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SAFELY AT SEA

Our role in creating safety



Finnish Institute of
Occupational Health



The purpose of this guide is to encourage seafarers and maritime operators to develop safety together. The guide features findings, lessons learnt and insights yielded by the “Assessing and developing maritime safety culture – better safety through managing human factors” (SeaSafety) research project.

It is generally acknowledged that the underlying reasons for incidents, hazardous occurrences and accidents include “weak spots in safety culture” or “a human factor”. What does that mean? What is it that did not work in practice? This guide makes the often very abstract terms of “human factors” and “safety culture” more familiar and easier to understand. In general usage, the term “human factors” is usually given a negative connotation. This guide brings a new angle to terms and introduces a new way to use them: Where did we succeed? Why? What did we learn? What creates safety? In essence, safety is people’s mostly successful actions.

A positive approach to safety was a key idea in the SeaSafety project: we applied tools and models that support safety at workplaces in co-operation with different maritime operators. Positive safety thinking benefits all maritime operators: shipping company employees and management, authorities, industry experts, trainers, occupational health care as well as occupational safety. For instance, bringing up incidents openly, handling them in order to learn and sharing insights gained and lessons learnt improve awareness of the impact of one’s own actions on safety.

In co-operation, acting as one system, we can anticipate incidents and accidents or mitigate the consequences of incidents that have already occurred. The effects of disturbances and risks remain smaller, they occur less frequently and we understand why and how they occur.





The SeaSafety project consisted of an initial survey, four workshops, interviews, workplace visits, document analysis and a final evaluation.

The project was driven and kept going by the participants' passion to learn, understand and promote maritime safety.

The project was carried out jointly by the Finnish Institute of Occupational Health, the three shipping companies TallinkSilja, Bore and Strömman, the Finnish Transport Safety Agency (Trafi), the Vessel Traffic Services of the Finnish Transport Agency, the Finnish Passenger Ship Association, the Finnish Ministry of Social Affairs and Health and the Occupational Health and Safety division of the Regional State Administrative Agency for Southern Finland. The project was funded by the Finnish Work Environment Fund and Trafi, for which we would like to express our thanks. A research team at the Finnish Institute of Occupational Health led and co-ordinated the project. The project execution was supported and guided by a steering group – A warm thank you to all the group members!

Information about other output and results of the project and the language versions of this guide are available at www.ttl.fi/seasafety

The SeaSafety project group members were Anna-Maria Teperi, Vuokko Puro, Päivi Miilunpalo, Pia Perttula, Henriikka Ratilainen, Maria Tiikkaja and Maria Sihvola



Finnish Transport Agency





**Safety culture
– our way of
working in
safety-related issues**







6.







There are dozens of definitions of safety culture and even experts belong to different schools of thought. At its simplest, the point is that we all – including you – create safety culture at our workplaces. Safety culture is a company's way of working in safety-related issues – it consists of and is influenced by everyday practices that ensure and promote safety.

Recently, safety research has highlighted a new approach (Hollnagel 2014), aiming at making safety thinking more positive and proactive.

SAFETY 1 the traditional approach to realising and developing safety

-  Safety = the risk of unwanted events is as low as possible
-  Reactive approach: safety is developed by eliminating risks, failures, errors and their underlying reasons
-  Focus on factors that impair safety, on "what goes wrong"
-  People are perceived as sources of errors, risk factors or risks


SAFETY 2 the new approach to realising and developing safety

-  Safety = as much as possible goes right and is successful
-  Proactive approach: events are identified and anticipated
-  Focus on successes and factors that maintain safety
-  It is accepted that human action always entails variance and the prerequisites of action are always subject to restrictions, which requires adaptation
-  E.g. creating new operating methods, avoiding error situations, mitigating consequences, compensating for missing resources and ensuring that work goes right
-  People are perceived as assets ("rescuers") that bring flexibility, elasticity and tolerance into systems in constantly changing work situations

Differences between the traditional and new approaches (Hollnagel 2014; Reason 2008).







7.



Do you recognise incidents in your work? What about things that go well?

8.






What kind of (unwanted) events/incidents may occur on board during your shift/watch?

-  What kind of things in your work go well? In which tasks do you usually succeed?
-  What kind of risks does your work entail when it comes to safety?
-  What kind of minor incidents have you encountered in your work as a seafarer?
-  During your career, have you got into more serious accidents or hazardous occurrences?

You can always learn from what has gone well in work as well as from everything that has gone “normally and as planned”. Safety can be further developed and existing good operating models and methods can be strengthened when attention is paid to smoothly running operations and successes and they are made visible and analysed more closely.

Identifying different incidents at work and making them visible is also necessary in order to improve safety-related issues in practice to learn from incidents.

At your workplace/on board your ship, are people encouraged to report incidents?

-  Do you know how to submit an incident report?
-  To whom do you send it?
-  How is your report processed and where is the information located?
-  Do you get feedback on the report you submitted? How about information about corrective actions?
-  Is it possible that your report threatens your status in the work community?

If there is anything unclear with regard to the questions above, turn to the occupational safety representative, your immediate supervisor or other line management, such as the ship's captain. In some situations, occupational health care services may be the best party to advance the case, either through an appointment, a periodic inspection or a workplace survey.

Figure 1 below includes examples of incidents identified in the maritime project, representing various levels of seriousness. A blank tool template can be found in Appendix 1.

This guide uses the general concept incident to describe all deviating and unwanted safety-related situations in seafaring. Concepts, such as hazardous occurrence, accident, non-conformity, equipment failure and defect, are used but they have not become firmly established among different maritime operators..

For more detailed information on terms, see Appendix 7.

9.

SAFETY SITUATION ANALYSIS

SERIOUS INCIDENTS

*e.g. shifting cargo,
black out,
the breaking of a mooring rope*

MEDIUM-SEVERITY INCIDENTS

*e.g. problems with navigation equipment,
difficult weather conditions, violent clients*

MINOR INCIDENTS

e.g. verbal threats, busy traffic

Figure 1 Examples of incidents in seafaring, representing various levels of severity.



This tool utilises the classic model used in safety research, known as Heinrich's ration (Heinrich 1931). The model shows that more minor incidents may occur than medium-severity and serious accidents. In addition, the same reasons or mechanisms of influence may be behind minor incidents and more serious incidents.





How can we handle and analyse the incidents?

"Going through successes related to incidents was a new and good idea."

"These direct questions are good, as is not asking what you did wrong but what you could have done better. It is a much more positive question and makes you think about developing things."

Contemporary safety thinking emphasizes success stories and good practices that help people to handle even difficult situations so that they do not become more serious. Consequently, safety does not only consist of identifying and calculating risks and errors, but also identifying areas in which performance is good and professional and situations are recognised.

Often, incidents give some kind of warning signals before occurring or the personnel has a preconception of them on the basis of earlier reports, discussions or experience.

