Investigation report

B1/2009M

MS OOCL NEVSKIY, a fatal fall overboard during load securing on 13 February 2009

Translation of the original Finnish report

Onnettomuustutkintakeskus
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Accident Investigation Board

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Translation R&J Language Service

SUMMARY

On 12 Feb 2009 at 18:30 OOCL NEVSKIY berthed at Mussalo Harbour, Port of Kotka. The unloading of her containers began immediately. After the incoming containers destined for Kotka were unloaded, the loading of outgoing containers began at 21:30. The ship's deck department, under the supervision of the boatswain, was securing the loaded containers. One of the deck hands was lashing a container on the port side of cargo hatch number 2 when he slipped and fell overboard. The sea was covered with ice.

The handwritten statements of the chief mate and the boatswain regarding the incident were made available to the investigation commission. According to them, the seaman and his work-mate were tasked to secure the loaded containers. The boatswain, supervising their work, had instructed the seaman in question to lash the containers tightly. At the time of the accident his workmate was performing the same task on the starboard side. When the boatswain went to guide this man, he heard the other seaman's cry. When he turned his head towards the sound he saw the seaman's legs disappear over the rail.

The sea ice was so thick that the seaman did not break it. He lay motionless on the ice following the 8–8.5 m fall.

The boatswain reported the incident to the chief mate who immediately sounded a full alarm on the ship.

The stevedoring company's shift foreman reported the occurrence to the Emergency Response Centre (ERC). Once the seaman was hoisted up to the pier ERC personnel pronounced him dead.

The investigators recommended that the vessel's flag state and the Finnish authorities actively work with the International Labour Organization (ILO) and the International Maritime Organization (IMO) to promote the safe lashing and unlashing of containers by implementing improvements in fall protection and work area arrangements.

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ABBREVIATIONS USED

ILO	International Labour Organization
IMO	International Maritime Organization
ISM	International Safety Management (Code)
PB	Port Side (the left side of the ship when facing the Bow)
SB	Starboard (the right side of the ship when facing the Bow)
TEU	Twenty-Foot Equivalent Unit

SYNOPSIS

On 12 Feb 2009 at 18:30 OOCL NEVSKIY berthed at Mussalo Harbour, Port of Kotka. The unloading of its containers began right away. After the incoming containers destined for Kotka were unloaded, the loading of outgoing containers began at 21:30. The ship's deck department secured the loaded containers with lashing wires. A seaman working under the supervision of the boatswain was lashing a container on the port side of cargo hatch number 2 when he slipped and fell over the rail. The sea was covered with ice and he was almost instantly killed.

After a preliminary investigation and conferring with the vessel's flag state, Accident Investigation Board of Finland (AIB) decided to investigate this incident. Marine Accident Investigator, Captain **Risto Repo** was named Investigator-in-charge, accompanied by AIB Investigator, Senior Safety Officer **Harri Halme**, LSc. The Investigation Report has been translated into English by R&J Language Service.

All times in this report are Finnish Standard Time (UTC+2).

An investigator visited the ship the next time she came to Kotka after the accident. The ship arrived late in the evening and continued her voyage in the small hours. Accident site investigation had to be conducted under deck floodlighting, which made documenting it more difficult.

The report has been produced in close cooperation with the flag state Antigua&Barbuda and is published as a joint investigation.

With regard to the investigation commission's recommendation, statements to the draft final report were requested from the maritime authorities of Antigua and Barbuda and Finland. The report was also sent to the vessel and its shipping company for possible comments.

The material used in the investigation is stored at Accident Investigation Board Finland.

