Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation
Bundesoberbehörde im Geschäftsbereich des Bundesministeriums
für Verkehr, Bau und Stadtentwicklung

Investigation Report 146/05

Very serious marine casualty

Fatal work accident on board MV WERDER BREMEN on 27 April 2005 in Santa Cruz de Tenerife

15 February 2006

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

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

Director: Jörg Kaufmann
Tel.: +49 40 31908300, Fax.: +49 40 31908340
posteingang-bsu@bsh.de www.bsu-bund.de

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1 Summary of the marine casualty

At about 19.30[1] h on 27.04.2005 a fatal work accident occurred on board the German container vessel WERDER BREMEN. During work on deck in the port of Santa Cruz de Tenerife a crew member fell from a height of approx. 7 m from the hatch cover onto the pier. The seaman had been in a lashing passage on hatch 2. Here the hatch cover extends up to the outer side of the vessel. There were no structural measures to prevent falling over board at this place. The seaman was not wearing any personal fall protection equipment.

[1] All times are ship's time, ship's time = UTC + 2 hours; local time = UTC + 1 hour.

2 Scene of the accident

Nature of the incident:	Very serious marine casualty, fatal work accident
Date/time:	27.04.2005 / 19.30 h
Location:	Santa Cruz de Tenerife, Darsena de los Llanos
Latitude/longitude:	φ 28°27,7' N λ 016°14,8‘ W

Figure 1: Berth of the vessel; excerpt from chart 844, Federal and Maritime Hydrographic Agency

3 Vessel particulars

3.1 Photo

Figure 2: Photo of vessel

3.2 Data

Name of vessel:	WERDER BREMEN
Type of vessel:	Container vessel
Flag:	Federal Republic of Germany
Port of registry:	Bremen
IMO number:	9202259
Call sign:	DDTP
Owner:	Beluga Shipping GmbH & Co. KG MS WERDER BREMEN
Operator:	Beluga Shipping GmbH
Year built:	1999
Building yard/building number:	J.J. Sietas KG Schiffswerft GmbH & Co. / 1124
Classification Society:	Germanischer Lloyd AG
Length overall:	121.89 m
Breadth overall:	18.20 m
Deadweight:	7114 t
Draft at the time of the accident:	4.61 m
Engine rating:	5,300 kW
Main engine:	MAN B&W Diesel GmbH, 8 L 40/54
Speed:	16.5 kn
Hull material:	Steel
Number of crew:	12

4 Course of the accident

The container vessel WERDER BREMEN came from Alicante, Spain. After a passage of two-and-a-half days the vessel had made fast with its starboard side alongside in the port of Santa Cruz de Tenerife at 05.00 h on 27.04.2005. Discharge and loading of containers started at about 09.00 h. At the time of the accident at 19.30 h only loading work was still being carried out.
At the time of the accident the seaman was in the lashing passage on hatch 2. The cause and the manner of the fall from the hatch were not observed. Staff of the stevedore company saw the body hit the fore spring line and land hard on the pier. The dock workers alerted an ambulance and the vessel's crew.
The seaman who sustained the accident was only responsive to a limited extent after the fall and was quickly taken to a hospital. He died there that same evening.

5 Investigation

The BSU[2] used the documents handed over by the vessel command and the operators for the investigation.
MV WERDER BREMEN was surveyed by a team from the BSU in Rotterdam on 18.07.2005. The ISM[3] representatives of the operator company were present at the same time. The BSU team questioned crew members who had been present at the time of the accident too.

In the course of the further investigation the deck features on five sister vessels were also examined. Furthermore, the accident was discussed with the See-BG (Marine Insurance and Safety Association) and the building yard and a vessel from the current building series 168 of the yard Sietas Werft was inspected.

The seaman involved in the accident had been assigned on board WERDER BREMEN. According to the statement by his wife, he had been sailing since 1991. Since July 1998 the Crewing Agency had chiefly assigned him to smaller vessels running in European waters.
The seaman had been on leave from 10.09.2004 to 16.12.2004. He started his first term of duty on WERDER BREMEN on 17.12.2004.

During this period WERDER BREMEN was assigned between the Spanish mainland and the Canary Islands. It left Alicante, Spain, on 24.04.2005.
During sea voyages a 3-watch rhythm was applied on board the vessel, and this was changed over to a 2-watch rhythm during times in port.
According to the time sheet handed over by the vessel command, the seaman was assigned to the 04-08 watch during the sea passage and to the 06-12 watch during times in port. There were only slight adjustments during times in port.

