



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

Investigation Report 128/14

**Serious Marine Casualty**

**Allision between the MSC BENEDETTA and  
pier in Zeebrugge on 16 May 2014**

12 May 2015

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, amended most recently by Article 1 of 22 November 2011, BGBl. (Federal Law Gazette) I p. 2279.

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 (Article 9(2) SUG).

This report should not be used in court proceedings or proceedings of the Maritime Board. Reference is made to Article 34(4) SUG.

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

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## 1 Summary

On 16 May 2014, the container ship MSC BENEDETTA was located in the approach to the port of Zeebrugge in Belgium. The pilots boarded at 0306<sup>1</sup> and took charge of advising the ship's command during the berthing manoeuvre in the Albert II Dock. After one tug was made fast forward and the other aft, the MSC BENEDETTA was turned by about 90° and slowly moved to the pier. The influence of the current was evidently not assessed properly, resulting in the MSC BENEDETTA's starboard side striking the pier level with her superstructure at 0504.

A tear formed in the shell plating level with the water line, through which two ballast tanks filled with water. However, there was no environmental pollution.

The ship could be repaired at the pier.

This report is once more directed at all ship's commands and pilots, advising them to co-operate as a well-functioning bridge team through comprehensive communication.

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<sup>1</sup> Unless stated otherwise, all times shown in this report are local = UTC +2h (CEST).

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## 2 FACTUAL INFORMATION

### 2.1 Photo



Figure 1: Photo of ship

### 2.2 Ship particulars

Name of ship:	MSC BENEDETTA
Type of ship:	Container ship
Nationality/Flag:	German
Port of registry:	Hamburg
IMO number:	9465253
Call sign:	DIUR2
Owner:	E.R. Schiffahrt GmbH & Co. KG
Year built:	2011
Shipyard/Yard number:	Hyundai Heavy Industries Ltd. Co., Ulsan (Korea)/HHI2155
Classification society:	GL
Length overall:	366.00 m
Breadth overall:	48.26 m
Gross tonnage:	141,635
Deadweight:	126,069 t
Draught (max.):	15.50 m
Engine rating:	72,240 kW
Main engine:	Hyundai-B&W 12k98 ME 7
(Service) Speed:	24.7 kts
Hull material:	Steel
Hull design:	Double bottom, double hull
Minimum safe manning:	18

### 2.3 Voyage particulars

Port of departure:	Port Klang, Malaysia
Port of call:	Zeebrugge, Belgium
Type of voyage:	Merchant shipping International
Cargo information:	Containers
Draught at time of accident:	F/M/A: 14.50 m
Manning:	24
Pilot on board:	Yes

### 2.4 Marine casualty or incident information

Type of marine casualty or incident:	Serious marine casualty, allision
Date, time:	16/05/2014, 0504
Location:	Port of Zeebrugge, Albert II Dock, Flanders Container Terminal
Ship operation and voyage segment:	Arrival/berthing
Place on board:	Starboard side level with the superstructure
Consequences (for people, ship, cargo, environment, other):	Tear in the shell plating level with the water line; no injuries or environmental pollution