1 OVERVIEW OF THE ACCIDENT AND THE INVESTIGATION

1.1 Vessel information

1.1.1 General information

Name of vessel	MS OOCL NEVSKIY
Owner	BBC Containerfeeder I AS, Norway
Shipping company	Vaage Ship Management AS, Norway
Operator (ISM)	Technical Ship Support Bv, The Netherlands
Charterer	OOCL (Orient Overseas Container Line)
Flag	Antigua and Barbuda
Homeport	St. John's
IMO number	9231834
Call sign	V2PW8
Type	Container vessel
Crew	14
Classification society	GL, Germanischer Lloyd AG
Class	+ 100 A5 E3
Ice class	IA
Year of build	2001
Shipyard	J.J. Sietas Werft
Length over all	134.44 m
Length btw perpendiculars	124.41 m
Breadth	22.75 m
Draught	8.7 m
Gross tonnage	9981
Net tonnage	6008
Dead weight	11390
Power output	8400 kW
Ship engine	9 M 43 MAK

1.1.2 Manning

The ship's crew comprised of fourteen persons. The master, two mates, chief engineer and second engineer as well as the engine crewmember were Russian. The boatswain, four seamen and a deck cadet as well as the cook and messman were Filipino. Pursuant to the flag state's ship manning document, the minimum manning was 12 crew members.

1.1.3 Other systems

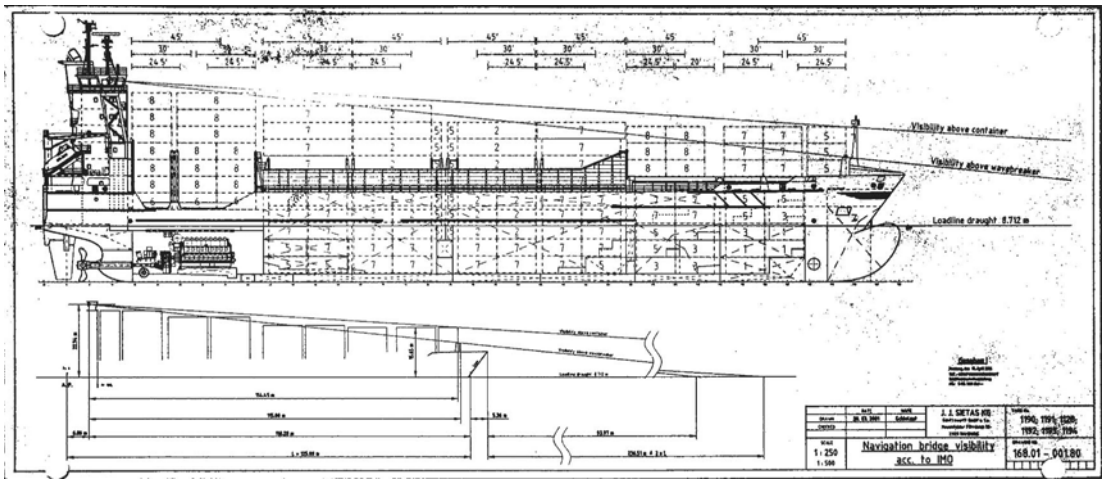

Figure 1 General arrangement of the OOCL NEVSKIY.

The ship has four cargo holds. The combined load capacity in the cargo holds and on top of the hatches totals 868 twenty-foot equivalent units (TEU).

OOCL NEVSKIY is a typical early 21st century feeder vessel[1]. She has navigated for years between the ports of the Baltic Sea and the North Sea. She follows a very tight schedule on a ten day route from ports handling European ocean traffic to ports in the north. Port calls range anywhere from 4 hours to 24 hours. Sea passages normally take 14 to 60 hours, but the shortest legs may only take 6 hours.

1.1.4 Cargo

After having moored at Mussalo, thirteen 20 ft-long (20') and sixty-nine 40 ft-long (40') containers were unloaded from 18:40–21:31. The loading of outgoing containers began immediately after this. Two 20' containers and seven 40' containers had been loaded when the accident happened. Loading was suspended from 01:35 until 02:45 because of the accident. The work was later continued and ten 20' containers and one hundred and thirty 40' containers were loaded. Loading was completed at 04:30 after which the vessel cast off at 05:30.

1.1.5 Lashing and unlashing containers

Containers are secured to the deck and to each other with twistlocks. Twistlocks are fastened into holes that are in the corners of containers. One container is stacked on top of another and the twistlocks go into the holes that are in the bottom of the container above it. This is normally an automatic process. During unloading, twistlocks have to be turned to unlock the containers so they can be hoisted off of the vessel. In addition to this, containers are secured to each other by turnbuckles. This is how stacks of containers are lashed to each other.

