



SAN NEWS

News about work environment and safety in shipping **3/07**

THEME: FATIGUE

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Much work and little sleep onboard Nord Carrier

On the dry loader Nord Carrier, the captain and first mate share the watch day. With dockings, departures, pilot's dispensation and paperwork, sleep comes in second place.

Friday 29 June, 05:00. Bo Kallander comes up the bridge. He fills a cup with fresh coffee, goes out to the port bridge wing and lights a Pall Mall cigarette.

– I feel pretty tired. It was difficult to fall asleep last night and later the ship was rolling so much that it was impossible to sleep properly, he says, and squints in the misty morning sun.

We are sailing along the east coast, from the SSAB harbour in Oxelösund towards Vejle on Jylland, Denmark. A large part of the route is in the lee of the land, but the ship – which has only a few weeks left to her 30-year classification – is sensitive to the weather. The load line has been raised to be able to take on sheet metal and steel, and the 10 - 12 m/s wind last night could be clearly felt in the berths.

– With containers on she sails like a swan in the water, says Bo, who has now walked into the bridge and sunk down into the captain's seat. But when she is as heavily loaded as this things really sway up in the high bridge when it is windy and she is heeling from side to side.

– When she is heeling at her worst, it is not possible to sleep in the cabin and then I usually lie on the sofa in the mess room. In the autumn, when it is dark and stormy, things are really bad.



Bo Kallander.

The crew is cut down to a minimum with two nautical officers, one cook seaman, one machine seaman and one deck seaman. The last cutback was in 1993, when the cook had to go.

– They installed a microwave and dishwasher and told us to eat microwave meals. But hell, you can't live on that for half the year, says Bo and half laughs. In the end we managed to hire a cook seaman instead.

Life at sea takes its toll

As well as the watch, the captain must be up for docking and departures. Bo manages a lot of the paperwork and is also the only one on board who has pilot dispensation. Complying with the resting time law under these conditions is very difficult, he says.

– Everybody knows it doesn't work out, but nothing happens anyhow.

Bo has been loyal to Nord Ship for 17 years. During the whole of that time he has worked six on six, mostly in the Baltic and in northern Europe. At 60 years old he can feel that life at sea is starting to take its toll.

– I sleep worse now than before and it has become more difficult to adjust when I get home. Not so strange that I am worn out.

We approach the sound of Kalmar with the steep mountain island of Blå Jungfru ahead. Oxelösund – Vejle and back takes five to six days, depending on weather and currents. Sometimes it takes a whole day at the quay in Denmark when the stevedores are free, and then there is an opportunity to sleep properly and relax →

together. But for the most part each 24 hours consist of eating, sleeping and working.

– I would be lying if I said that I had never dropped off on the bridge. You keep yourself awake with coffee, and then you get gastritis into the bargain, says Bo.

Those who are not working are asleep, and during the sea crossing it is rather lonesome for the cook seaman, Maria Slaastad. She spends a lot of time in the narrow kitchen and on Friday afternoon she is standing at the stainless steel bench filling chicken fillets with blue cheese.

– It feels a little desolate at times, and you have to enjoy your own company if you work here. But we are not lone wolves and if we get a night in the harbour we don't hesitate to take out the barbecue and open a bottle of wine.

The decimation of the crew influences everybody on board and the rust-red deck tells the story clearly.

– If we get a seaman who does not do his job, things get really heavy. Sometimes we have had guys with alcohol problems and then it doesn't work out at all. It is difficult enough to pull it all together even when everybody is helping out, says Maria.

Unloading early Sunday morning

Soon after leaving Oxelösund the shipping office reports that overtime unloading had been ordered in Denmark on Sunday morning at seven o'clock, since new steel is already waiting to be freighted at SSAB. It

is not certain that we will make it in time, since the wind and currents are reducing our speed. But towards the small hours of Sunday morning we are approaching Vejle. The sea is dark and smooth. Bo turns around and manoeuvres the ship towards the place indicated. A flock of seagulls lifts from the hangar roof when Nord Carrier rocks against the quayside and settles down. At half past four, the crew can go to bed. After a short sleep there is a loud bang. It is Maria who, together with machine seaman Anders Peterson, is opening up the cargo doors. The time is quarter to seven and soon the shining roles of steel and sheet metal are lifted out. Some of them weigh up to 40 tons and from time to time they hit the ship.

