



Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation
Federal Higher Authority subordinated to the Ministry of Transport
and Digital Infrastructure

Summary Investigation Report 10/11

Less Serious Marine Casualty

**Accident involving a person on the FRISIA II
while casting off at Norddeich
on 7 January 2011**

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 in the version applicable prior to 30 November 2011.

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

This report should not be used in court proceedings or proceedings of the Maritime Board. Reference is made to the aforementioned version of Article 19(4) SUG.

The German text shall prevail in the interpretation of this investigation report.

Issued by:
Bundesstelle für Seeunfalluntersuchung – BSU
Federal Bureau of Maritime Casualty Investigation
Bernhard-Nocht-Str. 78
20359 Hamburg
Germany

Director: Volker Schellhammer
Phone: +49 40 31908300
posteingang-bsu@bsh.de

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

Table of Contents

1	SUMMARY.....	5
2	FACTUAL INFORMATION.....	6
2.1	Photo of ship	6
2.2	Ship particulars.....	6
2.3	Voyage particulars.....	7
2.4	Marine casualty information.....	7
2.5	Shore authority involvement and emergency response.....	8
3	COURSE OF THE ACCIDENT AND INVESTIGATION	9
3.1	Course of the accident	9
3.2	Investigation	11
3.2.1	The ship	11
3.2.2	Aft manoeuvring station.....	11
3.2.3	Type of mooring lines	13
3.2.4	Line guidance on board.....	13
3.2.5	Quay.....	15
3.2.6	Ship safety measures.....	16
3.2.7	Course of the accident	17
4	ANALYSIS.....	19
5	ACTIONS TAKEN	21
6	CONCLUSIONS.....	22
7	SOURCES	23

Table of Figures

Figure 1: Photo of the FRISIA II.....	6
Figure 2: Port of Norddeich and the scene of the accident.....	7
Figure 3: Drawing of the aft manoeuvring station	12
Figure 4: View of the aft manoeuvring station from port	12
Figure 5: View of the port side of the aft manoeuvring station from starboard.....	13
Figure 6: Drawing of how the stern of the FRISIA II was made fast.	14
Figure 7: Bollard with two lines placed over it.....	15
Figure 8: Stern of the FRISIA II with both stern lines.....	16
Figure 9: Edge of the quay with bollard, dolphin, and fender.....	16
Figure 10: Typical setup on the starboard bitt.....	20
Figure 11: Illustration of the line setup.....	20

1 Summary

On 7 January 2011, a line accident occurred on board the FRISIA II. During the casting off manoeuvre at Norddeich, both mooring lines accidentally fell into the water after being removed from the quayside bollard. They then became caught and wound onto the port engine's propeller, which was running backwards. This went unnoticed and the two lines suddenly tightened. Two crew members were occupied with hauling in the lines on the aft manoeuvring station. They were surprised when the mooring lines tightened. At that moment, one of the two men was standing with a leg between one of the mooring bits and the suddenly tightening line. His leg was crushed and he was seriously injured as a result.

Another crew member administered first aid while the casualty was still on board. He was taken to a hospital after further medical care. Waterway Police (WSP) Norddeich took charge of the initial enquiries on board the ship.

2 FACTUAL INFORMATION

2.1 Photo of ship



Figure 1: Photo of the FRISIA II

2.2 Ship particulars

Name of ship:	FRISIA II
Type of ship:	Passenger ship
Nationality/Flag:	Germany
Port of registry:	Norderney
IMO number:	7723974
Call sign:	DCWQ
Shipping company:	AG Reederei Norden-Frisia
Year built:	1978
Shipyard/Yard number:	Jos. L. Meyer/589
Classification society:	Germanischer Lloyd
Length overall:	63.49 m
Breadth overall:	12.00 m
Gross tonnage:	1,125
Deadweight:	214 t
Draught (max.):	1.25 m
Engine rating:	2 x 800 kW on controllable pitch propellers
Main engine:	2 x MTU 16 V 2000 M 60
Manoeuvring aids:	Bow and stern thrusters
(Service) Speed:	11 kts
Hull material:	Steel
Minimum safe manning:	6

2.3 Voyage particulars

Port of departure:	Norddeich
Port of call:	Norderney
Type of voyage:	Merchant shipping/national
Cargo information:	Neither cargo nor passengers
Manning:	6
Draught at time of accident:	Aft draught 1.10 m

2.4 Marine casualty information

Type of marine casualty:	Less serious marine casualty/accident involving a person
Date/Time:	07/01/2011, 0745 ¹
Location:	Norddeich
Latitude/Longitude:	ϕ 53°37.45'N λ 007°09.62'E
Ship operation and voyage segment:	Casting off
Place on board:	Aft manoeuvring station
Human factors:	Yes, human error
Consequences:	One seriously injured crew member and damage to the mooring lines