[1] Short Sea Traffic: scheduled traffic between several ports of call including several dockings at a single port.

During the loading process, twistlocks are placed on the containers on the pier. On the ship, seamen check the locking and lash the containers to the deck and to each other with turnbuckles. During unloading, seamen turn the twistlocks open and disconnect the turnbuckles. On the pier, stevedores remove twistlocks from the containers before transferring them to the terminal.

Figure 2 A container lashed to the deck.

At some ports along the route of the OOCL NEVSKIY stevedores assist in cargo securing, that is, they lash/unlash the containers to the deck. This is included in the Terminal Handling Charge (THC) on the basis of a separate contractual arrangement.

Other ports levy distinct charges for this work, in which case the crew of the ship carries out the duties onboard the vessel. The ship's route included 18 possible ports. In 14 of them the crew of the ship lashed and unlashed the containers onboard the vessel.

1.2 Accident information

1.2.1 The occurrence

The occurrence took place when containers where being lashed. Regarding the incident, only the short, handwritten statements of the chief mate and the boatswain were available. According to them the seaman, together with his workmate, was tasked to secure the loaded containers. The boatswain, supervising their work, had instructed the seaman in question to lash the containers tightly. At the time of the accident his workmate was performing the same task on the starboard side. When the boatswain went to instruct this man, he heard the other seaman cry 'Boss'. When the boatswain turned his head towards the sound he saw the seaman's legs disappear over the rail.

The sea ice was so thick that the seaman did not break it. He lay motionless on the ice following the 8–8.5 m fall.

1.2.2 Location

The ship was moored from its starboard side at B Quay at Mussalo Harbour, Port of Kotka.

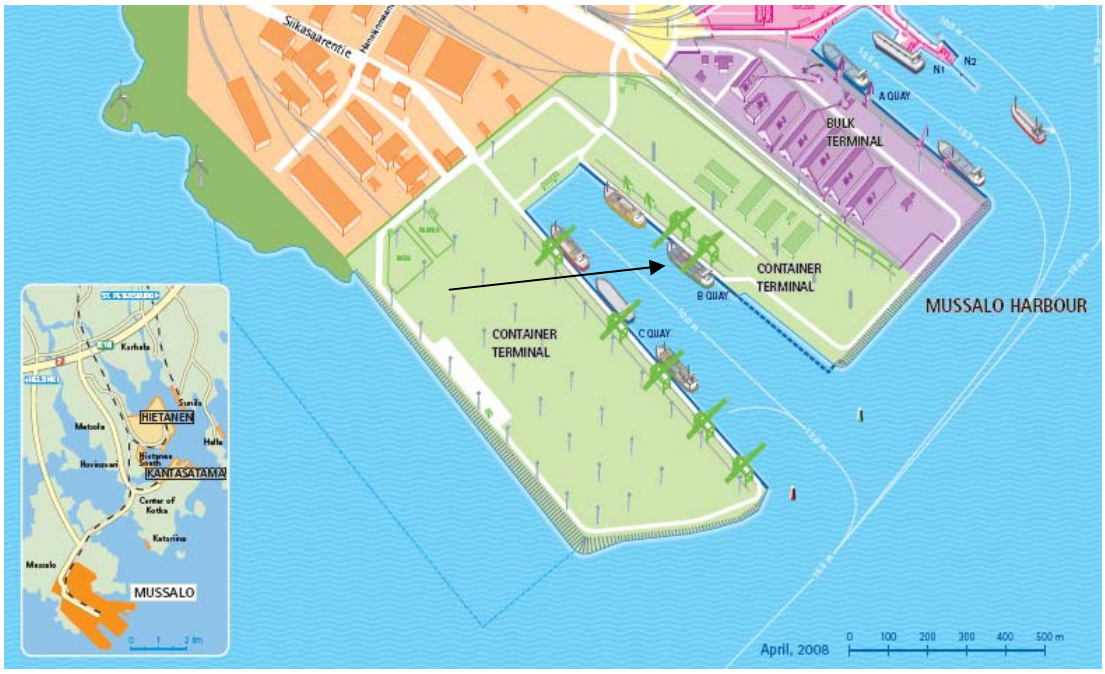

Figure 3. The arrow points to where the ship was berthed.