[2] BSU – Bundesstelle für Seeunfalluntersuchung (Federal Bureau of Maritime Casualty Investigation)
[3] ISM – International Safety Management

The following workloads were shown for the days preceding the accident:

- 23.04.2004 = 12 hours
- 24.04.2004 = 10 hours
- 25.04.2004 = 8 hours
- 26.04.2004 = 8 hours
- 27.04.2004 = 9.5 hours.

On 27.04.2004 the seaman began the watch at 03.00 h following a seven-hour break. He interrupted his work for breakfast between 07.00 and 08.00 h and was then working again from 08.00 to 12.00 h. He had no watch from 12.00 to 18.00 h. It was not possible to determine how he used this leisure period. The seaman recommenced work within the framework of the port watch at 18.00 h.
The vessel had already loaded at least one layer of containers on hatches 1 and 2. The containers stowed on hatch 1 were 45' containers.

Daylight was still prevailing at this time. According to the expert opinion by DWD[4] the wind was blowing from an east-north-easterly direction at a force of 2-3 Bft. No gusts were observed. The outdoor temperature was 20°C and it was dry and slightly overcast.

At the time of the accident the port watch was manned by the Chief Mate, the seaman and a further deck rating. The deck rating was supervising the gangway. The seaman subsequently involved in the accident was assigned on hatch 4. He was to supervise the loading work there.
In response to enquiries, the Chief Mate stated that he himself had been on containers on hatch 2. He had noticed the seaman for a moment in the lashing passage on hatch 2, between bays 3 and 5. He could not explain what the seaman was doing there. The seaman was not engaged in inserting lashing rods, since this work was always carried out by two crew members. He had not observed the fall or a situation leading to this.

The accident happened at about 19.30 h. The seaman fell from a height of approx. 7 m onto the pier. This fall was only observed by the dock workers standing on shore. They alerted an ambulance that arrived at the scene of the accident at about 19.50 h. The seaman who sustained the accident died in hospital at about 22.30 h.
According to the statement by the Ministry of Justice, the autopsy revealed severe internal injuries as the cause of the death.

The investigations into the cause of the accident by the vessel command and the operators could not find anything that would have triggered the fall. It is possible that the seaman who sustained the accident stumbled or slipped on the hatch cover. The Master of the vessel said in his statement that the seaman had been wearing safety shoes and a helmet.
The crew members questioned stated that no mobile ladder had been found on deck or on shore. The seaman had not been holding anything in his hands after his fall.

[4] DWD – Deutscher Wetterdienst (Germany's National Meteorological Service)

5.1 Structure of the hatches and deck cargo

WERDER BREMEN is a vessel of building series 160 from the yard Sietas Werft. This type of vessel that has been built 13 times has two hatches that can be closed with hydraulically operated hatch covers in the forward area. These are followed by an open hatch. Hatch 4 is then again a hatch that can be closed. There is a further cargo area forward of the bridge that is restricted in its depth by the engine room.

The design of the hatches is the same on both the starboard and the port side.
In this building series, containers can be stowed as deck cargo on hatches 1 and 2. In order to make use of the full width of the vessel, the outer containers in the area of hatch 1 are placed with their outer side on pedestals. This also applies accordingly for the outer, aft corner of the 3rd bay[5] when 2 x 20‘ containers or 1 x 40‘ container are stowed.
When 45' containers are stowed on hatch 1 the cargo situation is that the aft edge of the containers of the 2nd bay extend up to the cover of hatch 2 (Figure 3).
There are no pedestals in the area of hatch 2. Here the hatch cover is provided with projections that extend up to the outer sides of the vessel and on which the holding shoes for the Twistlocks[6] and lashing points are located.

In order to reach the lashing passage between bays 3 and 5 and hence hatch 2, it is normally possible to use a permanently installed ladder. This ladder is located on the pedestal on a level with the aft edge of hatch 1. When 45' containers are carried, they are stowed on top of this ladder that can then no longer be used. The other facilities for climbing to hatch 2 are in the form of permanent ladders on the port and starboard sides at the aft edge of hatch 2 and at their sides. The ladder on the starboard side serves primarily to reach a fold-out platform. The hydraulic control of the hatch cover is operated from this platform. The ladder on the port side serves for checking the hatch. If containers are stowed on deck, access to the lashing passage between bays 3 and 5 via the side and aft ladders is either more difficult or not possible at all (see Figure 4). The only remaining access is the way over the projections of the hatch cover.