Have you found yourself in a situation where you could have prevented an incident or mitigated its consequences by anticipating and rectifying the situation?

The following model/tool helps you to analyse an encountered incident or disturbance at the workplace and your actions in it (Figure 2). With the aid of the model, describe what happened before, during and after the situation. Also contemplate and write down what you did well and what you could have done better in different phases of the chain of events. The analysis template in Appendix 3 has more space for notes.

INCIDENT ANALYSIS

Are you capable of analysing your workplace's safety incidents and assess your own actions in resolving them? Use the chart below to write down a summary of measures to manage safety proactively during and after (aftercare) incident situations.

BEFORE THE SITUATION What happened?

BEFORE THE SITUATION
What did we do well?

BEFORE THE SITUATION
What could we have done better?

DURING THE SITUATION What happened?

DURING THE SITUATION
What did we do well?

DURING THE SITUATION
What could we have done better?

AFTER THE SITUATION What happened?

AFTER THE SITUATION
What did we do well?

AFTER THE SITUATION
What could we have done better?

Figure 2
Incident analysis

What kind of opportunities do you have to participate in the development of safety? How does your workplace handle safety-related issues?

Take a moment to think about your opportunities to participate in the development of safety:

- Do your supervisor and the shipping company management support the handling of safety-related issues?
- Based on the observations of external inspectors, is progress made?
- Are the instructions concerning your work clear? Are they easy to adhere to in your everyday work?
- Have safety rules been agreed on? Does everyone interpret them consistently?
- What kind of a division of tasks do you have among the crew when handling different safety incidents?
- Do you all have sufficient competence to handle situations? In which matters would you like have additional guidance or information?
- Is the flow of information and communications with other parties functioning well?
- Do tools function (e.g. usability and functionality of two-way radios; do cabin cleaning personnel's radios function? How much strength do the plates carried by a waiter during a shift require...)?



How is safety managed proactively at your workplace, both during and after incident situations? At your workplace, you can use the chart below when contemplating your current safety development practices and use the blank chart in Appendix 2 to write down a summary of measures to manage safety proactively, during and after (aftercare) incident situations.

The chart below (Figure 3) lists examples of safety development practices identified by maritime organizations.


Figure 3
Examples of practices with which maritime organizations manage safety proactively, during and after incident situations

ANALYSIS OF SAFETY MANAGEMENT SYSTEM

How is safety managed proactively at our workplace, both during and after incident situations? Use the chart below to write down a summary of measures to manage safety proactively during and after (aftercare) incident situations.

Before	During the situation	After
Safety management system	Hierarchy functions well, management = captain	Incident reporting
Operations manual	Instructions card near/on the desk	Incident analysis
Risk assessment	Standard procedure/alert chart	Preventive actions (circular, changes to the system)
Work permit procedure	Firefighting equipment	Crisis support – support discussions with the personnel, agreeing on follow-up
Checklists	First aid equipment and supplies	Handling in a common meeting (+/- feedback to the persons concerned)
Crisis management instructions	Communications and dissemination of information	Going through the situation together with other operators
Training of internal defusing counsellors & operating model maintenance	Situation assessment and conclusions	
Ship pharmacy & health care		
Training and situational practices		
Maintenance inspections		
Audits & observations		





**Human factors
– the background
factors that effect
how you succeed
at your work**

“The design of the tool has succeeded well.”

“The tool can be used for analysing both accidents and HR issues.”

“The HF tool makes you consider the case comprehensively, all the way to conclusions – how to move forward.”

16.

Over the past few decades, it has been concluded that safety development requires a better understanding of people's actions. You can take a moment to think about the following questions related to human factors, among other things:

- When are you particularly alert and attentive? How often do you feel tired at work? According to your observations, how has your level of alertness affected your perception, memory, decision-making and work performance?
- Are the tools and equipment you use easy to use? Do they support your actions? Is it possible that some tools interfere with your success in work?
- On board your ship, what kind of decisions do you make as a team/group? Are everyone's views taken into account in decision-making?
- What kind of decision-making is successful? Why do decisions sometimes lead in the wrong direction?
- Does your ship or your shipping company support the development of matters towards safety? Are safety-related issues appreciated (or are they considered a necessary evil and an expenditure item)?
- Do you feel that your workplace learns from earlier mistakes?
- Does your organization have the skills and courage to deal with error situations after they have occurred or are any emerging lessons buried out of sight?
- Can there be a lack of skills in working or conflicts in practices?

The aspects described above are examples of so-called human factors in seafaring. How much is this topic discussed at your workplace? Are people aware of it?

17.

HF TOOL

Which of the factors in the image are now in order on board your ship and which factors support the realisation of safety? (indicate with +). Which of the factors in the image do not really seem to be working well on board your ship? Which would you like to see improved? (indicate with -) The larger version of the tool can be found in Appendix 4.

Individual's actions and characteristics

1. Competence, mastery of work
2. Situation awareness (perception, memory, decision-making, response/execution)
3. Working along instructions and agreed procedures
4. Understanding the bigger picture/overall situation
5. Proacting, preconceptions and assuring assumptions
6. Workload (overload/unload) and means for managing it
7. Vigilance, alertness, fatigue symptoms
8. Life situation, anxiety, level of (long-term) stress
9. Age; quality and quantity of work experience
10. Health, work ability
11. Motivation, attitudes
12. Emotional state and reactions, mood

Work actions, characteristics of work

13. Quality and contents of work; work demands
14. Quantity of work; time pressure, having to rush
15. Work organization, work distribution, job descriptions; clarity
16. Usability and functionality of devices, software, technology
17. Procedures and instructions; functionality, clarity and being up-to-date
18. Opportunities to influence one's work and working conditions
19. Feedback on work, professional appreciation
20. Opportunity/ability to evaluate and develop one's work processes
21. Assuring competence (training, exercises, other ways of learning)
22. Work hygiene factors, physical work environment, working conditions, occupational hygiene factors (noise, ventilation, lighting, temperature; layout)

**Mastering
dynamic,
complex
situations**

Organization-level factors

30. Management and leadership; structure, styles
31. Organization/safety culture
32. Co-operation between different organization levels and units (e.g. office, ship, technology, quality and safety, manning)
33. Understanding ship safety as a whole throughout the shipping company's management
34. Decisions made (incl. resources; personnel, equipment)
35. Change management (personnel, systems)
36. Co-operation with partners, e.g. shipping companies, authorities
37. The company's support for ship operations (SMS/DPA)