– It's impossible to sleep when they are unloading, states Bo when he comes up after only a couple of hours sleep. If only you were undisturbed during the free watches there wouldn't be any problems, but you never are.

The stevedores work on and at half past 12 the same afternoon we are empty. The doors are rolled on. There is a light drizzle as we once again push out to sea. Bo is sitting in front of the computer at the bridge, looking after the paperwork. Chief mate Jan-Erik Tengström is sailing the ship with the officer cadet Christoffer Sjöberg at his side. The afternoon and evening come and go, and the watches are changed. Just before midnight Jan-Erik and Christoffer come up again. It is dark and raining. The wipers are operated from time to time to improve visibility.



Jan-Erik Tengström.

– I have slept about four hours. You are usually a little tired to begin with, but when it gets light you often brighten up, says Jan-Erik, and leans back.

Tanker ships worst

Since gaining his sea captain's certificate in 1998, he has worked with light tonnage. He joined the ship in January on a temporary post. Even though he admits that he is really tired sometimes, he still thinks it is rather good here.

– I worked for a while on a coastal tanker where we had dockings and departures twice every 24 hours. You could never wind down between these and we only got two or three hours sleep at a time. There were three of us nautical officers, but the captain never took a watch so there were only two of us who shared each 24 hours, he says.

Tanker shipping is also more weighed down by administration.

Seamen sleep worse than others

Watches of six on six are dangerous. Lack of sleep makes tired and unfocused officers that subject themselves and others to great risks. This is indicated by a new study by VTI.

Now it is time once again to state that six on six is an exhausting watch system that is bad from the sea safety aspect. The Swedish Road and Transport Research Institute, VTI, with the researcher and sea captain Margareta Lützhöft at its head, has been looking at how levels of tiredness among nautical officers are affected by different systems of watches: six on six and four eight. Those doing two watches were most tired.

– It did not happen very often that participants were hit by that killing tiredness, but it happened sufficiently often to be judged as serious. On some occasions

the officers had to fight to stay awake, says Margaretha Lützhöft.

Drowsiness is worst at the end of the watch. In 2½% of estimates, really critical levels were reached when participants had to make efforts not to fall asleep. Over 80% of these were from watches of six on six.

The body needs eight hours' sleep

In this study, 30 officers from 13 different shipping companies participated and the measurements were taken onboard ships during normal work. Questionnaires and physiological measurements were used as indicators. The officers seldom had more than four and a half hours sleep per free watch.

– The body needs about seven and a half to eight hours' good sleep, preferably in one stretch. But it is possible to

manage on less, at least for short periods, says sleep researcher Mats Gillberg from Karolinska Institutet in Solna, who took part in the investigation.

Another factor that plays a role in this context is the fact that officers' relatively short daily rest is divided into several different periods. One sleep cycle consists of several stages, and when people are forced to wake up early in the cycle they often suffer accordingly. Sleep quality was also studied. According to Mats Gillberg, a normally good night's sleep is about 90% effective; the officers in the study got about 75% effective sleep.

–Effective sleep means few awakenings and the person feels relatively rested 10 - 20 minutes after waking up. 75% is a little too low and the person has slept too unevenly for it to be really good, says Mats Gillberg.

The report also indicates that a certain amount of tiredness may be accumulated,

– There are ridiculous amounts of paperwork. Once we produced a voyage plan of seven pages, but the vetting company thought that was too little, says Jan-Erik.

Christoffer is studying in his third year at the Marine Institute in Göteborg and came aboard a few days earlier. This is the first time he is involved in a two-watch system.

– I am a bit tired at night, but otherwise it works fine. I sleep really well on board and I have nothing against working six on six after college. But it depends on what type of ship it is, he says.

