



# SAN NEWS

News about work environment and safety in shipping **4/07**

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## Lack of space costs extra time



Mikael Sjögren. Photo Linda Sundgren.

**The engine room on the Finnfellow is airy, clean and bright, but the crew is sometimes forced to carry out heavy and risky lifts – which could be avoided if the engine room had been better planned.**

The engine room is in the same blue and white colour scheme that characterises Finnlines ships in general. At the moment, Finnfellow is moored and waiting to be loaded in Kapellskär, the engines are humming at an acceptable level and it is not difficult to hear Mikael Sjögren's voice when he shows us around

all the technology. The ship is seven years old this year and still feels new and fresh in general. Duct tape and tin cans are nowhere to be seen and it is clear that maintenance is given high priority.

- She is reliable and we have very few emergency jobs. We spend almost all our time planning service and maintenance, he says.

The engines are housed on two decks at the stern of the ship. There are four main engines of 23,000 kW, which operate alternately to power the RoPax ship of almost 190 metres.

- Since we only use two engines at a

time, they run for half the time they would have done if all four were used simultaneously. This decreases wear considerably, says Mikael Sjögren, chief technician onboard.

The ship sails between Kapellskär and Nådendal. Every afternoon at half past four the Swedish coast is sighted, and the ship leaves again just over five hours later. Most of the work on the engines is carried out when the ship is at the quay-side; operations during the crossings are avoided.

- We avoid taking apart working systems to perform service since the risk of unforeseen side-effects is large. We sail in waters that are practically a mound of stones, and we must be very careful, states Mikael Sjögren.

Despite the first impression that the engine room in the Finnfellow is relatively easy to work in, there are a number of shortcomings in its ergonomics. The ceiling is rather low and things are cramped in a number of places, making access difficult. The first engineer, Jan Brännlund, is sitting in the control room. He came onboard recently and is hunched over a computer screen, going through the relief report.

- A ship like this is built to optimise the cargo hold, and other functions must fight over the rest of the space. I understand the priorities of the shipowners, but

you cannot count on the engine room being optimally planned, he says.

Jan Brännlund explains that the greatest problem is the heavy, difficult lifts that the crew are forced to carry out sometimes.

- We need lifting eyes and hatches in the ceiling in several places. Instead you have to be inventive and find your own solutions, he says.

Mikael Sjögren agrees with his colleague, and he shows several examples of what they mean in the engine room. He walks around one of the main engines and stops by a one-meter tall cylindrical electric motor.

- This weighs between 300 and 400 kilograms. You can imagine what it must be like to drag it all the way up the ladder over there and then to the workshop. Had there been a hatch in the deck above, we could have simply hoist it up, and if the aisles were wider we could have pulled it on a trolley.

We walk another ten metres and stop by the side of a main engine.

- This is just a cowling, says Mikael Sjögren as he taps on a blue-painted steel cover. Underneath there is a scavenging air cooler that needs to be removed from time to time for service. It is about one cubic metre in size, and just getting it out is difficult enough, he says and points to the thick white pipes in the low ceiling that would obviously obstruct the manoeuvre.

- Another example is the generator, explains Mikael Sjögren when we have moved forwards another couple of metres. If it starts to burn we have to move it, however that is supposed to be done. There should have been a large steel hatch in the deck above so that we could have lifted it out. Whoever who put it here must have believed in eternal life, he chuckles.

- When we are going to move heavy units we have to make our own rigs with a block and tackle, and drag and pull. It is a risky business and it is easy to get injured. It also costs a lot in terms of working time and manpower.

The heavy, awkward lifts involve risks for the employees, but so far we have been lucky and had no serious injuries, explains Mikael Sjögren. There are eight machine hands in total, so they are able to help each other out in such situations.

- Of course we could employ even more, but we have a dedicated crew. While we are underway there are only two working at any one time, and resources are concentrated when we are moored at the quayside.

Every six weeks there is a service week-



Jan Brännlund. Photo: Linda Sundgren



Jan-Erik Fagerholm.

end. During that time the ship is moored for 24 hours and a large amount of work is done on the engines. Mikael Sjögren describes it as a minor visit to the shipyard.

- There are many external companies that come onboard to help with different tasks. Without them we would never have the time to do it all. When I was working on the shipping company's vessels in Malmö they were moored for a one day each week and we could take care of most of the work ourselves.