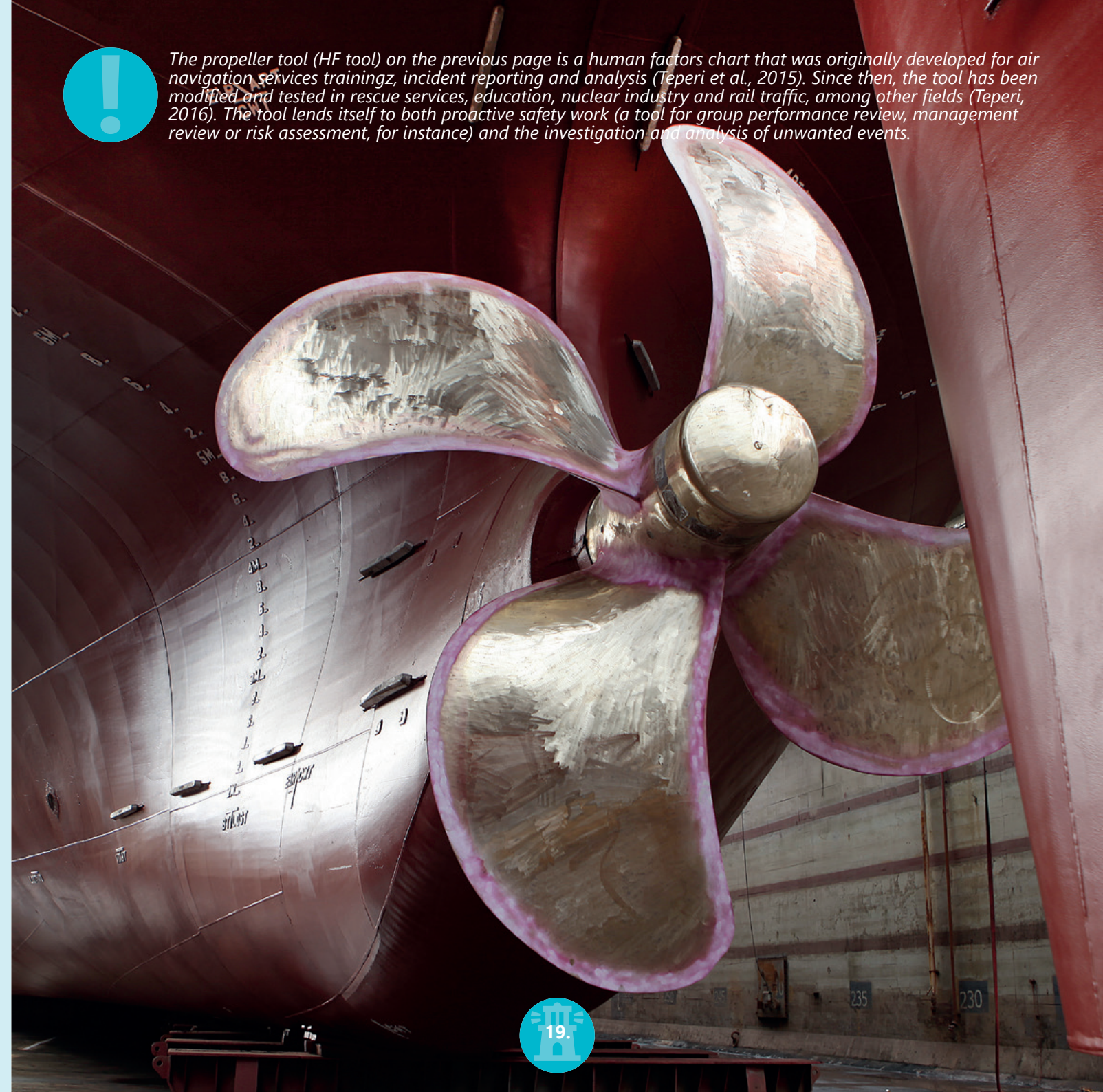
Group-level factors

23. Shared understanding of the situation among all group members
24. Knowledge of all group members is used
25. Communication within group (e.g. are misunderstandings, misinterpretations and mishearings corrected)
26. Structure and cohesion of group, group dynamics (social relations, atmosphere, mutual support)
27. Communication between different groups (deck, engine room, VTS, pilot, tugboats, icebreakers, harbour, other ships); model maritime glossary; language skills
28. Information flow, communication practices, incl. change of watch, change of shift
29. Decision-making in group (e.g. role of the watch officer)

Figure 4
Human factors chart, HF tool.



The propeller tool (HF tool) on the previous page is a human factors chart that was originally developed for air navigation services training, incident reporting and analysis (Teperi et al., 2015). Since then, the tool has been modified and tested in rescue services, education, nuclear industry and rail traffic, among other fields (Teperi, 2016). The tool lends itself to both proactive safety work (a tool for group performance review, management review or risk assessment, for instance) and the investigation and analysis of unwanted events.





Incident analysis
opens a window
of opportunity for
learning

20.

Just reporting incidents is not enough. Cases should also be analysed and efforts should be made to learn from them. When events are analysed, it is useful for entire work communities or groups to discuss which factors influenced the occurrence of the event, what action was taken in the situation, what went well and what should have been done differently. Supervisors should set an example to other members of the work community on how discussions become open learning forums not focusing on seeking to apportion blame. When the factors influencing the event have been identified, it is easier to find the correct actions that improve safety and the operations of the work community as a whole.

Supervisors are also key persons in launching corrective actions and persistently pushing forward. Many aspects can be developed with own resources, internally by the work community. In some situations, it is a good idea to use an external expert or sparring partner.

The earlier introduced human factor “propeller” tool can also be used in investigating incidents and learning from them, together with the three-part timeline template. A blank timeline template can be found in Appendix 4 of this guide. On the timeline on the next page, the incident analysis is illustrated with a simple example of loading a coffeemaker in the evening, to have it ready for the morning (Figure 5).

If you would like to test the HF TOOL / propeller tool in analysing a case (e.g. a case that has occurred to you previously), proceed according to the following procedure:

1

Describe the key phases of the chain of events as a timeline

What happened before the threatening situation?
What happened during the situation?
What was done after the situation?

2

Indicate on parallel timelines

- a.** in the green area, things that went well, functions that were handled well and successes in different phases of the chain of events described above
- b.** in the red area, those phases and issues that could have been handled better, that is: operational weaknesses and failures in handling the situation

3

Use the HF tool to identify factors that influenced the situation

When the event has been modelled on the timelines, related HF tool items are identified and indicated with + and – on the timelines as factors that influenced the situation (either improved or impaired safety).

21.

NN intends to load the coffeemaker in the evening, to have it ready for the morning. However, the coffeemaker already switches itself on and starts making coffee in the evening. Why? What successes and failures are related to the event? Which factors influenced NN's actions in different phases of the chain of events?