The accident occurred on the port side of the bow, on top of cargo hatch number 2.

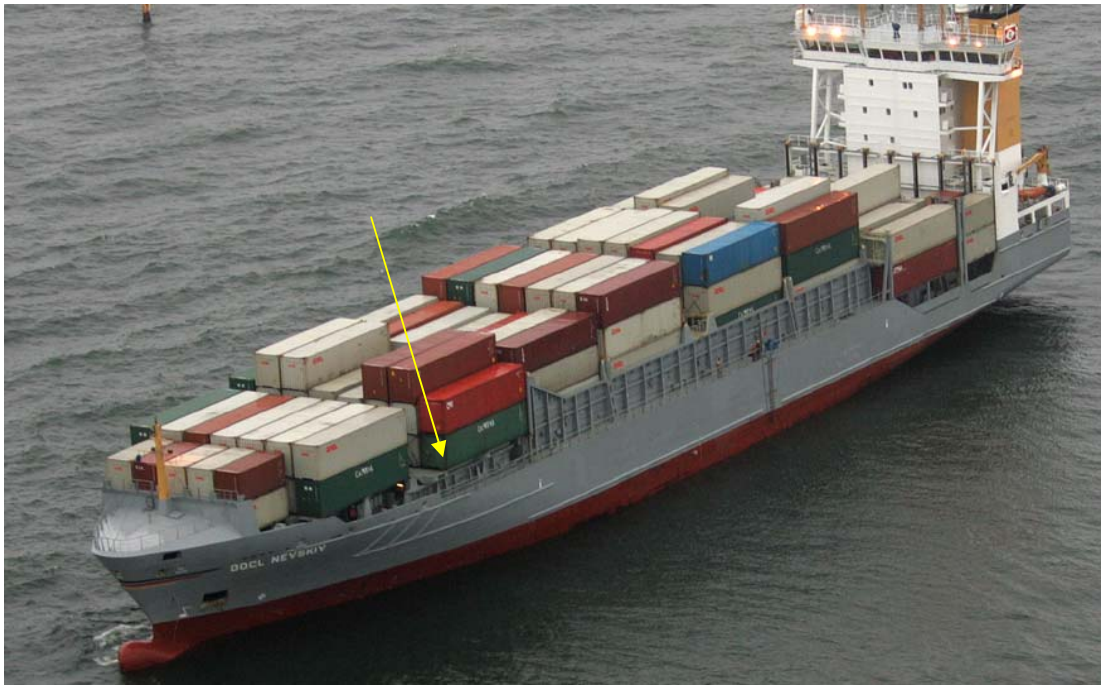

Figure 4. The yellow arrow points to the place from where the seaman fell (© Border Guard)

Figure 5. The place of the fall photographed later at the Port of Gothenburg (Sjöfartsinspektion, Sverige).

1.2.3 Meteorological information

Air temperature was -7° and light snow was falling. The surface of the sea was covered with a 10–15 cm thick layer of broken pack ice.

Figure 6. The site of the fall photographed on the night of the accident (Kotka Police).

Photographs clearly show a thin sheet of snow on the deck. This makes the deck extremely slippery.

1.2.4 Action after the incident

The boatswain immediately reported the occurrence on the ship and a rescue operation was launched at once. A stevedoring company's signaller who was working on the vessel learned of the incident at 01:35. He reported this to his foreman who was at a nearby building. The foreman immediately left for the ship, listening to the quay's working channel on his way. From the radiocommunications he became convinced that a man had fallen overboard. He first called the Emergency Response Centre (112) at 01:39 and then Harbour Security in order to guide the emergency response units to the accident site. Following this, he reported the occurrence to the vessel's shipbroker[2].

[2] Representative of the vessel and the shipping company, shipping agent

Rescue operations were put into action on the vessel and on the quay so as to hoist the seaman off the sea ice. A unit from Kotka Police was alerted at 01:53. After they arrived at the scene they conducted a preliminary investigation and took a few photographs.

Loading was continued after the ERC units and the police patrol had escorted the deceased to the hospital chapel. The death of the seaman interrupted the loading for approximately one hour.

