



Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation
Federal Higher Authority subordinated to the Ministry of Transport,
Building and Urban Development

Summary
Investigation Reports 642/08 and 114/09

Very serious marine casualties

Accident with subsequent loss of life
on board CMV SANTA ALINA
on 15 December 2008
in the port of Lomé, Togo

Accident with subsequent loss of life on board
CMV MOL UTILITY on 30 March 2009
in the port of Tanga, United Republic of
Tanzania

15 January 2010

Introduction

Occupational accidents on a vessel can be most effectively addressed preventively with an embodied culture of safety. Nevertheless, in spite of the fact that this is widely disseminated and therefore should also be widely known, job categories exist on board which repeatedly cause serious or even fatal injuries because of their inherent potential danger. Two typical categories as defined above involve working in the area of suspended loads or being situated in unprotected areas on deck where there is a danger of falling. These will be discussed below on the basis of two tragic fatal accidents.

A culture of safety should be established on vessels to prevent occupational accidents by means of the so-called safety management system (SMS), which is developed according to the ISM Code¹. In 2008, as German casualty insurer for shipping, the See-Berufsgenossenschaft (See-BG)² registered 573 accidents that caused more than three days incapacity to work or even death. Of these, 333 accidents occurred on board a vessel, three of which ended fatally. Therefore, the See-BG calls for focus to be put on accidents and crew members to be continuously informed about hazards and accident black spots. To that end, it also makes use of common methods of advertising (e.g., videos, calendars, posters) so that accident risk and accident prevention are fully absorbed.

Often, time-constraints and physical or psychological overload in a tough working environment on board impedes the necessary assessment of risks. However, recklessness, laziness and carelessness can also end fatally.

Occupational safety, including compliance with the requirements pertaining to safety at work which are provided for under national laws and regulations, is the responsibility of the employer. The employer should define the necessary qualification requirements for occupational safety and establish and enforce directives that ensure all persons are properly qualified to discharge their duties and responsibilities in the area of safety and health. Having regard to the magnitude and nature of the activities of the organization, documentation of the SMS should be ensured and continually improved on in order to identify, predict, and assess the hazards and risks to safety and health that arise from the existing or proposed work environment and work organization. If certain residual hazards/risks cannot be contained by overarching measures, the employer should provide appropriate personal protective equipment, including clothing, at no cost and implement the measures necessary to ensure the use and maintenance thereof.

¹ International Management Code for the Safe Operation of Ships and for Pollution Prevention (IMO Resolution A.741 (18)) (ISM Code), see chapter IX of the Convention for the Safety of Life at Sea.

² With effect from 1 January 2010, the See-BG and the BGF (German road vehicle maintenance employers' liability insurance association) have merged to form the BG Verkehr (German traffic and transport employers' liability insurance association).

Procedures for regular monitoring, measuring and recording health and safety performance should be developed, implemented and reviewed at regular intervals. The powers, responsibilities and authorisations for monitoring different levels of management should be assigned.

The BSU urges owners, vessel operators and seamen to work continuously on the culture of safety within the company so that accidents are reduced and the typical accident scenarios described in the following reports are prevented.

The senseless deaths of a 26-year-old officer and a 40-year-old fitter, which were due to just a few split seconds of carelessness and recklessness, tragically demonstrate the significance of internalised and actively embodied occupational safety on board. They represent both a warning and call to every crew member to be aware of the fact that danger to life and limb can be interconnected with many activities on a sea-going vessel every day. This also, and especially, concerns those working procedures which are commonly perceived to be routine and are carried out as such.



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Summary

Investigation Report 642/08

Very serious marine casualty

**Accident with subsequent loss of life
on board CMV SANTA ALINA
on 15 December 2008
in the port of Lomé, Togo**

The investigation was conducted in conformity with the law to improve safety of shipping by investigating marine casualties and other incidents (Maritime Safety Investigation Law - SUG) of 16 June 2002.

According to this the sole objective of the investigation is to prevent future accidents and malfunctions. The investigation does not serve to ascertain fault, liability or claims.

The present report should not be used in court proceedings or proceedings of the Maritime Board. Reference is made to art. 19 para. 4 SUG.

The German text shall prevail in the interpretation of the Investigation Report.

