

SHIPPING AND REST

How can we do better?

Guidance for shipping companies, ship managements and seafarers



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The risk of an accident increases when you are tired. Staying awake for 17 - 19 hours can have the same effect on your behaviour as having a blood alcohol level of 0,5 ‰.

(Williamson/Feyer, Occup Environ Med. 2000)



Photo: Knut Revne, The photo contest for seafarers 2015

This publication is based on the guide *‘Søfart og hviletid’* (shipping and rest) published by Seahealth Denmark (Søfartens Arbejdsmiljøråd). The content is based on voyages and interviews with seafarers and companies on their experiences when it comes to watch systems and rest periods.

In the chapter detailing the rules, we refer to the Norwegian book *‘Skipssikkerhetsloven med kommentarer’* by Terje Hernes Pettersen and Hans Jacob Bull. This book is based on the preparatory works for the Norwegian Ship Safety and Security Act. Reference is also made to Prop. 11 L (2011-2012) regarding amendments to the Ship Safety and Security Act (implementation of the STCW Convention's provisions on hours of rest).

We intend to keep this guidance up to date with new knowledge and research. The guidance may contain reference and spelling errors. Photo on front page: Ralph Tolentino, Photo Contest for Seafarers 2013.



Why and how?

Hours of rest at sea is subject to considerable attention. Do seafarers get sufficient sleep while they are on board the ship? What are the consequences of insufficient rest? What do the provisions on hours of rest say, and how can we comply with them? These are important questions that are relevant to the safety of the ship and the health of seafarers. This guidance provides some of the answers, and hopefully it will inspire you to look at planning in a different light. This will increase the safety and help more people get the rest they need.

Sleep and sufficient rest are crucial for the body to function optimally and for carrying out tasks in a safe and efficient manner. It is not only a question of the immediate well-being of the crew. It is crucial for the vessel safety and efficiency and the quality of the work. Over time, lack of sleep can be detrimental to the health. The balance needs to be right between hours of work and hours of rest.

As you can see, there are numerous reasons to pay attention to the planning of hours of work and rest. Moreover, it must be possible to improve the rest conditions at sea. The hours of rest require everyone involved - the company, ship management and all employees - to acknowledge that rest is crucial to maintain a healthy and safe shipping industry.



Photo: Bjørn-Thore Seljelid, The photo contest for seafarers 2013

Who can influence the hours of rest?

Several actors are involved:

- **The Norwegian Maritime Authority** determines the minimum safe manning at the request of the shipowner.
- **The customers** can make demands with consequences for operations and planning.
- **The company** establishes the overall framework for how the ship should be operated, such as voyage plans and crew size ("see to" duty).
- **The ship management** plans work and the watch system ("ensure duty").
- **Individual employees** also have a duty to ensure that they get the best sleep possible within the system and schedule.

This guidance addresses both the company, the ship management and the individual employees.

The company must set an example and show that they understand the importance of rest by laying down a framework to enable the ship management to plan well and ensure good communication between the ship and the company. The company must not man the ship in a way that compromises the provisions on hours of rest. The company may, however, only change the framework for the planning if they know the actual conditions on the ships. If this is the case, the ship management and crew members must make sure that the relevant information on hours of rest and rest is forwarded to the company.

The ship management must be willing to look at the planning with fresh eyes and through planning ensure that the crew will get the best rest possible.

Eventually, all employees must make sure to rest during the rest periods so that they are able to sail and work safely.

How does fatigue affect safety on board?

Fatigue-related accidents are a major problem in the shipping industry. Studies have shown that as much as 30% of all groundings are related to fatigue suffered by one or more crew members. Having an adequate number of qualified and sufficiently rested crew members is important for the safe operation of a vessel. We do not know for certain the total number of accidents caused by the lack of sleep. Accidents are rarely caused by one single factor. However, we know that heavy workload, high levels of stress, insufficient rest and poor quality of sleep negatively affect alertness and the ability to concentrate, and also increase the likelihood of accidents.

The fact that fatigue decreases people's performance is not new. However, it is only over the last 15-20 years that we have been able to clearly identify how the lack of sleep affects our performance of various tasks and why the shipping industry is particularly vulnerable. Many of these findings are related to the nature of the tasks on a ship. While dynamic tasks involving light physical work are relatively resistant to sleepiness, tasks associated with passive monitoring and high mental requirements are strongly affected. Navigation often includes tasks which tend to cause fatigue-related accidents. Operation 24/7, low manning level and shift systems making it impossible to get sufficient rest are other conditions that put the shipping industry at risk.

In the past, measures to fight fatigue have been directed at the behaviour of individuals. Advice about a healthy diet, sleep habits and safe caffeine intake is important, but not enough to ensure that fatigue does not affect safety on board. To make the crew perform their best, it is also necessary to have measures aimed at the organisation of the work and the design of the ship. Organisational measures mainly consist of finding an efficient manning level, using an appropriate shift system and having a wide distribution of tasks.



“Accidents at sea caused by fatigue are meaningless, as they could have been avoided. Accidents often have serious consequences. When the Axxon Valdez ran aground on Blight Reef in 1989, a sleep deprived fourth officer was on watch. Since then, hundreds of ships have run aground in different places all over the world, and in many cases fatigue has played a role. An in-depth investigation “Accidents at sea between 1994-2003” carried out by the Marine Accident Investigation Branch (MAIB) showed that one third of the groundings happened because a mate was sleep deprived. An investigation by the Norwegian Maritime Authority in 2006 showed that mates who had fallen asleep on watch were involved in eight out of 88 groundings.

(Navigare 2/2007)



Photo: Vidar Strønstad, The photo contest for seafarers 2014



The provisions in general

The size of the crew and the distribution of hours of work and rest are key to getting sufficient sleep. For this reason, provisions have been made for manning and hours of rest for those who work at sea.

Determining manning

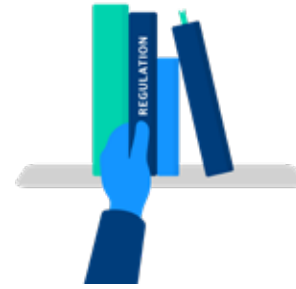
For each ship, the Norwegian Maritime Authority (NMA) shall determine the minimum safe manning including job specifications and qualification requirements, etc. that are necessary to maintain the safety of the ship and persons on board and prevent pollution of the marine environment.

The safe manning is determined by information in an application from the company. The application is based on the requirements of section 8 of the Manning Regulations. The safe manning is determined for all ships depending on ship type, equipment, operation, trade area, work arrangement, passenger number, etc. so that the size and composition of the crew make it possible to cover all relevant operations, tasks and functions necessary to maintain the safety of the ship and the people on board, including:

- maintenance of safe navigational and engineering watches;
- operation and maintenance of the propulsion machinery and rescue and emergency response systems;
- operation and maintenance of damage control, fire-fighting and communication equipment;
- safety-related maintenance and cleaning;
- mooring;
- catering and health issues.

The minimum safe manning level for ferries connected to the national road network shall in addition be assessed according to network, tonnage and capacity.

In other words, the vessel's minimum safe manning is the minimum permitted manning and must not be understood as a decision on what is considered correct manning in all situations.



The company is fully responsible for ensuring that the vessel is sufficiently manned at all times, and the company has a duty to continuously assess the manning needs. A proper process that includes risk assessment of the manning needs is therefore necessary in order to achieve a specification of manning that makes the ship a safe and effective workplace.

The NMA usually does not interfere with determining the necessary resources for solving commercial or maintenance tasks on the ship that do not directly affect the safety of the people on board or the ship. Examples are administrative tasks related to the cargo, deck and machine maintenance, service and sales to passengers or the ship's administration. This means that the company is responsible for determining whether the crew can handle these tasks without compromising the provisions on hours of rest. The ship may get assistance from ashore in different situations, such as dock workers for loading and unloading, securing of cargo, ISPS guards by the ship's walkway, repair personnel sailing on the ship and maintenance during docking. Moreover, there might be technical solutions and administrative tasks on board that can be relieved with IT solutions or possibly be reassigned to the shore-side organisation.

In addition, it is the responsibility of the organisation to make sure that the provisions on hours of rest are met by the crew at all times. The company must therefore persistently assess whether the current manning is sufficient for the fulfilment of the provisions on hours of rest. This means that the company must pay attention to the increased workload on board - for instance if the ship enters a new trade area, is being used in a different way, or ages and requires more routine maintenance and repair.





Provisions relating to hours of rest

The provisions on minimum hours of rest are international. The main rule for seafarers is that the hours of rest shall not be less than ten hours in any 24-hour period and 77 hours in any 168-hour period (one week).

Hours of rest may be divided into two periods, one of which shall be at least 6 hours in length. The interval between consecutive periods of rest shall not exceed 14 hours.

Any period of 24 hours means that a person's 24-hour period starts when they start their watch or work, for example from 08:00 until 08:00 the following day.

An exception can be made from the main rule in a binding collective agreement. However, the act sets a minimum standard for the right to be granted such exemption for certain positions on board. The conditions are as follows:

- The weekly rest period may be reduced to 70 hours for a period of up to two consecutive weeks. The intervals between two periods of exceptions shall not be less than twice the duration of the exception.
- For up to two days per week, the daily hours of rest may be divided into no more than three periods, one of which shall be at least 6 hours in length, and neither of the other two periods shall be less than 1 hour in length. The intervals between two consecutive periods of rest shall not exceed 14 hours.

You can see in the collective bargaining agreement whether exceptions from the main rule apply to you or your ship.

Furthermore, there are a number of other situations on board where exceptions may be made from the provisions on hours of rest for a limited period. See the elaborated rules on pages 31 and 32.

The employee may not be instructed to carry out work that can be postponed during his/her weekly 24-hour rest period or on public holidays.

For persons under the age of 18, there are stricter rules to ensure that they are allowed to rest.



Where can I find more information?

Ship Safety and Security Act

Section 24 "Hours of rest" implements the provisions of the MLC, STCW Convention and EU Directives concerning hours of rest. The most recent amendments followed the IMO's revision of the STCW Convention in Manila in June 2010. These amendments entered into force on 20 April 2012.

Regulations on hours of work and rest on board Norwegian passenger and cargo ships, etc.

The Regulations complement the provisions of the Ship Safety and Security Act on hours of work and rest on board Norwegian passenger and cargo ships.

Regulations on hours of work and rest on board fishing vessels

The Regulations complement the provisions of the Ship Safety and Security Act on hours of work and rest on board Norwegian fishing vessels.