- Just keeping it clean requires between eight and ten man-hours per week. And even so, we must bring in external companies for it to pass the annual inspection, says Mikael Sjögren.

We walk down a ladder and stop on the floor grating on the lower machine deck. The pipes below us cross in all directions and cleaning between them is a time-consuming task.

- The oil from various leaks in the engines runs through the grating here, says Mikael Sjögren, and follows the flow down among the pipes with his hand. To clean everything down there we first have to lift up the grating and then spray

it all off with hot water or use a large vacuum cleaner. If it had been a smooth surface there would not have been any difficulties, but here it is full of nooks and crannies which make it very difficult to get good access.

Jan-Erik Fagerholm is the repairman on board. He has worked for 45 years at sea and has seen many different machine rooms. He describes the working environment on the Finnfellow as generally good, even though some changes would please him.

- I feel that they could have given more thought to the workshop space seeing as it was built as new, and the air conditioning and acoustic insulation could be better.

One of the major benefits of his present job, thinks Jan-Erik Fagerholm, is relations with the employer.

- This is the first company I have worked for where the management is really decent and willing to cooperate. We always get what we ask for when we order safety equipment, and that makes it easier to work onboard.

Linda Sundgren

# Research for better engine room



Monica Andersson.

**Engine rooms and control rooms must become better places of work. A research team is looking into rooms below deck to select areas needing improvement.**

Machine rooms are often difficult to work in. They are cramped, hot and noisy. Much of the routine maintenance work is difficult to perform while sailing, which sometimes causes stress when the ship is moored at the quayside and "everything must be done". Despite obvious work environment issues, research projects in machine rooms have been almost non-existent, both in Sweden and in other countries. It is therefore a somewhat pioneering task that the researcher from Chalmers and marine engineer Monica Andersson has

taken on, now that she and several other bodies are studying the environments in machine rooms and control rooms.

- There is an accumulated need onboard ships to take up issues concerning machine rooms. People who have heard about our project contact me and want to be interviewed and sometimes they call from a sister ship of one of the ships we have visited, and want us to visit them too, she says.

The primary aim of the study is to investigate the environments in control rooms, but the researchers are also collecting data about engine room environments while they are onboard. Faults and deficiencies will be identified and documented, and will be the basis of continued research. Everything will be examined, from lighting to noise levels, ergonomics and stress, sleep and working procedures. The researchers are onboard every ship for 14 days to take measurements and interview the crew and officers. Seven ships with different areas of operations have been selected.

- Large machine rooms are often easier to work in than small rooms, since there is quite simply more space and more accessibility. But machine rooms on newer ships are not always better ergonomically than older ships. We have examples of 25-year-old ships that are relatively easy to work on and where the machine crew has been involved in the design, says Monica Andersson.

The ambition is to include the widest possible range of ships in the study, since conditions vary so much between different types of ship. On RoPax ferries, machine rooms are often cramped because the cargo holds take so much space. In pulp ships, machine rooms are placed towards the aft under the bridge with a longer propeller axle as a result. Tanker ships often have rather good space in the machine rooms, while small supply ships are a real challenge for machine room ergonomists.

- When ships are designed, the cargo container is given priority for obvious reasons. The bridge and its structure come next. The engine is given whatever space is left over, says Monica Andersson.

- But I can understand the shipowners' dilemma. Shipyards have their standard solutions and if you want anything extra it costs a great deal more. On the other hand, it is far more expensive to change something afterwards than to build it well from the start.

## Research

The project is called "Engine Control Rooms – Human Factors" and is led by Peter Grundevik at SSPA. The National Administration of Shipping and Navigation, the Foundation of Sweden's Shipping Office and Vinnova are financing the research, which started in May 2007 and will be completed in September 2008.

# Students identify messy controls

**The work for safer and more user-friendly bridges continues. Students are now being used to improve technology.**

Technology in bridges is often full of shortcomings. Illogical controls, messy instrument panels and buttons that can hardly be distinguished from each other create confusion and, in the worst cases, may contribute to accidents. Last autumn the project "MTO Sea" (People, Technology, Organisation) was started, in which trainee officers were given the task of looking more closely at the bridge environment during their work experience.