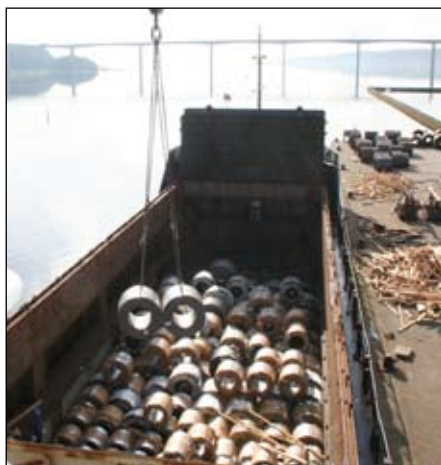
Jan-Erik says that it usually takes him about a week to catch up on sleep when he gets home after six weeks on board. And driving directly after signing off can be risky.

– During the last week the nights are

tough and sometimes you are really tired when you go home. Once I almost drove into the ditch, he says.

The rain continues. It never seems to get really light this morning, and the tiredness will not let go. But the next night is clear and calm. When we pass the Blå Jungfru once again at around three in the morning she is framed by a deep pink horizon. The sun rises quickly from the sea and the last hours until breakfast pass fairly easily. Tuesday is mild. At a quarter past one we glide in towards the quayside in Oxelösund. A couple of the crew sign off, while the rest of us remain. There was no extra rest to be had in the harbour on this trip, but with a little luck there will soon be a few days for the crew to relax and recover.

Linda Sundgren



Unloading in Vejle. The rolls of steel and sheet metal can weigh up to 40 tons each.



Maria Slaastad's tasty food brightens up life onboard.

Interviews on two-shift ships

An extra night's rest is needed occasionally to have the energy to work six on six, says PhD and sea captain Fredrik Hjorth in the context of his ongoing study.

Fatigue is a topical subject in shipping, not only in Sweden but also internationally. At the beginning of next year two-watch ships are on the IMO agenda and Fredrik Hjorth's study will be presented.

– This study had really been planned for next year, but since the issue is soon being discussed by the IMO the Swedish Maritime Administration wanted it earlier, he explains.

The investigation is based on interviews with crews of four two-watch ships. The questions relate to the person and his/her background, the current situation at work, and the relation between the ship and seaman's associations. The result will be put together in two reports, one to the IMO and the other to the Swedish Maritime Administration.

IMO interested in the work situation

– The IMO report will only touch on what is relevant for the current work situation and duties, sleep and rest, accidents, work-injuries and so on. The Swedish report will be wider in scope, says Fredrik Hjorth.

The study was started in the late spring and two ships have been visited so far. It is too early to draw conclusions, but it is clear that the crew on a two-shift ship work under a great deal of pressure, says Fredrik Hjorth.

– One way of making it reasonably tolerable is to get a full night's sleep sometimes. The crew could do that on some ships I visited thanks to certain stevedoring companies only working office hours, resulting in ships staying overnight or the whole weekend in the port.

The IMO report will be completed in November.

The Swedish report will come out a little later. The study is a sub-project in a larger three-year research project on the ISM code.

Linda Sundgren

when drowsiness increases the more days that are worked. Considering that Philippine contract crews on Swedish ships may work for 6 months consecutively, the researchers were particularly interested in the long-term effects of lack of sleep.

– If Swedes that have watches of six on six find it rather difficult, we can assume that foreign officers that work even longer periods must find it even more difficult, says Margareta Lützhöft.

Linda Sundgren

Decrease tiredness onboard

The report proposes a number of measures to decrease tiredness. Some of the most effective measures are:

- Change watch schedules. 9-3 is better than 6-6. The critical night watch is then divided and both watches get night sleep, which is so important for the body.
- Plan the watches. By using the computer program "Predicting sleep and wakefulness" suitable watch schedules can be planned for future routes on the basis of sleeping hours and working hours. Contact Margaretha Lützhöft for more information: margareta.lutzhoft@chalmers.se.
- Relaxation. There are effective methods for winding down and falling asleep more easily. Try to find a method which suits you.
- Knowledge. Find out how you are affected by tiredness and shift work and how much sleep your body needs.