Regulations on work by and placement of young people on Norwegian ships

Section 10 Prohibition of night work

Section 11 Rest periods and leisure time

Section 12 Extra work in the event of accidents and similar force majeure

Regulations on the manning of Norwegian ships

Regulations on watchkeeping on passenger ships and cargo ships

Section 5 Fitness for Duty

Other provisions on taking over the watch

Regulations on the working environment, health and safety of persons working on board ship

Section 2-2 Risk assessment

Section 2-3 first paragraph (e). Arrangement and organisation of work

Section 6-2 third paragraph. Duties of persons working on board

Regulations on accommodation, recreational facilities, food and catering on ships.

International Conventions

ILO Convention 186, 2006 on seafarers' working and living condition (Maritime Labour Convention, MLC)

The purpose of Regulation 2.3 - Hours of work and rest - is to ensure that seafarers have regulated hours of work or hours of rest.

ILO Convention 188, 2007 on work in fishing

Articles 13 and 14 contains provisions on manning and hours of rest.

The international Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (the STCW convention), with amendments.

Section A-VIII-1 regarding watchkeeping (Fitness for duty) has laid down the minimum standards for hours of rest for seafarers.

Council Directive 1999/63/EC of 21 Juni 1999, which is integrated into the EEA Agreement, implements a framework agreement on hours of work on ships (ESCA Agreement), which is the result of negotiation between the European Community Shipowners' Association (ECSA) and the Federation of Transport Workers' in the EU.



Minimum hours of rest per 24-hour period (according to Ship Safety and Security Act of 20.04.2012 section 24)

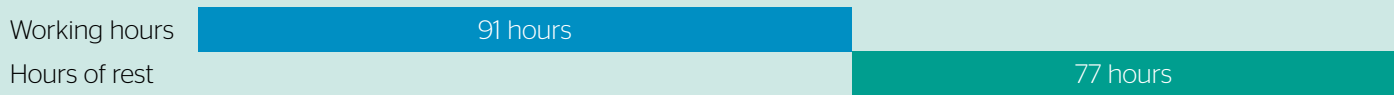


The hours of rest must not be less than 10 hours in any 24-hour period. A working day is a 24-hour period starting when the employee starts his/her watch. The rest period may be divided into no more than two periods, one of which must be at least 6 hours in length and the other not less than one hour. The interval between two periods of rest must not exceed 14 hours.

A minimum rest period of 10 hours per 24-hour period is insufficient if you work every day of the week.

See the next figure.

Minimum hours of rest per week (according to Ship Safety and Security Act of 20.04.2012 section 24)



The hours of rest shall be no less than 77 hours in any 168-hour (one week)

Note! A 6-hour rest period is the minimum requirement for an uninterrupted 24-hour rest period.

There are different working hours arrangements with longer consecutive rest periods than this, which are better suited to ensure sufficient sleep.

Record of hours of rest

In order to check compliance with the minimum rest periods, they must be recorded and checked in every period of 24 hours and 7 days. All seafarers must be supplied with a registration form for daily rest periods.

The Norwegian Maritime Authority has made a registration form (KS-3000, "Record of hours of rest for seafarers"). Each form covers one month. The form must be signed by the employee and the master, or a person authorised by the master.

The form may also be used for planning purposes. The completed forms can form an excellent basis for discussion in the safety board on how the provisions on hours of rest have been complied with on board, and how the company should be informed of any difficulties with complying with the hours of rest.

Registration forms for rest periods shall be kept on board for at least 6 months after they have been completed. Additionally, registration forms must be kept by the shipping company for a minimum of 3 years after being completed.



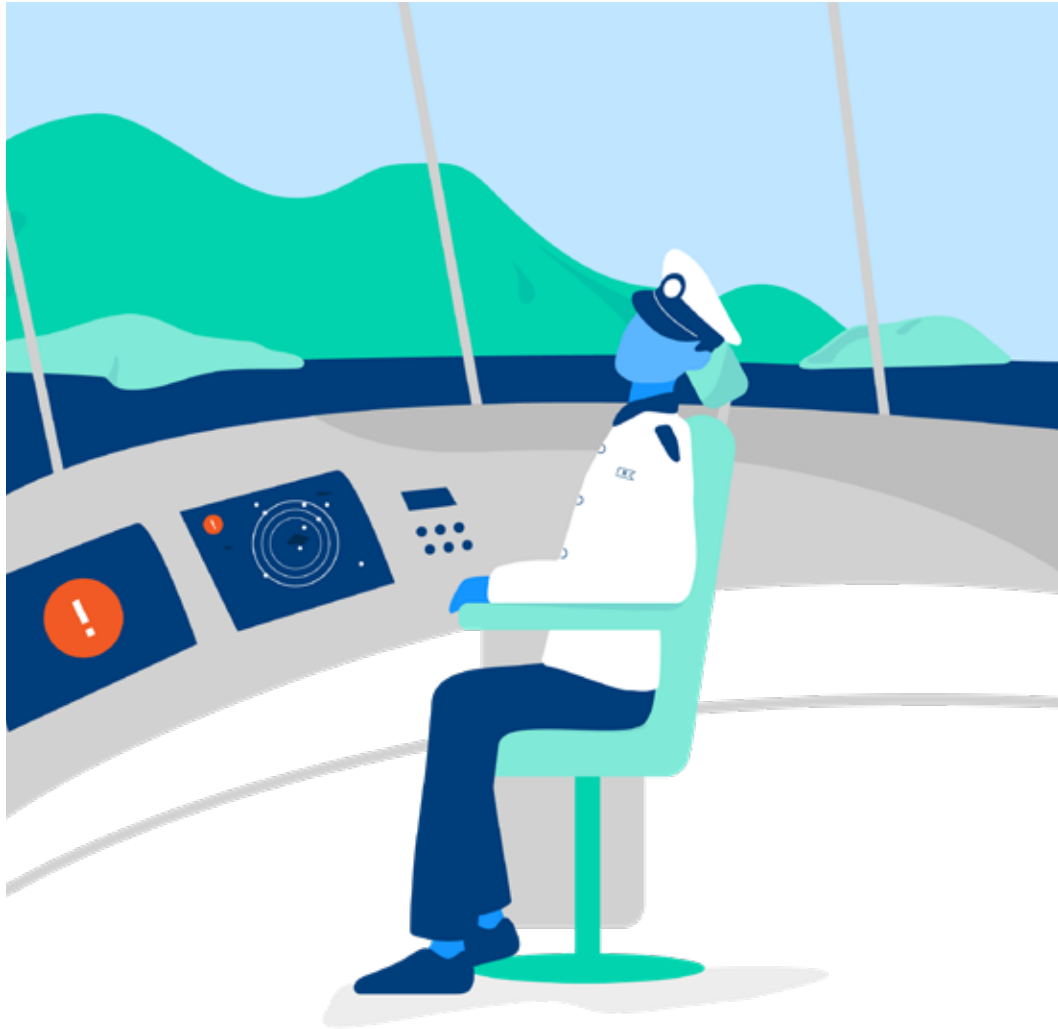
Off-duty time and rest

The rules on rest hours alone do not ensure sufficient rest. Needless to say, the employees must use their off-duty time to get sufficient rest and make sure they get enough peace and quiet.

Besides, it seems to be hard to find the time to get adequate sleep in one of the current watch systems at sea, the 6-6 watch schedule. The next chapter gives more details about what it takes to get sufficient rest, and on page 14 you can read about watch systems and fatigue

A study of more than a million people over a period of six years showed that people who slept about 7 hours had the lowest mortality rate, and those getting less than 4.5 hours had the highest mortality rate. Moreover, the study showed that it is possible to have too much sleep. Those getting more than nine hours of sleep a day had an increased mortality rate.

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CASE

It is just after 4:30 am, and it is still dark outside. The mate has just poured another cup of coffee in an attempt to stay awake. He has been on watch since midnight and still has a few hours to go. He looks forward to going to bed after a few days of hard work at port.

He quickly calculates: 6 – 8 hours of sleep a day but split into bulks it means that he only got 3 – 5 hours of uninterrupted sleep at a time. But wasn't that the way it had to be to get everything to work out?

He sits still in his chair. It gets more difficult to focus on the radar screen – the picture becomes blurry and monotonous.

His thoughts start to wander, and now he is thinking about the summer holiday and things he plans to do when he gets home. Perhaps they should rent a holiday cottage. He images his kids on a swing.

All of a sudden he wakes up. The alarm has gone off...

What does fatigue mean for health and performance at work?

Lack of sleep can have fatal consequences for both the ship and the crew. Some might say that a good night's sleep is a luxury, but they are wrong. It is essential for your health and the ability to concentrate to be rested.

Sleep, food and drink are primary needs. Good sleep is just as important for your well-being as a healthy diet and exercise. Poor sleep quality can lead to a weakened immune system, increased risk of infections, high blood pressure and diabetes. During sleep our body undergoes processes that are important to our physical health. If you are tired, you may find that you crave sweet and unhealthy foods.

We all know the effects of a good night's sleep. You wake up feeling well-rested, happy and ready to tackle anything that the day will bring. You are full of energy and feel like you can take on the world. We also know the effect of the opposite, a night of poor or too little sleep. Your sleep was disrupted, you feel tired, heavy headed and don't want to leave the bed. You become introvert, irritable, short-tempered and you think and react more slowly than when you are well-rested. Why is this the case?

Because good sleep is a precondition for us to be able to function properly. We need sufficiently long and uninterrupted sleep

How much sleep do you need?

You should sleep around half of the time you are awake. This varies from person to person, however. Some manage with 6.5 to 7.5 hours of sleep, while others need 8 to 8.5 hours. There are many factors that can affect the length and quality of our sleep. Most important are the need for sleep and our daily routines. Your need for sleep is controlled by how long you have been awake. The daily routines are controlled by our "inner clock".

Need for sleep

Sleep is just like hunger and thirst. The longer we go without drinking, the thirstier we get. The same goes for sleep. We are normally awake for 16 to 18 hours, then we become so tired that we can easily fall asleep. After 6 to 8 hours of sleep, we wake up well-rested and can again function for 16 to 18 hours.

