



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

Investigation Report 315/03

Serious Maritime Casualty

Collision between
MV GERMA and MV ESTECLIPPER
in the Kiel Canal, siding area Schwartenbek
on 13 October 2003 at 05:33 h CEST

The investigation was conducted in conformity with the law to improve safety of shipping by investigating marine casualties and other incidents (Marine Safety Investigation Law - SUG) of 24 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.

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1 SUMMARY OF THE MARITIME CASUALTY

On 13 October 2003 at 05:33 h CEST the westward-sailing MV GERMA collided with the stern of the MV ESTECLIPPER, also travelling westwards but was waiting in front of the stop signal, in the siding area Schwartenbek of the Kiel Canal.

There was no wind. Fog with visibilities of between 100 and 150 m made sight difficult. Both vessels were being advised by pilots. MV ESTECLIPPER was manned with Canal helmsmen.

Both vessels sustained considerable property damage, but there were no personal injuries and there was no environmental pollution.

2 SCENE OF THE ACCIDENT

Nature of incident: Serious maritime casualty,
collision between MV GERMA and MV ESTECLIPPER
Date/time: 13 October 2003 at 05:33 h CEST
Location: Kiel Canal, siding area Schwartenbek

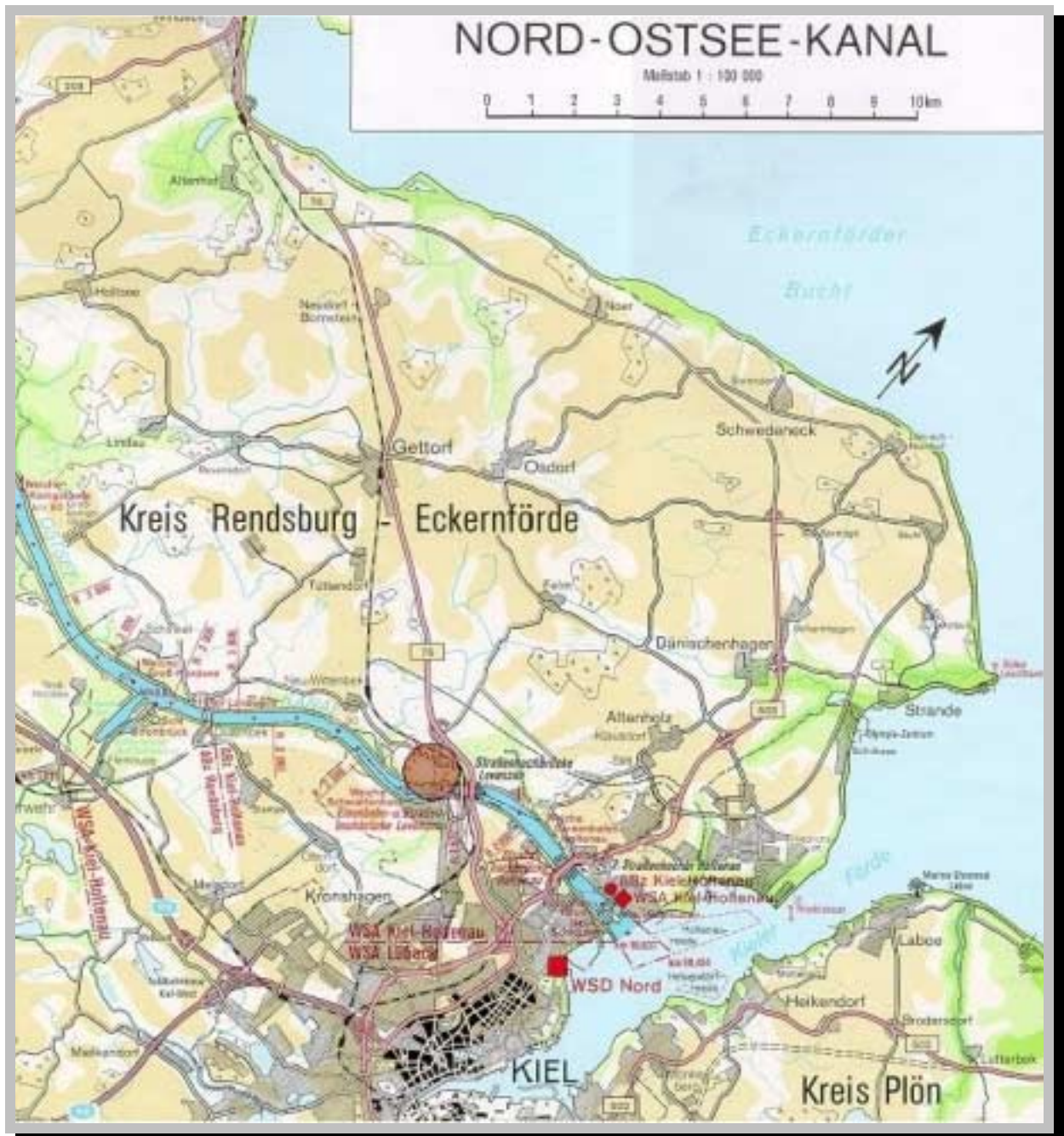


Figure 1: Scene of the accident – chart excerpt

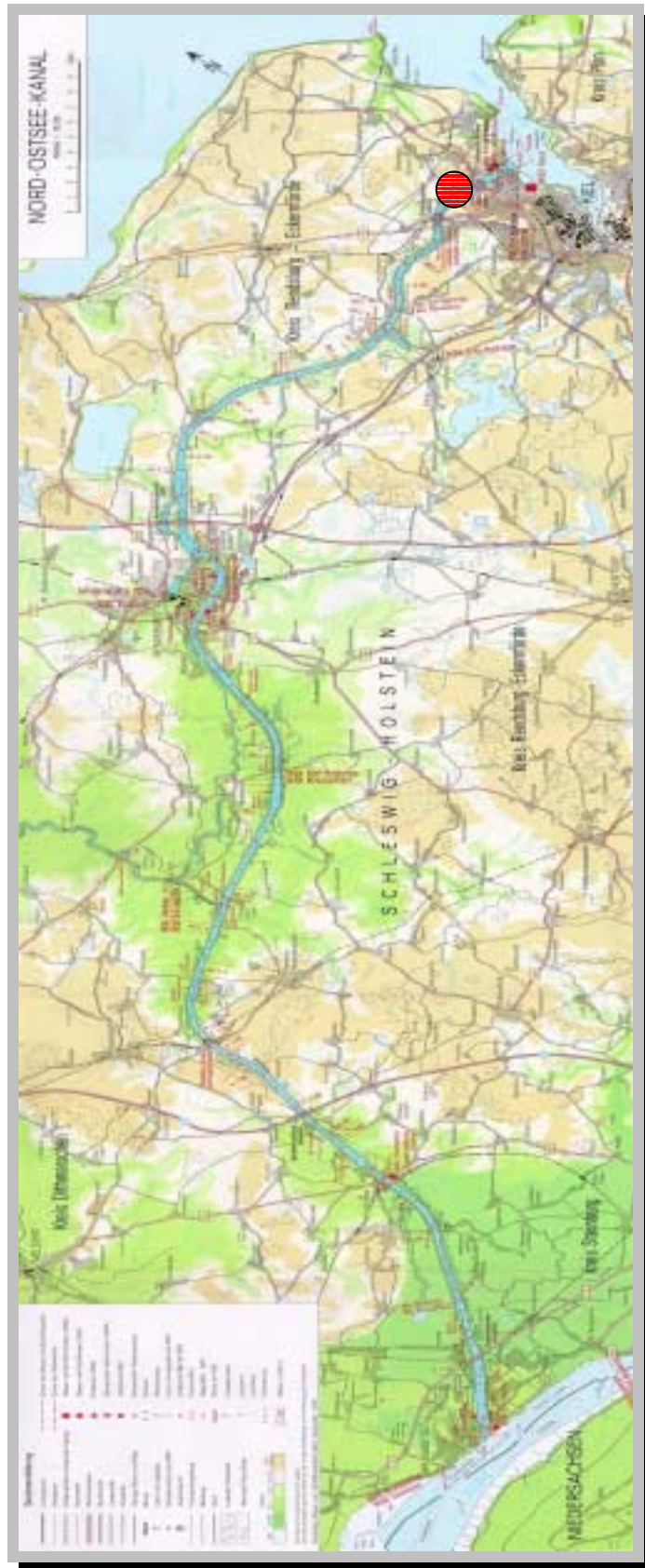


Figure 2: Scene of the accident – overview - Kiel Canal

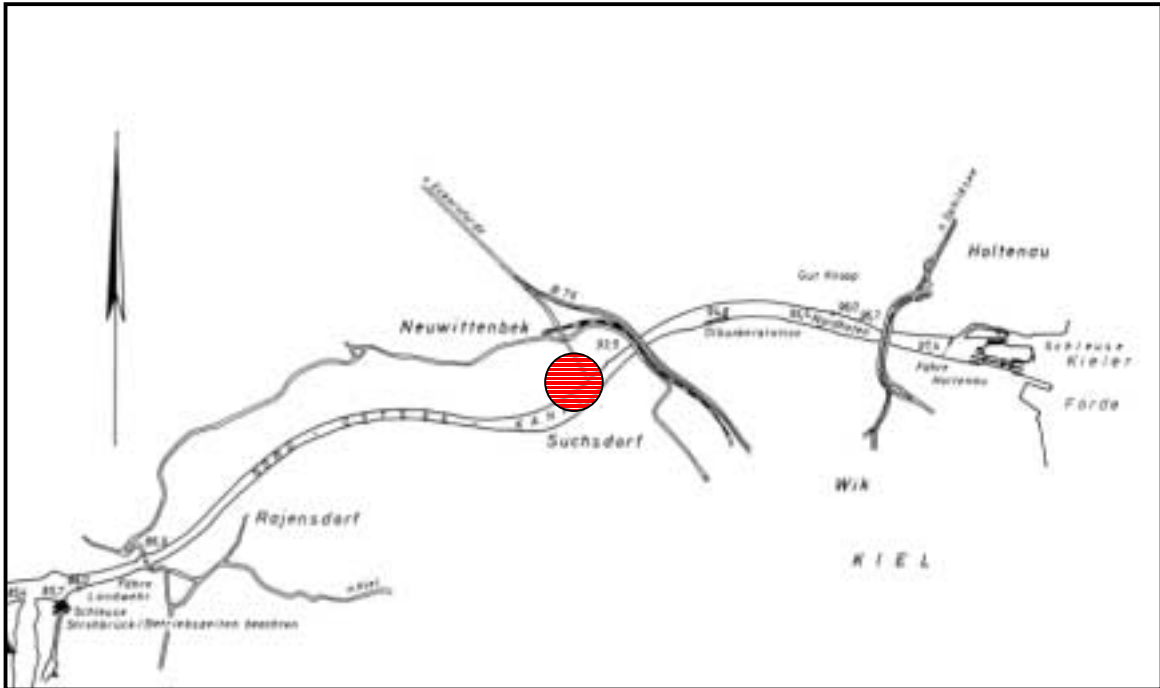


Figure 3: Scene of the accident – Canal kilometre 92



Figure 4: Scene of the accident – siding area Schwartenbek

3 VESSEL PARTICULARS

3.1 PHOTO MV ESTECLIPPER



Figure 5: MV ESTECLIPPER

3.2 PARTICULARS MV ESTECLIPPER

Name of vessel:	MV ESTECLIPPER ex. Ukraine
Operator:	Arta La Salette
Port of registry:	Luxembourg
Nationality/Flag:	Luxembourg
IMO Number:	9003483
Ship's call letters:	LXUK