Excerpt from Nautical Chart 89, Federal Maritime and Hydrographic Agency (BSH)

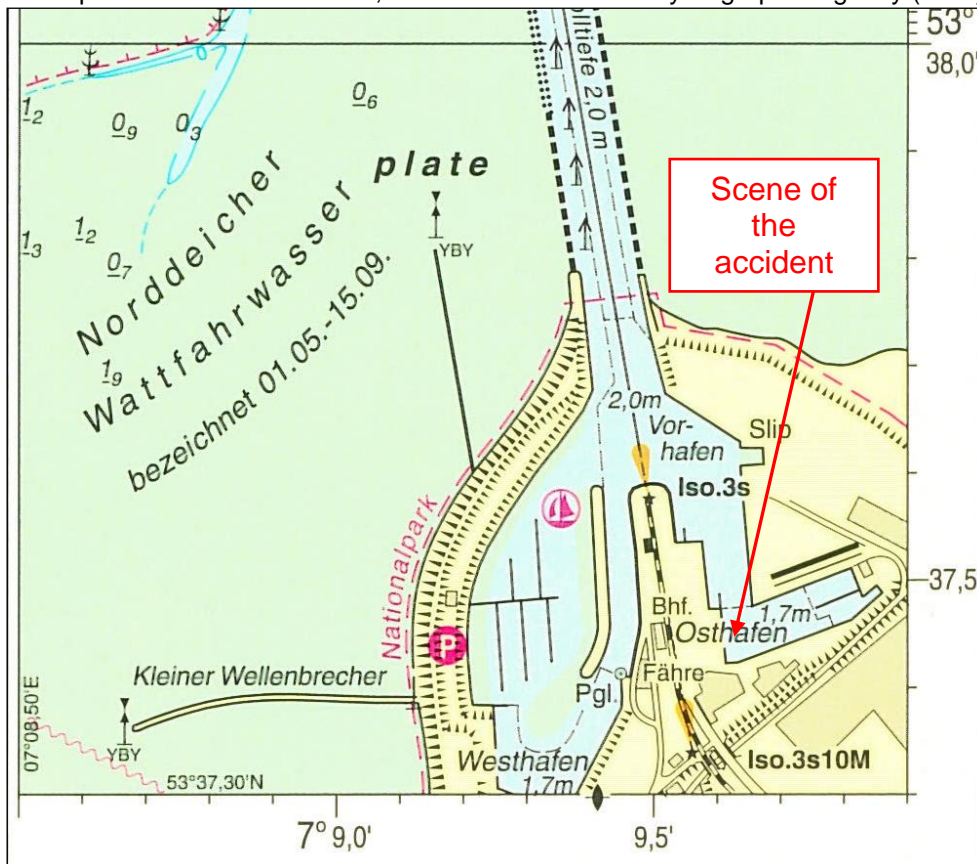


Figure 2: Port of Norddeich and scene of the accident

¹ All times shown in this report are CET = UTC + 1 hour.

2.5 Shore authority involvement and emergency response

Agencies involved: WSPs Norddeich and Wilhelmshaven
Resources used: Emergency physician and rescue services
Actions taken: Enquiries at the scene by WSP and BSU, first aid administered and taken to hospital

3 COURSE OF THE ACCIDENT AND INVESTIGATION

3.1 Course of the accident

On the morning of 7 January 2011, the FRISIA II (a ferry) was moored at the quay in Norddeich's eastern port south of Ferry Bridge 3. Due to a change in schedule, the ferry was instructed to cast off for an unladen voyage to Norderney. The master informed the other five crew members of the planned voyage during their morning meeting.

Because of the prevailing low tide and dolphins in front of the quay, the distance between the edge of the quay and ship was too great to permit the safe boarding of a crew member after casting off the lines. The surface of the quay area was slightly frozen in places and would have made this more hazardous. Therefore, the master sent a crew member ashore to ask an employee of the port operator for assistance. Meanwhile, preparations for departure began.

The crew member sent by the master returned on board after a docker had agreed to assist. Prior to that, he had agreed with the docker that he would help by giving instructions from the stern of the ship and informed the master of this by handheld VHF transceiver.

After the bridge, the engine room, as well as the forward and aft manoeuvring stations confirmed they were ready to cast off, the master sounded the ship's bell accordingly as the signal for casting off at about 0745. The docker then pulled the gangway back onto the quay.