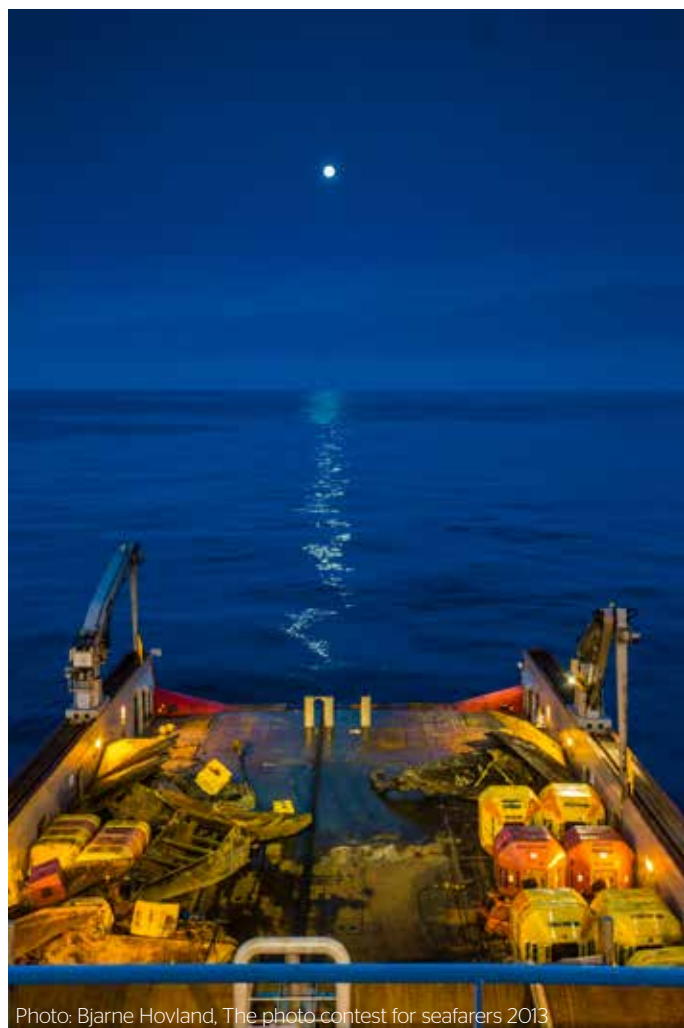


Photo: Bjarne Hovland, The photo contest for seafarers 2013

The need for sleep builds up during the course of the day and decreases when we sleep. You sleep according to the need you have built up and wake up well-rested. However, if you get less sleep than you need, you will feel tired and not rested.

When we sleep, we are unconscious, but can be woken up. How easily we wake up depends on the stage of sleep we are in.



CASE

John, an ordinary seafarer, is standing on the cargo hatch. The time is just after noon, and the sun is burning his arms and shoulders. He can taste salt on his lips. His tasks are almost done - he just has to check the last lashings from the port stay. Afterwards, he will have a cool shower before bed.

He has been on watch all night because his mate became ill. John feels tired, and he does a few minor mistakes now and then. A moment ago, he nearly tripped over a lashing on the hatch.

John gets to the final lashings on the ship side. He shakes his head. The dockers have positioned them wrongly. If only the mate could have checked the work of the dockers. Then there would be no need for John to check their work. He takes a glance over his shoulder, at the bridge. No, they can't see him. If he doesn't get the fall arrest, he can quickly fix the lashings and finally get to bed.

He reaches for the outer edge, but his foot is stuck. He loses his balance, and the grey deck is fast approaching. He curls up to soften the fall, but it is too late.

Sleep cycle and stages of sleep

A sleep cycle consists of several stages. From being awake to falling asleep we go through sleep stage number 1. We doze, and consciousness gradually disappears over 5 to 10 minutes. Then we move to stage 2 and sleep for about 30 to 40 minutes. It is fairly easy to wake up from stage 2, for example if the ship rolls or there is noise in the passageway. In such cases, consciousness rapidly returns, and in just a couple of minutes you will be able to think clearly.

If you are allowed to sleep undisturbed, you slide into deep sleep, stages 3 and 4. At this stage, it is very difficult to wake you. If you are woken up, full consciousness is not regained as easily as from stage 2. Your brain wants to go back to sleep, and it does not function the same way it does when you are fully awake. This means that if you have to deal with problems in this condition, there is an increased risk of making wrong decisions.

On the other hand, if you are allowed to continue sleeping, the deep sleep disappears after around 30 to 40 minutes. You go back to stage 2 and possibly stage 1 and enter dream sleep – also called REM (rapid eye movement).

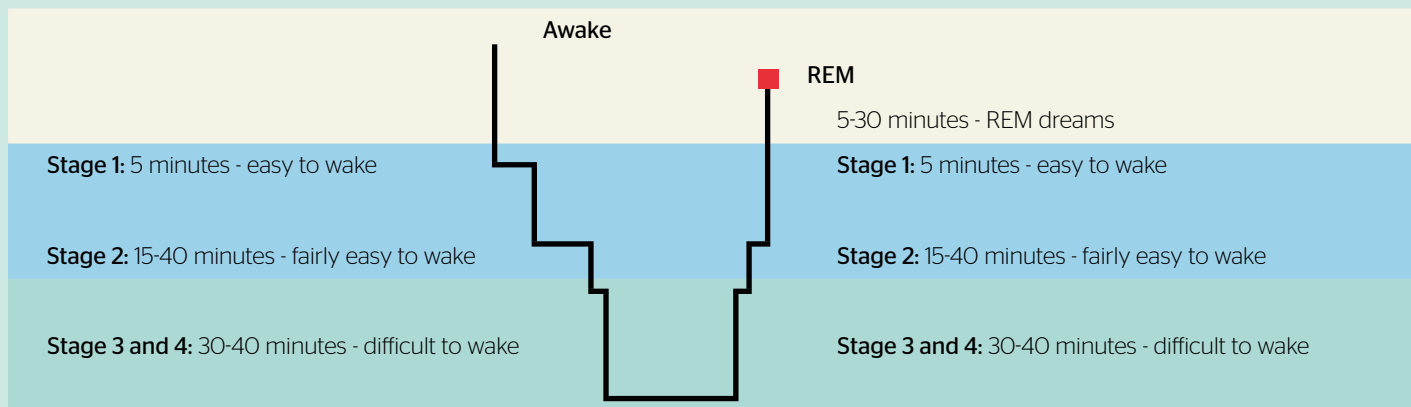
At this stage, the eyes move rapidly behind closed eyelids. If we wake someone at this stage, they are usually able to remember vivid dreams, and quickly regain consciousness.

A sleep cycle lasts for a total of around 1.5 hours. After that, you will enter your next sleep cycle. In a normal night, you will go through 4 to 6 sleep cycles.

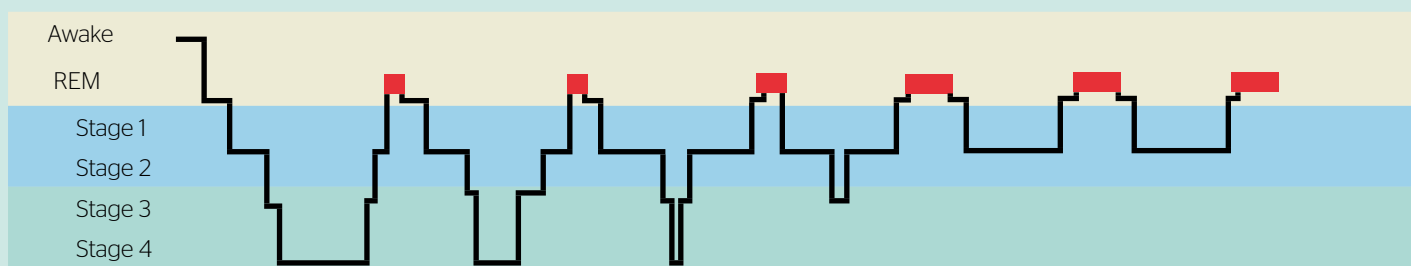
In the first part of a sleep period, you will have a lot of deep sleep in each cycle. During the course of the sleep period, the amount of deep sleep decreases. In the last part of the sleep period, you sleep lightly most of the time (stages 1 and 2 and REM).

If you are trying to sleep after being awake longer than usual, for example when approaching or leaving port or major maintenance jobs, you will find that it is easier to reach deep sleep. There will also be more deep sleep in the cycles. This means that you are catching up on “lost sleep” by sleeping more heavily. So you do not need to replace lost sleep by sleeping the same amount of hours.

A sleep cycle with the stages of sleep. A sleep cycle takes around 1,5 hours.



This shows a sleep period of 8.5-9 hours consisting of 6 sleep cycles. The deepest sleep is in the first cycle.



Circadian ryhtm

The longer we are awake, the harder it is to stay awake, especially if we do not stay physically active. It is particularly difficult to stay awake at night. We actually have an inner clock at the centre of our brain which is operating steadily. It has a rhythm of its own and sends signals saying that we should be active during daylight and passive and relaxed during the hours of darkness. These signals continue even if we try to change our daily routines.

As an example, it generally takes a whole week to change your circadian rhythm if you fly to China or the USA. When you arrive, your body clock does not respond to the routines of the people in China or the USA. They are either several hours ahead or behind. It takes at least one week before your body and inner clock adjust to the new time.

The inner clock controls our body temperature and hormones, including cortisol and melatonin. The concentrations of both hormones in the blood depend on the time of day. High cortisol levels are stimulating and activating. High melatonin levels make us slow and sleepy. During the day, the body temperature and cortisol level are high, and the melatonin level is low. At night, this is reversed. During the night, the body temperature and cortisol level fall and the level of melatonin rises.

Sunlight has the strongest impact on our inner clock. It breaks down melatonin. This is why special full spectrum daylight lamps, for instance in in control rooms or deck offices, help people feel less sleepy. Other influencing factors are physical activity and meals. Sometimes we can help make the inner clock adjust to a new circadian rhythm by changing these influencing factors.

Consequences from changed circadian rhythm

Working at night means working at a time when the brain is ready for sleep, until it has adapted to the new circadian rhythm. This means that you think a little slower and the reaction time can be a little longer. The risk of making mistakes follows the inner clock. If you switch from a normal daily rhythm of sleeping at night and being awake in the day, you can manage reasonably well for the first hours of the night. But between 3 a.m. and 5 a.m., reaction times are longer and the ability to concentrate has decreased.

It becomes very difficult to keep your eyes open. This means that there is a great risk of mistakes and accidents. Especially if you are already sleep deprived. And if you have to sit still, monitor and keep lookout in the dark, it becomes even more difficult to stay awake.

Many can relate to the experience of nodding off, difficulty keeping your head up and your eyes closing. You fall asleep, and perhaps you wake up as your head is nodding. This is called "micro sleep". But sometimes we don't wake up when our head nods forward. You continue to sleep until an alarm or a colleague wake you up. This is properly falling asleep, and when it happens, you are unable to keep an eye on the signals you are meant to be watching. Even if you are "just" sleepy, your response time may be longer. This means that you don't react in time, and in some situations, the consequences can be catastrophic.

Finally, when someone comes to replace you and you can go to bed, it can be difficult to fall asleep even if you are very sleep deprived. This is because your circadian rhythm has signalled to the brain and body that you should be awake and active. If you are lucky enough to fall asleep, you risk waking up again easily. This is partly because your circadian rhythm stimulates activity, and partly because it is daytime with disturbing light and noise.

Most people find it gets better after a couple of nights. Your inner clock starts adjusting to your new circadian rhythm, and after 5-6 days most people find they have adapted to the new rhythm. Even so, few who work at night get the same amount of sleep as those who work during the day. It is harder to get good sleep during the day than during the night. So periods of working at night often equal a constant lack of sleep.