[5] In container vessels the rows of stowage places across the width of the vessel are termed bay. They are counted from the bow. Odd numbers represent 20' containers and even numbers 40' containers. Thus if two 20' container fit behind one another in hatch 1, we talk of bays 1 and 3, or if a 40' container is loaded this is termed bay 2. Bays 2 and 3 thus have the same aft corner points.
[6] Twistlock – twisting lock for latching containers

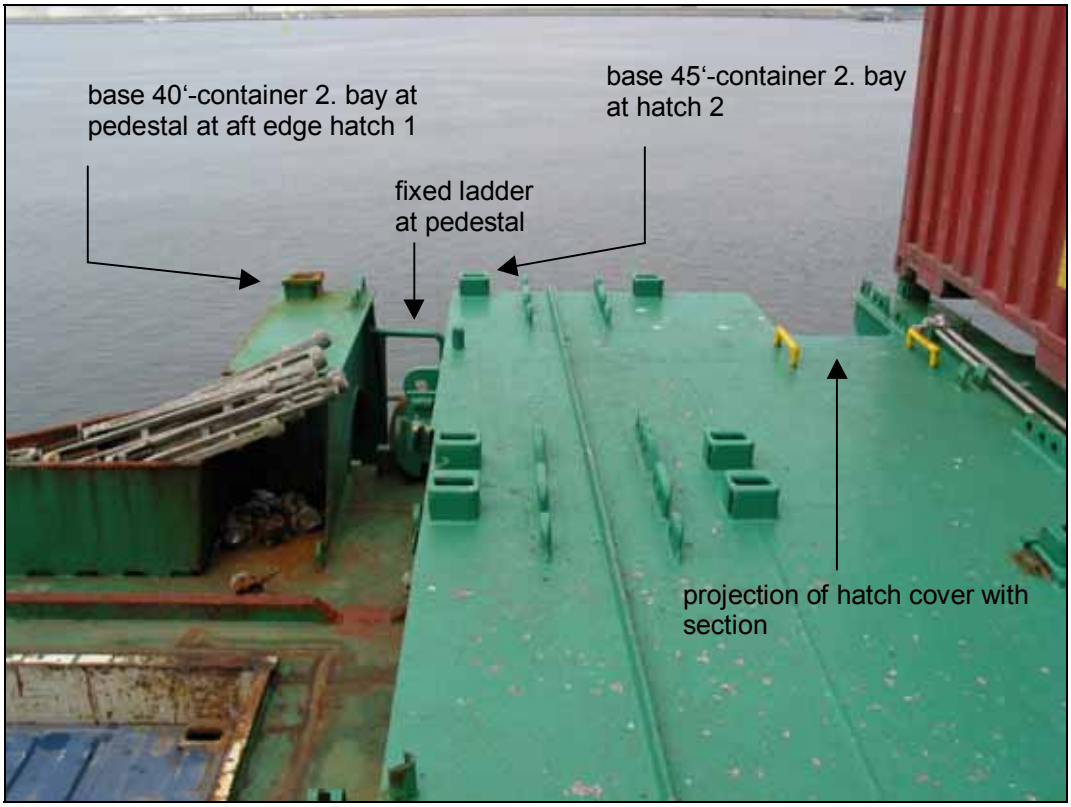

Figure 3: Front edge of the hatch cover on the starboard side of hatch 2 on WERDER BREMEN