The stations of the ship were manned for casting off in the usual manner. The master and mate were on the bridge. One crew member was working on the forward manoeuvring station. After the gangway was removed, the crew member who had assisted with this on the vehicle deck went to the stern of the ship to advise the docker from there as arranged.

The remaining two crew members were occupied on the aft manoeuvring station. One of the two was the later injured machinist. Prior to that, he started the two main engines and then went to the aft manoeuvring station in the usual manner.

The master had planned to cast off stern to, which was how it was carried out. The manoeuvre was started with an audible signal known to all.

The two fore lines remained on the bollard and attached to the ship when they started to cast off. The fore lines were then pulled tight by moving sternwards. This was done to create sufficient slack in the two stern lines to make it possible to remove them from the bollard they were both placed over. At the same time, the manoeuvre helped to keep the ship at the quay while the lines were being gradually removed. An aft spring was not deployed.

The docker positioned himself behind the stern of the ship at the bollard over which the two stern lines were placed. The two stern lines were placed over the bollard in the usual manner.

This means that the eye of the lower mooring line was placed over the bollard once. The eye of the upper line was placed over the bollard by means of a bitter. The docker was initially unable to remove the upper line from the bollard because the mooring line was still under too much tension. Observing the docker's efforts, the crew member on the vehicle deck used his radio telephone to ask the crew member located on the foreship to slacken the fore lines gently, which caused the ship to set sternwards by about one metre.

The sternward movement of the ship caused the stern lines to slacken and the docker was able to remove the upper stern line from the bollard. According to the docker, the lower stern line, which was placed over the bollard once, slipped off at the same time. To prevent it from slipping unchecked into the harbour basin, he took hold of this mooring line, too, but was then surprised by the combined weight of the two lines. He also stated that he suddenly slipped on the icy quay, which startled him and he let go of the two lines instinctively. This resulted in the two stern lines falling into the water, where they – or the two inhaulers attached to them – sunk so far under water that they were drawn in by the backwash, which was moving towards the bow. They were then caught by and wound onto the port propeller. This caused the two stern lines to tighten suddenly with a jolt. The machinist, who was evidently close to the port bitt at this point, had his right leg between the line and bitt when the line tightened. As a result, his foot was severed.

The docker did not observe the events that ensued at the stern and on the aft manoeuvring station, as he now intended to remove the lines deployed from the foreship. Accordingly, he went to the bollard for the fore spring immediately after releasing the stern lines.

The crew member located on the forward manoeuvring station had observed the sternward movement of the ship. Since the fore spring was the next one to be released according to the planned sequence, he kept his radio telephone close to his ear because the noise level was high due to the running bow thruster. He then heard a general instruction by radio to discontinue any further action and therefore advised the docker that the fore spring should not be cast off. Shortly afterwards, the master instructed everyone to abandon the casting off manoeuvre. The crew member from the foreship was then called to the aft manoeuvring station by radio telephone because the crew was aware that he was a trained paramedic. The crew member hurried to the aft manoeuvring station and started to administer primary care there.

The crew immediately alerted an emergency physician, who arrived at the scene of the accident shortly afterwards. At the same time, officers from the WSP started to investigate on board. The casualty was taken to a hospital after he was stabilised.

3.2 Investigation

The enquiries of the WSP and other witness testimony and statements were available for the investigation. The BSU conducted a physical inspection of the scene of the accident during the investigation.

3.2.1 The ship

AG Reederei Norden-Frisia is the owner of the ferry. Inter alia, the shipping company operates several ferries for the route to the islands of Norderney and Juist. The shipping company is also responsible for loading and unloading ships carrying passengers and cargo in the ports.

The FRISIA II is a combined car and passenger ferry. Basically, the ship is approved for the carriage of 1,340 passengers in the summer and 669 passengers in the winter. The vehicle deck is located above the passenger deck and can carry up to 55 cars. A bridge deck is installed above the vehicle deck. An open lounge area for passengers is located behind the bridge.

The bridge itself is closed and erected slightly forward of amidships. Due to the slightly projecting design and large windows, visibility forward and aft is good. Mounted mirrors improve visibility on the sides of the aft section further. The area immediately behind the ship cannot be seen from the bridge.

The bridge has three control positions. One control position is installed at each outer end of the bridge. This permits good overall visibility when manoeuvring.

3.2.2 Aft manoeuvring station

The aft manoeuvring station spans the entire breadth of the ship and is covered by the vehicle deck. The manoeuvring station is completely closed by removable panes installed at the openings. None of the panes were removed at the time of the accident. Hence, the possibility to communicate with people on the quay was limited. The noise level in the area of the aft manoeuvring station is relatively high because of the main engines situated below and the stern thruster. This impedes the possibility of communicating with people on the quay further.