The longer you work the same hours, and the less shifts you have, the more you get used to it. In a perfect world, half the crew would work at night and sleep during the day, while the other half would sleep at night and work during the day. Regrettably this is rarely possible or desirable – every time you change work shifts, you disconnect from your rhythm and it takes several days to reconnect.



Photo: Mikhail Chulanov, The photo contest for seafarers 2014



Photo: Oddmund Reite, The photo contest for seafarers 2012

CASE

It was close to 1 a.m., and Michael had been replaced by the deck watch around midnight. He had been on watch for the past six hours. He went to the bridge to check that the charts were in order and the route ready on the GPS. He had been working on the route that afternoon and just wanted to do a final check. They were scheduled for departure in a couple of hours, and if he checked now, he wouldn't have to think about this when he got up to make everything ready on the bridge.

Michael checked his watch. There seemed little point in going to bed. He would have to get up again in one hour, so he would hardly get any sleep. It would just make him feel totally shattered. He might as well sit and watch a film.

When the bridge was prepared, he went out on deck for departure at 3 a.m. He had only had two hours of sleep after dinner the previous day, and he was tired. But he pulled himself together. If the others can, so can I, he thought.

Watch systems and fatigue

The watch system provides a framework for how much rest each seafarer can get. At sea, there are two main watch systems: a two-shift watch with two teams covering all working hours of a day and a three-shift watch with three teams covering the working hours. The company makes the final decision about crew size based on the minimum manning provisions from the Norwegian Maritime Authority. This means that the company also decides which watch system should be used on board.

By focusing on watch schedules, duties and how they are distributed, it is possible to arrange for the crew to get sufficient sleep.

3-shift watches

The three-watch system implies approximately 8 hours on and possibly 16 hours off in a 24-hour period, provided this does not overlap with your other shifts. This basically means that there should be no problem in complying with the provisions on hours of rest within a 24-hour period or a week. In some situations, however, overtime work might be required, and in such cases it is important to ensure that the provisions on hours of rest are complied with.

Please note that other conditions can lead to insufficient sleep as well, such as changed meeting times affecting the circadian rhythm or night work and noise causing poor sleep quality.

2-shift watches

On a two-shift watch, it is usual to work a 12-hour shift followed by 12 hours off duty. Initially, this is not in conflict with the provisions on hours of rest for a 24-hour period or a week. But the well known 6-6 watch system is a bit more challenging to use. With this system it is difficult to get more than 5 hours of sleep at a time, even if you go straight to your cabin when you have finished your watch. Firstly, it takes time to get to the cabin. For officers of the watch it also takes time when the watch is handed over to the relieving officer. Secondly, it takes time to calm down and fall asleep.

A Swedish study from 2007 by Margareta Lützhöft confirms that seafarers on a three-watch system are more rested than seafarers on a two-watch system. The study (by the Swedish National Road and Transport Institute (VTI)) is called "Fatigue at sea - A Field Study in Swedish Shipping".

There are other watch systems besides the 6-6 system. One example is the 8-4 watch system. The 8-4 system provides better conditions for getting enough sleep since one of the rest periods is long enough, but planning the meals can be challenging. Even so, it is a good idea to check whether other watch systems might be better a better fit for the ship and the duties involved, while at the same time ensuring sufficient rest.

When setting up a watch system, there are many things to consider, such as duties, port calls and meals. The form below compares various two-watch systems. The time of the watch change matters. In your natural circadian rhythm, you are very tired at night, particularly at the end of the night between 3 a.m. and 5 a.m. This means that it is hard to get up and take over a watch at that time. This problem occurs in the 4-4-8-8 and 5-5-7-7 systems if the watch schedule starts at midnight

The relieving person will then have to get up at 4 a.m. and 5 a.m. correspondingly. Also, we should avoid waking someone up during the first hours of sleep, where they get the biggest portion of deep sleep. The sleep quality deteriorates if someone wakes you during this period. Note that if you wake somebody in the deep sleep phase, they will find it difficult to wake up, and their ability to concentrate and react will be very poor.

If, for various reasons, it is necessary to place a shift in this critical period, it is important to ensure that the crew is as rested as possible before the watch starts.

On page 16, you will find examples of watch planning. When deciding on the watch systems, you need to consider the duration of periods of rest and the times when the watches change.

Watch system	Opportunity to get enough sleep	Duration of watches	Distribution of night duties	Link to mealtimes
6-6-6-6	Poor	Medium	Evenly balanced	Easy
12-12	Good	Very long	Great imbalance	Easy
4-4-8-8	Good	Long and short	Equal	Difficult
5-5-7-7	Fairly good	Fairly long and fairly short	Option of even balance	Difficult



Photo: Han Lwin Oo, The photo contest for seafarers 2019

CASE

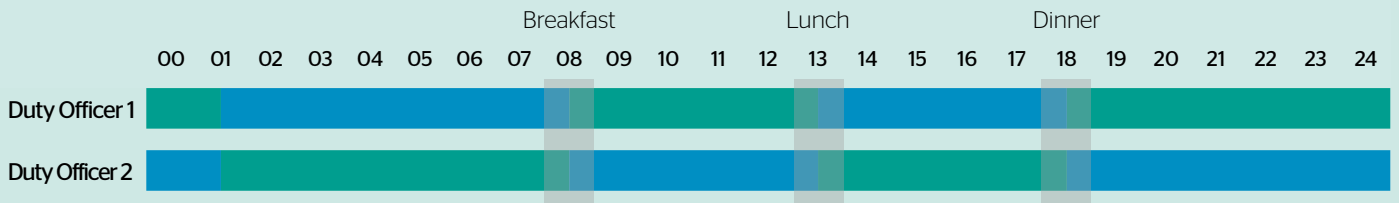
Engineer Hans has just finished the evening round and is ready for bed. He is on an on-call shift, but is tired, so he hopes there will be no alarms during the night. The first alarm goes off at 2 a.m.

He gets dressed and goes down to the control room. Luckily, nothing serious has happened, so he goes back to bed 15 minutes later.

The same thing happens at 3 a.m.

At breakfast in the morning, he feels groggy. The first engineer joins him: "Good morning, Hans. Are you feeling OK? Ready for boiler maintenance?"

First watch system example - 2-shift watch 7 - 5 - 5 - 7



Advantages:

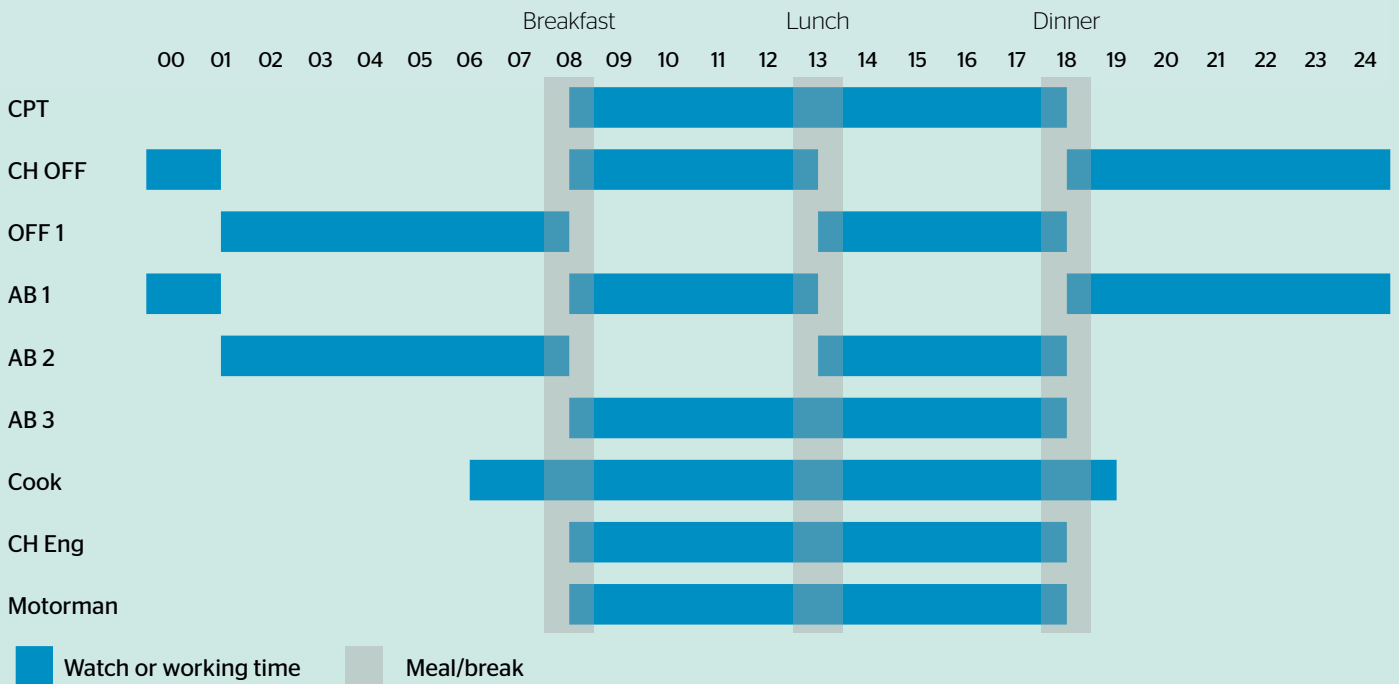
- Both offer the option of sufficiently long periods of sleep
- Watches correspond with mealtimes
- The person on night watch has a long rest before going on watch

Disadvantages:

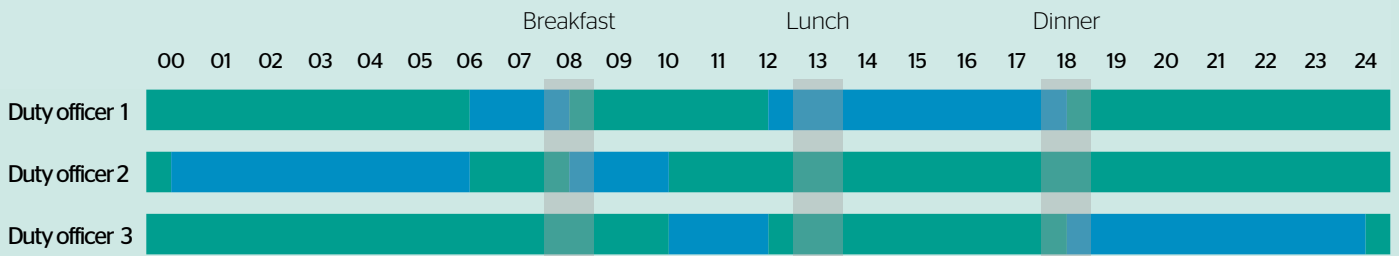
- Only one sleeps at night

Below we show how the planning might be for a ship if 7-5-5-7 was introduced.