As can be seen from the simplified coffeemaker example, the chain of events entails several successes (anticipating the early wake-up in the morning, loading the coffeemaker, reacting to what was heard and saving the situation) as well as a failure – accidentally turning the coffeemaker on. People's actions in different phases of the chain of events are influenced by many different factors mentioned in the "propeller" tool introduced above, such as situational awareness, anticipation of different situations, level of job control, adherence to instructions and agreed operating

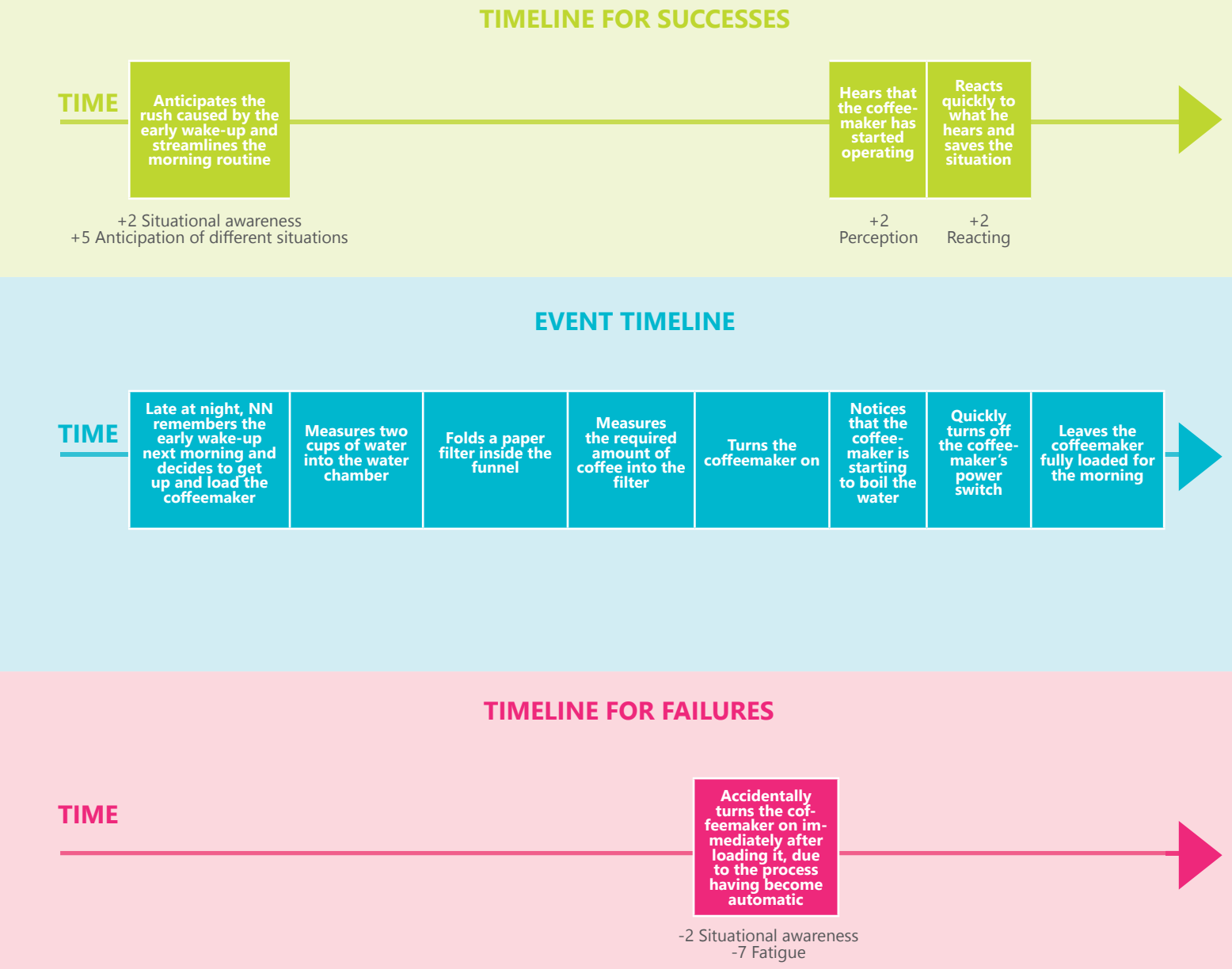
methods, reacting and alertness. By managing these factors that influence people's actions, we can help people to succeed in different tasks and situations.

Let's expand the perspective from the everyday example to a classic maritime accident – the capsizing of the car ferry Herald of Free Enterprise in 1987. The car ferry left Zeebrugge harbour with its bow and stern doors open. Soon after departure, water began to enter the car deck through the open doors and when the ship started turning, the water moved to the other side of the ship and the ship capsized. The chain of events leading to the capsizing of the car ferry, related successes and failures as well as human factors influencing the events are described in Figure 6 below. The analysis of events could be expanded to the rescue work and accident investigation.



AN EXAMPLE OF ANALYSING A CASE WITH THE HF TOOL:

Figure 5 Phases of the chain of events related to loading the coffeemaker and factors influencing NN's actions.



As shown by the Herald of Free Enterprise example, describing the chain of events on three timelines helps to determine its structure. The contemplation of successes and things that were handled well brings a new perspective into analysing the event and helps to understand the choices and decisions made in different phases of the chain of events – for instance, the bow was lowered by pumping water into the bow ballast tanks so that the ramp would reach the upper car deck. The pumping of water solved the problem and it was possible to load the cargo into the ship, but when water was not completely pumped out and the bow was lower than normally, it lead to an accident later. Specifying failures and stopping to think about them with the aid of the human factors chart helps to gain insight into which factors influence people’s actions in different phases of the chain of events. The assistant boatswain misunderstood the boatswain’s reply as permission to go to his cabin to rest and slept, perhaps due to his intense fatigue, so soundly that he did not wake up to the “Harbour stations” call. On the other hand, lack of detailed instructions and division of tasks related to closing the doors as well as tool deficiencies contributed to the fact that the doors were not closed and the ship’s captain did not notice that they were open when he decided on the ship’s departure. Several factors contributing to the accident can also be identified at the organization level, such as the fact that the shipping company did not accept the earlier proposals by the ship captains related to the need for sensors that would indicate the bow door position and that the entire industry did not understand or address the significant risks related to bow doors and ro-ro ships.