Overall, the view from the manoeuvring station of people working ashore is good. However, it was still dark at the time of the accident. The view outside is impeded by the manoeuvring station's lighting and the installed panes. The quay's lighting and outward facing deck lighting on the ship reduced this restriction in visibility.

For mooring the ship, two bitts are installed on each side of the ship on the aft manoeuvring station. These are offset by 90°. In front of each bitt, one single fairlead is located to aft with two more single fairleads at the sides.

The outer side of each bitt is equipped with a nose, which is designed to prevent the mooring line from slipping up.

A vertical capstan is installed on the port side. This was not used during the casting off manoeuvre.

The required lines are stored on gratings in the area of the manoeuvring station. This restricts the existing space further (see Figure 4).

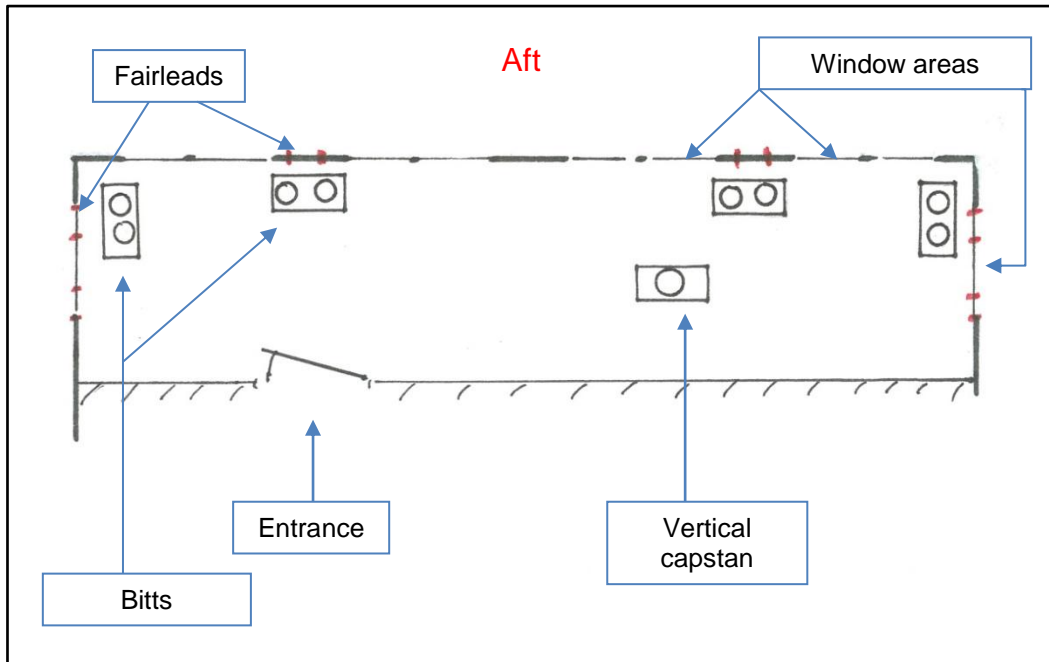


Figure 3: Drawing of the aft manoeuvring station



Figure 4: View of the aft manoeuvring station from port



Figure 5: View of the port side of the aft manoeuvring station from starboard

3.2.3 Type of mooring lines

So-called ATLAS lines of 44 mm in diameter were used on all the FRISIA II's manoeuvring stations. This is a non-buoyant, synthetic line that weighs 1.25 kg/m. Each end of the line was furnished with a spliced eye of about 1.40 metres in length. To improve handling, an inhauler line of about six metres in length was attached to the eyes on the two mooring lines. They made it easier to pass the lines ashore and return them on board. When returning the mooring lines on board, the inhauler line should be used for as long as possible. It is not known whether the inhauler lines were buoyant.

3.2.4 Line guidance on board

On the aft manoeuvring station, only two stern lines were deployed at the time of the accident. Both lines were directed outside through the aft fairlead on the port side. Moreover, the lowest line came from starboard and was directed to the fairlead via the bitt on the port side (see Figure 6). Each of the two lines was placed on one of the bitts, which were positioned transversely to the direction of the ship. The lines were belayed in bights in the usual manner.

The distance from the fairlead to the quayside bollard was about ten metres.