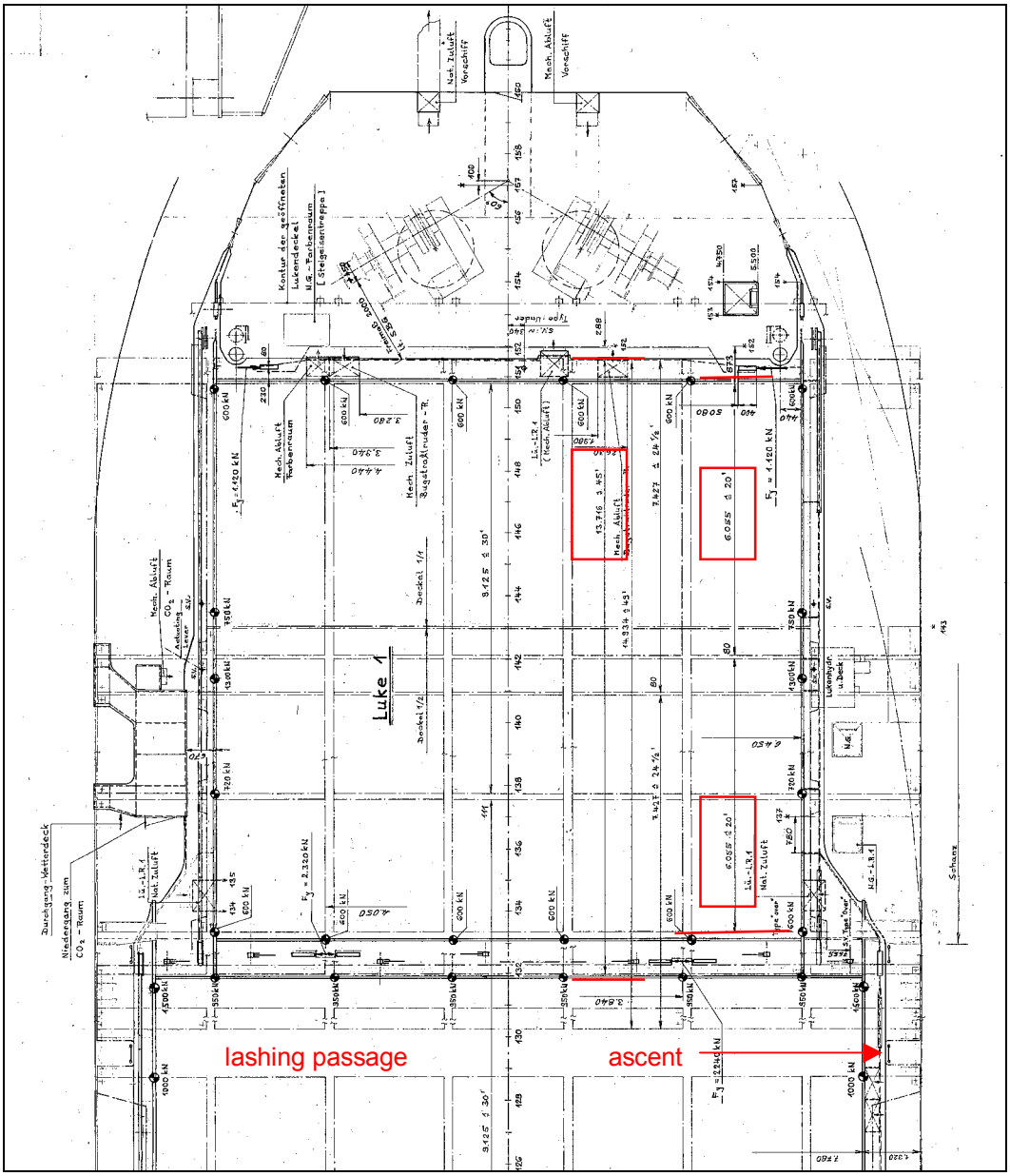

Figure 4: Top view of hatch 1 and front edge of hatch 2

The projections of the hatch cover have a cut-out. Consequently if the vessel is loaded with 45' containers on hatch 1 and containers in bay 5 it is possible to access the hatch / lashing passage there (Figure 5). At the time of the accident there was no ladder here. That was why the crew had to climb over the hatch coaming, a height of at least 2.40 m, or use a mobile ladder (see Figure 6).
No ladders were installed at this place on the sister vessels inspected by BSU either.

The drawings inspected at the See-BG[7] and the yard show a ladder at this point, as does the drawing in Figure 4. The yard was unable to make any statement on this circumstance. At the time of construction installations on board the vessel were discussed directly on the spot, and there was no subsequent documentation. The yard has altered this procedure in the meantime.