Vessel type:	Container vessel
Crew:	15
Class:	GL
Year built:	1992
Building yard:	Matthias-Thesen-Werft Wismar
Length over all:	157.00 m
Width over all:	23.20 m
Max draft:	8.0 m
Gross tonnage:	11946
Deadweight:	14371 t
Engine rating:	7950 kW
Main engine	
Speed:	15.5 kn

3.3 PHOTO MV GERMA



Figure 6: MV GERMA

3.4 PARTICULARS MV GERMA

Name of vessel:	GERMA
Operator:	Oceanclause Shipping
Port of registry:	Limassol
Nationality/Flag:	Cyprus
IMO Number:	7637046
Ship's call letters:	P3TB5
Vessel type:	General cargo vessel
Crew:	6
Class:	LR
Year built:	1978
Building yard:	Buys Krimpenald Netherlands
Length over all:	63.0 m
Width over all:	9.96 m
Max draft:	3.55 m
Gross tonnage:	906
NET:	519
Main engine:	Caterpillar
Engine rating:	635 kW
Speed:	9 kn

4 COURSE OF VOYAGE/COURSE OF THE ACCIDENT

4.1 COURSE OF VOYAGE OF MV GERMA

MV GERMA was on a voyage from St. Petersburg to Rotterdam and reached the lock installation of the Kiel Canal in Kiel-Holtenau at about 04.30 h CEST on 13 October 2003.