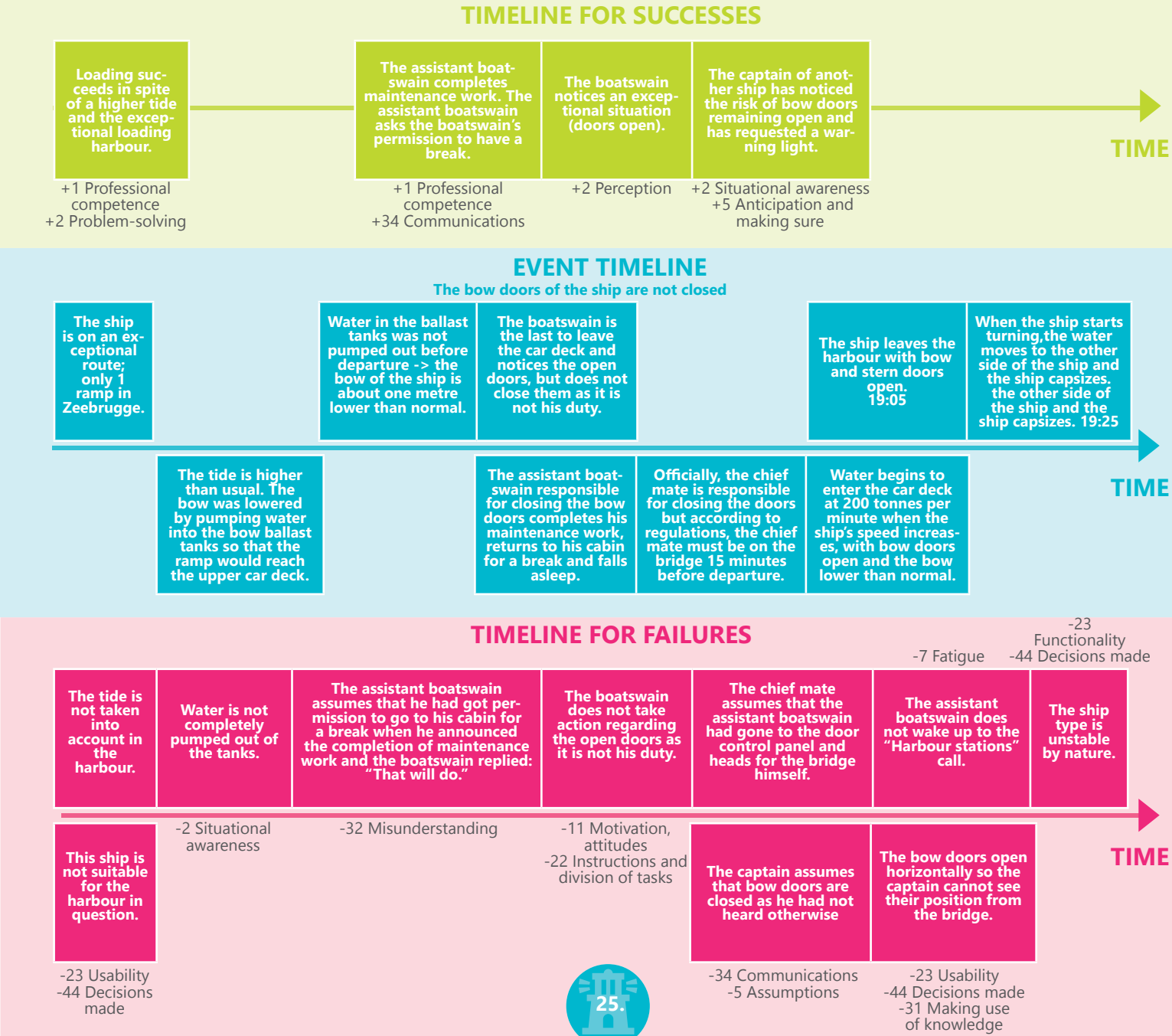
By analysing factors that influence people’s actions, one can find development areas and factors to the management of which attention should be paid in the future at the individual, work, group and organization level. Examples of actions to be taken on the basis of the Herald of Free Enterprise accident include the clarification of the division of tasks and instructions as well as the installation of a warning light or camera on the bridge to indicate the bow door position.

The HF tool brings a new perspective and helps people to learn from incidents or accidents, but in line with new safety thinking, it can also be used for analysing successes or normal operations. This is the direction in which safety thinking should be developed.




AN EXAMPLE OF ANALYSING A CASE WITH THE HF TOOL:

Figure 6 Events leading to the capsizing of the car ferry and factors that influenced them.





**ColleagueSupport
(Mental First Aid)
ensures work ability
and functional
capacity after
an incident**



“Simple, easy to learn.”



**“It is fairly easy to implement,
it is quite a light tool.”**



26.


Is it possible that there are feelings of guilt at your workplace after a safety incident? Is it possible that a hazardous occurrence shocks or frightens people or that the personnel have other symptoms or sensations after the event? Would support from a colleague and a quick defusing be needed?

A discussion being carried out within ColleagueSupport is mental colleague-to-colleague first aid*. Its goal is to normalise potential symptoms and reactions after the incident and preserve the work ability and functional capacity of persons involved. It is like a “mental sticking plaster” for an employee who has encountered an incident. The discussion is held as soon as possible (within 8–12 hours) after the incident.

** Look figure 7.*

It is important that all SAFER* phases are covered in the ColleagueSupport discussion. The discussion is started by ensuring that the setting and the situation are peaceful. It is important that the person involved in an incident is allowed to talk about the incident freely in his or her own words and let out emotions and feelings evoked by the incident. The ColleagueSupport provider should enter information into the situation and normalise it as well as highlight the fact that emotions, reactions and symptoms resulting from the incident are completely normal, even if the situation itself were entirely exceptional and atypical.

As an aid, the symptom table in Appendices can be used: it contains four types of symptoms that may occur after an incident (*adapted from Mitchell 2006*). It can also be discussed whether even a shocking event could offer an opportunity to learn something for the future. At the last phase of the ColleagueSupport discussion, the person involved in the incident is reassured and encouraged and his or her recovery is ensured; the participants assess jointly whether the situation allows the person to continue working or to go home without further assistance. It is also important to say that the person can contact the support person again or to indicate where he or she can get help, if necessary, or to promise to call the next day to see how he or she is doing, for instance.



The mental first aid procedure (defusing) differs from the process conducted by professionals, such as occupational health care services, (usually called debriefing) in that it is colleague-to-colleague support: The personnel of the work community are trained to become support persons (peers) who have the competence to handle minor or medium-severity incidents in the work community. Serious incidents should still be handled by occupational health services or other external professionals. The mental first aid procedure has yielded encouraging results in the pilot project by the City of Helsinki (more information about the Hetipurku pilot project can be found via the link provided in the list of references).



27.