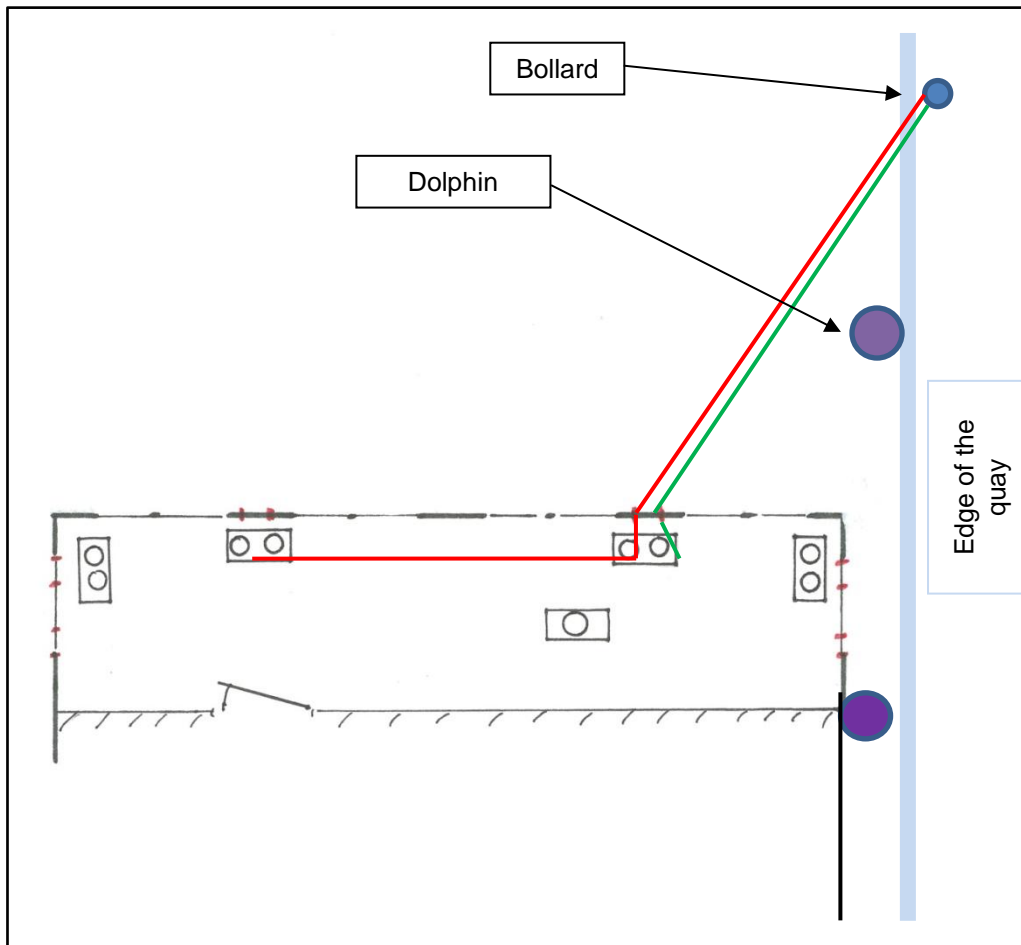


Figure 6: Drawing of the mooring setup at the stern of the FRISIA II

In its statement, the shipping company said that the style of mooring shown above is usual for the winter months. In justifying the procedure described, it said that the intention was to have the same direction of pull for both lines to ensure the load on the lines is evenly distributed. The shipping company believes that this also simplifies handling the line as compared to deploying them from the seaward fairlead, from which passing the line ashore involves some difficulty. Furthermore, the risk of the line falling into the water is reduced.

The mooring lines were placed on the quayside bollard in the manner described in section 3.1 (see Figure 7). According to the shipping company, this is also the common and proven procedure for the winter months. It is done to prevent lines from possibly floating and loosening automatically when a bollard becomes immersed during higher water levels.

The quayside bollards are furnished with pronounced noses to prevent mooring lines from slipping unintentionally. The line-bearing surface is about 24 cm. This means that there was basically enough space available to accommodate the eye of the line placed over once and that of the other line placed over twice.



Figure 7: Bollard with two lines placed over it

The procedure for deploying and hauling in the lines indicates that a type of 'pre-configured' line length, a 'pendant', is used on the FRISIA II. The shipping company justified this with the advantage that the ship could thus be positioned at her berth precisely. This means that quayside obstructions like junction boxes or various railings would not impede deployment of the gangway. According to the shipping company, this procedure was confirmed by many years of use without any accidents.

3.2.5 Quay

The location of the quay at Norddeich is exposed to the tide. The tidal stream itself had no effect on the accident.

The quay is a solid structure and its upstream face is a driven sheet pile wall. The quay has a paved surface. The edge of the quay is made of solid concrete components in which bollards are set.