Remember that this is only an example. You need to adapt your watch system so that the planning fits your ship.



Another watch system - 3-shift watch 6 - 2 - 2 - 2 - 6 - 6



Advantages:

- Everyone has the opportunity to get enough sleep. Two will get a good night's sleep, one will have to work at night, but there is a long period during which it is possible to rest.
- Shifts match mealtimes.

Disadvantages:

- None, provided that no rest time is lost when watches are handed over.



Photo: Jouni Niskakoski, The photo contest for seafarers 2009

CASE

Anita sits down for dinner in the mess. She managed to squeeze in a shower after her rounds. She has been doing scheduled maintenance all day and is getting tired. But they will be docking during the night, and after arrival they will have to get ready for an overhaul of the exhaust valve on the main engine. Just thinking about it makes her feel exhausted.

She has had a full working day and still needs to do the final evening round. But they will arrive during the night, and who knows when the exhaust valve overhaul will be done? Probably not until sometime tomorrow morning. Why on earth couldn't they have planned things so that she could have been sleeping until arrival?

Planning and choice of watch system

Many people are sceptical of changes in the watch system since they may disturb a number of routines. We know what we have, and we know that it works. Moreover, being loyal to routines and payroll systems can also be a hindrance when trying to change the watch system. When we change to a different watch system, we challenge our routines. You might wonder why most vessels have the same watch systems and the same way of organising their work despite the various ship types, cargoes, trade areas, nationalities, ISM systems and companies.

Sleep is so vital to our health that it is worth considering if changes should be made to the. A thorough review of the watch system might show that minor changes in the work distribution to a great extent could help more people get enough sleep.

When selecting a system and planning a watch on board, there are a number of pieces of the puzzle that need to fit together. Some are known conditions, others are unpredictable.

Conditions:

- ship
- route plan
- duties
- crew Size
- crew qualifications

Unpredictable conditions:

- accidents and disruptions
- weather
- delays

As mentioned above, the company establish the overall framework for the operation of the ship. Accordingly, the company should start by discussing the options. Which principles and guidelines should be applied to the watch planning? When this has been determined, the individual ship will be in a position to decide the detailed planning.



In addition to the company's guidelines, the following should be taken into account:

- a list of duties to be carried out while the ship is underway;
- an assessment of persons who will be able to carry out these duties in a safe manner;
- a list of duties that can only be carried out at certain set times;
- an assessment of whether or not it is possible to be more flexible with meal times.

Based on this, you should try to make a watch schedule to, as far as possible, ensure:

- sufficiently long periods of rest enabling as many as possible to get at least six consecutive hours of sleep;
- pay attention to the critical period between 3 a.m. and 5 a.m. for those seafarers who have a normal circadian rhythm;
- additional rest hours for seafarers who do not get long rest periods.

In the practical planning of the work it is important to ensure that noisy work will not be carried out near seafarers who are attempting to sleep. It is also important to ensure as much continuity in every person's watches as possible, so that the crew do not have to change their circadian rhythms more than absolutely necessary.

You need to plan so that you are rested when you go from a 3-shift watch to a 2-shift watch with less opportunities to sleep.

Plan the watch changes to correspond with the arrival times. This frees more resources for when you need them.

Focus on the skills and qualifications of the crew rather than their ranks and titles. By doing so, you get more alternatives to make the planning add up. Why is it always the mate who checks the fire extinguishing equipment? Could the catering assistant be the ISPS watch? Could the mate on watch communicate with the authorities rather than the captain?

Planning port stays

Port stays are challenging. Many additional duties require extra hands. Many ships do not make plans for their port stays any longer, because they have not been able to stick to the plan. However, there are good chances of making different plans if you look at it with fresh eyes.

Firstly, you should plan as much rest as possible before arriving at port in order for the crew to feel refreshed and ready for the duties.

Secondly, you should look at the distribution of the duties from a new perspective. This distribution does not necessarily need to be based on titles, meaning that it is set which duties an able seafarer, second officer, engineer or chief mate have during a port stay.

Thirdly, it is important to pay attention to the watch-change time. Most seafarers have experienced that if watches are changed around the time of departure or arrival, it is much easier to ensure compliance with the provisions of hours of rest. One part of the solution is found in this experience. If you plan watch changes based on the time of arrival, the critical conditions related to hours of rest may be minimised. New planning methods can get us quite far.

For the planning to be successful, we need to have a wider mindset than “this is how it has always been done”, and we need to look for opportunities rather than obstacles.

Tools to help plan port stays

The tool is made up of three parts:

- A) Record of port stay tasks
- B) Form for task schedule
- C) Form for task distribution

A) Record of tasks

First, you must register the tasks before, during and after port stays. The figure on page 20 shows some of the tasks. You can add more if needed. The more tasks you have registered and planned, the less unforeseen tasks will appear.

B) Task scheduling

In the form on page 22, you can enter tasks in a timeline where the starting point is the port call time. You can add or delete tasks as appropriate.

The watch change has been scheduled to correspond with the port arrival, which is the time when most resources are needed. Indicate in the form when the tasks should be carried out.

C) Distribution of tasks

In the lower part of the form, you can enter the names of the persons who will carry out the individual task. Given the timeline, the tasks should be distributed among the workers. Afterwards, you need to consider whether this is the best work distribution.



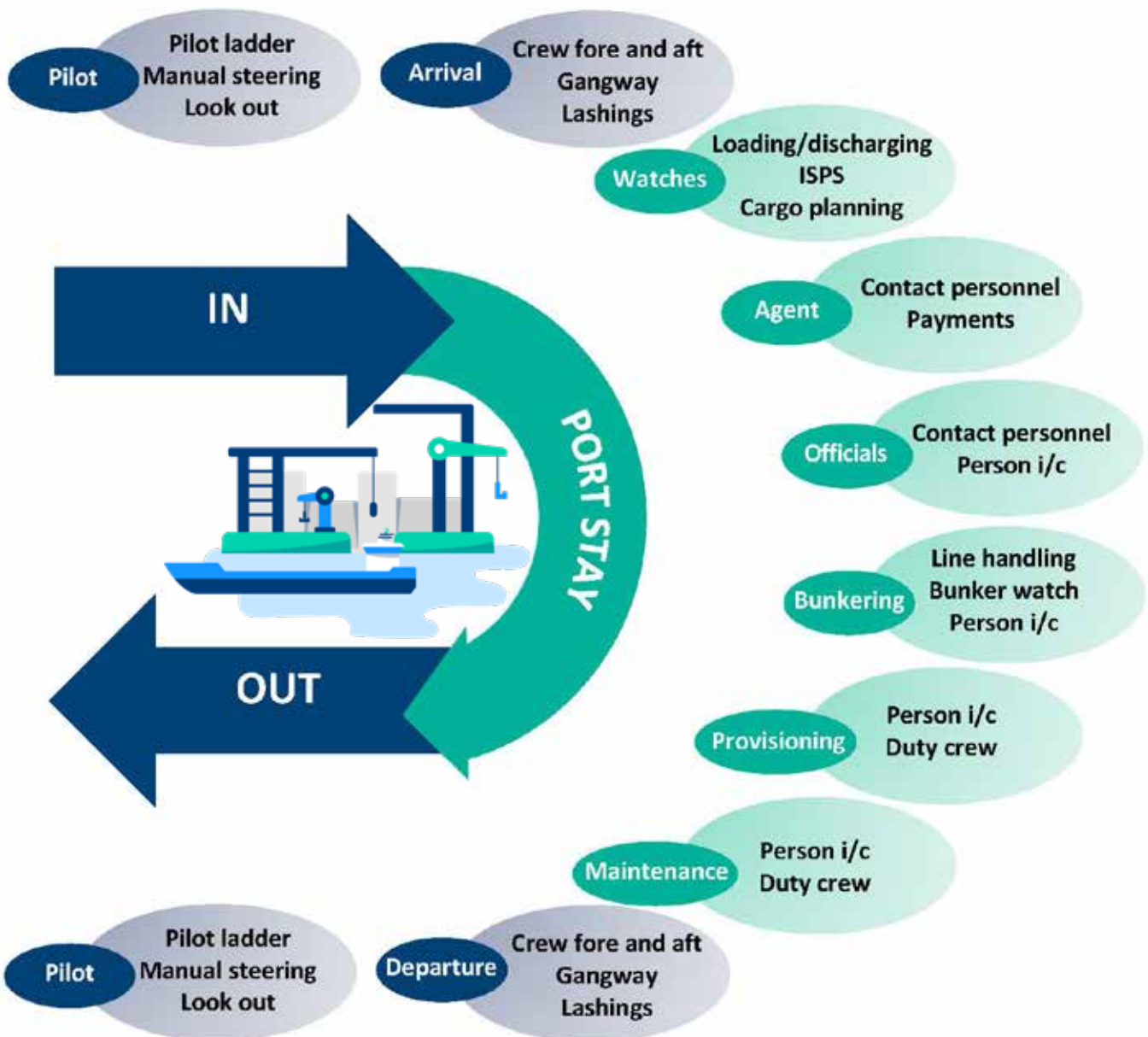
Photo: Reynaldo S. Costillas, The photo contest for seafarers 2015

Keep an eye on how your resources are used

- Will anyone work into their rest periods?
- Should anyone be moved to other tasks?
- Are there enough crew members to carry out the task safely?
- Could another sufficiently qualified person carry out the task?
- Is anyone awake and able to carry out the tasks?
If so, is it then really necessary to summon others during their rest period?

After leaving the port, you should evaluate the planning based on the result. You can use the experiences to prepare the planning for the next port call.

This procedure does not solve all rest period problems, but it could help identify many risks that may lead to breaches to the compliance with the minimum hours of rest.



Watch form template

On the next page, you can see an example of a completed watch form.

The tasks have been listed at the top of the form. There is a line through 4 p.m. since that is the time of arrival. In the example, the watch change is planned at the time of arrival, as described in the form on page 22.

At the bottom of the form, there is an overview of people assigned to the tasks. You need to check that the plan complies with the provisions on hours of rest and that it can be carried out on board. To make everything add up, more persons have been included. The motorman is, for instance, given tasks upon arrival. It is a precondition that he has time off during the day since he will be working again later that evening/night.



Setting and breaking of watches

The rules for setting and breaking of watches are set out in section 5 of the Regulations on hours of work and rest on board Norwegian passenger and cargo ships, etc..



Photo: Stig Silden, The photo contest for seafarers 2013

Blue is working hours. Light blue indicates crew members that might be available.

