
ISM Code		2021-01-01 First annual verification of DOC after	All cargo vessels, HSC/ DSC and passenger vessels.	The new Res. 428(98) encourages Administrations to ensure that cyber risks are appropriately addressed in safety management systems.	MSC.428(98)
MARPOL	Annex IV (sewage), Reg. 1, 11 & 13	2021-06-01 (expected) Implementation date.	Passenger vessels, contract date <= 2019-05-30. This regulation applies if building contract < 2019-06-01, or in the absence of building contract, if keel-laid < 2019-06-01. Delivery date is not relevant in this respect.	Annex IV has been amended introducing Special Area (the Baltic Sea) regulating the discharge of sewage from passenger ships. Discharge is prohibited in this area except for ships that have an operative approved sewage treatment plant (STP), type approved to the new standard, Res. MEPC.227(64), para. 4.2.	MEPC.274(69)
IGC Code	Ch.2, 2.2.6 (in revised code)	2021-07-01 Final date for complying.	Gas carriers, keel-laid >= 1986-01-01, keel-laid <= 2016-06-30.	All ships shall be fitted with an approved stability instrument, capable of verifying compliance with intact and damage stability requirements. Existing instruments needs no replacement if satisfactory to the Administration. There are some conditions for exemptions. Paragraph 6 of Certificate of Fitness is updated accordingly.	MSC.370(93)

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Incidents

Serious injury to a crew member during tank cleaning operations

The accident

The vessel departed from the port of Algeciras, Spain, on 13 February 2020, in ballast condition, proceeding to Tarragona, Spain, to load her cargo.

On arrival, the vessel anchored within the anchorage area of Tarragona, to carry out planned cargo tank cleaning operations prior to berthing and loading operations.

The planned tank cleaning operations included cold sea water washing of each cargo tank using the fixed machines for two hours, followed by a hot sea water wash, for a further 1.5 hours.

Thereafter, the plan was to steam each pair of tanks, strip the contents of the tanks, ventilate them and mop them dry.

At 13.00, on 16 February, COT cleaning operations commenced with the planned cold sea water wash. The operation was completed at about 21.00, following which, preparations were made for the hot sea water wash. At around midnight, the hot (75 degrees celsius) sea water wash was initiated at the forward tanks.

During both cold and hot sea water washes, the tank cleaning pump was set to deliver a pressure of 8.0 bar in the tank cleaning pipeline.

At 07.40, on 17 February, the sea water temperature was observed to be low. At the time, washing was undergoing in No. 4P COT. Operations were suspended.

At 10.00, the hot washing of No. 4P COT was resumed, following which the Boatswain went to rest and, at around 11.00, the Pump-man reported on deck.

At around 11.28, the Chief Officer instructed the Pump-man to open the tank cleaning machine valves of No. 5S COT. At that time, AB 1 was near the valves of the cargo tank cleaning line to No. 4P COT whilst the OS was beside the tank dome of No. 4P COT. The Pump-man was at the starboard cargo manifold.

The Chief Officer was busy in the cargo control room (CCR), adjusting the No. 4P cargo pump rpm to transfer the wash water from No. 4P COT to No. 6S (slop tank).

When the tank cleaning machine valves of No. 5S COT were opened, the Chief Officer observed the pressure in the tank cleaning line to drop from 8.0 bar to 6.0 bar. He then instructed AB 1 to shut the portable tank cleaning machine valves of No. 4P COT.

At about 11.30, whilst AB 1 was shutting the valve, the valve block burst open. Consequently, the pressurized, hot wash water sprayed over AB 1's left arm. As he tried to turn away to protect his face, the hot water continued to spray onto the left side of his body.

Post-accident actions

The OS and the Pump man heard the sound of water spraying as well as AB 1's calls for help. The OS immediately reported the matter to the Chief Officer via the portable radio.

Immediately, the Chief Officer ordered the Pump-man to stop the tank cleaning operation.

He then informed the Master of the accident and proceeded down towards the main deck.