4.1.1 Statement by the Master

The Master said that he had been following the sea since 1972 and had worked on all types of vessel. He had been sailing as Master since 1978. He first commanded MV GERMA from December 2002 to March 2003. His second, current command had started on 9 July 2003.

In the morning of 13 October 2003 MV GERMA had been on a voyage from St. Petersburg to Rotterdam carrying a cargo of 900 t scrap. The vessel's draft had been 3.24 m forward and 3.55 m aft. The vessel had thus been optimally trimmed.

At 05.05 h MV GERMA had left the northern locks in Kiel to pass through the Canal. Other vessels in the lock were MV ESTECLIPPER, a container vessel with a length of approx. 140 m, and MV AMICA, which although smaller than MV ESTECLIPPER, had been larger than MV GERMA. The first vessel to leave the lock was MV ESTECLIPPER, followed by MV AMICA.

The pilot had been talking to another vessel via VHF. However, since the Master did not understand German, he did not know what this conversation was about. However, the pilot had apparently then said to him that he had agreed with the pilot of ESTECLIPPER that GERMA would overtake ESTECLIPPER in the Schwartenbek siding area, since ESTECLIPPER would have to wait for an oncoming vessel there.

On leaving the lock into the Canal the weather had been very calm and there had been dense fog.

After leaving the lock all crew members had gone into the mess or to their cabins, so that only the pilot and the Master remained on the bridge.

The Master had gone to the daylight radar set, from where he also operated the wheel manually in accordance with the pilot's recommendations.

The pilot had stood next to him on the right so that he could operate the engine telegraph, which the Master allowed. The pilot had selected a speed of about 5 kn in order to be able to follow ESTECLIPPER at a safe distance. MV ESTECLIPPER had then disappeared from the radar screen, probably because it had picked up speed. The Master had thereupon repeatedly re-set the port radar set from 0.25 sm to 0.5 sm and back in order to obtain greater visibility ahead. The starboard radar had been in standby mode and had only showed the ship's speed from the GPS.

The voyage had proceeded up to Schwartenbek siding area without any problems. Visibility had been approx. 150 m because of the fog. Before MV GERMA had reached the siding area, the Master had set the radar set to 0.5 sm again. He had been able to see that MV ESTECLIPPER was lying in the middle of the siding area ahead of them. He could not say exactly how the ESTECLIPPER had been lying in the siding area, since the radar display had not revealed this. However, he had not been able to ascertain any irregularities.

The pilot had then asked him to go further to port in order to overtake the ESTECLIPPER with a side distance of approx. 10 m from the southern dolphins. At the same time the pilot had reduced the speed further to approx. 3.5 to 4 kn.

During the further voyage the Master had observed from his own estimation through the window and with the radar that the distance between the port side of his own vessel and the southern dolphins had remained at max. 10 m.

MV ESTECLIPPER had still been in the middle of the channel when the Master could already make out the stern lamps. He had not noticed whether ESTECLIPPER was moving, since he had been concentrating more on the distance between the vessels and the southern bank.

It was only when GERMA reached the intended passing point and the bow of the GERMA was almost abreast the stern of ESTECLIPPER that the Master noticed that the stern of ESTECLIPPER was moving quickly towards his course line. His first reaction had been to lay the rudder hard to port. However, shortly after that, in his opinion only a few seconds later, after his bow had passed the stern of ESTECLIPPER, he had decided to lay the rudder hard to starboard in order to keep the two sterns apart. However, in view of the low speed the rudder manoeuvre had not had any substantial effect on the direction of travel of MV GERMA.

In the meantime the stern of MV ESTECLIPPER had moved further to the south so that ultimately it hit the starboard side of MV GERMA on a level with the forward edge of the superstructures. Not only was the crane on the hatchway heavily damaged by this, but also the superstructures, in particular the Master's cabin.

As a result of this impact MV GERMA was subjected to a turning force, which subsequently pressed the bow of MV GERMA against MV ESTECLIPPER, probably resulting in light contact there as well.

In accordance with the pilot's request the Master then turned the rudder back to port in order to bring the vessel back on course.