~ THE CHAIRMAN HAS THE FLOOR ~

Occupational safety law the greatest change

It is time for me to write my last SAN column, and I cannot help reflecting on what has happened over the last six years since I have been involved.

The one factor that has brought about the greatest changes in shipping is, of course, the introduction of the new occupational safety law. It has been a challenge to train almost 300 senior officers in systematic environment work. My abiding impression from the courses is the positive attitude of the participants to the work ahead of them and the rewarding discussions we had about the occupational safety law in general, both the psychosocial and operative aspects. SEKO had successfully run similar courses for many years for safety ombudsmen. SAN has also resumed the instructive SAN conferences, even though none have been held this year for logistical reasons. The conferences have attracted many visitors and have received much positive feedback, which has been most encouraging.

Many of the areas that have been covered

“My abiding impression from the courses is the positive attitude of the participants to the work ahead of them and the rewarding discussions we had about the occupational safety law in general”

within the scope of the conferences are the subject of continued research, such as noise and vibrations, diet and exercise onboard, fatigue and work allocation. The SAN news-sheet has undergone great changes visually as well as in terms of quality. Our editor, Linda Sundgren, does a fantastic job with every issue, and SAN News is now a publication that I believe is read with increasing interest onboard ships and in shipowners' offices.

At the moment we have ahead of us the final review of our work environment manual in Swedish and English, which is to be re-worked. The changes will be sent to all file-holders. Our editing committee at SAN

has done a good job with this material to ensure that the manual is continually updated. Use this manual to make sure you are at a safe place of work!

Finally, do not forget that a process which is started at one end is not completed until the circle is closed and feedback on the original issue has been passed on. There are good tools to work with in this context, for example Insjö reporting, which not only handles near-accidents and breakdowns, but also has space for issues related to occupational safety.

I am now moving on to new challenges in Swedish shipping and would like to take the opportunity to thank you all for our time together and to wish my successor good luck in the future.



Pieter Sprangers
Chairman, SAN

~ OUTLOOK ~

Load correctly 2007 - European campaign of the year

The overall objective of the campaign on strain injuries by the European working environment bureau is to help employers, employees, safety representatives, politicians and others involved to improve the prevention of strain injuries at places of work. As a rule there are several different factors that lead to strain injuries.

As well as heavy elements of work and unsuitable loading, other factors such as stress, cold and work organisation may be contributing factors. For this reason it is important to evaluate all risks of strain injuries and to deal with them in an overall fashion. The EU campaign is a continuation of the European working environment week in 2000, “Say goodbye to strain injuries”. The campaign supports an integrated steering method for dealing with strain injuries; both preventive measures and those that relieve injuries, and all member states and EFTA countries are encouraged to participate actively. The steering method has three

main elements that are important for it to be applied successfully:

- Cooperation between employers, employees and the state to deal with strain injuries.
- To deal with the entire load on the body that leads to strain injuries.
- To ensure that those who are suffering or have suffered from strain injuries can remain employed, be rehabilitated and return to work.

The main part of the campaign lies in “handling the load”. This refers not only to the load itself but also to other conditions, such as the working environment and the rate of work. In addition to the primary prevention of strain injuries, the integrated steering method also includes prevention in the second and third stages. This is to promote those who already suffer from strain injuries remaining employed, receiving rehabilitation and returning to work. Social and organisatio-



Informative film sequences on how to avoid strain injuries at:

<http://ew2007.osha.europa.eu/napo/>

nal support is especially important in this context. The campaign will culminate in the European working environment week on the 22-26 October 2007.

Source: European occupational safety bureau.

Karl-Arne Johansson

The Swedish Marine Surveying Department continuously publishes information of interest to the shipping industry. Below is a selection of the latest reports. The reports may be read in their complete versions on the Surveying Department's website: www.sjofartsverket.se - Swedish Marine Surveying Department.