Issued by:
Bundesstelle für Seeunfalluntersuchung
Bernhard-Nocht-Str. 78
20359 Hamburg
Germany

Head: Jörg Kaufmann
Phone: +49 40 31908300
posteingang-bsu@bsh.de

Fax: +49 40 31908340
www.bsu-bund.de

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1 Summary of the marine casualty

On 15 December 2008 at about 1010¹, a fatal accident occurred on board the container vessel SANTA ALINA sailing under German flag in the port of Lomé, Togo. Two seamen were occupied with installing a handrail on an open hatch during the unloading operations. In the process, a 40-year-old seaman was hit by a swinging 40 foot container being lifted (with the shipboard crane) from the cell guide and pressed against the superstructure. The seaman suffered severe internal injuries and broken bones, to which he succumbed in hospital.

¹ Unless stated otherwise, all times shown in this report are local = UTC + 0.

2 Scene of the accident

Type of event: Very serious marine casualty
 Accident with subsequent loss of life
 Date/Time: 15 December 2008, 1010
 Location: Lomé port, Togo
 Latitude/Longitude: $\phi 06^{\circ}08'N \ \lambda 001^{\circ}17'E$

Excerpt from nautical chart, British Admiralty 1380, map of port

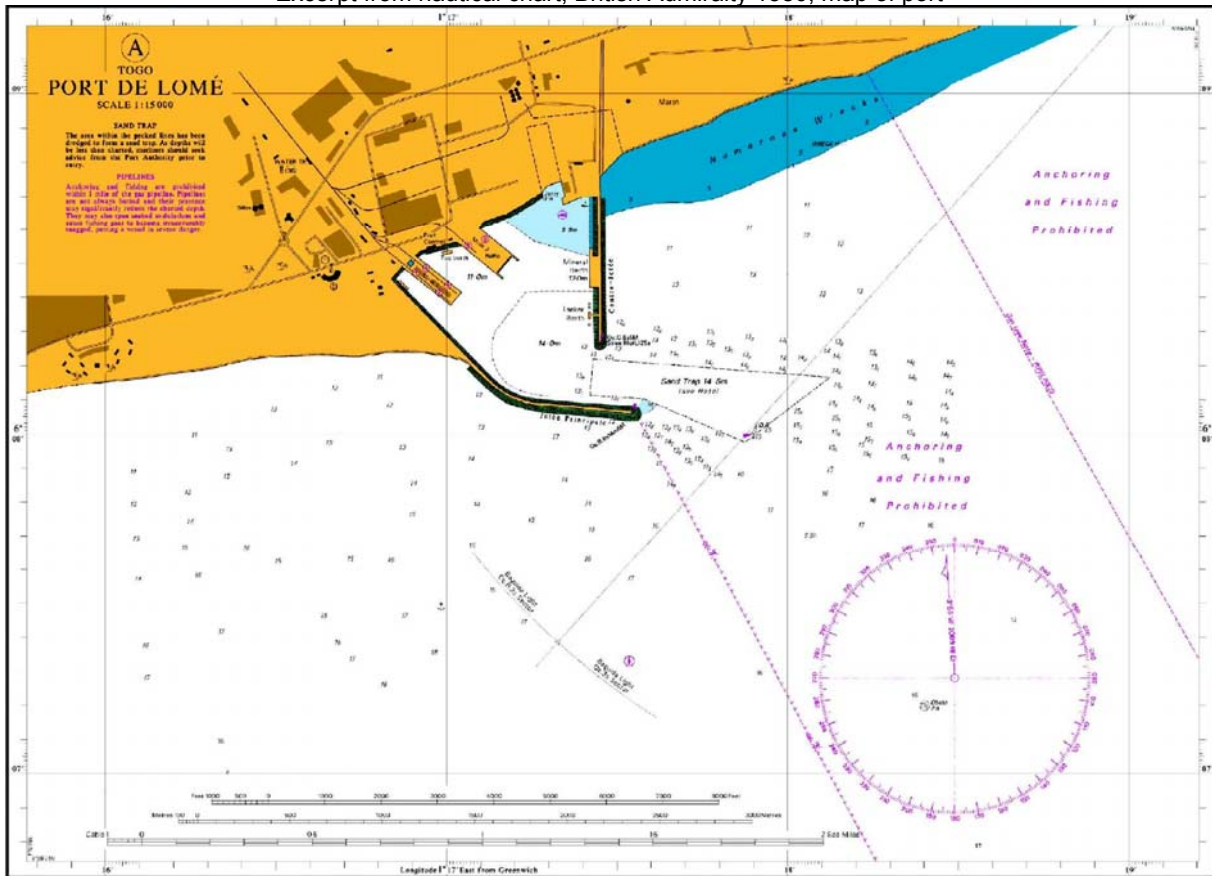


Figure 1: Scene of the accident

3 Vessel particulars

3.1 Photo



Figure 2: Photo

3.2 Particulars

Name of the vessel:	SANTA ALINA
Type of vessel:	Container vessel
Nationality/flag:	Germany
Port of registry:	Hamburg
IMO number:	9209104