Dolphins are driven into the area in front of the edge of the quay. They are designed to ensure ships can be moored safely and do not set up on the quay when water levels are high. To absorb hard impacts during a berthing manoeuvre, plastic fenders are installed between the dolphins and edge of the quay. The overall structure (dolphin and fender) creates a distance of about half a metre between ship and edge of the quay.

Niedersachsen Ports GmbH & Co. KG operates the quay. In its statement, the FRISIA II's shipping company advised that traffic safety is incumbent on the operator. It follows that grit is applied to the public pathways in frost or when there is an ice hazard. Moreover, an agreement exists between the shipping company and Niedersachsen Ports to the effect that the latter will clear or grit traffic areas of the port leased by the shipping company if there is snowfall or ice. It is usually checked what needs to be done at about 0500. Gritting takes place from 0600 and is repeated at midday if necessary. After an enquiry by the shipping company, Niedersachsen Ports stated that the relevant part of the quay was gritted between 0600 and 0700. Information on the actual conditions of the surface of the quay at the time of the accident or when it was recorded is not available.



Figure 8: Stern of the FRISIA II with both stern lines



Figure 9: Edge of the quay with bollard, dolphin, and fender

3.2.6 Ship safety measures

The FRISIA II possessed a valid safety management certificate issued by the Ship Safety Division (BG Verkehr). A valid document of compliance was also on board.

The ship operation manual that is kept on board in this context and forms part of the safety management system was reviewed together with the ferry's skipper. Section 4.5 of Chapter 4 (Duties and responsibilities) of the manual contains the tasks of the machinist and section 4.6 of the same chapter those of the deck crew certified to form part of the watch.

With regard to the accident, only one of the 16 points (comprising the key tasks) referred to concerned the machinist:

- making fast aft on Norderney.

17 points were listed for the deck crew certified to form part of the watch and were the responsibility of the people referred to, in particular. Here too, only one point concerned the accident:

- making fast the lines.

Additional provisions for particular conduct on the manoeuvring stations or potential hazards when making fast the ship were not contained in the ship operation manual.

3.2.7 Course of the accident

A 1-2 Bft south-east wind prevailed at the time of the accident. Air temperature was below 0°C and the tide was low.

The docker requested to assist with casting off had been employed by the company for nine months. Although his normal role was different, he had helped with returning or accepting mooring lines from ferries belonging to the shipping company on several occasions in the past. During his task, he was supposed to be assisted from a distance by one of the ferry's crew members.

The ferry's crew members have served on her for a long time. The casualty had been with the company for one and a half years and served mainly on the ferries FRISIA II and FRISIA IV. His place of work was always on the aft manoeuvring station during berthing or casting off.

According to the findings of the police, the casualty was responsible for hauling in the starboard line. The other crew members took care of the line placed on the port bollard.

The crew asked the docker to help because the distance to the edge of the quay, the prevailing low tide, and possible frost formation on the quay made it impossible to guarantee safe boarding.

After the docker dropped the lines into the water, each man on the aft manoeuvring station started to haul in his particular line. According to his statement, the later casualty hauled about three to four metres from the deflection point on the port bollard by moving to starboard with the line. He then returned to haul in another section of line. He placed his right leg close to the bollard in the process. At that precise moment, the mooring line that was caught by the port propeller suddenly pulled tight and his leg became trapped between one of the lines and the bollard.

After the event, it was not possible to determine with certainty which of the two mooring lines caused the injury because their position was changed in the interest of administering medical care to the casualty. The side of the bollard on which the leg was crushed could not be determined with certainty, either.

Before suddenly pulling tight, at least one of the two lines evidently had a certain degree of slack or was far enough from the bollard for the later casualty to move his foot there.

The statements given during the initial enquiries by the WSP gave rise to the assumption that only one of the two stern lines became caught in the propeller. However, parts of each line were found in the port propeller during the diving operation to remove the line from the propeller. The witnesses on board the ship then corrected their statements.

4 ANALYSIS

According to information given by the shipping company, the style of making fast and casting off described in section 3.1 corresponded to the normal procedure for lying at berth away from the ro-ro bridges. This was justified by the ferry's considerable wind vulnerability due to her high superstructure and shallow draft. As regards operating the two propulsion units during the casting off manoeuvre on the day of the accident, this procedure differed from that described by the shipping company, however.

According to the shipping company, when the lines are cast off during the casting off manoeuvre, the port propulsion unit is set to ahead, the starboard propulsion unit to astern, and the rudder to starboard. This holds the ship at the quay until all the lines are released and hauled in.