1.2.5 Injuries to persons

A seaman perished.

1.2.6 Damage to the vessel

There was no damage to the vessel.

1.2.7 Other damage

Due to the delay in loading, costs were incurred to the vessel and the shipping company. But really, this delay only lasted a couple of hours. The seaman that perished had to be replaced, which incurs costs. Additional costs also include the accounts and reports that have to be made to different authorities.

Possible psychological trauma sustained by the other members of the crew.

1.3 Rescue and survival aspects

1.3.1 Distress Alerts

The boatswain reported the occurrence to the chief mate at approximately 01:30; a *Man Overboard* alert was immediately given.

The signaller announced the occurrence on the working channel. All persons involved in the loading were immediately informed of what had happened. The foreman reported the occurrence to the Emergency Response Centre as follows: *Mussalo Harbour, B Quay, man overboard. Ship: OOCL Nevskey, berthed. Attempting to hoist the man with a crane*.

According to the ERC log the report was received at 01:36 and an alert was sounded at 01:37. The ERC alerted Kymeenlaakso Rescue Department's Kotka unit and Kotka Police to the site. The rescue code was *483A, water rescue*. The ERC designated the task completed at 03:52.

The ERC did not notify the on-call officer at the Finnish Maritime Administration's Gulf of Finland Inspection Division or the on-call officer at Accident Investigation Board Finland.

1.3.2 Launching of rescue operations

The boatswain immediately reported the occurrence on the ship and rescue operations were launched without delay. The crew of the ship as well as the employees of the stevedoring company promptly initiated the process of recovering the victim from off the sea ice to the quay.

They first tried to hoist the victim with a crane spreader, to no avail. The crane was then fitted with a personal access cage, which managed to collect and lift the victim ashore. He was covered but not moved while in the cage.

The victim was put in an ambulance; however, no vital signs were detected.

1.4 Other investigation

1.4.1 Investigation of the accident vessel and at the site of the accident

A local police unit inspected the site of the fall, took some photographs and briefly interviewed persons who knew of the accident. The police completed their own investigation report.

During the night Kotka Police did not notify the on-call officer at the Finnish Maritime Administration's Gulf of Finland Inspection Division or the on-call officer at Accident Investigation Board Finland. The shipbroker reported the incident to the maritime inspector the following morning. A marine accident investigator learned of the occurrence around noon when he was surfing on a ship enthusiast web chat page. Since the occurrence was clearly an occupational accident, he reported the information to the head of the Uusimaa District Occupational Safety and Health Office.

As the vessel had already departed in the early hours it was impossible to carry out any detailed investigations at the site of the accident.

On 17 February 2009 the stevedoring company sent a report of the accident to the Occupational Safety and Health District and to AIB Finland.

When the vessel returned to Kotka, Finland, an AIB Finland marine accident investigator visited the ship. The vessel had a new chief mate and master. The boatswain took the investigator to the site of the occurrence. Given that the vessel was only berthed for a few hours after 22:00, darkness hampered the site investigation. Nevertheless, the investigation commission received illustrative documents and spoken information regarding the accident.

1.4.2 Tests and research

Apart from police investigation and the marine accident investigator's visit to the accident site no other technical investigations were conducted.

1.4.3 Organisational and management information

MS OOCL NEVSKIY sails in Short Sea Traffic, i.e. scheduled traffic. In this kind of traffic port calls can even occur within the space of a few hours. The shipbroker is in charge of cargo information and general load planning. He endeavours to optimise load handling at ports and minimise the time spent alongside the quay.

The stevedore, in turn, tries to unload and load the ship as rapidly and efficiently as possible.

In addition to navigational duties, the crew of the vessel participates in several tasks when the ship is berthed. While the officers carry out various supervisory functions, such as seeing to the safe loading and securing of cargo, the deck department participates in the actual loading and unloading.

Crew members have 6–9 -month-long seamen's contracts aboard the vessel.