- When you have worked for a while it is easy to become blind to buttons that are taped over and toothpicks jammed in here and there. Trainees come on board with new insight, and notice faults

and deficiencies in a completely different way, says Christer Bergquist at the Kalmar Maritime Academy.

The first group of students with this task started out in the spring. They were equipped with a "logbook" filled with questions to put to the officers onboard. Out of a total of 42 Sea Captain students, only eight handed in any materials. But the project leader is satisfied, despite this result.

- The quality of the reports is quite acceptable, in view of the circumstances. The students did this task in addition to their ordinary exercises and other work assignments onboard, says Margareta Lützhöft at Chalmers.

The students reported different deficiencies on board, but there are some problems which arise in almost all reports. Alarms are one of these. They are either

too loud, too quiet, too sensitive, and so on. Another common problem is the difficulty in turning down the brightness of screens, which can make night sight worse. The aims of MTO Sea are both to teach students critical thinking and to improve bridge technology. The idea is that the students' reports on deficiencies in technology will be forwarded to parties involved such as shipowners, classification associations, insurance companies, shipbuilders and suppliers of technological equipment. MTO Sea is planned to become an obligatory part of the maritime courses in Kalmar, probably both for engineers and captains. The maritime courses at Chalmers are also thinking of adopting the system. The results from the spring reports are undergoing analysis and will be presented after Christmas.

Linda Sundgren

## Healthy working environment attracts officers

There is growing concern in the industry about the increasing shortage of marine officers (particularly engineers). Information is coming through that shipowners are already having problems finding crews for their ships, and SMBF reports that their members cannot always go home on leave as planned because there is nobody to relieve them. Many look with hope towards the marine academies and are crying out for more places on these courses. Funds are being invested in recruiting campaigns and there are discussions about how to increase the number of work experience places and how to cut down on the dropout rate. The focus is completely on academies and education. In contrast, the association between shortage of officers and the work environment is seldom taken up. "Work environment is not a problem. It is far better on Swedish ships than foreign ships", is how many people reason. And that may be the case in general. But young Swedish people are hardly likely to compare life on board Swedish ships with those sailing

under other flags. Their references are in Swedish society and in comparison with land-based places of work, the shipping industry is generally lagging behind.

In addition, there is a completely new generation of sea officer students in the classrooms. Many come directly from high schools, have working experience and no previous connections with shipping. The contrast with the past is very noticeable, when potential sea officers were often a little older with generations of seamen in the family. This must be taken into account. The work experience period at the start of the first term is very likely to be many students' first long time away from home, and that experience is probably critical for some of them in deciding whether they will continue on the course or not. But how attractive is life on board? Interesting and exciting work, certainly, but the small crews give little scope for social life and it is often a case of eating, sleeping and working. Mooring times in harbours are short and training equipment,

especially on small ships, is practically non-existent. Many officers do an excellent job as instructors, but hardly any of them have been trained for this task and often lack the time to really take care of their trainees. Many of the new students spend several months in this environment, some of them even celebrating Christmas onboard.

It is possible that more investments in the work environment at sea, both the physical and the psychosocial environment, would attract more young people to the industry. And maybe it would also encourage more officers to stay longer in the profession. In the past it was said that an officer was at sea for an average of 15 years before he or she applied for a job on land. According to SFBF, that time period has now been halved.



Linda Sundgren  
Editor, SANNYTT

## ~ OUTLOOK ~

# Succes for fatigue at IMO

Fatigue was the subject of discussions at an IMO meeting, Maritime Safety Committee, in Copenhagen in October. Torbjörn Åkerstedt, Swedish sleep researcher and professor, participated through the international officers' organisation, IFSMA. He spoke about how people are affected by tiredness and presented a computer program for watch planning, Sleep Wake Predictor, that has been developed in Sweden.

- He made a strong impression. There were many people who came up after his presentation and were very interested, recounts Christer Lindvall, president of IFSMA and managing director of the Ships' Officers' Association, who also participated in the meeting.

He says that Sweden, Britain, Spain, IFSMA and ITF are those in IMO that take the hardest line on the issue of fatigue. Their demand is that all ships over 500 tons must have at least three officers onboard, if there are no specific reasons for only having two.