Excerpt from Nautical Chart INT 1474, BSH

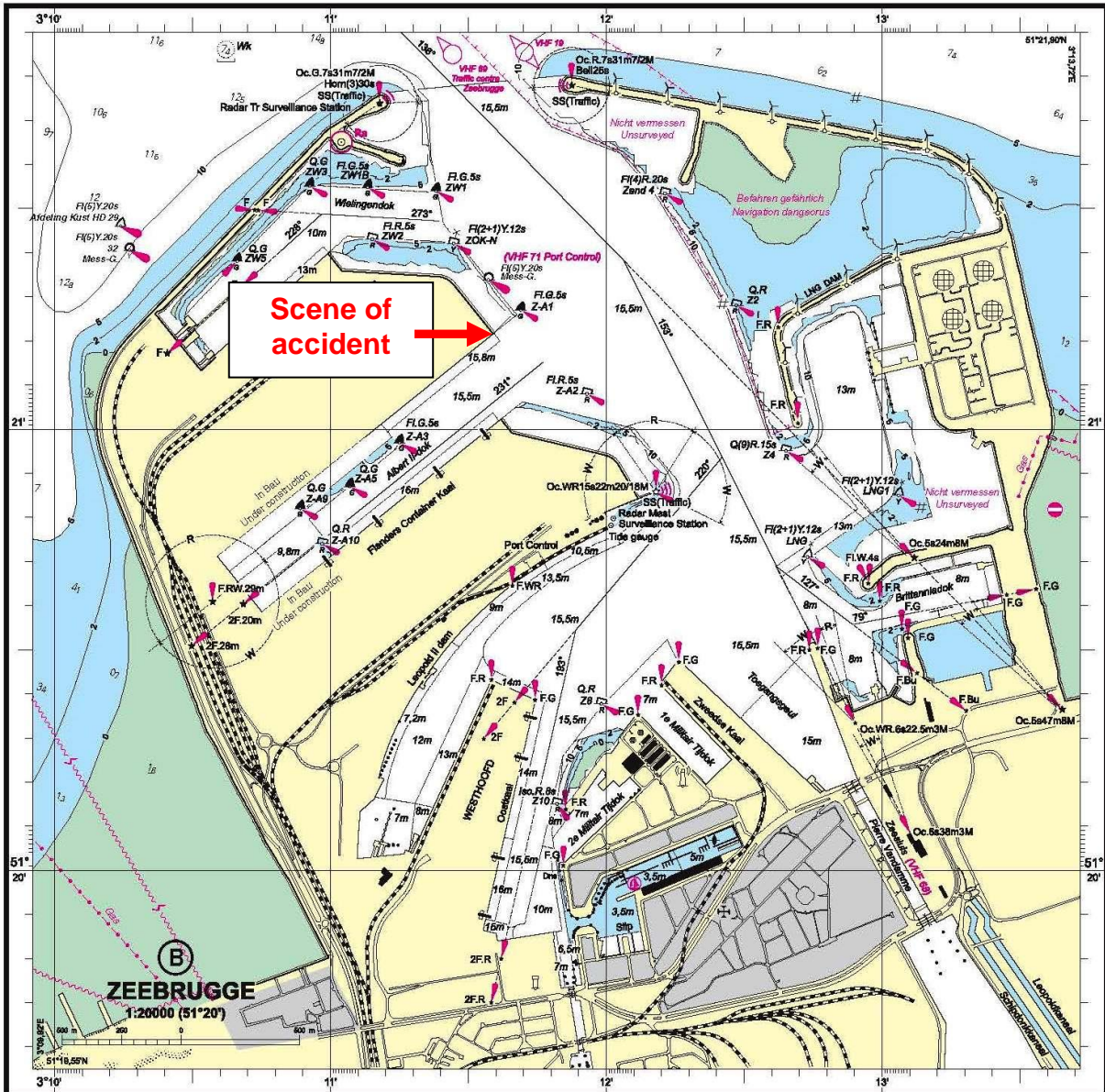


Figure 2: Nautical chart showing the scene of the accident

### 2.5 Shore authority involvement and emergency response

Agencies involved:	None
Resources used:	None
Actions taken:	Repair at the pier
Results achieved:	Ready for use



### 3 COURSE OF THE ACCIDENT AND INVESTIGATION

#### 3.1 Course of the accident

The large container vessel MSC BENEDETTA reached the pilot transfer station at Zeebrugge in the early hours of 16 May 2014. At 0306, two Belgian pilots boarded and took charge of advising the ship's command. All the manoeuvres, particularly the flow conditions at the scene, were discussed. There were no navigational or technical problems.

The port mole was passed at 0439. Two tugs made fast to assist with the berthing manoeuvre, one forward and one aft.



Figure 3: AIS track of the berthing manoeuvre

The ship was stopped at 0448; the heading was about 150°, in order to start the turn to starboard as the bow thruster was ordered fully to starboard, the bow tug to starboard and the stern tug to port. According to hydrodynamic effects this did not lead to a starboard turn. It was then decided to set the rudder to dead slow astern in order to shift the pivot point to the stern of the ship. This rendered the bow thruster and the bow tug more efficiency.

Now the ship started to turn over starboard. The engine was stopped with an astern movement of about 1.5 kts. At a distance of about 30° to the parallel course with the berth both tugs were ordered to stop in order to work with the bow thruster to port to compensate for the starboard turn. The bow tug was ordered to move to port.

The ship was turned to starboard until she was parallel with the pier. At about 0456, the main engine was set to dead slow astern, the rudder to hard to port, and the bow thruster to 100% to port to compensate for the starboard turn.