Call sign:	DMRK
Vessel operator:	Claus-Peter Offen GmbH & Co. KG
Year built:	2001
Shipyard/yard number:	Samsung Heavy Industries, 1312
Classification society:	Germanischer Lloyd
Length overall:	207.16 m
Breadth overall:	29.80 m
Gross tonnage:	25,294
Deadweight:	32,299 t
Draught arrival:	Fore: 10.7 m, aft: 10.8 m
Engine rating:	20,940 kW
Main engine:	Wärtsilä RTA-72U-7
(Service) Speed:	20.5 kts
Hull material:	Steel
Number of crew:	24

4 Course of the accident and investigation

4.1 Course of the accident, SANTA ALINA

The container vessel SANTA ALINA arrived at Lomé, Togo, on 12 December 2008 and shifted to her berth to begin loading operations on 15 December at 0300. At 1010, a fitter was fatally injured while a 40 foot container was being unloaded with the shipboard crane on the port side of the superstructure, aft edge of Bay 39 (see Fig. 3). Together with an able bodied seaman, he wanted to install a handrail on the working passage that runs athwartships to Bay 39. The rail consists of approximately 10-12 supports, has a twin-layered construction and is 105 cm high. It takes about 10 minutes to erect. The working passage has a width of 1.40 m. With exception to a 10 cm high edge, it is level with the coaming when the hatch is open. After the hatch cover is removed on the port side, the rail should be fitted to protect against falling. To that end, the fitter was situated at the port side and the seaman on the starboard side of the working passage.