By contrast, at the time of the accident both propulsion units were evidently set to astern to take the tension out of the stern lines. It is not possible to assess the extent to which both propulsion units were necessary to pull the fore lines tight enough to remove the stern lines from the quayside bollard in retrospect. Moreover, it is not known whether the procedure on the day of the accident was an exception. However, the overall circumstances permit the conclusion that pulling the fore lines tight was the standard manoeuvre. From that it could be concluded that the manoeuvre may always have involved both propulsion units being set to astern.

On the day of the accident, the fore lines were pulled tight in the manner described. To begin with, there was not enough slack to release the stern lines. Only after additional lowering of the fore lines and the resulting sternward movement of the ship was it possible for the doc

ker to remove the stern lines from the bollard. There may have already been some degree of pre-tensioning, which complicated the work of the docker and ultimately led to him removing both stern lines from the bollard at the same time as a result of the course of action. That simultaneous handling of both lines was the usual procedure or that it was at least intended in this case cannot be completely ruled out, however. The design of the bollard actually prevented the line from simply sliding down.

As the docker then held both mooring lines in his hands, he suddenly slipped on the surface of the quay, which was icy at his position at least. Letting go of the two lines was a natural reaction. The docker could not foresee the ensuing course of events.

Due to the changes made while first aid was administered on the aft manoeuvring station, it was no longer possible to trace the course of the accident unequivocally. Nevertheless, the investigators assume its course was as follows:

The fact that the load reduction necessary for loosening the stern mooring lines from the quayside bollard was carried out by the forward mooring lines yielding and not by loosening the stern lines, which appears more logical, implies that the stern lines should not be removed from their respective bitts during the casting off manoeuvre.

Ref.: 10/11

It follows that both stern lines had to be taken hold of in the area between the fairlead and bitt to haul them in (see Figure 10 – gripping position). The result of this is that both crew members worked in a very confined space and it was necessary to move extremely close to the bitt. When the later casualty took hold of the line for the second time, he moved the leg that was supporting him close to the bitt. His leg became trapped when the propeller caught and tightened this line at this very moment. The procedure was responsible for the lines that became caught by the propeller not simply slipping out but tightening in the manner described and subsequently parting, as they were still placed over their bitts.