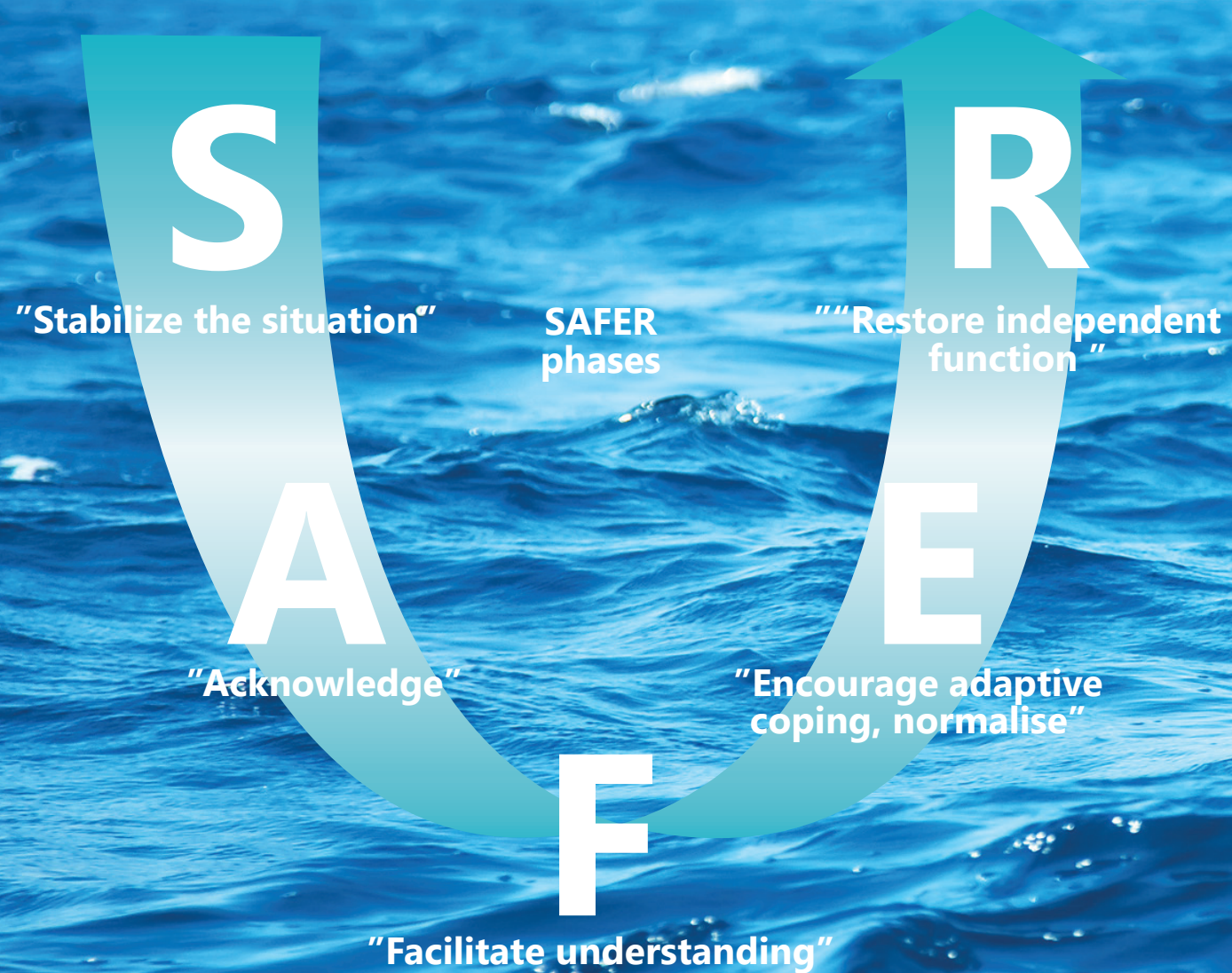


Figure 7
Mental first aid discussion model
(ColleagueSupport).



28.



29.



Our ship's future development plans

At your workplace, discuss together the needs for developing safety and plan and choose concrete actions to promote safety. You can inspire discussion by approaching the topic with the aid of the following questions, among other things. In order to achieve genuine development, it is important to ensure the prerequisites for implementing the action and adequate decision-making power (questions 3 and 5) and also to agree on the persons in charge, the implementation schedule and the follow-up of the realisation (questions 6-9).

1

Which safety-related issues are already handled well at your workplace/on board your ship? What things have gone well at your shipping company?

2

Which issues that affect safety should be addressed next at your workplace? Choose 1–3 issues.

3

What concrete actions should be taken?

4

Could their implementation have harmful effects? What does their implementation require from you personally and from the entire work community?

5

How does advancing the above-mentioned issues benefit you and your work community?

6

Who decides on advancing the above-mentioned issues? To whom or to which party the issues should be taken to have them handled or approved?

7

Who will be responsible for implementing them? Who implements the actions to be taken? Appoint a person in charge.

8

How will you arrange the follow-up of the realisation? Agree on a person or party in charge of the follow-up.

9

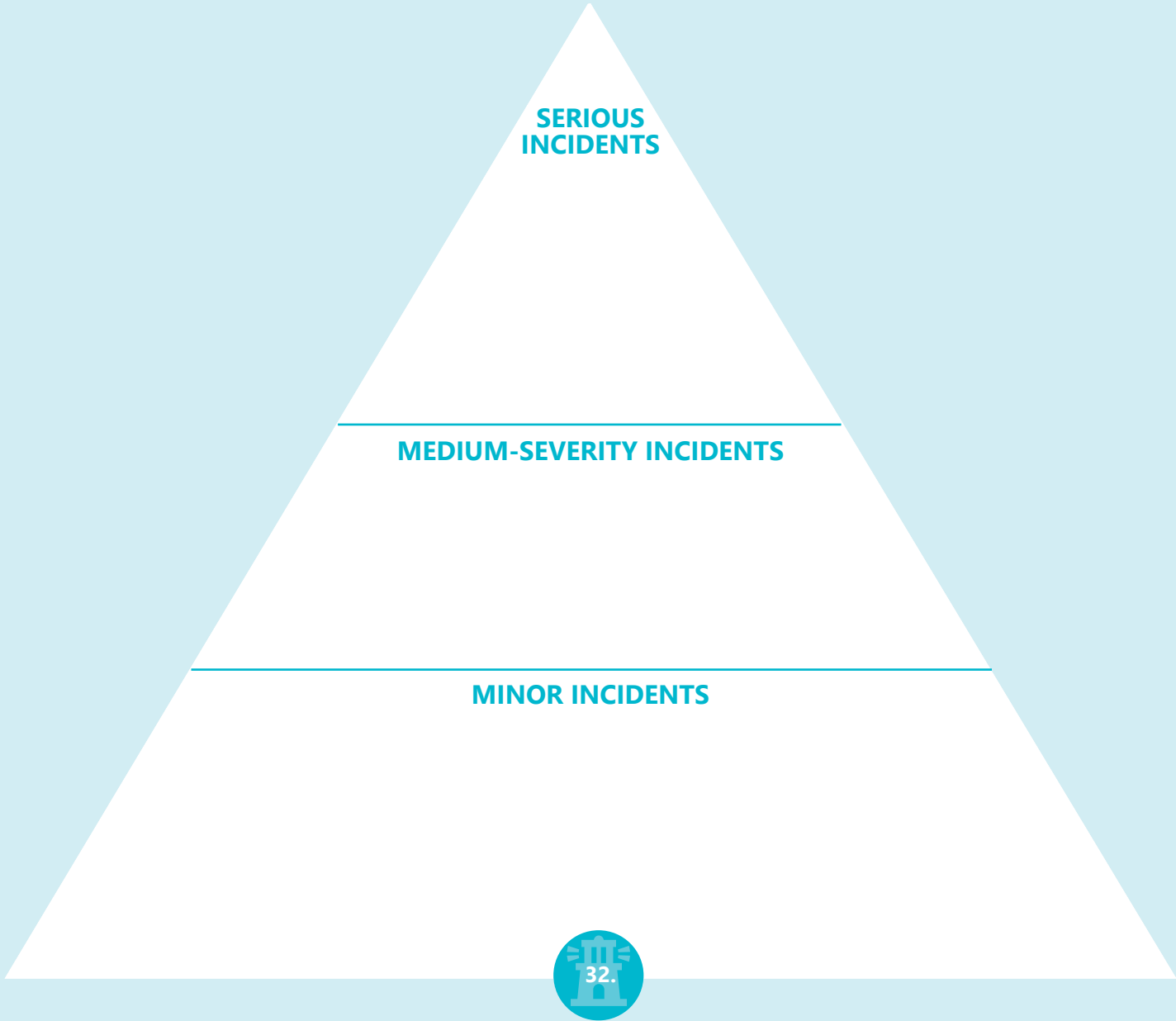
Which is your target schedule for the realisation?