In the meantime, the OS assisted AB 1 towards the accommodation, removed AB 1's PPE, and sprayed cold fresh water over him.
At around 11.35, after the Chief Officer arrived and assisted AB 1 to the hospital, where the 2nd Officer administered first aid. At around 11.40, the Chief Officer instructed the Pump-man to remove the damaged valve, blank off that section of the COT cleaning line, and resume the cleaning operation.

At around 14.04, after evaluating the situation, the Master contacted International SOS for medical advice, following which, he notified the Company of the accident.

At around 16.42, the Master contacted the vessel's local agents to arrange for a boat to pick up the injured AB and transfer him to a hospital ashore for further medical treatment.

Injuries suffered by AB 1

At the hospital ashore, it was observed that the AB 1 had suffered second and third degree burns to his left leg, left part of the abdomen and his left hand.

The extent of burns was stated to be between 18% and 20%. Following treatment, he was discharged from the hospital on 20 April 2020. Reportedly, he was able to be fit to resume duty by the beginning of October 2020.

Job safety analysis

In accordance with the Company's procedures, a Job Safety Analysis (JSA) was reportedly performed on 16 February 2020, for the COT cleaning operation.

This JSA included a risk assessment, which addressed the hazards associated with the task.

The listed hazards included, amongst others, injury to crew members while working on deck, damage of equipment due to improper operation, in correct operation / unfamiliarity with the operation, and pressurized lines / hoses.

Reportedly, the tank cleaning plan and job safety analysis were discussed among all deck crew members and the engine-room Officers.

Cause of injuries suffered

The burn injuries suffered by AB 1 were caused by the spray of hot seawater (75 degrees celsius) from the COT cleaning line, after the valve block burst open whilst it was being closed.

Failure of the valve block

The three mild steel bolts which were used to secure the valve block had failed. The ruptured bolts were not made available to the safety investigation for further inspections / tests, as they had reportedly been disposed of, following the accident.

However, a closer look at photographic information indicated heavy corrosion of the bolts, which would have compromised their strength. The safety investigation, concluded that when the stainless steel-ball valve was turned to shut off the flow of the hot wash water, the pressurized stream of water was directed onto the part of the valve block where the strength of the bolts was already compromised by their corrosion.

This pressurized stream of water was enough to cause the corroded bolts to rupture, and the valve block to be pushed open, which resulted in hot water spraying over AB 1.

A pressure surge towards the valve, or, what is commonly known as a water hammer effect, may have developed when the valve was shut off. This may have caused the valve block to rupture at its weakest points i.e., the corroded mild steel bolts.

CONCLUSIONS – LESSONS LEARNED

1. AB 1 suffered second and third-degree burns following the failure of the block of a branch valve, which burst open whilst the injured AB was shutting it, causing hot sea water at 75 degrees celsius to spray onto him.

2. Neither was the valve block nor the valve damaged due to this occurrence.

3. The mild steel bolts holding the valve block and the valve bridge were heavily corroded, possibly due to a galvanic reaction with a dissimilar metal.

4. The corroded bolts may have ruptured after a pressurized stream of hot water was directed onto the part of the block in the vicinity of these bolts, causing the valve block to burst open.

5. It was not excluded that a water hammer effect may have developed when the valve was shut, resulting in the rupture of the corroded mild steel bolts of the valve block.

6. It is highly likely that the material of the bolts, as well as their corrosion, was not noticed by the crew members due to the paint coating covering them.

7. The PPE worn by the injured AB did not protect him against the hot water spray.

CORRECTIVE ACTIONS

1. All bolts on fleet vessels' cargo tank cleaning line were replaced, as necessary, with stainless steel bolts.

2. All vessels under the Company's management were instructed to check the fittings of

their respective cargo tank cleaning lines.

3. All serving masters were instructed to record the pre-operation checks of the cargo tank cleaning system in the deck logbook.

4. The planned maintenance system of the Company's vessels was revised to include the inspection of the tank cleaning line and bolts during the Company's recommended annual pressure test of the tank cleaning line.