- In this way we will turn the whole

assessment around, and two officers will be the exception rather than the rule. But the probability of IMO following our line is, as I see it, small in the present situation. We will probably have to accept that it will take longer than we thought to reach that goal, explains Christer Lindvall.

Another measure to solve the problem of tiredness that is being discussed in IMO is to change the present recommendations that govern manning levels into binding requirements. That would mean that all parties involved would be forced to adhere to the rules and regulations for manning that they are free to ignore completely at the moment.

- But even if the recommendations become binding, I do not believe that it would make a huge difference in practice. The positive aspect is that IMO has at last accepted fatigue as a major problem. For the first time it is placed in the context of manning, a working group is devoted to these issues and they are looking for concrete solutions, says Christer Lindvall.

But he finds it difficult to accept that

the problem is not taken even more seriously.

- Research shows that high levels of fatigue are equivalent to 0.6 parts per thousand alcohol in the blood. At the same time there is proof that a large number of accidents take place due to fatigue. If the same number of accidents occurred due to drunk officers onboard, the situation would never be tolerated.

The next time fatigue will be taken up in IMO is at a subcommittee meeting in March next year. The report will then once again be sent to MSC with proposals and recommendations for possible measures. But it is not only the UN maritime safety organisation that is interested in fatigue. Others include the international tanker shipping organisation, says Christer Lindvall.

- At INTERTANKO, people are terrified that one of these small vessels with officers asleep at the bridge will sail directly into one of their gas tankers. The explosion would be horrific.

Linda Sundgren

The Swedish Maritime Administration reports The Administration continuously publishes information that may be of interest to the shipping industry. Below is a selection from the latest reports. Complete articles may be read on the Administration's website: [www.sjofartsverket.se](http://www.sjofartsverket.se) – the Swedish Maritime Administration.

## Serious fire started by fluorescent lamp fitting

A fire broke out in the hold of a large fishing vessel where corrugated cardboard, among other things, was stored to be used for packaging frozen fish. A number of fire doors and hatches were open as daily work was in progress. Fire and smoke spread extremely quickly through the whole ship. The fire alarm was not activated until the automatic alarm started after a good while. Despite the fact that there were many people onboard, nobody sounded the alarm. Instead warnings were spread from person to person. The ship was quickly filled with smoke and the crew of about 110 was forced to evacuate. It was then discovered that a number of people were missing. The investigation is not yet complete but it is already possible to draw the conclusion that the fire was started by some recently installed fluorescent lamp fittings. Sparks from a short-circuit in the lamp fittings had been caused by poor switch connections, which were made worse by vibrations on the ship. The lethal smoke spread so quickly since all the doors and hatches were open. The shipping company has taken measures on other ships including the installation of magnetic devices on doors so that they close automatically when the fire alarm goes off. The fact that nobody activated the alarm was due to language problems and poor knowledge. It may be noted in this context that a similar event took place on a sister ship just before this fire. In that case, too, it was fluorescent lamps fitted in the cargo hold some months previously that had overheated and risked catching fire. It was reported in accordance with the procedures at the shipping company, but before the report had been sent to other ships in the company, the above accident had already happened.

These events illustrate the importance of reporting incidents and observations, and of having a system that can efficiently handle these reports.

The lamps are of the type ADVANCE model Centium 1CN-2P32-SC, Instart – start Electronic Ballast. The ship burned for several weeks and was a total write-off. A total of eleven people died in the fire.

*Shipping Board DK/Iu*

## Drank thinners instead of water

A seaman who was carrying out painting work was thirsty and drank from a water bottle. The bottle contained thinners, not water. The seaman swallowed several mouthfuls before he was aware of this. The incident was serious and it is important to maintain correct procedures to avoid similar mistakes. Hazardous substances and substances used for work should not be kept in a way that may cause confusion with other liquids or solids.

*Iu dnr 080201-07-17048*



## Container damage onboard

A container ship sailing in the Baltic ran into bad weather and continued her passage at reduced speed on a modified course to decrease movement. The following morning the weather had calmed and the voyage continued as planned. It was then discovered that a stack of seven containers had collapsed into the fore bulkhead in the cargo hold. The containers were damaged and three of them contained hazardous materials. The ship had to deviate from its planned route and sailed into port to obtain help with salvaging work. The cargo was unloaded without further damage some days later. The reason behind the incident was that the lower containers did not meet ISO

norms for their pressure withstand figures. The investigation points out several shortcomings in the exchange of information within the industry, and recommends measures to eliminate these deficiencies. Furthermore the investigation states that it is unreasonable for the ship to be responsible for the loading plan being correct, and also that loading is planned on land and carried out rapidly. It is further proposed the containers with lower norms than ISO are specially marked, and that senior officers have sufficient time and knowledge of their work before they are signed on.