[7] See-BG – See-Berufsgenossenschaft (Marine Insurance and Safety Association)

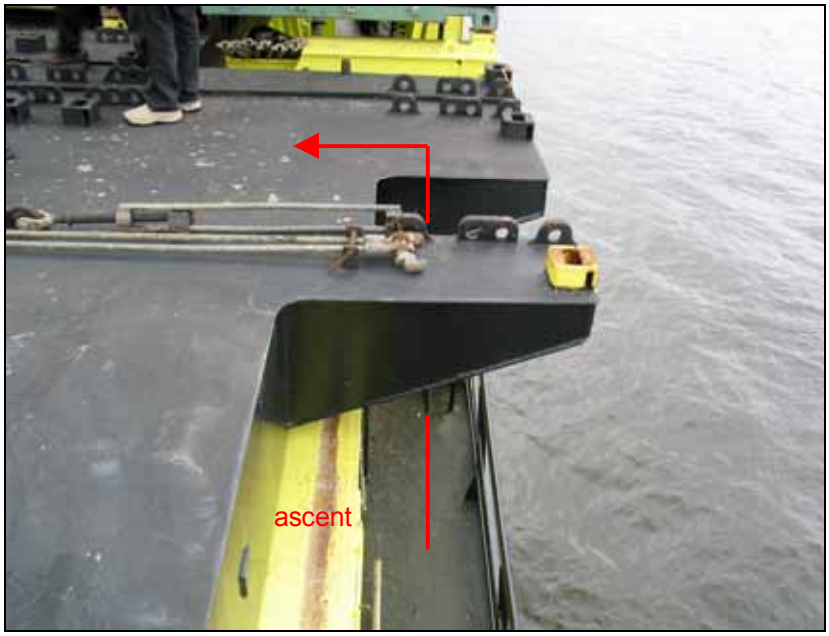

Figure 5: Projection of hatch cover (black) with section to the ascent

Figure 6: Ascent facility to hatch 2 (without ladder at the time of the accident)

5.2 The lashing passage

The lashing passage between bays 3 and 5 is approx. 2.2 m wide when 45' containers are carried. It does not represent a level surface, as lashing points and receiving points for container feet are welded on (see Figure 7). It was not possible to clarify finally to what extent lashing materials were lying in the lashing passage or had already been put in place there at the time of the accident. The paint coating on the hatch cover corresponded to the customary standard. No structural fall protection facilities could be placed at the edge of the hatch cover. They had not been planned by the yard and had not been installed subsequently either.

Figure 7: Loading situation after the accident in the lashing passage on hatch 2

5.3 Safety at work instruction and personal protection against falling

At the time seamen contract on board started, introductory familiarisation in accordance with Rule I/14 STCW-Code[8] was carried out. It is specified in the work description for deck staff as part of the SMS Manual[9] of the vessel operator that persons working on deck are responsible for using the safety equipment necessary from case to case. During the monthly safety at work instructions – Shipboard Management Meeting – questions of safety during the cargo operations were expressly discussed in the months of December, March and April.

At the time of the survey by the BSU, full personal protection equipment was available on board WERDER BREMEN. Some of this looked as though it had been used. According to the information supplied by one crew member, it was generally only used when working outboard or at a great height. The lashing rods were inserted by teams of two without wearing full protection equipment. According to the information supplied by crew members, the seamen secured each other by holding fast normally.

5.4 Mobile ladders

During the inspection the BSU team ascertained that there were several ladders of a certain type on board WERDER BREMEN. These were aluminium ladders of which the sides were made of hollow round material and the rungs of a rectangular, solid material welded on upright. The ladders were provided with hooks at the top. The bottom ends were not equipped with rubber feet (see Figure 8). The statements on use made by the crew of WERDER BREMEN were not uniform. Some said they had only been used to latch the Twistlocks in the first layer of containers, while others said that they had also been used to climb onto containers in order to fit the bridge fittings there. The ladder had always been held by a second man. However, placing of the Twistlocks and bridge fittings as well as the associated climbing onto the containers had generally been carried out by staff of the stevedore companies. The ladders had also been used to reach the hatches. In order to prevent them from slipping, the ladders had been placed against the outer plate marking the edge of the gangboard.

During the survey of the sister vessels, small numbers of this type of ladder were found repeatedly. Through contact with Sietas Werft it was ascertained that the building yard also supplied these ladders. The ladders were only intended for use at certain points specially planned for this purpose. The yard had attached a strap at these points. The upper end of the ladder was to be hooked into these straps in order to ensure stability. That is why the ladders were not provided with rubber feet. The yard had not intended these ladders to be used in other places. Generally, two ladders were supplied with the vessel. These were stored in special brackets (see Figure 9).