Man overboard and loss of life of a crew member while rigging a combination pilot ladder

The accident

On 05 February 2020 the vessel was navigating at seven knots in the East lane of the Çanakkale TSS. She was scheduled to pick up the Çanakkale pilot at 02.30 for her transit through the Çanakkale Strait.

The Master was on the bridge, 2nd Officer was OOW and an AB was the helmsman. Once the anchor station was over, the Master instructed the Chief Officer to prepare the pilot ladder.

The Chief Officer along with the Boatswain, one AB, and two OS, set out to rig the pilot ladder on the port side (which was the leeward side of the vessel).

As the vessel exceeded the 9.0 m height criterion, the pilot ladder had to be rigged in conjunction with the accommodation ladder / gangway, located abreast of cargo hold No. 4. Since it was dark, the overside floodlight was switched on.

The pilot ladder was lowered over the ship's side and the accommodation ladder was swung out and rigged. The Boatswain went down the accommodation ladder to the lower platform.

After completing the lashing of the pilot ladder to the ship's hull, he called the OS on deck to fetch a piece of rope to secure the gang-

way to the vertical pilot ladder.
The bosun then climbed up to the main deck, collected the rope from the OS and descended the accommodation ladder to fasten the two ladders together.

Soon after, the OS heard a scream from below. When he looked down, he saw the bosun in the water and called out man overboard.

The Chief Officer presently involved in the rigging, instantly reacted and threw the self-igniting light lifebuoy, and reported to the bridge that the Boatswain had fallen into the sea. A second lifebuoy with light was released by one of the crew members.

The accident occurred at 01.45 in position 39° 59.92' N 026° 05.33' E, about two nautical miles West of the Çanakkale Strait's pilot boarding area.

Post-accident action

Upon hearing that the Boatswain had fallen overboard, the OOW rushed to the port bridge wing and released the bridge wing lifebuoy. He then pressed the event key on the ECDIS as a reference point (MOB) on the chart.

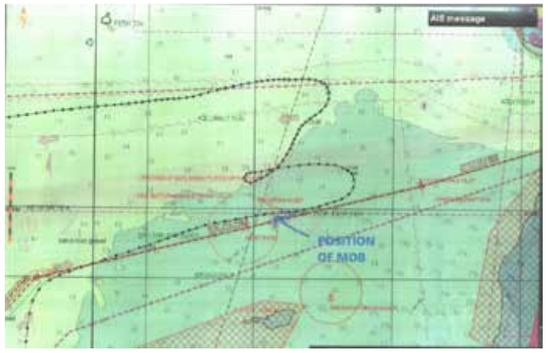
Meanwhile, the Master reduced speed, informed Kumkale (Çanakkale) VTS on the VHF radio and requested permission to turn the vessel back to rescue the Boatswain.

A general alarm was sounded, and a MOB was announced through the public address system. Lookouts were posted on each side of the vessel and the rest of the crew members were mustered at the muster station.

By 02.00, the vessel was on a reciprocal course, in the East lane of the TSS. Three lighted buoys were sighted but the crew members could not see the Boatswain.

The Master made a request to Kumkale VTS to arrange search and rescue and decided to return to the anchorage area so as not hamper navigation of other vessels in the TSS.

At 03.15, the Turkish Coast Guard commenced search and rescue operations at the site of the MOB position. However, despite the rescue efforts of the Coast Guard, the Boatswain was not recovered.



Probable cause of the fall

At the time of rigging the combination pilot ladder, the vessel was experiencing rough seas with winds gusting at 50 knots and a wave height of between two and three metres. There was reportedly no rolling or pitching.

Therefore, it was unclear what caused the Boatswain's fall from the accommodation ladder since none of the crew members tasked with the rigging witnessed the actual fall.

As noted above, the environmental conditions were severe. The probability of the waves buffeting the underside of the lower platform or its upper surface being wet from sea spray was not excluded by the safety investigation.

Therefore, it seemed most likely that the Boatswain may have lost his balance and / or

slipped while securing the lower platform to the pilot ladder.