10

When will you handle the issue next time?

APPENDIX 1. SAFETY SITUATION ANALYSIS

What kind of safety incidents occur in everyday work at your workplace? Identify typical incidents and write them down in the pyramid below.



APPENDIX 2 ANALYSIS OF SAFETY MANAGEMENT SYSTEM

How is safety managed proactively at our workplace, and both during and after incident situations? Use the chart below to write down a summary of measures to manage safety proactively during and after (aftercare) incident situations.

Before	During the situation	After
(write)	(write)	(write)

A table with three columns and two rows. The columns are titled 'Before', 'During the situation', and 'After' in white, bold, sans-serif font on a blue background. The rows below have a white background and each contains the text '(write)' in a grey, sans-serif font. At the bottom center of the table, there is a circular blue icon containing a white building silhouette and the number '33.'.

APPENDIX 3. INCIDENT ANALYSIS

Are you capable of analysing your workplace’s safety incidents and assess your own actions in resolving them? Describe, phase by phase, what happened (before, during and after the situation) and then describe your actions.

BEFORE THE SITUATION What happened?

BEFORE THE SITUATION What did we do well?

BEFORE THE SITUATION What did we do well?

DURING THE SITUATION What happened?

DURING THE SITUATION What did we do well?

DURING THE SITUATION What could we have done better?

AFTER THE SITUATION What happened?

AFTER THE SITUATION What did we do well?

AFTER THE SITUATION What could we have done better?



APPENDIX 4. HUMAN FACTORS CHART – HF TOOL

Individual’s actions and characteristics

- 1. Competence, mastery of work
- 2. Situation awareness (perception, memory, decision-making, response/execution)
- 3. Working along instructions and agreed procedures
- 4. Understanding the bigger picture/overall situation
- 5. Proacting, preconceptions and assuring assumptions
- 6. Workload (overload/unload) and means for managing it
- 7. Vigilance, alertness, fatigue symptoms
- 8. Life situation, anxiety, level of (long-term) stress
- 9. Age; quality and quantity of work experience
- 10. Health, work ability
- 11. Motivation, attitudes
- 12. Emotional state and reactions, mood

Work actions, characteristics of work

- 13. Quality and contents of work; work demands
- 14. Quantity of work; time pressure, having to rush
- 15. Work organization, work distribution, job descriptions; clarity
- 16. Usability and functionality of devices, software, technology
- 17. Procedures and instructions; functionality, clarity and being up-to-date
- 18. Opportunities to influence one’s work and working conditions
- 19. Feedback on work, professional appreciation
- 20. Opportunity/ability to evaluate and develop one’s work processes
- 21. Assuring competence (training, exercises, other ways of learning)
- 22. Work hygiene factors, physical work environment, working conditions, occupational hygiene factors (noise, ventilation, lighting, temperature; layout)



Group-level factors

- 23. Shared understanding of the situation among all group members
- 24. Knowledge of all group members is used
- 25. Communication within group (e.g. are misunderstandings, misinterpretations and mishearings corrected)
- 26. Structure and cohesion of group, group dynamics (social relations, atmosphere, mutual support)
- 27. Communication between different groups (deck, engine room, VTS, pilot, tugboats, icebreakers, harbour, other ships); model maritime glossary; language skills
- 28. Information flow, communication practices, incl. change of watch, change of shift
- 29. Decision-making in group (e.g. role of the watch officer)

Organization-level factors

- 30. Management and leadership; structure, styles
- 31. Organization/safety culture
- 32. Co-operation between different organization levels and units (e.g. office, ship, technology, quality and safety, manning)
- 33. Understanding ship safety as a whole throughout the shipping company’s management
- 34. Decisions made (incl. resources; personnel, equipment)
- 35. Change management (personnel, systems)
- 36. Co-operation with partners, e.g. shipping companies, authorities
- 37. The company’s support for ship operations (SMS/DPA)



APPENDIX 5.

TIMELINE FOR SUCCESSES

TIME

EVENT TIMELINE

TIME

TIMELINE FOR FAILURES

TIME

APPENDIX 6. MENTAL FIRST AID DISCUSSION MODEL (COLLEAGUESUPPORT)

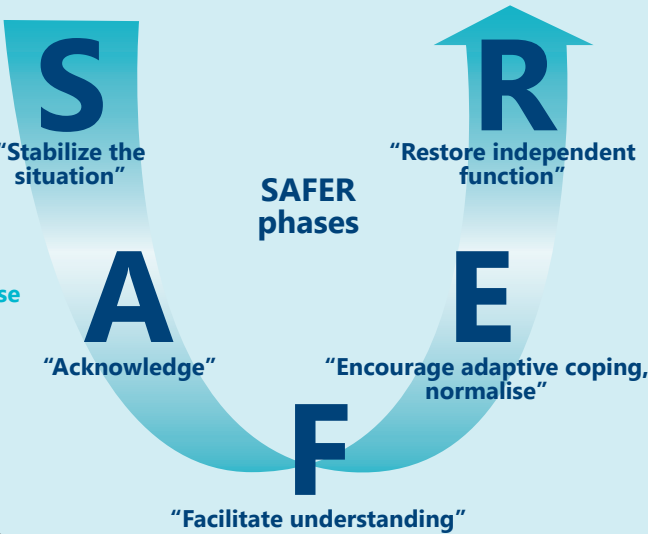
Stabilize the situation
“Let’s move over there, shall we?”
“Would you like some water?”

Acknowledge
“What happened?”
“What did you think?”

Facilitate understanding
“How did you feel?”
“How did you react?”
“Did you get any symptoms?”
“I can only imagine.”
“I would feel like that, too.”

Encourage adaptive coping, normalise
“This may occur, you may feel like that now.”
“Those reactions are normal” (symptom list)
“Could we learn anything from this?”
“Remember to avoid drinking alcohol – go for a walk instead.”