1.4.4 Other investigation

Antigua and Barbuda, the vessel's flag state, assisted Accident Investigation Board Finland and conducted its own investigation. At the request of AIB Finland, the Swedish Maritime Safety Inspectorate photographed the deck of the vessel during the summer of 2009.[3]

1.5 Statutes and codes

1.5.1 National legislation

When a vessel is berthed it is in Finnish territory and subject to Finnish law, such as the Criminal Code. In other words, while in Finland a vessel may not violate Finnish safety codes, such as occupational safety and health regulations.

The Occupational Safety and Health Act (738/2002) is the basic law which governs the occupational safety and health of employees, providing the framework for more detailed statutes. The Act lays down provisions on employers' and employees' general obligations and issues further provisions on working conditions and work itself.

Another important statute is the Government Decree on the Occupational Safety in Loading and Unloading of Ships (633/2004). The decree lays down detailed provisions on freight handling and related safety issues.

Regulations on personal protective equipment, such as personal fall arrest systems, are included in the Government Decision on the Selection and Use of Personal Protective Equipment (1407/1993).

[3] Soon after the accident the vessel's trafficking zone was changed; it no longer visited Finnish ports

1.5.2 Statutory provisions and regulations

Pursuant to section 11 of the Occupational Safety and Health Act, *if the work may cause a particular risk of injury or illness, such work shall be done only by an employee who is competent and personally suitable for it*. Working on top of containers in the dark requires attentiveness, professional skill and caution due to the high risk of an accident.

Section 10 of the Government Decree on the Occupational Safety in Loading and Unloading of Ships (633/2004) lays down that *a movable work platform, a man cage or personal fall protection equipment must be used when working on top of a container. For moving onto the first level of containers and away from it on a weather deck, an appropriate ladder supported from its upper end may be used*. This provision is included in the decree because it is well known that it is dangerous to work on top of containers.

The Government Decision on the Selection and Use of Personal Protective Equipment requires that employers assess the risks entailed in the working conditions, acquire and provide appropriate personal protective equipment for employees and see to it that employees wear it.

Port Regulations issued by port authorities provide instructions related to ships and traffic. Nevertheless, they do not normally contain regulations pertaining to lashing/unlashing containers on vessels.

1.5.3 The operator's regulations

The operator in question has no express regulations for lashing/unlashing containers on the ship. The crew carried out this work and the stevedoring company's signaller was onboard the vessel. The crane driver was also an employee of the stevedoring company.

1.5.4 Safety regulations on the vessel

A vessel must have a Safety Management System (SMS). This is compulsory and is based on the International Safety Management (ISM) Code. The ISM Code defines the most important and routine tasks, the manner in which they should be carried out and the safety features to be observed. Technical Ship Support BV from the Netherlands is the dedicated ISM certified ship manager. The company manages eight ships of different sizes.

The ship's SMS system provides a general overview on occupational safety and health topics[4]. The chapter on cargo handling[5] was added at the request of the authorities. Chapter 1.10 includes the following obligation: *All employees should take care about themselves in all types of activity. They should not put themselves into unnecessary danger.*

[4] 1.10 Safety at Work

[5] Cargo Operation

The ship's work manual classifies work that poses a risk of falling as hazardous work. In such cases, as per instructions, it is compulsory to wear personal fall protection equipment.

Vessels carry cargo stowage and securing manuals which define the proper manner of securing cargo in accordance with the situation at hand. The manual gives instructions on how different types of cargo should be stowed and secured as well as how weather conditions and the route affect cargo securing.

1.5.5 International conventions and codes

The International Maritime Organization (IMO) has adopted the Code of Safe Practice for Cargo Stowage and Securing (CSS Code). Vessels must have Cargo Securing Manuals (CSM) that provide vessel-specific instructions on how to secure cargo in a safe manner.

IMO also adopted the Container Safety Convention, which is aimed at improving occupational safety and health when working on top of containers. The Convention dates back to 1972, which proves that the dangers of working on top of containers have been long recognised.

Work on revising the present Container Safety Convention is in progress. One of the proposals related to lashing operations includes increasing the present width of the work platform from 600 mm to 750 mm.

The International Labour Organization (ILO) has published a Code of Practice on Safety and Health in Ports. The code is extensive and it also includes instructions on container handling and working on top of containers. It emphasises the significance of adequate walkways or approaches with regard to occupational safety and health. Among other things, portable ladders should not be used for access to containers stacked more than two high. Portworkers who have to work on top of containers should be protected from falling off of them. Whenever possible, the work should be carried out from a mobile elevating work platform or an access cage.