[8] STCW-Code - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.
[9] SMS Manual – Safety Management System Manual

Figure 8: Mobile ladders (sister vessel)

Alongside this the BSU team found a large number of other types of ladders on the sister vessels inspected. Some of these were in a very poor condition. Some of them showed strong signs of corrosion, had no rubber feet, loose rungs, or were badly bent (see Figures 10 to 15). The steps on the wooden ladders were nailed on (see Figures 14 and 16). According to the information provided by the crews these ladders were used at all points on the vessel. However, their use during loading and discharge operations varied and depended on the range of trade, especially the distribution of lashing works between the stevedore companies and the crew.

Figure 9: Example of a stored ladder (sister vessel)

Figure 10: Missing rubber foot

Figure 11: Corroded ladder ends

Figure 12: Corrosion and missing roller

Figure 13: No rubber feet

Figure 14: Damaged aluminium ladder, wooden ladder with rungs nailed on

Figure 15: Loose rungs

Figure 16: Improper repairs

6 Analysis

6.1 Introduction

The BSU was unable to determine the cause of the fall from the vessel. An incident on the hatch cover is probable. A situation leading to the fall during descent via the cut-out in the projection is also probable.
However, the inspection revealed weak points in the system of monitoring and observing the requirements and principles under the law governing safety at work by the employer / vessel command representing the employer and by the insured, in this case the seamen assigned.
The inspection also found defects in the mobile and permanently installed ladders on board.

6.2 Working conditions

The seaman who sustained the accident could be considered an experienced seaman. Although he had only been assigned on board WERDER BREMEN for four months, in view of the rapid succession of ports, the experience and skills he had gained in loading and discharge work with containers could be considered high.
On evaluating the work and rest timesheets presented for the month of April, the BSU ascertained that the provisions of Section A-VIII/1 of the STCW Convention and § 84 a SeemG had been observed. The seaman had had sufficient rest periods.
The conditions on deck at the time of the accident were good. It was dry, there was no wind, and it was daylight.
Fatigue or environmental influences can thus be ruled out as the cause of the accident.
The work distribution between the deck watch on duty corresponded to the customary procedures. The seaman was assigned in a less dangerous area. It was not clarified why he was in the lashing passage on hatch 2.

6.3 Safety at work measures for work on deck

The building series 160 from the building yard Sietas Werft is a proven type of vessel that has been built 13 times. One of the special features of this type lies in the structure of the cover of hatch 2. Normally, the outer corners of the containers are placed on pedestals on the outer sides of the vessel. In this type, this is done on the projections of the hatch cover extending up to the outer edges. In view of the many different loading cases to be covered for different container sizes, the projection can structurally cover a large area. As a result, in most cases the lashing passage provides a great deal of space. At the same time it is generally possible to walk freely over it up to the outer edge of the vessel, so that this in itself involves the risk of falling. The height of a fall depends on the loading condition and the height of wharf. There was no structural safeguard affording protection against falling to counteract the risk of falling from a great height. During the construction phase, the See-BG did not issue any conditions for applying a safeguard or modifying the design.
For vessels sailing under German flag the rules on safety at work can be taken from the Accident Prevention Regulations for Shipping Enterprises (German acronym UVV-See). It is stated in § 1 there that: "*These Accident Prevention Regulations*

apply for shipping enterprises affiliated to See-Berufsgenossenschaft (Marine Insurance and Safety Association)."

It was not possible to determine to what extent the operators / the vessel command of WERDER BREMEN had recognised the existing risk of accident in advance. At any rate it was part of the duties of the employer to take precautionary measures, as also stated in § 3 Para 1 Sentence 1UVV-See: "*The employer shall take measures in order to prevent occupational accidents, occupational diseases and work-related danger to health ... ."* and eliminate this danger. Structural solutions in the form of folding or plug-in railings are difficult to implement on folding hatch covers. In view of their exposed position they are subject to the risk of damage.

An evaluation of the documents submitted shows that the operators adopted the path set out in § 5 UVV-See. It is stated here in paragraph 1 and thereafter:

"(*1) The employer shall provide suitable personal protective equipment if the hazards in question cannot be avoided, or sufficiently limited, by means if general protective technical arrangements (technical means of collective protection) or by measures of work organization.*

(6) The employer shall ascertain which hazards cannot be avoided or sufficiently limited by means of operational and technical arrangements.

(7) The employer shall choose suitable personal protective equipment for the hazards ascertained to (6)."

The operators provided corresponding protective equipment against falling to the vessel.