Although he had donned personal protective equipment (overall, safety shoes, gloves and helmet), he was wearing neither a life jacket nor a safety harness. In any case, if the Boatswain did survive any physical injuries, it was very likely that he would have immediately suffered from the severe effects of cold-water immersion and hypothermia.

His chances of survival were probably very slim. At the time of the fall, the temperature of the sea was 13 °C and the Boatswain was not wearing any thermal protective clothing.

Requirements for working overside

The vessel's safety management system (SMS) specified that whenever work had to be carried overside, all equipment must be checked and a permit to work had to be prepared and issued before commencing the overside work.

It was also required that a buoyancy aid and safety harness had to be worn, where there was a reasonable risk of crew falling or being washed overboard.

Control measures documented in Risk Assessment Form (Work Outboard - Preparation of Pilot Combination Ladder), had identified the use of a safety harness and a life jacket.

In addition to these safeguards, a responsible Officer had to be in attendance to supervise the working personnel.

Furthermore, the SMS stipulated that overside work must not take place when the ship is either underway, or if the ship is rolling.

Information presented, showed that a toolbox meeting was carried out just before weighing the anchor.

However, the meeting made no reference to the pilot ladder or another meeting being held at the work-site close to the combination pilot ladder.

Therefore, it was unclear whether safe working methods were thoroughly examined considering the vessel's movement and prevailing weather conditions.

Then, no formal risk assessment had been carried out and the permit to work procedure which consolidate general instructions and safety precautions was not filled in.

None of the crew members donned a lifejacket or safety harness.

CONCLUSIONS

1. It is very likely, the Boatswain lost his balance while lashing the gangway to the vertical pilot ladder and fell into sea.

2. The Boatswain was not wearing a safety harness and he may have possibly drowned because he was not wearing a lifejacket.

3. The SMS required that overside working is undertaken neither when the ship is underway nor during ship's rolling. Since, combination pilot ladder is rigged when arriving or leaving port, the crew members could not comply with this requirement.

4. No formal risk assessment and no permit to work overside had been filled in. Consequently, weather conditions and vessel's movement were not considered.

5. Preparing a combination pilot ladder was seen by the crew members as normal routine work.

6. The crew may have perceived the use of a safety harness and life jacket as impeding the task of rigging and securing the combination pilot ladder to the ship's hull.

Good mental health

Taking care of our mental health is just as important as looking after our physical health

There are several factors that can impact seafarers' mental health, such as job stress, family pressures and limited shore leave. Being away at sea can also make it difficult to access support. However, help is out there!

ACHIEVE

Our brain gets a boost when we achieve things during the day. Achievement increases the neurotransmitter dopamine and purposeful activity increases serotonin. It is helpful to plan realistic and achievable goals every day, such as those concerning work, chores and study, but we can also set goals and achieve activities relating to connecting to others, enjoyment and exercise.

CONNECT

As our mood drops, we feel more tired and we tend to do less. We start to stay alone more, withdrawing and isolating ourselves. The unique conditions on board a ship can make isolation more likely. You may have limited opportunities to communicate with friends and family back home but it's important to keep connected to loved ones when you can.

Different shift patterns and other reasons may make it difficult to connect with other crew on board, but making an effort to socialize could help. Are there opportunities on board to get involved in a film or games night? If not, why not plan a range of regular activities to enjoy with crew mates such as: deck BBQs, game evenings, team sports, movie nights and karaoke contests.

ENJOY

When our mood is pretty good, we tend to do a large variety of enjoyable activities, in addition to the things we have to do. As our

mood and energy levels drop, we do less and less, until eventually we struggle to even do the necessary daily chores. Aim to do more enjoyable activities. Try to find activities you can enjoy now and plan ahead for your next voyage/contract – what can you take with you that you can enjoy doing on board?