The International Cargo Handling Co-ordination Association (Ichca International Limited, at present) has published a Safety Panel briefing pamphlet on Safe Working on Container Ships. It promotes the importance of good communication between the crane driver and the personnel working on top of containers when the work is started. Work planning should minimise the need for climbing on top of containers. Footwear should be slip-resistant. Safe access on top of containers must be guaranteed, as described earlier with regard to other regulations. Fall arrest systems must be used when working outside the access cage. Furthermore, abnormal weather conditions such as very strong winds or difficult ice conditions must be taken into consideration.

1.5.6 Quality systems

The shipping company's quality systems related to loading and unloading did not arise during the investigation.

2 ANALYSIS

Lashing and unlashing containers is demanding work. Without appropriate safety arrangements it is particularly dangerous work. Furthermore, the proper securing of containers is an elemental factor for the safe voyage of the ship. Lashing operations are not sufficiently taken into account in ship design. The lack of adequate work platforms and walkways is an indication of this. Therefore, the use of mobile elevating work platforms or access cages is necessary.

Fall protection is important in lashing and unlashing operations. On the other hand, vessels rarely have access cages or work platforms. Stevedores can normally carry out lashing/unlashing operations in a safer manner than ship crews. Still, when mariners carry out this work, the ship saves on stevedoring costs. This is an unfortunate contradiction which is yet to be permanently resolved. Safety is compromised when the ship's crew carries out lashing/unlashing operations under inadequate safety arrangements. As per the ship's safety regulations, personal fall arrest systems were compulsory for work that poses a risk of falling. This rule was not followed. Evidently the work supervisors did not enforce the regulation. From the standpoint of safety regulations the situation is clear: all parties must carry out the work under uniform safety requirements.

A representative of a stevedoring company in Kotka said that ship crews always carry out the lashing/unlashing onboard vessels. Ships do not carry access cages. On quay, containers are fitted with twistlocks before they are lifted onboard. Correspondingly, twistlocks are removed from unloaded containers before they are moved to the terminal area. The stevedoring company carries out this work and stevedores use access cages.

Work experience and professional skills directly relate to work performance and occupational safety. The victim was an experienced mariner.

Weather conditions and darkness impact safety. Loading and unloading continues 24/7 and work is usually commenced as soon as a ship is berthed. Similarly, transports continue throughout the year in all seasons. This accident happened in the middle of the night under floodlights. It was the middle of February in mid-winter and it was below zero and snowing lightly. Work platforms were icy and slippery. Footwear and sole material played an important part in slip resistance.

Short Sea Traffic is rapid-tempo transport, which places tight schedule constraints on a ship. Apart from the minimum possible time spent in ports, traffic planning aims to constantly keep a ship on the move to its next port of call. This causes a rushed work pace. If the ship's crew carries out lashing/unlashing operations it may significantly shorten their rest periods.

It is often the case that **work and rest periods** are planned on the basis of time spent at sea. Port calls and, especially, working while at port may eat into sailors' rest times. The seaman who perished in the accident had started working on Thursday, 12 February at 08:00. From 12:00–13:00 he took a lunch break, after which he continued to work from

13:00–17:30. He then took a 2.5 hour break until 20:00 after which he worked until 00:30, Friday the 13th February 2009, the time of the accident.

From the time he had started his work the seaman had not had a proper rest during 16.5 hours of work.

The on-scene investigation did not extend beyond the short visit of the police patrol. This can be criticised, seeing that a human life was lost but records were not taken from the accident site, nor were the crew thoroughly interviewed. The Finnish Maritime Administration, the maritime authority, operates a regional on-call service. The police were evidently unaware of its existence. In the beginning of 2009 the Finnish Police had been reorganised. Police department areas of operation became larger. On the night of the accident, Kotka police units were under the command of the Kouvola[6] police department. After the Kotka police patrol had reported their visit to the ship and the fatal accident, they did not receive any instructions pertaining to the ship's following movements.

[6] Kouvola is an inland city 57 km from Kotka.