PORT:	Bergen	+ PILOT	14:30	ETA:	16:00	ETD:	09:00	- PILOT	10:30															
DUTIES	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11
Pilots																								
Pilot ladder																								
Look-out																								
Manual steering																								
Arrival																								
Persons fore and aft																								
Gangway																								
Securing the cargo																								
Watchkeeping																								
Loading/unloading																								
ISPS																								
Cargo planning																								
Agent																								
Contact persons																								
Payment																								
Authority																								
Contact persons																								
Responsible																								
Bunkering																								
Mooring																								
Bunker watch																								
Responsible officer																								
Stocking up																								
Contact persons																								
Executive																								
Maintenance																								
Responsible																								
Executive																								
Departure																								
Persons fore and aft																								
Gangway																								
Ready at the anchor																								
Pilots																								
Pilot ladder																								
Look out																								
Manual steering																								
CREW	12	13	14	15	16	17	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11
Captain																								
Chief mate																								
2nd Officer																								
3rd Officer																								
AB 1																								
AB 2																								
AB 3																								
AB 4																								
The cook																								
Galley assistant																								
Chief Engineer officer																								
2nd engineer officer																								
3rd engineer officer																								
4th engineer officer																								
Motorman/oiler																								

What you can do yourself?

Reduce sleepiness during night shifts

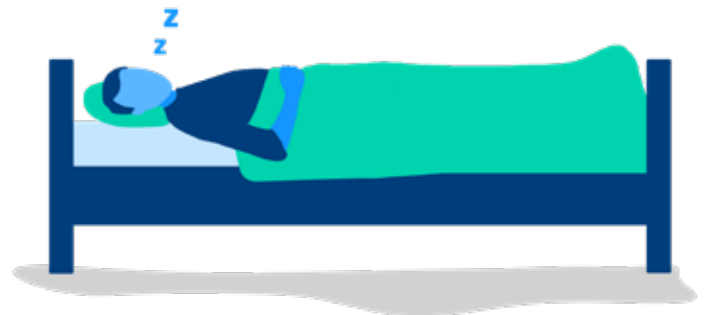
After a leave period, most people have normal circadian rhythms. If your work period starts with a night watch, it is a good idea to minimise your need for sleep by being as rested as possible before boarding the ship.

Let's say you got up around 6 or 7 a.m. That means that by 6 or 7 p.m., you have been awake for 12 to 13 hours. If that is the case, you should make sure you get a few hours of sleep before starting work around midnight. Your inner clock will still make you feel tired around 3 or 4 a.m., but the feeling will be less dominating. Your "accumulated need for sleep" will be less than if you had not slept at all around 6 or 7 p.m.

Get some exercise done after you have slept and before you start your watch. This activates your body and gets it started. The effect can last for 3 to 4 hours and keep the sleepiness at bay.

Decrease your need to sleep with a power nap

A power nap is a short sleep, no longer than 15-20 minutes. If you rest or sleep longer than that, you risk going into a deep sleep. If you are woken up from deep sleep, you may struggle to function properly.



Sleep well after watch

Slow down first. That means that you should not go straight to bed but prepare by relaxing. Clarify and solve any problems that keep your mind occupied. If you cannot solve them, it may be helpful to decide how to deal with them the next time you are awake, and write it down. This means that you need to "clean your blackboard" the best you can, so as to free your mind from the problems.

Repeat this "ritual" every time you go to bed. When you go to bed you need to clear your mind. Do things that make you relax. There are a number of techniques to help you relax, such as breathing exercises, meditation and so on. Try to avoid being disturbed by light and sound, including the light from your phone.



Photo: Mikhail Chulanov, The photo contest for seafarers 2009

Changing from night watch to normal circadian rhythm

When you get home, you should avoid sleeping during the day, or at least try to sleep as little as possible and as early as you can. Try to get some sun. After a period of night work, your brain will secrete melatonin during daytime. This makes you sleepy, but the effect is weakened by sunlight because sunlight causes the melatonin to break down. If you can avoid sleeping during the day, you build up a need for sleep big enough to make it easier to fall asleep at night.

If you have an urge to sleep during the day, you should go for a run or do other physical exercise to get your body to speed up. You must remember, however, to stop 3 to 4 hours before you intend to go to sleep. Do not sleep late the next morning, even if you have the day off. Try to get up at the usual time to achieve a normal circadian rhythm.

If you are unable to fall asleep when you go to bed at night, you should get out of bed. Get up and wait until you feel sleepy, then try again.

It is not unusual to sleep badly the first night after a period of working nights. After two or three nights, however, most find that their circadian rhythms have adjusted.

Driving after night watch (mainly applicable to ferries)

After a night watch, there is always a risk of longer reaction time. If you are driving home from the watch, you risk falling asleep if the drive is monotonous. The best way to eliminate this risk is to sleep. Sleep before you start driving, or pull the car over and take a nap if you feel tired while driving.

Avoid jet-lag

Try to adjust to the time zone of your destination as quickly as possible. Sleep at the same time as the locals. If you limit your sleep while travelling, you can "plan" your need for sleep to be stronger than normal when you go to bed at your destination. That makes it easier to fall asleep even if the time is not in line with your circadian rhythm.

STAYING AWAKE DURING THE NIGHT WATCH

If you carry out non-physical tasks in the dark, such as performing a bridge duty, it is particularly difficult to stay awake and alert.

Try the following:

- Be physically active, for instance 100 jumps. This boosts your body and mind.
- Have some fruit or carrots. Taste stimulates one part of the brain and chewing another.
- Drink a cup of coffee or tea. This is invigorating and stimulating.



Photo: Håvard Melvær, The photo contest for seafarers 2019

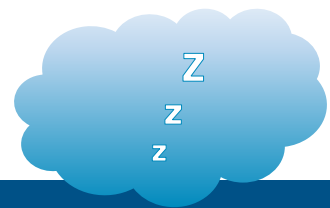
The company should plan watch start and journey so that it is possible to start the shift rested.

Reduce the sleepiness from your inner clock by exposing yourself to sunlight. This reduces the effect of the melatonin produced by the body at night.

Some types of sleep problems are not related to night work or changing watches. They can be caused by snoring or sleep apnoea which make you feel like you are being suffocated while sleeping, as well as restless legs and arms.

If you suspect that you suffer from any of these conditions, and that they affect your sleep, you should contact Radio Medico or your regular GP when you are home.

There is sleeping medicine in the medicine chest, but it must be arranged by the Radio Medico. If you have your own sleeping medication prescribed by your GP, this must be registered in the control document under "other and new medications".



GOOD ADVICE FOR GOOD SLEEP

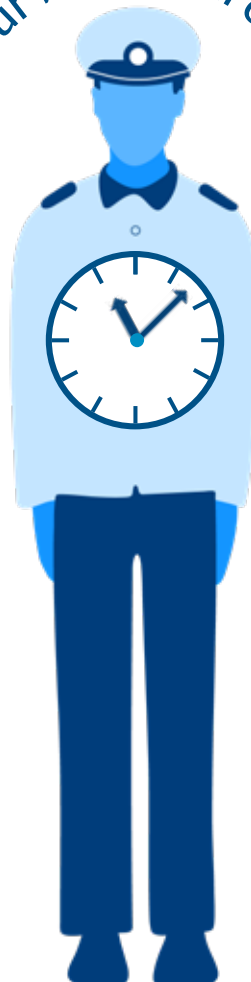
Your biological clock

Try to get up at the same time every day, even on days off. This strengthens the body's inner clock.

Avoid strenuous activity immediately before bedtime. Exercise should be done a couple of hours before going to bed.

Avoid large meals, coffee, coke and other stimulants before bedtime.

Do not go to bed hungry. Have a small snack, preferably accompanied by a warm drink, for instance soothing tea or hot milk.



Taking a hot shower before bed can also improve your sleep.

If you cannot fall asleep, or if you wake up and cannot get back to sleep, you should get out of bed. Read a book for a while (not too exciting), or do a crossword. When you feel sleepy, go back to bed.

Try different relaxation techniques, play some quiet, relaxing music, or listen to a boring audio book. Make sure to use a device that switches off automatically after a selected period of time.

If it is impossible to avoid noise, you can block it out by using earplugs.

Cabin and berth



Cabin design

A cabin should be comfortable and welcoming. Make sure you keep yours clean and tidy and at the recommended slightly cool temperature. If you are cold, you can always put on a blanket. If it is too hot and you have removed your duvet, you have no other ways of adjusting the temperature. The cabin should have black-out curtains and be insulated for sound. If there is noise, you could try some soft background music to camouflage it.

Moreover, you should try a dark sleeping mask and earplugs if it is hard to avoid light and noise.

Requirements regarding the location of the cabin, accommodation, size and any limitations concerning sharing of cabins, have been laid down in the Regulations on accommodation, recreational facilities, food and catering on ships.

Berth

The berth must be the right size for you, and the mattress must be comfortable and as hard or soft as you prefer. We recommend a mattress topper for increased comfort. The bed linen must be clean. Your berth should be somewhere you enjoy spending time. If you are tired and relaxed you should fall asleep quickly and sleep well here.

CONDITIONS FOR A GOOD NIGHT'S SLEEP

A good, right sized berth, mattress and bedding.

A cabin with the right sleep environment, meaning not too hot and not too dry.

Absence of noise.

Diet and change of watches

Research shows a significant increase in the occurrence of digestive problems for people working different watches. Next to sleep problems, gastrointestinal problems are the most common consequences of changed working hours. Many experience light symptoms such as constipation or diarrhoea. The explanation might be that variable watch times lead to irregular meals. Accordingly, the seafarer might have more snacks containing high levels of fat and carbohydrates.

The fact that the production of stomach acid, enzymes and bile, which enable the digestion, conversion and storage of food, is slow at night, is also significant. Persons with watch periods at night often have higher cholesterol levels, and some show signs of resistance towards insulin, which is one step closer to diabetes.

Because of this, it is important to try to eat as smart as possible when working irregular watches and nights.



Photo: Arild Lillebø, The photo contest for seafarers 2011

DIETARY ADVICE

- Have three main meals. This helps to keep a daily rhythm.
- Have light meals during the night, such as vegetables, fish and/or light meat, soup or a small pot of yoghurt.
- Drink a minimum of 1.5 litres a day. You should, however, drink less before going to bed.
- Avoid drinking with your meals at night – drink in-between your meals. This way, you don't dilute the stomach acid, which is in smaller supply at night.
- To keep your blood sugar level stable, which will improve your ability to concentrate and the sleep quality, you should avoid large quantities of sweets, snacks, cakes and sweet drinks. If you need sugar, you should eat fruit.
- Modify your intake, so that you don't eat too much.
- Avoid coffee, tea, coke and chocolate for at least three hours before bed time.
- Don't go to bed hungry. Eat a small amount of food first.

Who does what?

Parties around and on the ship can contribute in various ways to a watch schedule which ensures sufficient rest for the crew.