Supported by the tugs and the ship propulsion, the actual berthing manoeuvre was then started. The ship's command and the pilot controlled and executed the manoeuvre from the starboard wing.

When it appeared to the master that the ship's parallel distance to the pier was too low, he spoke to the pilot about it. However, the pilot reassured him, pointing out that the tugs would maintain the distance.

The master spoke to the pilot again at 0457, requesting that the tugs pull. The pilot replied that the tugs were pulling at 100%. Shortly afterwards, the master again urged the pilot to increase the distance to the pier. Following that, an order was issued to set the main engine to slightly astern. At the same time, the aft tug was to stop and the forward tug should pull. The bow thruster ran continuously at 100% to port. In spite of that, the measuring instruments recorded by the VDR indicated at 0500 that the rate of turn at which the MSC BENEDETTA was turning to port stood at about 0.5 kts. The pilot then issued a series of commands to the two tugs. The main engine continued to run at dead slow astern. The rudder was set to hard to starboard.

At 0502, the pilot recommended half astern. At 0503, the VDR indicated a speed of about 1.5 kts ahead and lateral movement of the entire ship to starboard of about 0.5-1.0 kts.

The starboard side of the MSC BENEDETTA collided with the pier at 0504. This is clearly audible on the audio recordings by the VDR. The main engine was immediately stopped and the bow thruster set to 50% to starboard. Shortly afterwards, the MSC BENEDETTA was moored at the pier and the damage assessed.



Figure 4: AIS track of the berthing manoeuvre (in detail)