The Master continued to observe the radar and ascertained that ESTECLIPPER had turned further, so that its stern continued to approach the dolphins on the south bank and according to the radar display finally formed an angle of approx. 60° to the course line

Immediately after the collision the Chief Mate had appeared on the bridge and the remaining three crew members had come onto the deck. There had then been communication via VHF between the pilot of MV GERMA and the pilot of MV ESTECLIPPER, which the Master had again not understood since this had been conducted in German. The engine operator had gone into the engine room to look for leaks and check the main engine. He had then reported to the Master that everything was in order. In the meantime the Master himself had checked the steering gear and ascertained that it was still functioning.

After some discussion it had then been decided to return to Kiel, since the Master wanted to inspect the substantial damage in detail first before continuing on a long sea voyage. In consultation with the pilot on MV ESTECLIPPER and the pilot of the oncoming vessel, MV GERMA had then turned at the west end of the siding area and returned to Kiel.

4.1.2 Statement by the pilot

The statements by the advising pilot on board MV GERMA coincide essentially with the data supplied by the Master. However, within the framework of his comment on the draft of this Investigation Report, the pilot stressed once again that in his opinion there had been sufficient agreement with the pilot on ESTECLIPPER about the planned passage in the Schwartenbek siding area. In response to ESTECLIPPER's enquiry as to whether GERMA wanted to overtake immediately on leaving the lock just like MV AMICA, the pilot had said no and pointed out that his vessel would only pass ESTECLIPPER in the Schwartenbek siding area.

4.2 COURSE OF VOYAGE OF MV ESTECLIPPER

MV ESTECLIPPER was on a voyage from Gdynia to Bremerhaven and reached the lock facility of Kiel Canal in Kiel-Holtenau at about 04.30 h CET on 13 October 2003.

4.2.1 Statements by the Master

MV ESTECLIPPER had been in the lock as the first of three vessels. There had been one pilot and two Canal helmsmen on board. At 04.55 h the vessel had left the lock and proceeded into the Kiel Canal. As the vessel was passing Nordhafen, the Vessel Traffic Services NOK II had notified MV ESTECLIPPER that it would have to wait at Schwartenbek siding area for an oncoming vessel. After this notification the pilot of MV GERMA had made contact via VHF and said he would remain behind MV ESTECLIPPER up to the siding area and would then overtake. Since MV GERMA was classified in a smaller traffic group, it would be able to pass the siding area without having to wait for oncoming traffic.

While visibility in the lock had still been good, it deteriorated increasingly after leaving the lock, so that from time to time it was no longer possible to see even the fore ship of the vessel. He, the Master, had therefore concluded that visibility was 50 to 100 m.

The vessel had reached the start of the siding area with the engine stopped and a speed of 3 km/h at about 05.29 h. With a slight reverse manoeuvre the last forward travel had been taken out of the vessel. In the bend of the siding area, at dolphin 26 - 28, the vessel had stopped completely and was lying almost parallel to the dolphins. The lighting of the dolphins on the starboard side was visible, but that on the port side was not. Since the vessel had picked up a slight starboard turn, it had been intended to neutralise the incipient turning with a port rudder and dead slow ahead. At this moment, at exactly 05.33 h, the superstructures of MV GERMA had collided with the stern of MV ESTECLIPPER.

The Master of MV ESTECLIPPER is of the opinion that MV GERMA had picked up speed without any further agreement in order to pass MV ESTECLIPPER on its port side.

After the collision MV GERMA had drifted with its starboard side slightly to the port side of MV ESTECLIPPER again on a level with Bay 13, but this had not caused any

further damage. An immediate examination of the stern of MV ESTECLIPPER had revealed that there had been no water intake. In view of the inadequate visibility conditions only two bumps in the area of the stern could be ascertained.

Following an exchange of information between the pilots involved and the Vessel Traffic Services it had been decided that MV ESTECLIPPER would continue its voyage and MV GERMA would turn on the spot and proceed back to Kiel.

4.2.2 Statement by the pilot

The statement by the advising pilot on board MV ESTECLIPPER coincides largely with that of the Master. In his comment on the draft of this Investigation Report the pilot points out expressly that there was not at any time any agreement according to which MV GERMA would pass in the Schwartenbek siding area. The pilot simply confirmed that MV GERMA had announced that it would remain behind ESTECLIPPER up to the said siding area after declining to overtake in the Nordhafen.

Moreover by contrast with the Master, the pilot is of the opinion that the collision occurred even before MV ESTECLIPPER was lying parallel with the dolphins.