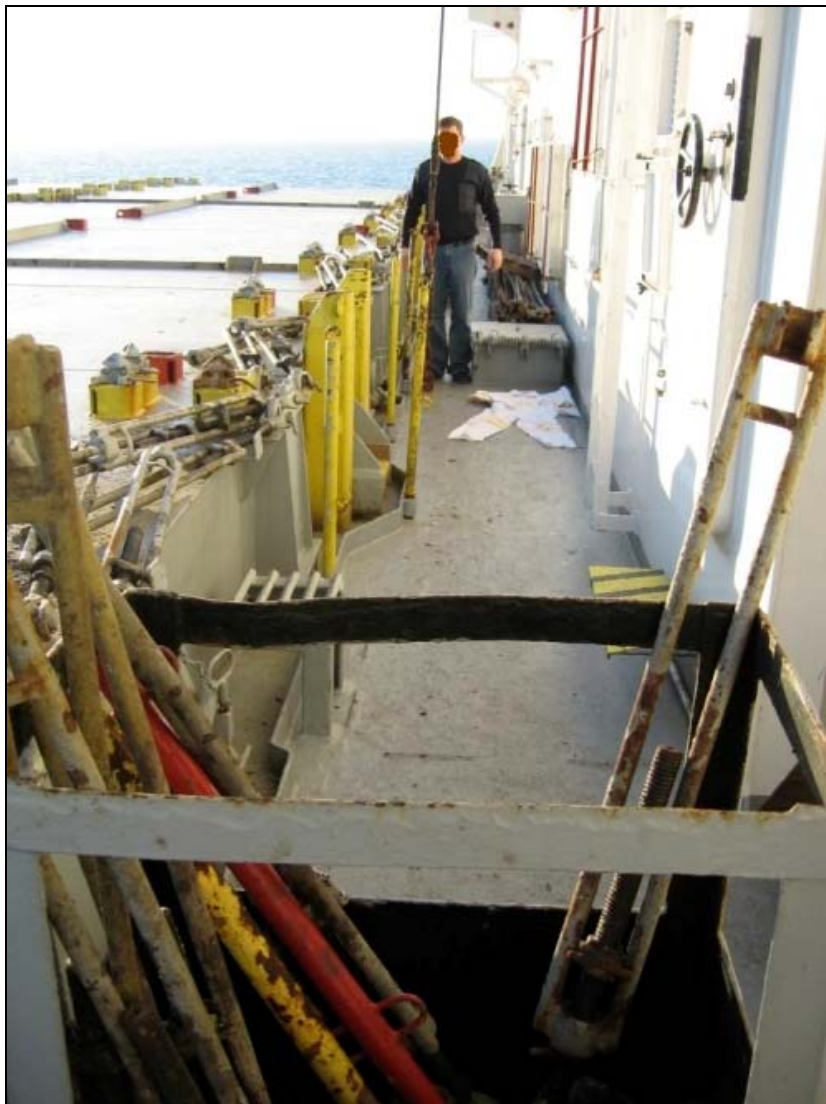


Figure 3: Accident scene, aft edge of Bay 39

During the work in the working passage, containers were being unloaded from the open hatch. The crane was occupied by a shore-based crane operator. It was possible to see Bay 39 and the working passage from the crane operator's position (see Fig. 4). A spreader was mounted on the boom with which the containers could be locked. During the unloading of the third container, the fitter was reportedly hit by the swinging container and crushed. Following that, the seaman reportedly attempted to contact the crane operator in order to stop the unloading operation. He then ran to the casualty, who was still responsive, and informed the Officer on Watch. Immediately afterwards, the Master and another officer arrived at the scene of the accident. The casualty was then laid on the stretcher, which had been brought from the ship hospital, and was taken ashore at 1031. At 1040, the casualty and an accompanying officer were driven in a vehicle belonging to the terminal operator to the Clinique Barruet hospital in Lomé, where he succumbed to his internal injuries at 1210.



Figure 4: Crane operator's view

It was not possible to establish why the container began to swing. The seaman did not observe a topping up or slackening of the crane jib. The container's centre of gravity was unknown. The vessel reportedly was on an even keel and the weather conditions were good. It was dry and windless with a temperature of 30 °C. The shore-based spreaders in West Africa are operated mechanically by means of a lever system used on the container. During the unloading operation, stevedores were situated in the hatch. As the 40 foot container was hoisted by the shipboard crane from the container frame, it began to swing. This was probably due to the crane cable being non-perpendicular to the bridle of the spreader or the container having an unfavourable centre of gravity. A guide for positioning the boom was reportedly not seen.

The shore-based crane operator and his qualifications were unknown. The authorities did not record the accident on board. A preliminary survey record was prepared on behalf of the P & I insurer 'Standard'. On 17 December 2008, the vessel operator issued a directive to the fleet to the effect that no crew member was to be situated in the area of loading and unloading operations while such operations were taking place. Necessary work on the vessel is to be performed before or after loading operations. This directive was to be dealt with by the Chief Officer as a standing order. It was incumbent on the Master or the Chief Officer to inform the crew about this directive immediately.

The Chief Officer was responsible for the loading and unloading operations according to the safety management system (SMS). Specific daily working procedures were discussed with the Bosun and the Officers on Watch were duly informed. The deck watch was carried out in 6-hourly intervals starting at 0000 by an officer and two seamen. The fatally injured fitter worked on the day of the accident from 0000 to 0300 during the transfer to the berth and from 0600 to the time of the accident in port service. Previously, he had a 6-hour rest period. After the vessel entered the port, the cargo officer received the freight list in electronic form from a foreman, who then left the vessel. Communication between the vessel and terminal by means of mobile telephone was not in place in Lomé. The watch keepers on board were accessible via VHF handheld transceivers. There was also a radio link between the crane operator and terminal operator. The cargo officer was not aware of the loading operation schedule in Lomé. Damage caused to the vessel or cargo during the operation was repaired and/or logged.

According to the UVV See², open hatches are to be secured against falling. Protective handrails are usually of a flexible construction and consist of supports and rails. Firmly installed handrails on hatches have not proved useful because they are often destroyed during operations. This is one reason why installation takes place only after the hatch is opened. In this case, an installed handrail would not have prevented the accident.