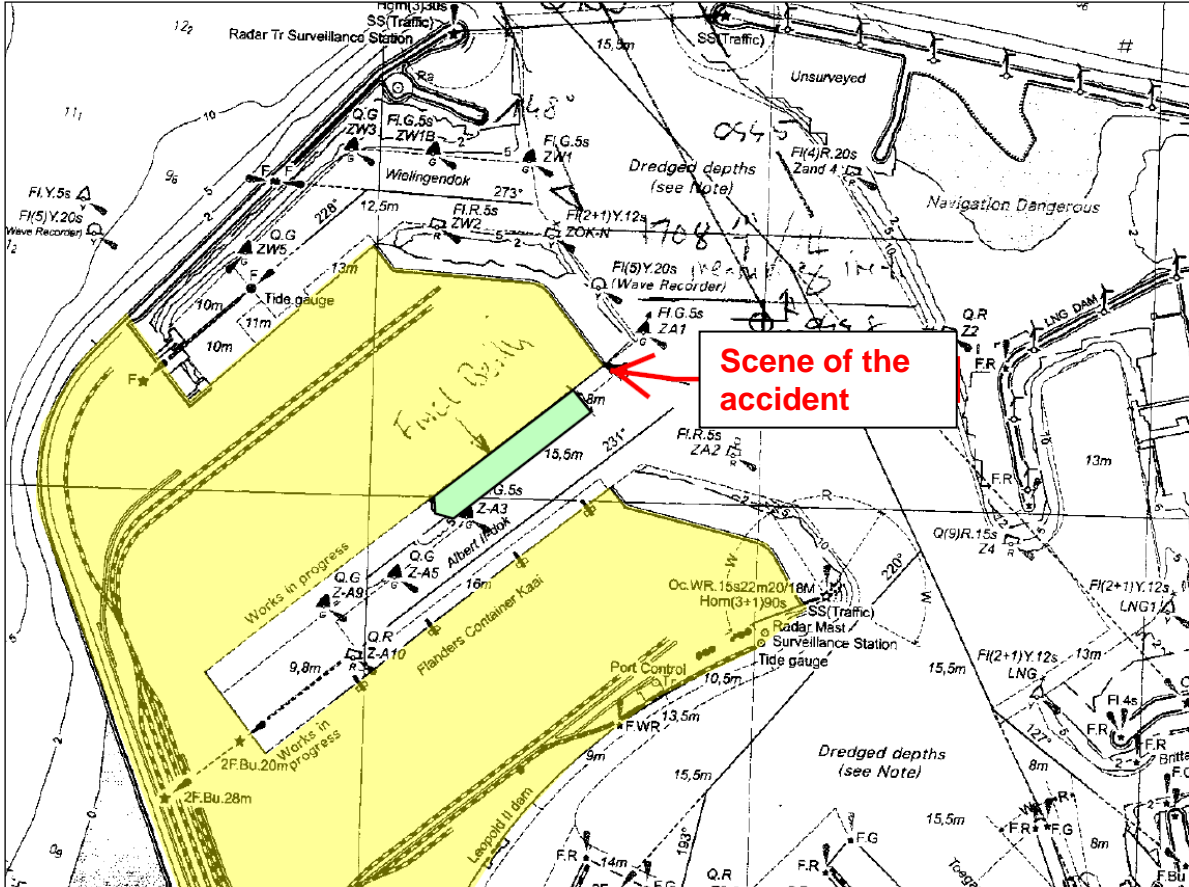


Figure 5: Original nautical chart showing the scene of the accident

### 3.2 Accident damage

Contact with the pier resulted in severe damage to the outside of the fourth and fifth ballast water tanks. Since the tear formed level with the waterline, these tanks took on a substantial amount of water rapidly.

Extensive repairs were necessary.

The north-east corner of the mole sustained minor damage.

There were no injuries and the environment was not affected.