*MAIB 21/2007*

## Cargo caused machine damage

A bulk freighter had high exhaust gas temperatures and an investigation showed several broken piston rings. These were replaced and the engine was restarted. After a couple of hours more broken piston rings were discovered. These were also replaced, but then the engine would not start and the ship had to be towed into port. A large number of defective piston rings were found, as well as a large amount of wear to the cylinder liners and piston ring grooves. Holes were also found in the venting ducts from the bunker tanks. These ducts passed through the cargo hold, among other places. The probable reason for the above damage was that previous loads of aluminium and other substances had contaminated fuel through the broken venting ducts. The centrifugal oil purifier did not have enough capacity to remove such large amounts of foreign matter. When designing a ship there is good reason to place the venting ducts to bunker tanks in such a way that they are easy to maintain and inspect. Procedures for regular inspections are recommended when the ship is in operation.

*DNV Casualty information 1/2007*



*Foto: DNV*

# Healthier staff at Stena Line

**Extensive measures to get employees on sick leave back to work have been successful at Stena Line Scandinavia AB. Since the project started one and a half years ago, absence due to sickness has fallen by more than 1%.**

The shipping line has been subject to widespread sickness absence among the quartermaster staff. Frequent and often relatively long periods of absence during recent years have brought about different measures in the area of health care and preventive care. In autumn 2005 cooperation was started with a company called Aktiv Arbetsmedicin ("Active Working Medicine"). The goal was to bring down sickness absence through detailed investigations and high levels of support. Measures were aimed at three different categories: those who had been absent at least 25% of the time during the last year, those who had reported sick more than six times during the same period and those who were judged to be in the risk zone for long or frequent periods of reported sickness.

- We produced a list of 150 employees. They were called in one by one and informed about the project. Those who were in the risk group were allowed to choose whether they would be involved or not, but only a few chose to stay out, says Elinor Gerle, personnel officer at Stena Line.

During the first meeting, the employee meets with his/their immediate superior and one personnel officer from the shipping company. The objectives and structure of the project are explained.

- In general we have received a very positive response. Most employees have chosen to be involved in the project, and only one or two people from the risk group have refused, says Elinor Gerle.

The medical journals of each employee are sent on to Aktiv Arbetsmedicin, who take over the process through a rehabilitation coordinator. Seven meetings within 8 to 12 weeks are booked with a nurse, a physiotherapist, a psychologist and a doctor in turn. At the last meeting, everybody involved in the process and a representative from the National Insurance Office gathers to check off with each other and make a decision.

- Some are perhaps able to work full-time again, but need support in the form of cognitive behaviour therapy, for example. We have bought anti-smoking packages, and overly obese people have their own coach. We also try to modify the services so that people can work part-time if their working ability is not greater, says Elinor Gerle.

Since the project started, sickness reported among those employed onboard has decreased from 6.2% to 4.7%.

- Now we are looking at how this can be



*Elinor Gerle Stena Line is satisfied with the result.*

followed up so that we do not fall back into old patterns. One option is to develop cooperation with occupational health services, says Elinor Gerle.

The project costs around SEK 30,000 per employee. On top of this there are expenses for training managers, daily allowances and a number of other costs. But according to the shipping company's own information, the investments will be repaid and, even more important, employees can return to work with better prospects for the future.

*Linda Sundgren*

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## Illness do not stop seafarers

**While sickness absence is relatively high on ferries, freighters have a problem with sick crews in service. Few employees report illness during a long watch.**

Among the four shipping companies contacted by SAN NYTT, there is a large difference between sickness reported on ferries and freighters. Last year, sickness reported at the commercial shipping company Broströms and Wallenius Lines was around 4%. The corresponding figure for Tallink Silja was 7%, and for Stena Line Scandinavia AB about 5%.