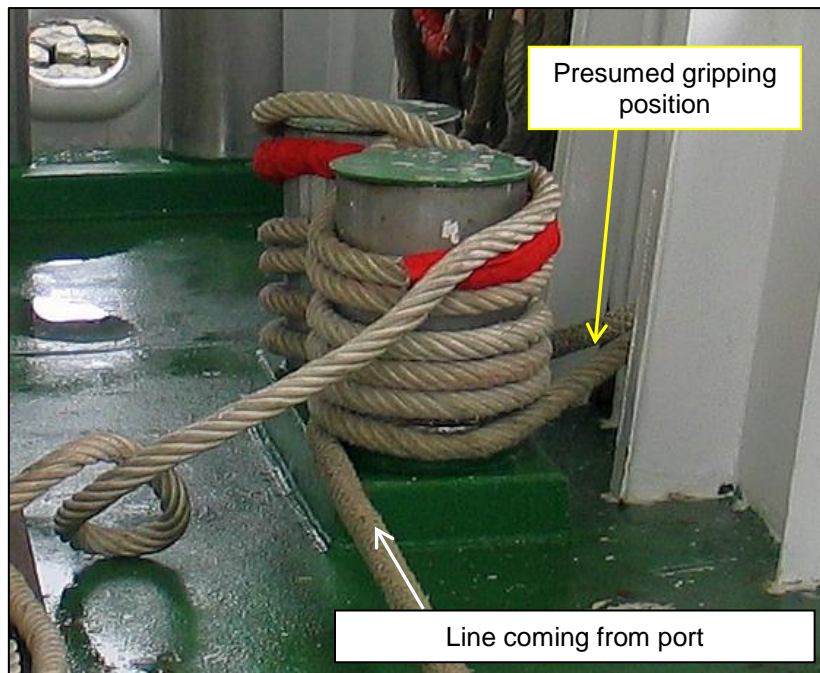


Figure 10: Typical setup on the starboard bitt

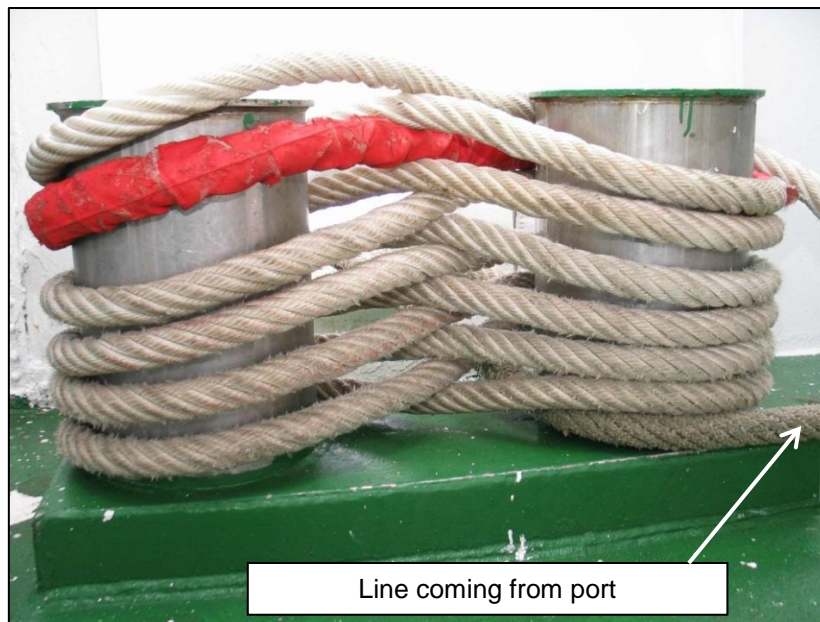


Figure 11: Illustration of the line setup

5 ACTIONS TAKEN

The shipping company took various measures in response to the accident. Firstly, the FRISIA II was equipped with buoyant mooring lines and heaving lines. Secondly, in the context of organising safe ship operation several meetings involving the ship's command of the FRISIA II, the shipping company's technical inspection department and designated person², as well as a staff member from the Ship Safety Division (BG Verkehr) were held to analyse the course of the accident and identify potential consequences. With regard to the probable course of the accident, the shipping company came to the same conclusion in its analysis as the BSU. Following that, the procedure on the aft manoeuvring station was changed. Both lines are now removed from the bollard and hauled in in the usual manner. Moreover, the analysis also resulted in a call to the masters to emphasise to their crew members the particular risk when casting off and making fast and to ask the crews to suggest improvements. The staff of the port operator were also reminded of the risks involved in casting off and making fast. Staff training is repeated at regular intervals. An internal ISM circular also pointed to the risks involved in working with lines in written form. A relevant article from a trade publication was attached. Furthermore, excerpts from the 'Handbuch See' (sea manual) published by the Ship Safety Division (BG Verkehr) were circulated.

The master of the ship, the expert for occupational safety, and the designated person drew up a risk assessment for working with mooring lines. It now forms part of the shipping company's system (Measures for Occupational Health and Safety).

The shipping company has obtained buckle-on spikes for every ship and the port operator to provide sufficient protection against slipping in ice and snow during the winter period.

² Designated person for the purposes of the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code).

6 CONCLUSIONS

Both crew members working on the aft manoeuvring station were sufficiently familiar with the situation there. Although the tasks in the ship operation manual relating to the manoeuvring station only referred to the machinist explicitly for the port of Norderney, the BSU assumes that he also works there regularly when making fast and casting off at other locations. Inasmuch, the machinist and other crew members were familiar with the spatial constraints, the style of line guidance, and the entire sequence of the manoeuvre.

The style of line guidance and spatial constraints due to the structural conditions meant it was necessary for the two crew members to move extremely close to the bitt on the port side. Safe movement was restricted further by the described course of the accident. It was thus possible for the later casualty to step into a bight and be surprised by the suddenly tightening mooring line.

The docker entrusted with casting off the mooring lines had some experience in handling lines. Inasmuch, there was no reason for the crew of the FRISIA II to believe that he was not up to the task. Circumstances that could not be clarified further caused him to remove both lines from the bollard at the same time. He had no influence on the ensuing course of events.

The style of casting off manoeuvre, both propellers set to astern, and the fact that no buoyant lines were on the FRISIA II facilitated the accident.

The BSU is abstaining from issuing safety recommendations in the case at hand because the shipping company has dealt extensively with the accident internally.

7 SOURCES

- Enquiries by the Waterway Police (Wasserschutzpolizei – WSP)
- Written statements
 - Ship's command
 - Shipping company
- Witness accounts
- Nautical charts and ship particulars: Federal Maritime and Hydrographic Agency (BSH)
- Figures 4 and 8: WSP Station Norddeich. All other figures: BSU
- Documentation, Ship Safety Division (BG Verkehr)
 - 'Handbuch See: Arbeitssicherheit und Gesundheitsschutz in der Seeschifffahrt und Fischerei' (sea manual: occupational health and safety in maritime shipping and fisheries), Hamburg 2012.
 - 'Gefahrlos Festmachen' (safe mooring) from Issue 1/2011 of Sicherheitsprofi.