Figure 6: Photo of the tear



Figure 7: Buckled frames

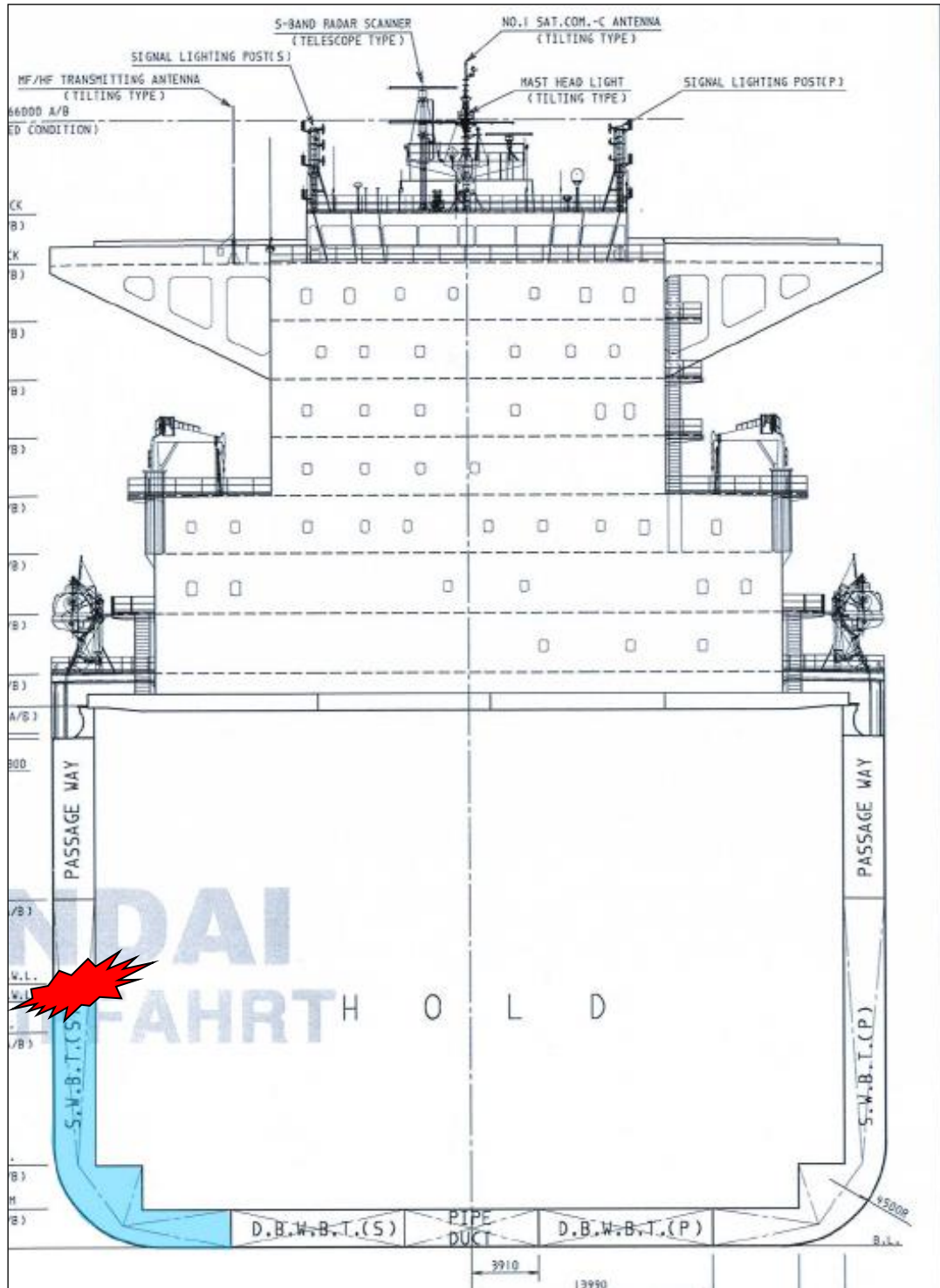


Figure 8: Approximate position of the leak

### 3.3 Investigation

#### 3.3.1 VDR data

A voyage data recorder made by Furuno (VR3000) was on board the MSC BENEDETTA.

Inter alia, audio recordings are available in addition to the radar image. The allision is clearly audible at 0504.

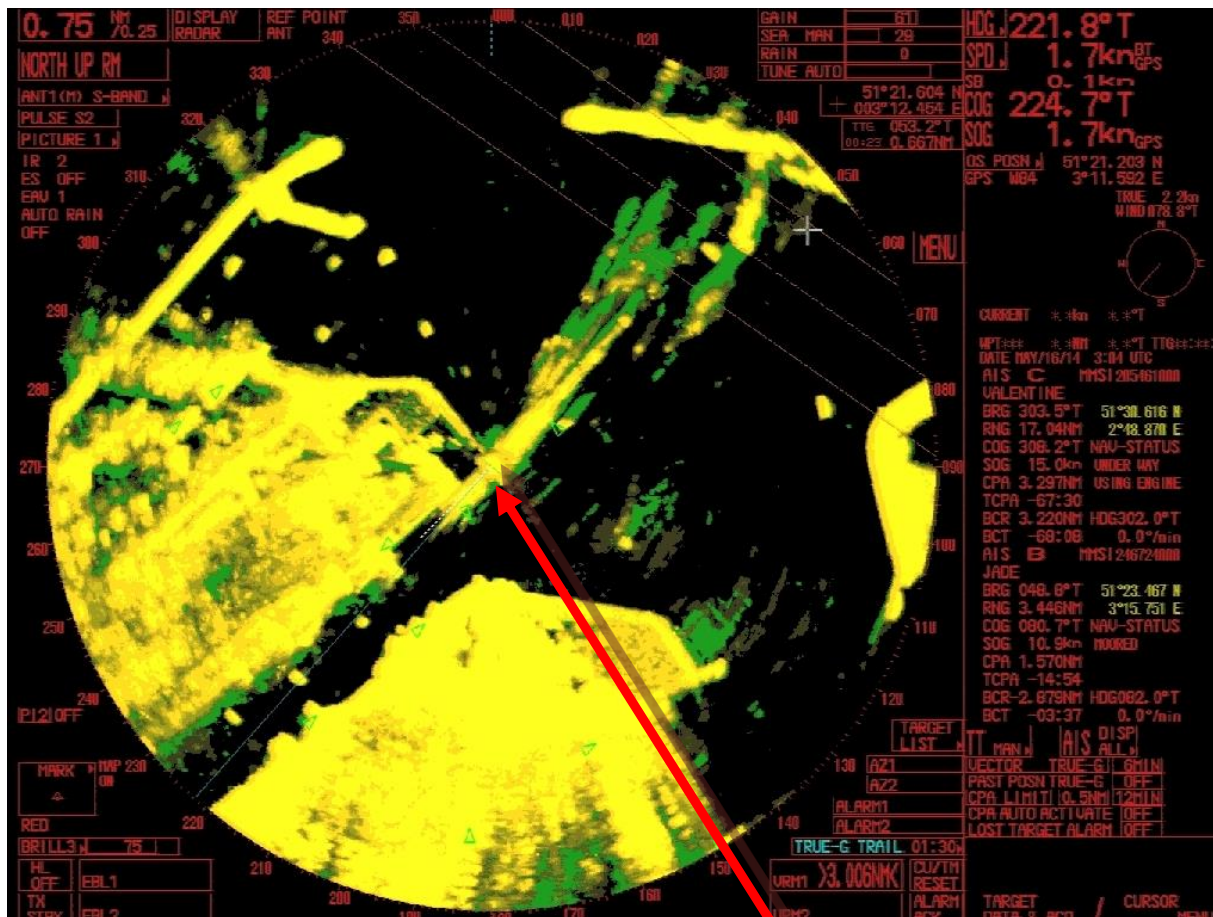


Figure 9: Radar image at the time of the accident (0504)

Figure 8 shows the radar image of the MSC BENEDETTA (centre of the frame) at the moment that her starboard side struck the pier.