The operators and the vessel command also satisfied the requirement of § 8 UVV-See. This includes the requirement: "(*2) The employer shall issue instructions to insured persons about the dangers associated with their work activities and about corresponding accident-prevention arrangements before employment commences. This issuing of instructions shall be repeated as often as the degree of danger associated with the work in question dictates.*" The safety at work instructions meant by this were provided when the seaman started work on board and were repeated at intervals.

The command of WERDER BREMEN evidently did not follow the requirement of § 3 Para 4 UVV-See sufficiently. This calls for monitoring of the directions and measures: "*Measures shall be taken to ensure that regulations relating to work protection and accident prevention are being observed and that the instructions and measures governing working procedures and the conduct of the insured are effective.*" This requirement is repeated and augmented with reference to dangerous work in § 9 Para 1 UVV-See: "*The employer shall ensure that dangerous work is performed only under the supervision and direction of a operational supervisor, and that such work is not started before such safety precautions as are necessary in the specific circumstances have been taken.*" In the explanations for this it is stated that the requirements are fulfilled if "*instructions concerning the safety measures required to prevent persons or objects from falling have been issued and are followed when work involving hazardous procedures such as dealing with hot, noxious or highly flammable materials has to be performed; ... .*" There is no doubt that work in the area of the outer stowage places is to be classified as dangerous on the grounds of the possible substantial height of a fall. In addition, there is a special risk of stumbling inherent in the specific design of a hatch cover on container vessels. The holding points for container feet fitted there (Bottom Stacking Cone or Bottom Twistlock) and the lashing rods create such a danger.

The actions comprising the necessary interlocking of the containers using Twistlocks and the lashing work to be carried out extend beyond the limitation opened in § 9 Para 2 UVV-See for work that only involves "*single movements*". On the contrary, the paragraph cited formulates this precisely: "*Precautions shall be taken to prevent falls occurring during the course of any work that involves more than single manipulations outside the hull, on deck but outside the hull, on deck but outside the deck railings, on the mast, in the bosun's chair, on stages, or at other dangerous locations.*"

The crew members of WERDER BREMEN working on deck did not satisfy their obligations either. It is stated in § 19 Para 1 UVV-See: "*Insured persons shall wear the personal protective equipment that has been placed at their disposal. They shall follow all instructions (including any additional directions issued by the employer) relating to the proper use and maintenance of the equipment.*"

For work with containers, the BSU also refers to the paper published in See-BG E 2 – Notes on lashing of containers by ships' crews. This requires under Point 5 that safety harnesses must be worn "*during work on the first layer of containers or higher*". On the basis of the design of the hatch cover (see Figure 5), the BSU sees the degree of peril set in leaflet E2 for work in the first layer of containers to be equivalent to the situation in the outer area of the lashing passage on hatch 2 of WERDER BREMEN.

The requirements to be made of protective equipment against falling/safety harnesses are set out precisely in leaflet B1 on safety harnesses. The selection and the manner of using safety harnesses lies within the responsibility of the employers and in cases of doubt should be effected in consultation with the See-BG.

6.4 Permanently installed ladders

It was ascertained during the investigation that no ladders were installed in the area of the lashing passage between bays 3 and 5 of any of the vessels of this building series inspected. Reference has already been made to the discrepancy between some of the building drawings with regard to this fact (see Figure 4). So far the crews of the sister vessels had only partly noticed this lack due to the differing ranges of trade and the associated different cargoes carried.

Permanently installed ladders in the spirit of the Accident Prevention Regulations are ladders that are mounted vertically or almost vertically. The Accident Prevention Regulations[10] are summarised in BGV[11] D36 – Ladders and Steps. The special provisions for vertical ladders are regulated under § 15: "*1. Vertical ladders are only*

[10] The UVV-See always takes priority. Furthermore, according to § 3 Para 1 Sentence 2 UVV-See, "Especially, *he (the employer) shall provide equipment and give instructions which shall comply with the requirements of these Accident Prevention Regulations, with any other accident prevention regulations applicable to him, and with generally accepted rules of technical safety an occupational medicine."* and according to § 3 Para 3 UVV-See, *"Any special requirements stipulated in other legal provisions, in particular in those relating to work protection or safety on ships, remain unaffected",* other regulations are also relevant.

[11] BGV – Accident Prevention and Insurance Association Regulation for safety and health at work

admissible if it is not possible to install steps for operational reasons or not necessary due to the low risk of accidents. 2. Vertical ladders must be installed permanently. 3. Vertical ladders must have a holding device at the point where they are dismounted."