The Company management

The company is responsible for the manning and route planning. That means that the company sets the conditions for the planning of hours of work and rest. When planning, the company must assess whether the work on board entails additional tasks requiring increased manning of the ship.

The company should be familiar with the ship's experience with different watch schedules and be in a position to know whether a small change would simplify the planning on the ship and make it more reasonable. More crew members might be necessary if frequent breaches of the rest period requirement are caused by conditions that are impossible to remove immediately.

The company should also consider the watch system if officers on call in an unattended machinery space are called often, leading to non-compliance with the provisions on hours of rest since they do not get at least 6 hours of uninterrupted rest. If this arrangement can be considered permanent rather than an exception, the company should consider establishing a watch in the machinery space instead.

When there is insufficient competence, the managers are often disturbed in their rest periods since the crew needs consultation to make decisions.

It is not possible for the company to make plans based on such conditions if they are not known. This is why the company should make sure there is transparency regarding hours of rest and breaches, and make sure the experiences from the ships are gathered. Furthermore, the company can offer the exchange of experiences so that ship managements and crews can learn from each others' planning experiences.

The master

The master is responsible for the planning of work and rest periods on the ship. An approachable attitude which invites to a dialogue enables a watch system that ensures that the individual crew member gets adequate rest to the degree possible.

The master is also responsible for the recording of hours of rest, and it is vital that these records are true. The records are necessary to consider whether your current watch system complies with both the rules and the aim to secure proper rest. Finally, the master is responsible for making sure that seafarers who have worked beyond their rest hours get compensatory rest.

The employee

All employees have a responsibility to spend their rest periods in such a way that they are rested and able to safely carry out their tasks. If this has not been possible for you, you need to inform your colleagues that you are so tired that it could be irresponsible to work.

In addition, you can offer to share your experiences and be willing to perform other than your usual tasks. You also share the responsibility of keeping true records of your hours of rest so that the ship management and company get an overview of how the watch system works.



Discuss important issues on board

When you desire change on board, you need to bring the other crew members in on your idea. All previous experience shows that the crew's understanding of "why" change should be made, as well as the sense of being included in the decision making, are key to their involvement in new initiatives. Changes in the watches and working hours are major changes and obviously need to be agreed by all parties. If agreement is not reached and people have a sense of being left out, the human resistance to change can potentially destroy any initiative. Therefore, the ship management needs to agree on whether you want change or not, and also why you want it.

The scope of the changes must be widely agreed by involving the whole crew. One way of doing this is to call for an extraordinary safety committee meeting and invite everyone. If you do this, you create a base for the acceptance of your message.

Agreement in the ship management

When you call for a meeting and try to implement changes that will affect the everyday lives of others and yourself, you need to be able to say why this particular change is important, and argue the case. You should therefore clarify the following issues:

- What would you like to achieve?
- What will be discussed/decided in the meeting?
- What information do the other participants need to make a decision?

The first thing you should do is to issue a meeting invitation. The other participants must be given at least a few days' notice. That will give them an opportunity to reflect on their own views and opinions and prepare their arguments.

The agenda should have a minimum of three items:

- information - what you want to do and why? (Find material in the guidance.)
- discussion; what arguments do you have - pros and cons
- decision; how and when do we move forward, and who is responsible

Consensus on board

If you as the ship management have decided that you want change, you must involve the rest of the crew. You can use the procedure described above.

To ensure that you focus on the desired changes, and that you achieve the broadest consensus, you need to consider the following good advice for meetings:

- Make sure that the items on the agenda are well prepared, and that it is decided who should prepare which points.
- Start the meeting with a "contract" or a description of the purpose of the meeting, how long it will take and any prioritising of the agenda items.
- Use the time well.
- Stick to the items on the agenda.
- Make sure that all opinions are heard.
- Make sure that decisions are made.
- Close the meeting by clarifying what you have agreed, and who will do what.
- Follow up on the decisions that have been made.



More on the rules

How were the rules made?

After several accidents in which lack of rest was identified as a contributing factor, the IMO started to take a closer look at the regulations concerning hours of work and rest. At the same time, the ILO followed up on the issue when the EU was drawing up the rules for hours of work and rest in the mid-1990s. The IMO initiated discussions on the same topic as part of a revision of the STCW Convention, which was completed in 1995.

Initially, the IMO issued a resolution to describe the importance of rest periods and the conditions causing insufficient rest. The ILO made a proposal for the now well-known main rule: 10 hours of rest in any 24-hour period and 77 hours in any 7-day period. This main rule was incorporated into section A-VIII/1 of the STCW Code, which sets the minimum standards regarding watchkeeping.

The ILO Convention concerning hours of work and rest entered into force in 2002. That means that the main rule of 10 hours of rest etc., was made applicable at the same time as access was granted to agree exceptions from the main rule in agreements, though limited by the minimum rules of the STCW Convention.

At a Diplomatic Conference in Manila in June 2010, the IMO adopted an extensive revision of the STCW Convention. The revised Convention entered into force in 2012.

The international provisions on hours of work and rest were implemented in section 24 of the Ship Safety and Security Act on 20 April 2012.

Detailed provisions on hours of work and rest have been laid down in various regulations:

- The applicable Regulations for ships are the Regulations of 26 June 2007 No. 705 on hours of work and rest on board Norwegian passenger and cargo ships, etc.
- The applicable Regulations for fishing vessels are the Regulations of 25 June 2003 No. 787 on hours of work and rest on board fishing vessels
- The applicable Regulations for young people, are the supplementing working hour rules found in the Regulations of 25 April 2002 No. 423 on work by and placement of young people on Norwegian ships. These Regulations also apply to young persons working on fishing vessels.

Whereas former legislation had detailed requirements regarding both periods of work and rest, the legislation from the last decades have focused more on the provisions of hours of rest than hours of work since sufficiently rested seafarers are crucial to safety.

The main rule for seafarers is that the hours of rest shall not be less than 10 hours in any 24-hour period, and 77 hours in any 168-hour period (the same as seven 24-hour periods).

Hours of work and hours of rest

The regular working hours shall be 8 hours a day, with one day of rest per week and rest on public holidays.

The hours of work means the time during which the seafarers carry out work for the ship. The rule does not prevent anyone from working more hours, provided that the provisions on hours of rest are complied with. (In collective agreements, the parties agree on a compensation for work hours exceeding an 8-hour day.)

Hours of rest means time outside hours of work. Hence, the term “working hours” must be understood as the time spent carrying out practical work or the time during which the employee is required to carry out duties, typically in a watch scheme. Even though you have few duties during a watch, the entire watch will be considered working hours.

Unless the exemption provisions in section 24 of the Ship Safety and Security Act allow it, the main rule regarding hours of rest must be complied with, which means that seafarer must have a minimum of 10 hours of rest in any 24-hour period. The rest period must be considered to start at the end of a work period. If the work starts at 8 a.m., it must end no later than 10 p.m. if the work is continuous.

The main rule further states that in any 168-hour period, the rest period must be at least 77 hours. Converted to weeks and 24-hour periods, this means that an employee who works 7 consecutive days must have 11 hours of rest per 24-hour period.

Hours of rest may be divided into two periods, one of which shall be at least 6 hours in length.

The 6-hour rule applies because human beings need at least one longer rest period to be able to function normally in the next work period. When planning overlaps between shifts, you need to take into consideration that the employee must have a minimum of 6 hours of actual rest (cf. the requirement concerning taking over the watch in the Regulations on watchkeeping on passenger ships and cargo ships.)

The interval between consecutive periods of rest shall not exceed 14 hours.

There is nothing to prevent the rest period from being held while the employee is ashore. This is actually common for seafarers working on board a ship engaged on short voyages, such as ferries and fishing vessels/workboats. The provisions on hours of rest must in such cases prevent an employee from having a different part time job ashore stopping him/her from spending the provided time resting. The intention behind the rest period requirements is clearly that seafarers should not use the rest periods working for another employer.

Exemptions from the main rules

Exemptions from the main rule on hours of rest are laid down in the Ship Safety and Security Act section 24 second to fifth paragraphs.

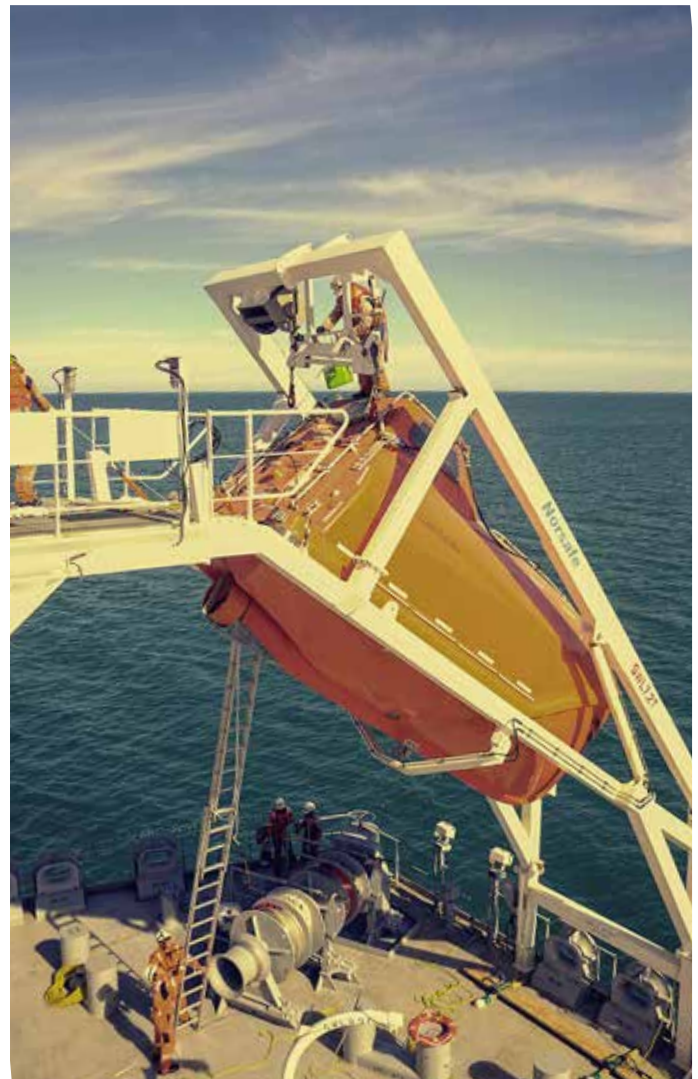
Safety on the ship

The provisions of the first paragraph do not apply in the case of an emergency or work as a consequence of musters or drills prescribed by or pursuant to law. Likewise, the provisions of the first paragraph do not apply to watch-keeping personnel or personnel whose duties involve designated safety, prevention of pollution and security duties in connection with work as a result of overriding operational conditions.