- If one of our ships is hit by stomach flu, the whole crew may be knocked out but nobody reports sick. People help each other out and those with less of a temperature go up and work, says Louise

Langely, personnel officer at Broströms.

Neither does everybody use the option of reporting sick during time off.

- There are very few employees that report sick with a bad cold. "I am at home anyhow" is how many people reason. But if the illness lasts more than a few weeks they call us, says Louise Langely.

Reporting sick on ferry lines shows a different pattern. At Stena Line the skeleton crew does not report sick more often than their colleagues on cargo ships, but sickness reported among quartermaster employees is almost twice as high.

- One reason may be that quartermaster crew meet a lot of passengers and are more exposed to infections. And they have a tough job, too, says Elinor Gerle, personnel officer at Stena Line.

*Linda Sundgren*



# Thanks to the human factor

Writing many incident reports is an indication of involvement and a feeling for quality rather than a poorly maintained ship. This is the key message in the new information film, "Thanks to the human factor", which will be shown to shipowners and employees onboard.

Reporting to the incident database Insjö is far too modest, according to those involved. According to an estimate made when the database started 10 years ago, every ship would deliver approximately 10 reports per year about risks, incidents and accidents. But there is a long way to go before that goal is reached.

- We receive about 300 reports per year, and we are not satisfied with that, says Olle Bråfelt at ICC where the system is administrated. As well as commercial ships we have the whole Sweref fleet of passenger ferries, so there should be more reports coming in.

To encourage ship crews and shipping companies to send more reports to Insjö, the National Administration of Shipping and Navigation and the Shipowners' Association – the co-owners of the system – have ordered an information film about the importance of reporting incidents.

- The film is aimed at two target groups: seamen and shipping company officials. Reports are written onboard the ships and then come to Insjö via the shipping companies, but they tend to get stuck in shipping company offices, says Jörgen Zachau at the National Administration of Shipping and Navigation.

"Thanks to the human factor" is 15 minutes long and is produced by the journalist, Torbjörn Wileen. The title reflects the focus of the film: that the skills of seamen are key for all safety work at sea.

- Exactly as described in the film, it is the crew onboard that knows best what shortcomings and risks exist on the ship. To organise effective work with safety, their knowledge must be involved, he says.

With contributions from serious shipping accidents in combination with insights into the daily work onboard and comments from crews, shipowners and authorities, a clear and simple picture of safety at sea is provided and an impression of how seamen, via Insjö, can be involved in raising standards.



Photo Lennart Brösicke.

- The most important aspect is viewing people onboard as a resource, not a liability and a cost. A "no blame culture" is also required to make more people dare and want to report incidents, says Torbjörn Wileen.

That is the conclusion of many people that SAN NYTT has spoken with. There is some concern about how reports are perceived and people are afraid that they will appear to be incompetent or whining.

- But in reality the situation is almost the opposite: frequent reporting is a sign of high safety awareness. It is also important the shipping company management shows their standpoint on incident reporting onboard and actually demands that people write reports, says Olle Bråfelt.

While certain ships and shipping companies often supply reports to Insjö, there are many that never send a single report. That there has not occurred one single deviation worth reporting during a whole year is not really credible, says Olle Bråfelt.

- The pattern of report writing tends to be related to individuals rather than shipping companies or ships. If a captain who has sent in reports diligently changes ship, suddenly there are more reports from his new ship and fewer from the old ship.

Linda Sundgren

~ IN BRIEF ~

## Theme page about trucks

Trucks are the category of machine most often involved in accidents in industry and Sweden, and between 2002 and 2006 there were over 1500 accidents involving trucks. The most common injuries are to feet and legs, which are often crushed between the truck and another object. On 1 July this year, regulations regarding the handling of trucks were made stricter, and for this reason the Swedish Work Environment Authority has started a specific website: [www.av.se/teman/truckar](http://www.av.se/teman/truckar). Information is presented here about the new regulations and how injuries can be avoided.

## Fewer people reporting sick

The number of people reporting sick in Sweden is decreasing all the time. Since the peak in 2003 with an illness rate (days of absence reimbursed by the National Insurance Office) of 43.2, in July this year it was down to 38.9 days. This is shown by statistics from the National Insurance Office, which in its latest forecast predicts a continued decrease in the illness rate to less than 37 days sometime in 2009.



# SAN NEWS

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