² Accident Prevention Regulations for Shipping Enterprises – art. 205 Safety regulations for open hatches and ramps

Deck work in the area of loading operations involves an accident risk. It is not known why the experienced fitter and the seaman continued their work on the working passage in spite of that. Matters were complicated by the fact that there was no permanent communication link, such as via handheld transceivers, between the terminal and the vessel and the operating schedule had to be left solely to the terminal operator.



Figure 5: Main deck

5 Conclusion

Within the framework of a risk assessment, the employer should define which operating areas may not be entered by insured personnel. The operating areas (dangerous areas) are derived from the operating conditions, the specific tasks and the associated regulations pertaining to occupational safety. These include areas under suspended loads, such as during the operation of a crane. This rule, which is usually absorbed into the mind of seamen, was infringed and ended fatally.

It remains unclear why the experienced seamen tried to install a handrail designed to protect against falling into a hatch during an unloading operation and in the process exposed themselves to danger. The seamen should have requested the Officer on Watch to arrange for crane operations at the open hatch to be discontinued so that the work at the 1.40 m wide working passage and 10 cm high coaming could be carried out without interruption. Basically, the unloading operations should not have commenced before the handrail was installed. This situation was possibly due to the lack of communication between the shipboard and shore-based operations in Lomé.

Two days after the fatal accident, the vessel operator issued a directive to the fleet to the effect that no crew member was to be situated in the area of loading and unloading operations while such operations were taking place.

Improved protection against falling at open hatches, e.g. in the form of firmly installed folding handrails, has yet to be widely adopted in container shipping. This may be due to the equipment's vulnerability in terms of resisting destruction during loading and unloading operations. During the survey by the BSU, numerous handrail supports on the main deck were bent.

6 Sources

- Investigation
 - See-Berufsgenossenschaft, BSU

- Written statements
 - Ship's command
 - Vessel operator

- Witness accounts

- Expert opinion
 - Survey Wiggins - Togo

- Nautical chart and vessel particulars, Federal Maritime and Hydrographic Agency (BSH)

- Documents of the See-Berufsgenossenschaft (See-BG)
 - Accident report
 - Accident Prevention Regulations for Shipping Enterprises (UVV See) and other applicable regulations pertaining to occupational safety
 - Annual Report 2008

- Photos vessel operator, Hasenpusch, BSU



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Federal Bureau of Maritime Casualty Investigation
Federal Higher Authority subordinated to the Ministry of Transport,
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Summary
Investigation Report 114/09

Very serious marine casualty

Accident with subsequent loss of life on board
CMV MOL UTILITY on 30 March 2009
in the port of Tanga, United Republic of
Tanzania

15 January 2010

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Head: Jörg Kaufmann
Phone: +49 40 31908300
posteingang-bsu@bsh.de

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1 Summary of the marine casualty

On 30 March 2009 at about 2220¹, a fatal accident occurred on board the 1730 TEU² container vessel CMV MOL UTILITY sailing under German flag in the port of Tanga (United Republic of Tanzania). The vessel anchored inside the port for the cargo-handling operations to be carried out with the shipboard cranes as adequately sized berths were not available at the pier. The port hatch cover of cargo hold No. 3 (Bay 32), which spanned half the vessel's beam, was placed on the starboard hatch cover of cargo hold No. 3. There was a parallel misalignment of some 0.6 m in width and some 0.9 m in height towards the middle of the vessel between the two stacked hatch covers.

At the time of the accident the Officer on Watch, the Third Nautical Officer (NO), walked diagonally on the port hatch cover from aft starboard towards the open hatch on the forward edge of the aforementioned misalignment. While descending from the cover placed on the starboard hatch cover, the officer tripped, lost his footing and fell approx. 9 m onto a container stowed at the second position in the hatch.

First aid was given immediately on the vessel. At 2245, a motorboat, which had been requested for moving the seriously injured officer to hospital, reached the vessel and took the casualty.

At 2350, the Master learned in a telephone conversation with the local agent of the vessel that the Third Officer had succumbed to his injuries in the minutes before the call.

¹ All times shown in this report are East Africa Time (EAT = UTC + 3).

² Container stowage capacity (Twenty-foot Equivalent Unit standard container according to the vessel operator).