Emergencies: The exemption provision applies both in the case of an emergency on your own ship and anybody else's, where your crew is a part of the rescue work. The term "emergency" is defined as an extraordinary critical situation threatening life or health, the environment or material values, including the vessel. Situations or work that is planned are not included in the exception.

Drills: The reason for this exemption is that drills often involve the whole crew, which might affect the individuals' hours of rest. Drills must still be held so that breaches to the provisions on hours of rest and fatigue can be avoided to the extent possible. The heads of department on board must be careful to ensure that it is not always the same people who need to participate in drills during their scheduled hours of rest.

Overriding operational conditions: Overriding operational conditions means shipboard work that cannot be delayed for safety or environmental reasons, or that could not reasonably have been anticipated when the voyage started. Safety means situations or tasks which, unless they are dealt with, could lead to an accident. This does not include planned situations or tasks.



Ordinary operational functions, such as port calls or departures or loading and unloading are therefore not overriding operational conditions. One example of what may be considered an overriding operational condition is that an additional navigator must be summoned on the bridge because the navigation of the ship is particularly challenging. Another is that problems in the engine room make it necessary to summon one of the engineer officers on call.

Compensation for interrupted rest and recording

As soon as possible after the normal situation has been restored, the master must ensure that any seafarer who has performed work in a scheduled rest period is provided with an adequate period of rest.

If your planned rest period is disrupted, you must register the actual rest period and add in the comment field that the deviation was caused by an emergency, muster, drill or overriding operational conditions (please specify in brief). The same applies if your rest is disrupted when you are on call.





Access to regulated exemptions

Exceptions from the provisions of the first paragraph may be made in a binding collective bargaining agreement. When making exceptions, due consideration shall be given to the health and safety of the seafarers, including the need for rest.

For persons forming part of the navigational or engineering watch, or whose duties involve designated safety, prevention of pollution and security duties, derogation in a collective bargaining agreement from the provisions in the first paragraph may only be made on the following conditions:

- a) The weekly rest period may be reduced to 70 hours for a period of up to two consecutive weeks. The intervals between two periods of exceptions shall not be less than twice the duration of the exception.*
- b) For up to two days per week, the daily hours of rest may be divided into no more than three periods, one of which shall be at least 6 hours in length, and neither of the other two periods shall be less than 1 hour in length. The intervals between two consecutive periods of rest shall not exceed 14 hours.*

Hence, the access to make exceptions from the main rule in binding collective agreements is limited by the above mentioned rules. You are not supposed to plan activities according to these possible exceptions from the main rule. The exceptions may be used, however, in situations requiring flexibility.

The weekly rest period may be reduced to 70 hours for a period of up to two consecutive weeks. The intervals between two periods of exceptions shall not be less than twice the duration of the exception. For example, if the rest period is reduced to 70 hours one week, the same exception cannot be made until two weeks later. The daily rest period may not be reduced from 10 hours.

While the main rule is that there should be two periods of rest (one of at least 6 hours and one of 4 hours), as an exception, the daily hours of rest may be divided into three periods of rest, one of which shall be at least 6 hours in length, and neither of the other two periods shall be less than 1 hour in length. The daily rest period may not be reduced from 10 hours, but the rest periods may be divided into 6, 2, and 2 hours, or 6, 3 and 1 hours. Lunch breaks are not rest periods.



Photo: Jeanett Rotset Farstad, The photo contest for seafarers 2016

Exceptions for personnel on domestic ferries

For personnel on passenger ships practising shift work and operating in trade area 1 and 2, the supervisory authority may make exceptions from the first paragraph beyond the limitations specified in the fourth paragraph. Further conditions for such exceptions may be laid down, and the concerned seafarers' and shipowners' organisations shall give reasoned opinions before exceptions are made.

In principle, the regular provisions on hours of rest shall apply to all seafarers on vessels subject to the Ship Safety and Security Act. For certain ferries in extraordinary cases, an extended exception from the ordinary exception may be granted.



Working hours arrangements and record of hours of rest

Records of the working hours arrangement for the seafarers on the vessel must be kept on board. The records shall state the start and end of each seafarer's ordinary working hours, as well as the daily total hours of rest.

All seafarers must be supplied with a form for recording their daily rest periods. The master, or a person authorised by the master, must monitor and record the hours of rest in every 24-hour and 7-day period.

Provisions on the recording and requirements regarding the keeping of documentation is found in the relevant Regulations.

The company's duty to inform means that they must make sure that everyone on board have been informed of and understand their own rights concerning rest, and how their rest periods are to be recorded and reported.

The company also has a duty to check that the provisions on hours of rest are kept. This particularly applies to the master's own hours of rest, which are not subject to control by others on board. The company must also make sure that the master carries out his/her duty concerning hours of rest for the other employees on board.

Ensuring that the crew is getting sufficient rest is a key part of the company's safety work through the safety management system. The company's "see to" duty involves a responsibility to systematically review registration forms to determine whether there are recurrent breaches to the provisions on hours of rest. If the records show repeated or serious breaches, the company must assess whether the manning is sufficient or the work needs to be organised differently. Breach of the company's duties is sanctioned pursuant to the Ship Safety and Security Act, section 62 second paragraph.

Violation fines may also be used pursuant to sections 55 and 56 of the Ship Safety and Security Act.



Supervising and inspection

The supervisory authority will carry out supervision to make sure that the registration forms for hours of rest and the form for working arrangements comply with the requirements.



If the supervisory authority receives information from a person who has an interest in the safety of the ship, and this information gives reason to believe that the seafarers on board show signs of fatigue that could lead to the individual not being able to carry out his/her tasks in a safe manner, a detailed inspection must be carried out in order to determine whether the recorded hours of rest correspond with the provisions of these Regulations or a collective agreement. Other registered information concerning the ship's operation will be taken into consideration.

Correspondingly, the first paragraph applies if the supervisory authority's own observations on board lead to the same conclusions. The identity of the person making the complaint must not be revealed to the master or the owner of the ship concerned.

Rectifications

If an inspection shows that the provisions on hours of rest are not observed, the supervising authority shall take such action as is deemed necessary to rectify any condition on board that clearly constitutes a hazard to the safety or health of the seafarers, and to avoid future breaches, including audits of the ship's manning.

When seafarers responsible for the first watch or the subsequent watches are showing signs of fatigue which could result in these persons not being able to carry out their tasks, it shall be seen to that the ship does not leave port before the found non-conformities have been rectified or the seafarers are sufficiently rested.



Hours of rest in fishing

The Norwegian Maritime Authority's annual risk assessments show that fishing vessels are the vessel type with the highest risk of grounding. (Cargo ships on short sea voyages and high-speed passenger craft are next on the list.) Reports show that in many of the cases, the reason why fishing vessels run aground is that people are tired and inattentive after too long and hard shifts.

The Regulations on hours of work and rest on board fishing vessels section 3 first and second paragraphs shall make sure that the safety and health of workers is protected against the damage that happens or may happen when working too long, getting too little rest or working irregular hours.

Legislation

ILO 188, the Convention concerning work in the fishing sector entered into force in 2017. The purpose is to ensure that the employees in the fishing sector are provided with better conditions with regard to working environment, health and safety at sea, including provisions on adequate rest. The Convention applies to all fishing vessels irrespective of size, and compliance will be checked during supervision.

Most of the provisions of the Convention had already been implemented in Norwegian legislation. The main provision on hours of rest in the Ship Safety and Security Act section 24 first paragraph also applies to fishing vessels. The provision is repeated in the Regulations on hours of work and rest on board fishing vessels section 3 first and second paragraphs.

Hours of work and rest

The normal working hours shall not exceed 48 hours per week, calculated as an average over a period not exceeding 12 months.

The hours of rest shall not be less than 10 hours in any 24-hour period, and not less than 77 hours in any 168-hour period. The 10 hours of rest may be divided into two periods, one of which shall be at least 6 hours in length. The interval between two periods of rest shall not exceed 14 hours.

The master may require the persons working on board to perform any hours of work necessary for the immediate safety of the ship, persons on board, tools or cargo, or for coming to the aid of other vessels or persons in distress at sea.



As soon as practicable after the normal situation on board has been restored, the master shall ensure that the persons who have performed work in a scheduled rest period, get adequate rest.

Exceptions through collective agreements

Exceptions from the provisions of the first and second paragraphs may be laid down in a binding collective agreement. Exceptions may be laid down for objective or technical reasons or out of consideration for organisation of work. Exceptions shall, as far as practicable, comply with the standards laid down, but may take account of more frequent or longer leave periods or the granting of compensatory leave. When adopting such exceptions, the health and safety of the persons working on board, including the need to rest, shall be taken into account. On vessels not covered by collective agreements, a written agreement to follow exceptions from the first and second paragraphs laid down in collective agreements for equivalent crew groups and vessels may be entered into.

Exemptions

The Norwegian Maritime Authority may upon written application from the company grant exemption from one or more of the requirements of these Regulations. Exemptions must not contravene ILO Convention No. 188 or Directive 2003/88/EC, and the company must establish that one of the following conditions is met:

- a) the requirement is not essential and the exemption is justifiable in terms of health and safety;*
- b) compensating measures will maintain the same level of safety as the requirement of these Regulations.*

The Norwegian Maritime Authority may lay down special conditions for exemptions pursuant to this provision.

Supervision

The Norwegian Maritime Authority or whoever is authorised may at any time carry out supervision on board or demand that information be produced to check that the provisions of the Regulations are satisfied.



Illustration photo (edited.): Arve Svenning, The photo contest for seafarers 2009

CASE

The fishing had been good, but Edvin was tired after having spent hours processing and handling the catch. They had taken the boat further out at sea and spent more hours than planned, but managed to catch their quotas, although the rough weather and sea conditions had made the job difficult.

He thought about the payment of lot, which would cover the renovation that he and his wife had planned. However, he had put a lot of sweat and toil into the work at sea, and he could do with a couple of extra hands. Someone to help him steer the vessel back to port. He looked forward to setting foot on land again and getting some sleep in his own bed. But there was still a rough stretch of sea ahead of him.

Luckily, the wind calmed, and the autopilot could be used. Edvin's muscles were aching, but strangely enough, he never felt tired or worn out while working. It was only when he sat down in the wheelhouse that tiredness set in. He nodded off, only for a second. The thought hit him that the Bridge Navigation Watch Alarm System might not work at low speed. He would have to check it out before his next voyage.

The vessel was approaching land, and it was possible to get a glimpse of the lights in port. It was important to stay alert, but he was so terribly tired. If only it wasn't so dark...



Photo: Russel P. Balolot, The photo contest for seafarers 2018

Having enough appropriately qualified and rested crew is important for the safe operation of any vessel.

The hours of rest involve a requirement that everyone involved, including the company, ship management and all employees, acknowledge that adequate rest is crucial to maintain a healthy and safe shipping industry and to operate safely.