4.3 SITUATION AS SEEN BY VTS II

The Vessel Traffic Services NOK II in Kiel-Holtenau was staffed as usual with one mariner on duty/traffic controller and an assistant. The voyage data of the vessels involved provided by the controller confirm the above statements. According to the logbook entry the Vessel Traffic Services were notified of the collision by the pilot of MV GERMA at 05.35 h. Thereupon the river police had been informed. It was noted that MV GERMA had sustained considerable damage above the water line and was returning to Kiel, and also that MV ESTECLIPPER was continuing its voyage to Brunsbüttel at 06.01 h.

The analysis of the sound recordings of the VHF discussions with the Vessel Traffic Services does not lead to any other findings.

The question as to whether the planned overtaking manoeuvre had been discussed and agreed upon with VTS II was answered with "no" and it was explained that such discussions were not necessary and were not in line with customary practice.

4.4 WEATHER CONDITIONS

According to the weather expertise by the German Meteorological Service Deutscher Wetterdienst (DWD), on 13 October 2003 Germany was in the centre of a high pressure zone that extended from the Arctic Ocean and Norway via Skagerrak and Kattegat and included the western Baltic Sea down to the Balkans. In the area of high pressure there were favourable conditions for wide-spread occurrence of frost at a height of two meters over North Germany. With a cloudless sky and weak or no winds, wide-spread fog developed in Schleswig-Holstein in the second half of the night and dissolved again in the course of the morning.

The analysis of the data bases revealed that there was fog with visibilities of about 100 m on Kiel Canal at Schwartenbek siding area at about 05.30 h on 13 October 2003.

5 SUMMARY OF THE DAMAGE/PHOTOS OF THE DAMAGE

MV ESTECLIPPER sustained minor paint damage. MV GERMA sustained property damage costing approx. Euro 100,000 which made it necessary to spend time in the shipyard. There was no personal injury or environmental pollution.

The following photos of MV GERMA were kindly made available by the river police. Due to the slight nature of the damage sustained, it was decided to refrain from photos of MV ESTECLIPPER.



Figure 7: Photo of damage 1



Figure 8: Photo of damage 2



Figure 9: Photo of damage 3



Figure 10: Photo of damage 4



Figure 11: Photo of damage 5



Figure 12: Photo of damage 6



Figure 13: Photo of damage 7

6 ANALYSIS

The investigations of the BSU show that the cause of the collision was on the one hand the inadequate discussion and agreement between the participating vessel commanding officers and pilots in connection with MV GERMA passing MV ESTECLIPPER (6.2).

In addition to this there were further infringements against existing regulations on board MV GERMA (bridge crewing; lookout), which at least promoted the collision (6.3).

Finally administrative factors too, especially the role of the VTS (Vessel Traffic Services – traffic control) within the framework of coordinating dangerous close encounters of vessels in Kiel Canal in general and with regard to the subject collision in particular, must be reviewed critically (6.4).

As regards the assessment under section 6.2 it is first necessary to categorise the passage in the subject siding area correctly under transport law in order to then be able in a further step to define the requirements that should therefore have been observed by the participating vessel commands and pilots.

6.1 LEGAL CATEGORISATION OF THE PASSING OPERATION

Observed naturally, if a vessel that is not lying at anchor and not berthed is passed by another vessel in a navigation channel limited at the sides, this is in principle an overtaking operation.

In the area of the federal German waterways, overtaking as such is the subject regulated by § 23 German Collision Regulations (known by the German acronym SeeSchStrO), where in Para. 3 various situations are defined prohibiting overtaking within the scope of the above regulations. According to No. 2 of this provision, one of the rules is that *overtaking in narrow places and unclear bends is prohibited*.

In § 23 Para. 4 SeeSchStrO the rules of conduct to be observed, as a limitation for the basic prohibition of overtaking in dangerous areas as it were, are standardised for the case that safe overtaking is only possible with cooperation of the vessel to be overtaken:

„(4) If it is only possible to overtake safely in a navigation channel with the cooperation of the vessel to be overtaken, then overtaking is only allowed if the vessel to be overtaken has clearly agreed to this in response to a corresponding enquiry or indication by the overtaking vessel. In deviation from Rule 9 Letter e Section i of the Collision Regulations, the overtaking vessel can notify the vessel to be overtaken of its intention via VHF radio telephone if

- 1. the participants in communication identify themselves clearly,*
- 2. a clear agreement is possible via VHF radio telephone,*
- 3. it is ensured by selection of the VHF channel that as far as possible all traffic participants affected can hear the VHF*

agreement and
4. *the traffic situation allows this.*

If the vessel to be overtaken agrees, in deviation from Rule 34 Letter c Section ii of the Collision Rules, it can notify its consent via VHF radio telephone and agree on measures for safe passing. If the conditions for agreement via VHF radio telephone do not exist, then Rule 9 Letter e of the Collision Regulations applies exclusively.