Restore independent function
“Are you in a state that will allow you to return home/to work?”
“How will you go on from here?”
“Have some sleep now and I can call you tomorrow.”



Issues that come up in ColleagueSupport (Mental First Aid) conversations are always treated confidentially.

(Adapted from Mitchell, J. 2006; Leonhardt & Vogt, 2008; Teperi et al. 2016)

Four kinds of symptoms may appear

Physical symptoms	Cognitive symptoms	Emotional symptoms	Behavioural symptoms
sweating	concentration problems	emotional shock	excessive use of alcohol; medicines, other intoxicants
rapid breathing	weakened perception ability	hate, fear, sorrow	unsocial behaviour
palpitations	memory problems	depression, helplessness	overreaction to surroundings
sleep disorders	confusion	mood swings	withdrawal, avoidance
muscle cramps	nightmares	guilt	inability to rest, anxiety, restlessness
physical sensations	pervasive ideas, memories and thoughts	insecurity	

(adapted on the basis of Jeffrey Mitchell 2006, 59-60 mukaan)

APPENDIX 7. INCIDENT-RELATED CONCEPTS AND THEIR DEFINITIONS

Non-conformity

= a situation in which objective evidence shows that one of ISM Code requirements is not met.

Accident

= an event or a series of events that leads to injury or material or environmental damage.

Hazardous occurrence

= a chain of events that could have led to a loss or damage, such as injury, environmental damage or business loss.

INCIDENT REPORTING

= operating methods that cover the reporting and analysis of the non-conformities, accidents and hazardous occurrences mentioned in Section 9 of the ISM Code.

Near miss case

can be used as a synonym for hazardous occurrence.

In addition, shipping companies have other terms that have become established, such as **defect** and **deviation**. The VTS incident reporting system has three different levels: internal reports, reports on the violation of International Regulations for Preventing Collisions at Sea and incident reports.

The definitions of terms used in this guide (Lappalainen 2016)



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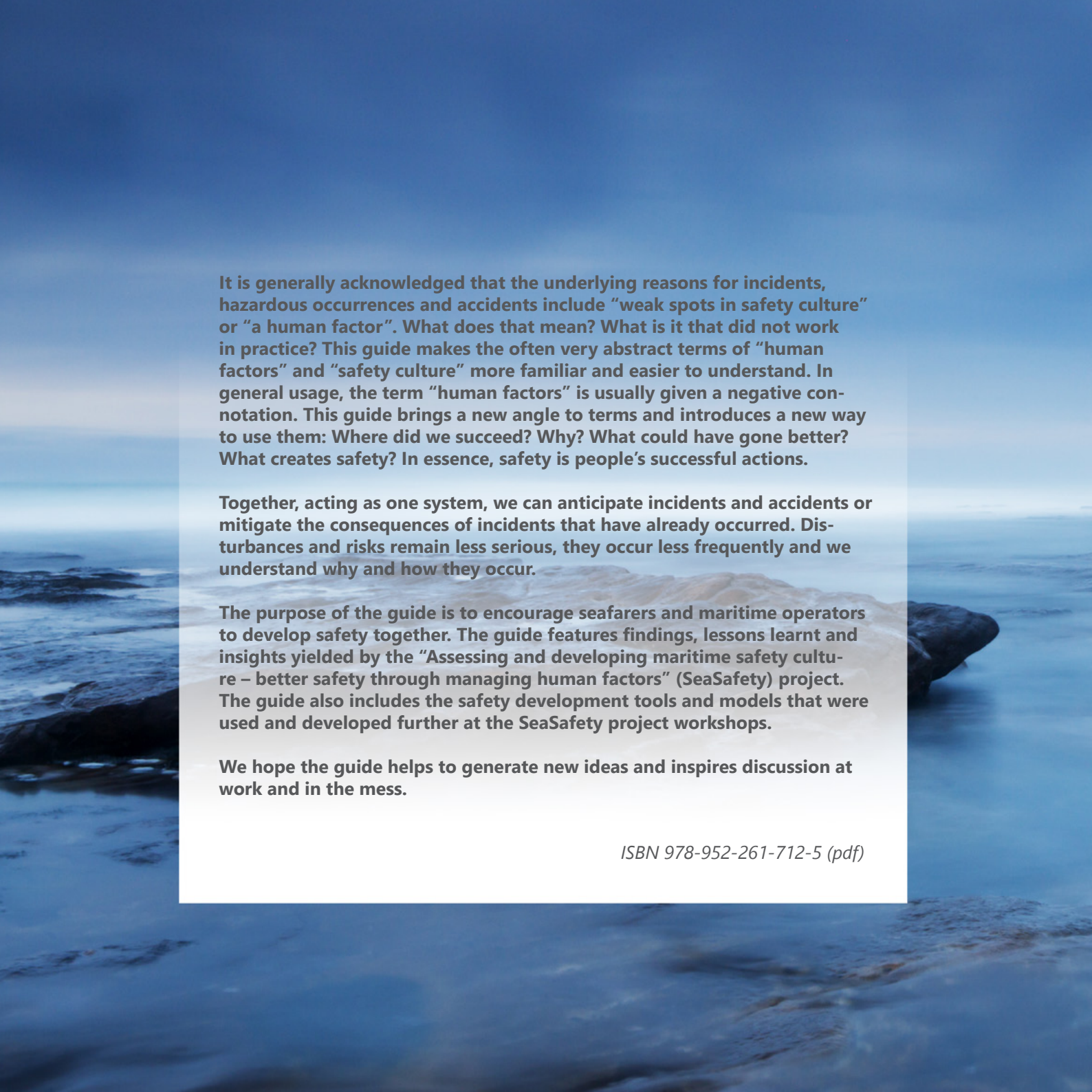
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It is generally acknowledged that the underlying reasons for incidents, hazardous occurrences and accidents include “weak spots in safety culture” or “a human factor”. What does that mean? What is it that did not work in practice? This guide makes the often very abstract terms of “human factors” and “safety culture” more familiar and easier to understand. In general usage, the term “human factors” is usually given a negative connotation. This guide brings a new angle to terms and introduces a new way to use them: Where did we succeed? Why? What could have gone better? What creates safety? In essence, safety is people’s successful actions.

Together, acting as one system, we can anticipate incidents and accidents or mitigate the consequences of incidents that have already occurred. Disturbances and risks remain less serious, they occur less frequently and we understand why and how they occur.

The purpose of the guide is to encourage seafarers and maritime operators to develop safety together. The guide features findings, lessons learnt and insights yielded by the “Assessing and developing maritime safety culture – better safety through managing human factors” (SeaSafety) project. The guide also includes the safety development tools and models that were used and developed further at the SeaSafety project workshops.

We hope the guide helps to generate new ideas and inspires discussion at work and in the mess.

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