Absence of signalman accident risk

Two fatal accidents in conjunction with unloading of bulk cargo illustrate the risks involved when signalmen are not used. In both cases unloading, which took place using a bucket, was in its final stages. There were trimmers in the hold to remove the last parts of the load from corners and around the frames. The obligatory signalman at the frame of the hold opening (whose task would have been to communicate with the crane driver and control the bucket in those places where the crane driver did not have clear sight) was not there. In both cases a crew-member was crushed against the side of the ship by the bucket. One case has been judged by a court, and the second has not yet been tried. One more death occurred when a stevedore was going to climb out of the hold. The covers for the hold were above a manhole. To come up through the entrance opening he started to climb up in one of the compartments in the hold covers above. Just at that moment the crew started to close the covers. The stevedore was crushed to death between the frame and the moving hold covers. These accidents show the necessity of communication between the crew and stevedores.

J. Nr. 080202-03-17639, 080202-07-15985, 080202-03-16797.

Picture: www.paranter.org

LPG explosion in boat

Last summer there was a powerful explosion in a boat moored at a quay-side. The officer received burn injuries and injuries to his feet. The boat caught fire and sank. The explosion was probably caused by leaking LPG

ignited by a thermostat-controlled heater. The Swedish Marine Surveying Department notes the following regarding LPG:

- LPG is heavier than air and sinks to the lowest places onboard.
- To prevent this, the bottle should be kept in an airtight space.
- The bottom of this space should be ventilated, e.g. by a separate lead-through in the outer hull (that opens above the waterline), or by a wind turbine (fan driven by the wind).
- The hoses or pipes should be checked regularly and replaced at regular intervals.
- Hose clamps should be in stainless steel and double.
- Make a point of always closing the tap on the bottle to avoid leakage. A remote closing device directly to the bottle makes this easier.
- Preferably purchase a simple type of gas-warning device designed specifically for LPG. This increases safety considerably.

The boat in question was used for transporting passengers. Since it takes a maximum of 12 passengers and is less than 20 gross, it does not need to be inspected by the Marine Surveying Department, which is the case for all other professional boats. This is also applicable to leisure boats over 100 gross. However, there is nothing to prevent special inspectors from inspecting smaller boats too. A list of inspectors can be found on the Swedish Boat Union website www.batunionen.com. Information about LPG installations can be found on the Internet, e.g. www.kungsholmens-gas.se or www.paranter.org/artiklar/gasol/gasol.php.

J.nr. 080201-07-16725

Dangerous sea chart plotters recalled

Garmin sea chart plotters GPSmap 520 and GPSmap 520s are impaired by hardware faults which may make them dangerous to use as the position stated is false. Garmin is encouraging owners of plotters of the following models to return them for replacement:

- GPSmap 520 serial numbers 132000000 – 132001915
- GPSmap 520s (without sensor) serial numbers 133000000-133003139

- GPSmap 520s (with sensor) serial numbers 133000000-133003369

Ny Teknik URL: <http://www.nyteknik.se/art/51661/>

Iu

Shortcomings in fixed CO2 installations

Problems have arisen in a number of cases in fixed CO2 installations on ships. The problems have been caused by vibrations and corrosion, and have led to loose wash plates, broken plinths and stays, splits in pipes and water in tanks. Broken taps have also occurred.

Better preventive maintenance and better training for crews have now been proposed. It is also important to make qualitative assessments of the CO2 gas from the start through samples and testing water content. When maintenance is carried out parts not normally covered by maintenance instructions should also be checked, including pneumatic control taps, the control system in general and limit switches. Manufacturer's instructions are not always complete and may need to be checked and supplemented. The most important aspect of preventing accidents is to place the tanks in a place free of vibrations.

J.nr. 0804-07-15722.

GPS signals are sensitive and interference may occur. Photograph by the Marine Surveying Department.

GPS signals sensitive to interference

The Swedish Marine Surveying Department has previously warned shipping personnel about putting too much trust in information from GPS devices (information from SMSD, 4/2006).