2 Scene of the accident

Type of event: Very serious marine casualty, accident with subsequent loss of life

Date/Time: 30 March 2009, 2220

Location: Tanga port, United Republic of Tanzania

Latitude/Longitude: ϕ 05°03.0'S λ 039°07.0'E

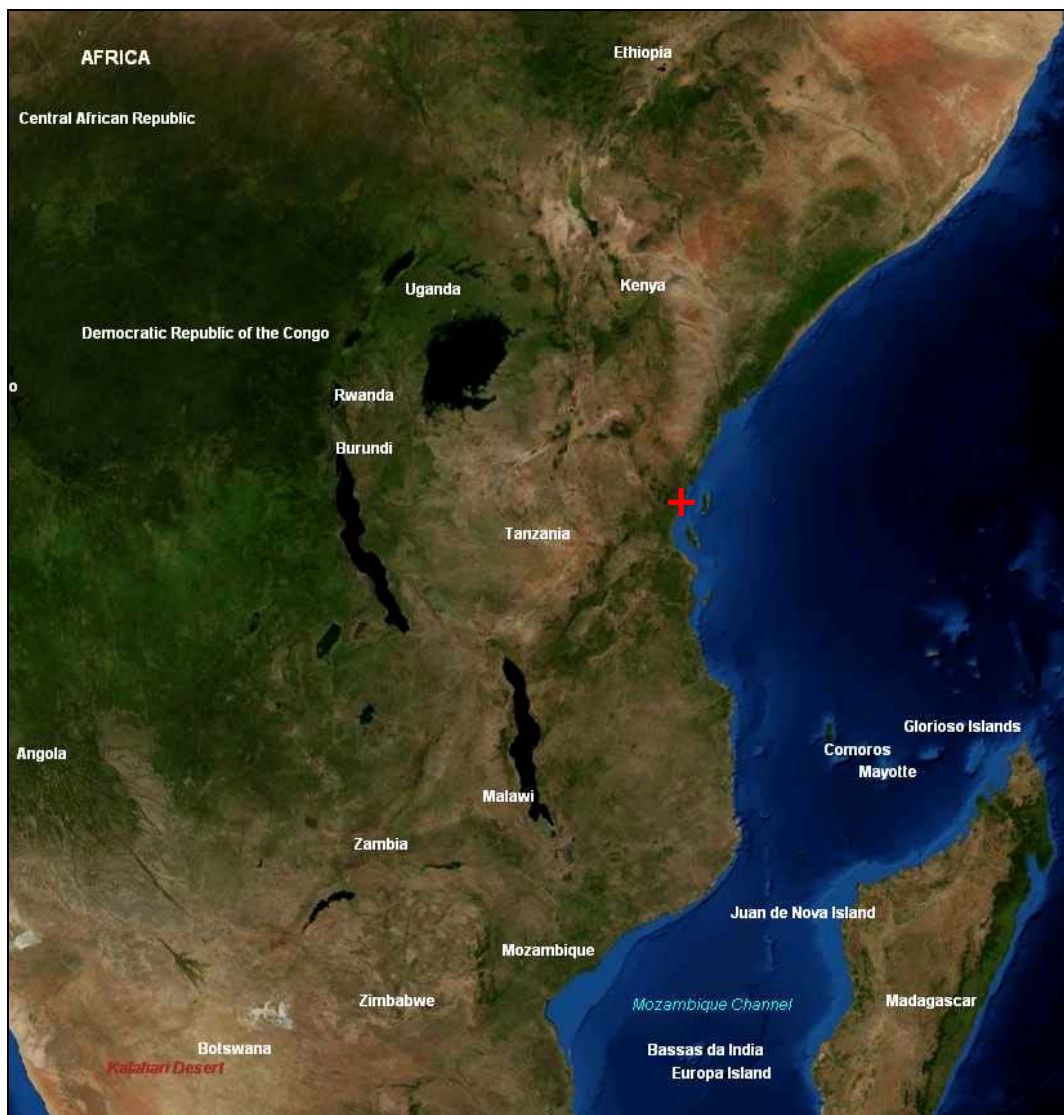


Figure 1: Scene of the accident³

³ Source: NASA World Wind 1.4.