According to this § 23 Para. 4 SeeSchStrO represents a regulation modifying Rule 9 Letter e of the International Collision Prevention Rules for the area of the maritime waterways of the Federal Republic of Germany, since it expressly permits agreements in connection with overtaking manoeuvres via VHF if certain conditions exist. In other cases, however, the unrestricted validity of Rule 9 Letter e Collision Prevention Rules remains:

"e)

- (i) *If it is only possible to overtake safely in narrow navigation channels or in a navigation channel if the overtaking vessel cooperates, the overtaking vessel must indicate its intention by the appropriate signal in accordance with Rule 34 Letter c Section i. If the vessel to be overtaken agrees, it must give the corresponding signal in accordance with Rule 34 Letter c Section ii and take measures for safe passage. In cases of doubt it may give the signals specified in Rule 34 Letter d.*
- (ii) *This Rule does not exempt the overtaking vessel from its obligation under rule 13."*

Thus the German Collision Regulations distinguish between dangerous areas ("narrow areas and unclear bends"), in which overtaking is prohibited, and those in which it is possible to overtake safely with certain restrictions, in other words with the cooperation of the vessel to be overtaken observing precisely defined rules of conduct, and is therefore admissible.

The regulation authority has left it open where the boundary between strict prohibition of overtaking and allowed, safe overtaking subject to cooperation must be drawn, and has thus left this to a decision of the commanding officer dependent on the situation.

Section Seven of the SeeSchStrO (§§ 41 ff.) contains supplementary regulations for the Kiel Canal, however, and in § 49 in particular for conduct ahead of and in so-called "siding areas". In the last standard mentioned, reference is made to the aforementioned § 23 Para. 4 SeeSchStrO. However, § 49 Para. 3 is of particular importance for legal categorisation of the passing operation in the siding area of the Kiel Canal:

"...If a vessel wishes to overtake a vessel lying ahead at the same row of dolphins and entitled to continue further, then the commanding officers of the vessels must communicate with each other in accordance with § 23 Para. 4. This also applies if vessels running into the siding area wish to overtake the vessels lying in the siding area in the same direction of travel and entitled to continue their voyage. Passing of vessels not entitled to continue their voyage that are lying at the dolphins is not counted as overtaking."

Consequently the legislating authority only classifies passing of vessels entitled to continue their voyage as overtaking with the consequences resulting from § 23 Para. 4 SeeSchStrO. By contrast, passing of vessels lying at the dolphins and not entitled to continue their voyage is not counted as overtaking.

Thus the rules set out in § 23 Para. 4 SeeSchStrO for safe overtaking for those cases in which vessels in the Kiel Canal pass vessels lying at the dolphins (in the siding area) that are not entitled to continue their journey are expressly suspended.

For the legal classification of MV GERMA passing MV ESTECLIPPER, it is therefore crucial whether MV ESTECLIPPER was already properly lying at the dolphins when MV GERMA initiated the passing operation. Only in this case would it not have been necessary to agree via VHF in the spirit of § 23 Para. 4 SeeSchStrO or alternatively to use sound signals in accordance with Rule 34 Letter c in conjunction with Rule 9 Letter e Section (i) of the International Collision Rules as specified for overtaking operations.

(Note: However, the exception regulation in § 49 Para. 3 Sentence 3 cited above does not cover the possibility provided for under § 49 Para. 2 Sentence 1 2. Alt. SeeSchStrO of the vessel not entitled to continue its journey stopping near the dolphins and giving the through-going shipping sufficient space as an alternative to taking up a waiting position at the dolphins. This is evident from the distinct wording in this case that that is addressed solely to the vessels "lying at the dolphins". It follows from this that simply stopping close to the dolphins in conjunction with space-giving manoeuvres in no way exempts vessels from the aforementioned (communicative) requirements in connection with executing overtaking manoeuvres.)

However, as a result of the investigations by the BSU it is certain that MV ESTECLIPPER was not yet lying safely at the dolphins. Objective indications according to which the command and pilot of MV GERMA could have assumed that MV ESTECLIPPER had properly taken up its waiting position at the dolphin and in particular successfully completed the manoeuvre necessary for this are not evident.