Then it referred to interference deliberately transmitted to interfere with the rather weak signals from satellites. However, there are other sources of interference that may be significant. Processors in completely normal modern computers may send out interference signals on the same frequency as GPS signals. The sun also emits radio frequency radiation from sunspots, which can overpower GPS signals. This happened in December last year.

Ny Teknik, 16/07 and 17/07 / Iu



Everyone has the right to a non-smoking cabin

Regulations about smoking onboard are so difficult to interpret that not even the authorities involved know what is valid. But according to the Swedish Maritime Administration, nobody on ships under the Swedish flag need be subjected to tobacco smoke against their will.

Now and then there are discussions onboard about where and when smoking is permitted. Some think that it is only natural to smoke a cigarette in their cabin. Others claim that there is no smoking allowed at all in inside environments. There was an article planned last winter for SAN News about smoking regulations at sea, but since there were no clear decisions passed down, the article was postponed. During the spring the Swedish Maritime Administration has looked at the question. According to a decision by the Swedish Institute of Public Health and the Occupational Safety Agency, who have joint responsibility for compliance with the tobacco law, the Act is not applicable to ships providing foreign public transport.

It is unfortunate that the regulations regarding tobacco smoke are so weak. It should be natural that it must be as

safe to work at sea as on land, says Bo Wallgren.

But despite the lack of clarity in the regulations, he believes that there is support in the law for anybody who wishes to avoid passive smoking. Regulations governing the working environment, hygienic limits, and measures against aerial pollution are all covered by the occupational safety law, which now includes personnel onboard.

– If an employee feels bad due to smoke, or is perhaps worried about cancer, the occupational safety and health regulations about chemical health risks apply. In this situation the employer must pay for expensive measurements to find out what substances are in the air and if the concentrations are harmful. In my opinion this also applies to cabins, day rooms and all other environments onboard, he says.

Tobacco smoke equally harmful to everyone.

There is some uncertainty onboard about whether smoking is allowed or not. People still smoke in restaurants and nightclubs on ferries while at sea, even though some ships have introduced their own, stricter rules on smoking.

– Shipowners and personnel should take

up the issue of tobacco smoke as it has been on land with good results. They should focus on preventing conflict situations which may arise when some people wish to smoke and others do not want to be subjected to tobacco smoke. A ship sailing under the Swedish flag is a Swedish workplace, even if it is in foreign waters, and tobacco smoke is equally harmful wherever people are subjected to it, says Bo Wallgren.

To those who want to avoid tobacco smoke

Take up the issue with your immediate superior, safety committee, officer or ship owner. You may also contact your union.

To those who want to stop smoking

The Centre for Public Health has a free quit-smoking-line. You may call Monday to Thursday between 9:00 – 20:00 and on Fridays between 9:00 – 16:00 at 020-840000, or visit their website at www.sluta-roka-linjen.org There are many programs for quitting smoking on the Internet.