3 CONCLUSIONS

Working on top of containers is dangerous work. The risk of falling is high and falls almost always cause serious injuries. Darkness, inclement weather, slippery surfaces and inappropriate footwear only heighten the risk. These dangers have been recognised for decades.

Safety rules and regulations are often inadequately followed. It is primarily the employer's responsibility to monitor compliance with regulations. The employer is responsible for ensuring that employees follow the rules and regulations of work. Even though the authorities also monitor compliance with regulations, they can only make observations through sporadic inspections.

The employer must be cognisant of the danger and risk factors related to work; it is his responsibility to make an appropriate risk assessment. When it comes to this accident, this was poorly done. After the accident occurred a safety rail was installed and danger zone stripes were painted to prevent any further falls.

International conventions have been adopted to improve occupational safety and health. Finland has enacted national statutes for working on top of containers.

Dedicated regulations exist for the use of personal fall prevention equipment. The use of access cages, mobile elevating work platforms and personal fall arrest harnesses make it possible to work on top of containers without the risk of falling.

Weather conditions on the night of the accident were difficult. The deck was slippery with recently fallen snow. When snow falls on a painted steel deck, moving around and working become extremely dangerous. Slippery footwear only increases the risk of an accident. Furthermore, it was dark and the deck was icy at the time of the occurrence.

Sailors often lash and unlash containers at a safety level which is inferior to that of stevedores. Statutes require the work be completed under uniform safety regulations, regardless of who carries out the work. In reality, this is a difficult challenge because the port operator cannot impose demands on the workforce of a ship. Time and again, part of the lashing/unlashing operation is carried out at sea as the ship is approaching the port or right after its departure. Some work processes do not require any particular fall protection arrangements. Official monitoring in such cases is both difficult and complex.

Carrying out lashing and unlashing operations in addition to their normal sea duties increases sailors' daily working hours. This particularly applies to Short Sea Traffic in which port calls happen on an almost daily basis. It is evident that this seaman's reduced alertness contributed to his fatal accident. He had been working for a long period without adequate rest.

4 IMPLEMENTED MEASURES

The ship has, at least, installed a safety rail and painted danger zone markings at the point of the fall. At the request of AIB Finland, Swedish maritime authorities visited the vessel after the accident and took photographs. The pictures below show the changes that have been implemented. A safety rail has been installed at the work area and clear danger zone markings have been painted on the area.

Figure 7. The safety rail and danger zone markings on the starboard side.

Figure 8. The erected safety rail on the port side.

When erected, the safety rail markedly improves fall protection.

5 SAFETY RECOMMENDATIONS

Lashing and unlashing containers on ships is dangerous work. Proper fall protection arrangements and adequate work spaces are of crucial importance. Serious accidents continually occur all over the world. One large port recorded 10 fatal falls[7] from 2001–2007. The investigators recommend that:

1. *The flag state and Finnish authorities actively work with the International Labour Organization (ILO) and the International Maritime Organization (IMO) to promote the safety of lashing and unlashing containers by implementing improvements in fall protection and work area arrangements.*

Helsinki 27.11.2009

Risto Repo

Harri Halme

[7] Naval Architect September 2009

LIST OF SOURCES

- Kymeenlaakso Police Department; investigation report 8150S/767/09
- Chief Mate V Pimchenko; a written statement of the incident
- Boatswain G Cuasay; a written statement of the incident
- The victim's work and rest period records from 1-13.2.2009
- The victim's employee orientation form, 12.8.2008
- The vessel's SMS, Section 1.10 *Safety at Work*
- The vessel's SMS, Section 2.2 *Cargo Operations*
- Photographs
- The ship's cargo list
- Occupational Safety and Health Act (738/2002)
- Government Decree on the Occupational Safety in Loading and Unloading of Ships (633/2004)
- Government Decision on the Selection and Use of Personal Protective Equipment (1407/1993)
- Convention for Safe Containers (CSC). International Maritime Organization. 1972
- Safety and Health in Ports. International Labour Organization.2006.
- Safe Working on Container Ships. International Cargo Handling Co-ordination Association.
- *It's the Ergonomy stupid!* The Naval Architect, September 2009