3 Vessel particulars

3.1 Photo



Figure 2: Photo⁴

3.2 Particulars

Name of the vessel:	MOL UTILITY (ex. WEHR RISSEN)
Type of vessel:	Container vessel
Nationality/flag:	Germany
Port of registry:	Hamburg
IMO number:	9204489
Call sign:	DPME
Vessel operator:	Oskar Wehr KG (GmbH & Co.).
Year built:	1999
Shipyard/yard number:	Stocznia Szczecinska S.A. Szczecin/B170-III/13
Classification society:	Germanischer Lloyd
Length overall:	183.91 m
Breadth overall:	25.30 m
Gross tonnage:	16,802
Deadweight:	23,028 t
Draught (max.):	9.889 m
Engine rating:	13,320 kW
Main engine (type/manufacturer):	Diesel 6 RTA 62 U/H. Cegielski-Poznan S.A.
(Service) speed (max.):	19 kts
Hull material:	Steel
Number of crew:	19

⁴ Source: Oskar Wehr KG (GmbH & Co.).

4 Course of the accident

The Federal Bureau of Maritime Casualty Investigation (BSU) was informed about the accident by the vessel operator. In each case, after receiving a corresponding request, the vessel operator promptly provided the BSU with a large number of documents for the investigation. Alongside the statement of facts made by the German Master, the diagram of the accident, which was made on board, was especially helpful (see **Fig. 4** below). This was created on the basis of the witness account of a Tanzanian dock worker. Using the diagram it was possible to trace the accident unequivocally. Beyond that, the vessel operator submitted, inter alia, records of the interviews carried out by the Tanzanian authorities and the local forensic investigation report.

The BSU abstained from carrying out the usual on-site formalities because the actual conditions at the time of the accident could not be visually inspected due to continuation of the cargo-handling operations. Furthermore, a subsequent survey of the vessel or other interviews on board did not promise any significant findings.

The MOL UTILITY anchored in the port of Tanga at 0830 on the day of the accident. The cargo-handling operations, for which the shipboard cranes were used, began at 0930. At 1200, the later deceased Third NO handed over the deck watch to the Second NO. At 1800, the Third NO relieved the Second NO in accordance with the roster. During the hours that followed, shipboard cranes No. 1 and 3 were used to unload containers. The 26-year-old Romanian Officer on Watch was assisted in his deck watch by a Ukrainian sailor and a Romanian trainee.

Neither the sailor nor the trainee (cadet) saw the accident. Shortly before the accident, the trainee reportedly received watch keeping instructions from the Third NO, then lost sight of the officer when he (the officer) departed via the hatch cover and shortly afterwards only heard the fall. The only actual eyewitness of the accident was a Tanzanian dock worker, who reportedly saw how the Third NO reportedly walked on the port hatch cover of cargo hold 3, which was placed on the starboard hatch of cargo hold 3/Bay 32, in the direction of the forward edge amidships. The Third NO then reportedly tumbled while descending from the deposited hatch cover onto the remaining approx. 0.6 m wide uncovered part of the starboard hatch cover and fell into the hatch.



Figure 3: Accident scene (red and blue arrows show the actual/possibly planned (?) direction of movement of the Third NO)