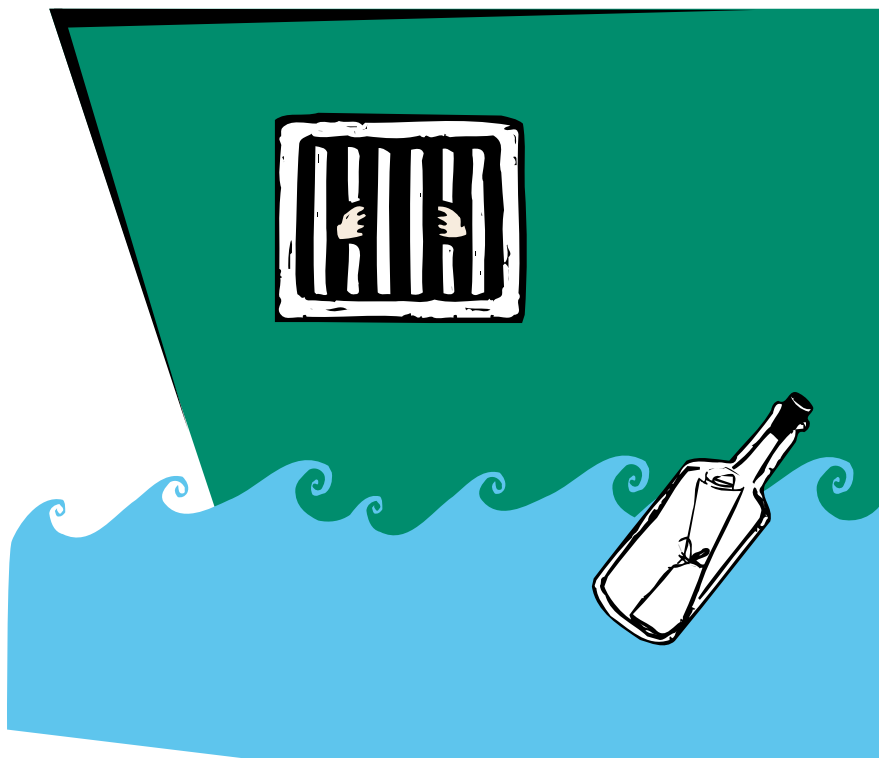


Illustration: Tove Svensson

Eight out of ten seamen do not have e-mail

Isolated and alone, many seamen feel that their ships are like jails.

This is indicated by an extensive international study ongoing at the University of Cardiff/Wales concerning the well-being of seamen.

To go ashore and keep contact with their families is high on seamen's wish lists, according to the study. Natural rights, it may be thought, but the same investigation shows that this is often far from the truth. The 4000 questionnaire responses that have been received so far show that 64% had not been on land for the last eight weeks before the questionnaire. For the one third who had been off the ship, they had been ashore for one to two hours on average, and the majority had not got further than the nearest telephone box.

Infrequent stopovers at ports were said to be mainly caused by short mooring times, high workloads, lack of information about ports, lack of transport and restrictions due to the ISPS code. Many seamen felt that they were stuck on their ships and compared life onboard with being in jail, and the job was often seen as a sacrifice to provide their families at home with a more tolerable life. The investigation also shows that the

opportunities for keeping regular contact with friends and family are limited. Of the more than 100 shipowners and management companies represented in the report, only one offered their employees a personal e-mail account.

Visits onboard appreciated

Eight out of ten had no access at all to e-mail, although officers had better access. Among those who did have e-mail there was widespread discontent. Limitations on the number of e-mails allowed to be sent and limitations on their length were irritating, and many felt that their e-mail was not private. Some seamen had to pay not only for the e-mails they sent but also for those they received.

According to the investigation, visits by different seaman's associations were appreciated onboard. However, seven out of ten said that they had not been visited by any seaman's association during their present contract. Visiting frequencies depended to some extent on which route and which regions they worked in, and those working in Western Europe and North America had more visits than others. Land contact was also more common in coastal shipping.

Linda Sundgren

~ IN BRIEF ~

More stringent smoking regulations on Danish ships

On 15 August a new law on smoking came into force in Denmark, which also includes ships. Smoking indoors is generally forbidden, with certain exceptions. In places where only one person works at a time it may be permitted. Smoke rooms may be provided and it may be permitted to continue smoking in one-man cabins. According to the Swedish Shipping Gazette, hundreds of employees at Danish DFDS are considering suing the shipowners since the management has forbidden smoking in cabins.

Shift work does not increase the risk of cancer

A new study from Karolinska Institutet shows that shift work does not increase the risk of cancer. This result contradicts earlier research results.

Occupational safety regulations in English

Occupational safety regulations applicable to shipping have now been translated into English for the Swedish Maritime Administration website www.sjofartsverket.se. The regulations in question are gathered under 2005:23 and 2005:25.



SAN is a joint body for Swedish Shipowners' Employer Association (SARF), Swedish Ship Officers' Association (SBBF), Merchant Marine Officers' Association (SBF) and SEKO Seafarers.

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