#### 3.3.2 Weather

The ship's command and the pilots rated the weather conditions as good. A 2-3 Bft east-north-east wind prevailed. The sea was calm and visibility was in excess of 12 nm. Sunrise was at 0553, meaning the berthing manoeuvre took place at dawn.

The last high tide was reached at 0329 and the next low tide at 1002. The ship's command registered a current of about 2 kts during the berthing manoeuvre.

## 4 Analysis

Fortunately, there were no injuries despite the heavy material damage. Furthermore, it was possible to prevent any harm to the environment.

Based on statements and the fact that no other port was called at since the Suez Canal, it is reasonable to assume that the crew was neither unduly fatigued nor under a lot of stress.

The owner regularly conducts bridge team management courses, which the ship's command of the MSC BENEDETTA has also attended. Similarly, special ship handling training for ultra large container vessels was conducted.

Communication between the ship's command and the pilots was described as good. The master and pilot stated that they had discussed any important manoeuvres. The two pilots spoke good English. However, discussions between the two pilots were held in Flemish, which the ship's command did not understand. The same applied to discussions with the tugs.

The pilots were equipped with their own laptop on which an electronic chart was installed; they made use of this when advising the ship's command.

The pilots expected there to be a current during the berthing manoeuvre, which would push the ship away from the pier. That is the reason why the MSC BENEDETTA was turned so close to the pier.

The master was aware of his responsibility, as can be heard on the audio recordings of the VDR when he spoke to the pilot about not turning too close to the pier. However, his confidence in the pilots' knowledge and experience was nonetheless greater, and so he did not interrupt and change the manoeuvre.

The pilot was obviously surprised by the hydrodynamic effects so that the MSC BENEDETTA collided with the pier.

The pilot evidently misjudged the current, resulting in the MSC BENEDETTA colliding with the pier.

The issue of communication between pilots also exists in German waters. Slipping back into the native language is common everywhere, resulting in the ship's command often not understanding what is being discussed. Here, both sides are encouraged to maintain the communication between pilots and ship's officers.

The owner's internal investigation report is remarkably solution driven. The accident is set out and analysed comprehensively. Here too, one comes to the conclusion that co-operation with pilots must be stepped up. The prompt implementation of bridge team management courses shows clearly that the owner strives to avoid such marine casualties in the future.

## 5 Conclusions

The owner concluded its internal investigation with a report. This was placed at the disposal of the BSU on 14 November 2014. After a comprehensive account of the course of the accident, the report moves on to the investigation into the cause and defines measures to be observed by all the ship's commands of the owner forthwith:

1. the procedures for communication between the ship's command and pilot already laid down in the fleet instructions are to be given more detail and made available to all ships;
2. in particular, if the pilot co-ordinates the tugs in his own language, then the master should prompt him to repeat everything in a language understood by the master;
3. the owner will integrate this accident situation, communication with the pilot in particular, into the bridge management courses;
4. furthermore, workshops on the topic are to be conducted for all ship's officers.

The Belgian Governmental Maritime & Coastal Services Agency – division Pilot Services emphasizes in its statements pertaining to the draft investigation report, that they are aware of the special hydrodynamic conditions in the port of Zeebrugge. They will henceforth take into account the conclusion of the safety investigation conducted by the BSU.

In the case at hand, the objective of the BSU's safety investigations, helping to improve maritime safety, has already been accounted for by the wide-ranging measures of the owner and the pilots of Zeebrugge. Therefore, the BSU is addressing all pilots, ship's commands and their owners with this report, so that this issue remains topical.



## 6 SOURCES

- Written statements
  - Ship's command
  - Owner
  - Classification society
- Witness accounts
- Nautical charts and ship particulars, Federal Maritime and Hydrographic Agency (BSH)
- Documentation, Ship Safety Division (BG Verkehr)
  - Accident Prevention Regulations (UVV See)
  - Guidelines and codes of practice
  - Ship files