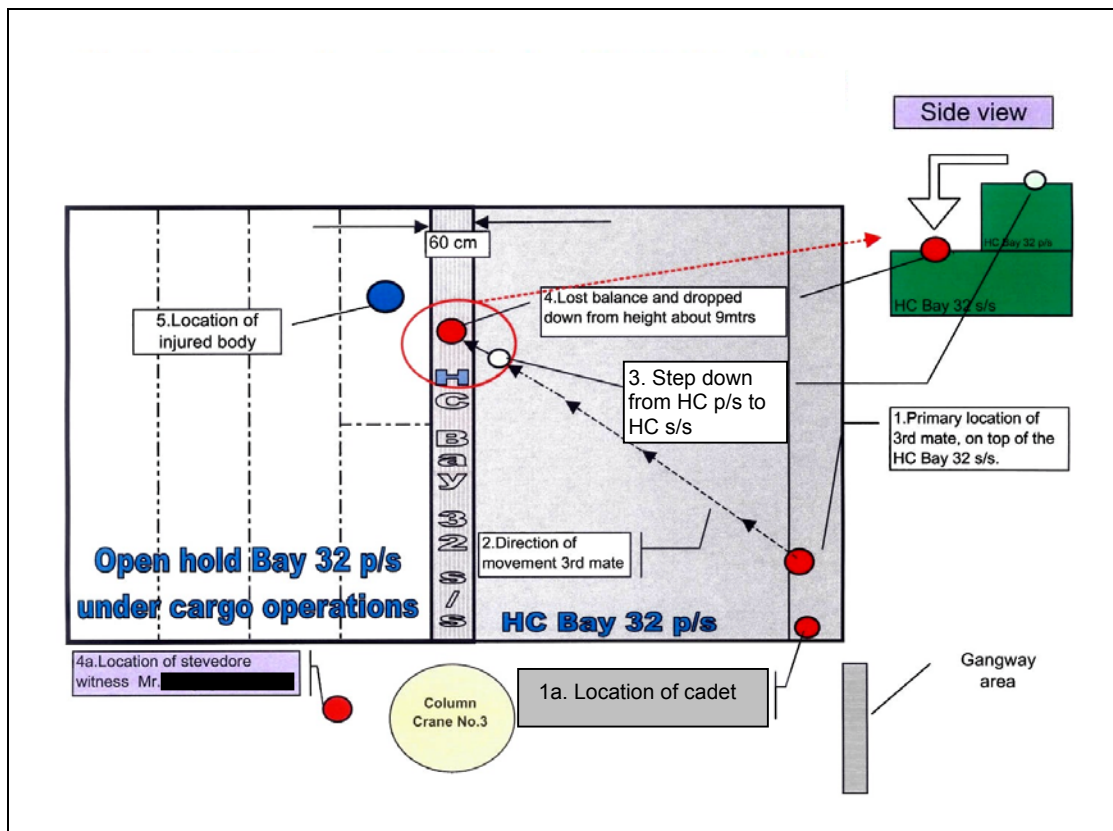


Figure 4: Diagram of the course of the accident⁵

⁵ Diagram (edited by the BSU) and photo (Fig. 3) were kindly provided by the vessel operator.

5 Conclusion

The question as to why the Third NO approached the area of the fall remains open. It is presumed that he wanted to look into the hatch from the edge of the hatch cover to check the progress of the unloading operations. However, because of the diagonal direction of his path towards the forward edge of the hatch cover in particular, it also seems possible that the officer had the intention of climbing across to the aft edge of the closed preceding hatch from the end of the forward edge of the starboard hatch cover amidships to get to the port side of the vessel from there (see blue arrows above in **Fig. 3**).

It is also only possible to speculate on the cause of the fall. However, it is arguable that the officer underestimated the height of the misalignment (approx. 0.9 m) and also the width of the available walking surface on the starboard hatch cover (approx. 0.6 m). When jumping down or climbing from the upper cover, he could then stumble and the area for catching the fall with his hands would be too small.

The relevant accident prevention regulations (UVV See, BGV A1)⁶ do not contain a preventive measure for this specific accident situation. The stacking of hatch covers in the course of cargo-handling operations is rather unusual and is due to the particular situation when loading/unloading at sea. This does not allow for the hatch cover to be deposited outside the vessel. For the discussed irregular operational reasons and also because it is not necessary to be situated in the area of the "tripping edge" that runs amidships, there was no reason for the otherwise ordinary and required installation of an emergency handrail.

Finally, it should be noted that irrespective of the absence of a specific occupational safety regulation that addresses the accident in question, the fundamental principles of occupational safety include not overcoming differences in height by jumping and, if possible, avoiding areas in which there is a danger of falling or ensuring adequate personal protection if entering such areas is crucial.

In this context, the BSU is aware that a hasty jump from, for example, a companionway while underestimating the force of the impact on the ground or unprotected working practices in areas on board where there is a danger of falling are an everyday phenomena. The fact that in most cases such actions do not lead to an accident causes one to lose sight of the high risks associated with such careless behaviour. It is precisely for this reason that specific accident events, such as that presented here, should be focussed on and discussed during training and also on board in order to raise the safety awareness of all crew members.

⁶ UVV See = Accident Prevention Regulations for Shipping Enterprises. The cross-industry accident prevention and insurance association regulation BGV A1 (principles of prevention) has been mandatory for shipping enterprises since 1 April 2008. To a large degree this has replaced the hitherto applicable UVV See (see art. 34 BGV A1). However, certain provisions of the UVV See that concern the special conditions on board a vessel remain in effect.

6 Sources

- Statement of facts by the Master
- Diagram of the accident (made on board)
- Witness accounts
- Photos (provided by the vessel operator)
- Documents from the Tanzanian authorities (provided by the vessel operator)