6.5 Mobile ladders

§ 64 and 73 UVV-See and Leaflet F8 on ladders for leaning in vessel operations apply for the use of mobile ladders. Further rules and regulations can be taken from BGV D36 – Ladders and Steps – and the implementing instructions issued on these.
The following is specified in § 64 Para 3 UVV-See with regard to the wooden ladders found on board that had been only improper repaired and the aluminium ladder shown in Figure 15: "*The rungs shall be reliably and durably connected with their stringboards or sides.*" In the implementing instruction relating to § 6 Para 1 BGV D36 this is explained in more detail: "*Reliable and permanent connections for wooden ladders are glued, positive-fit (e.g. with plug and wedge) connections. If loosening of the connections is avoided by appropriate measures, it is possible to do without the wedging.*
Screw fastenings only satisfy this requirement if they are secured against working loose independently.
Fastenings of wooden parts using nails or woodscrews are not considered to be permanent fastenings …"
As regards the other defects ascertained, the following provisions under the law of employment protection from § 73 Para 1 UVV-See provide information on the correct procedure: "*Ladders for leaning may only be used if they are set up safely and secured against sliding and tilting.*" This is specified in more detail in the leaflet under II. 3: "*In the case of equipment with ladders for leaning, it should be ensured depending on the purpose of use that these are largely secured against slipping. Safeguards preventing the foot of the ladder from slipping are suitable design of the feet, such as e.g. steel tips for use on wooden floorings, or rubber feet for use on steel decks.*"
A statement about damaged ladders is made under I. 5.: "*Damaged ladders must be removed from use. They may only be used again after proper repair that restores their original strength and ensures safe use.*
Ladders no longer suitable for repair should be destroyed immediately if possible. Experience has shown that this is the most effective way of withdrawing them from use. Inexpert repair comprises, for example, the use of bandages round broken ladder struts. When rungs are replaced, care should be taken to ensure that damaged or missing rungs are replaced by sound rungs of the same type. The strength of the struts may not be impaired by the use of rung holders for fastening replacement struts."

6.6 Reactions of the operator

The ISM Officer of the vessel operator conducted an internal investigation immediately after the accident on board. The entire vessel command was present. In its evaluation of the accident, via a circular letter Beluga Shipping GmbH called upon all vessel commands in its operating company to instruct the crews to observe the

Accident Prevention Regulations. Express reference was again made to the wearing of fall protection belts during dangerous work.
A vertical ladder was mounted on the starboard side between bays 3 and 5 for reaching the lashing passage. Appropriate holding devices were installed at the dismounting position and marked in colour.

7 Safety recommendations

The BSU recommends that all operators of vessels flying the German flag and the vessel commands, the crews and the safety officers observe the safety at work requirements against falling resulting from the Accident Prevention Regulations and check observance of these on board their vessels. Above all, permanent safeguards should be fitted at dangerous points. Mobile safeguards or protective equipment against falling are always the poorer means.

It is recommended that the operators of the vessels of building series 160 from Sietas Werft equip their vessels with permanently installed ladders at both sides of the lashing passage between bays 3 and 5. This will prevent dangerous climbing onto and descending from the hatch coaming and incorrect use of mobile ladders for leaning.
The attention of the crew members should be drawn to the special purpose of the ladders supplied by Sietas Werft.

The See-Berufsgenossenschaft, vessel commands and safety officers of the vessels are called upon to pay greater attention to the technical condition of the mobile ladders on board during their checks. Missing parts should be replaced expertly, heavily corroded ladders should be removed.

8 Sources

- Written statements/comments
  - Vessel operator
  - Vessel command

- Statements by the crew

- Charts and vessel particulars: Federal Maritime and Hydrographic Agency (BSH)

- Official Weather Expertise by DWD (Germany's National Meteorological Service)

- Documents of the See-Berufsgenossenschaft (See-BG - Seamen's Accident Prevention and Insurance Association)
  - Accident Prevention Regulations for Shipping Enterprises (UVV-See)
  - Directives and leaflets
  - Vessel files

- See-BG Regulations for safety and health at work:
  - BGV C21 – Port works
  - BGV D36 – Ladders and steps and implementing instructions

- Documents and statements by the yard Sietas Werft

- Photos – photo of vessel on page 7: Beluga Shipping GmbH, others: BSU