Try to get a balance between time on your own and time with others. Individual hobbies can help when social activities aren't possible:

• Exercise can really help lift your mood. Try ***www.trainingonboard.org*** for inspiration.
• *Want a challenge?* Learn new skills at your own pace. There are many free online courses which may introduce you to new interests and activities. For example, try ***www.lynda.com***
• *Feeling creative?* Keep a written or photographical journal of your time on board.

STEPBACK

When we have a problem we can get caught up in the emotion (anger, frustration, sadness) – it is difficult to think clearly and see the bigger picture at those times and we can react by doing things that are unhelpful. At stressful times, we tend to be driven by our emotions and opinions, which create a vicious cycle by fuelling each other.

Our emotions strengthen our opinions, which in turn, intensify our emotions.

This leads to impulsive acts and unhelpful longer term consequences, which helps to maintain the overall problem. It might seem like doing those things helps at the time, but by reacting impulsively or the same way all the time, we just keep the problem going.

POSITIVE COPING STATEMENTS

Positive coping statements encourage us and help us cope through distressing times. You only have to watch a tennis match to see the power of positive self talk. The player who looks despondent is probably criticizing themselves whilst making lots of mistakes.

The other player may look very confident, using lots of positive self talk to encourage and push themselves, and they play like a master. This process might swap from player to player during the match – but the one who is using and believing positive self talk will be the better player at that time. We can say these encouraging words to ourselves, and be our own personal coach. We have all survived some very distressing times, and we can use those experiences to encourage us through current difficulties.

MINDFULNESS | WHAT IS MINDFULNESS?

Mindfulness is an ancient Buddhist practice which is very relevant for life today. It is a very simple concept. Mindfulness means paying attention in a particular way: on purpose, in the present moment, and non-judgmentally. This increases awareness, clarity and acceptance of our present-moment reality.

Mindfulness does not conflict with any beliefs or tradition, religious, cultural or scientific. It is simply a practical way to notice thoughts, physical sensations, sights, sounds, smells – anything we might not normally notice.

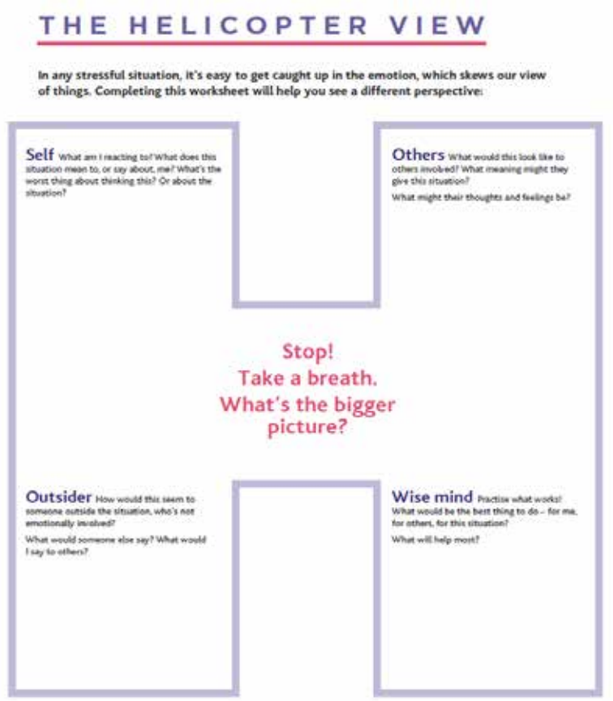
The actual skills might be simple, but because it is so different to how our minds normally behave, it takes a lot of practice.

Being mindful helps us to train our attention. Our minds wander about 50% of the time, but every time we practice being mindful, we are exercising our attention "muscle" and becoming mentally fitter.

We can take more control over our focus of attention instead of passively allowing our attention to be dominated by distressing thoughts. Mindfulness might simply be described as choosing and learning to control our focus of attention, and being open, curious and flexible.This article can be used as a self-help guide with details and some skills, exercises and coping strategies to help seafarers deal with their emotions when life becomes stressful or their mood is low.

You may find more information here:

https://www.seafarerswelfare.org/seafarer-health-information-programme/good-mental-health/steps-to-positive-mental-health



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