Admittedly the Master and pilot of GERMA refer to their intention to pass ESTECLIPPER in the Schwartenbek siding area being known on board the latter vessel. However, the statements by the parties involved agree that this announcement was not made close to the time of initiating the passing manoeuvre, but instead already on leaving the lock area. Even if it is assumed – which the pilot of ESTECLIPPER disputes – that the passage had in fact been clearly agreed, it is ultimately crucial that especially in view of the adverse visibility conditions, this agreement alone could not be suitable for assuming on board GERMA that ESTECLIPPER was lying properly at the dolphins at the time of the planned passing manoeuvre.

In cases of doubt, especially in view of the restricted visibility conditions, under the general obligation to take care MV GERMA should have assumed that this was an overtaking operation in the meaning of §§ 49 Para. 3 Sentence 2, 23 Para. 4 SeeSchStrO, if appropriate in conjunction with Rule 9 Letter e Section (i) and 34 Letter c of the International Collision Regulations.

In addition to this it can also be derived from Rule 9 Letter e Section (ii) in conjunction with *Rule 13 Letter c Collision Prevention Rules* the vessel commanding officer and the advising pilot were obliged in cases of doubt to assume that this was an overtaking manoeuvre:

"c) If a vessel cannot safely recognise whether it is overtaking another or not, it must assume that it is overtaking and act accordingly."

Admittedly in view of its systematic position in the Collision Prevention Rules this regulation can serve primarily to draw the necessary line between overtaking manoeuvres and approaches due to oncoming or crossing courses and the associated obligations to give way.

The rule formulated without restrictions stating that within the framework of approaches the special behaviour standards for overtaking operations must be applied in cases of doubt generally allows the conclusion that the Collision Prevention Rules attach a particularly high risk potential to overtaking manoeuvres in every case.

This in turn means that every (unclear) passing situation is covered by the meaning and purpose of Rule 13 Letter c.

Accordingly even in cases of "passing" in siding areas of the Kiel Canal, in cases of doubt it must be assumed that this is an overtaking manoeuvre and appropriate action should be taken.

6.2 OMISSIONS ON BOARD THE VESSELS INVOLVED

Accordingly MV GERMA would have been obliged to announce via VHF but at least give the specified sound signals indicating that it was passing MV ESTECLIPPER and to await the agreement of MV ESTECLIPPER before starting the passage.

The fact that MV ESTECLIPPER was a vessel not entitled to continue its voyage, as was known on board MV GERMA, does not change the situation at all. On the basis of this knowledge alone MV GERMA was not yet free from the obligations in accordance with § 23 Para. 4 SeeSchStrO (if appropriate in conjunction with Rules 9 Letter e Section (i) and 34 Letter c Collision Prevention Rules). Instead it was necessary for MV ESTECLIPPER to cooperate in the passing operation, and thus consequently for MV GERMA to initiate the measures necessary for an overtaking operation, and to continue these until it could be safely assumed that MV ESTECLIPPER had beyond doubt come to lie safely at the dolphins. However, MV GERMA neither announced via VHF nor alternatively with the specified sound signals that it intended to overtake.

In view of the failure to announce the forthcoming overtaking manoeuvre MV ESTECLIPPER evidently did not recognise the dangers connected with this.

Considering the matter in isolation, MV ESTECLIPPER was therefore not expressly called upon either to point out to MV GERMA in the spirit of § 23 Para. 4 S. 1 of the SeeSchStrO that the manoeuvres in connection with taking up the waiting position at the dolphins were not yet completed.

However, in view of the approach evident on board ESTECLIPPER of a possible danger situation, there was a duty of MV ESTECLIPPER to indicate and/or warn without any prior request by MV GERMA.

On the one hand the command and the pilot of MV ESTECLIPPER were aware on the basis of the agreements already made that MV GERMA wanted to pass them in the

Schwartenbek siding area, and this should have forced MV ESTECLIPPER to pay special attention and if appropriate to issue warning measures addressed to MV GERMA. Moreover, the still existing intention of GERMA to pass the vessel must also have been recognised within the framework of continuous radar display analysis.

On the other hand, on the grounds of the general rules for giving signals set out in the SeeSchStrO and the International Collision Prevention Rules in any case, MV ESTECLIPPER and MV GERMA should have taken the measures stated in these rules.

This means that MV ESTECLIPPER was obliged to give the general danger and warning sound signal (one long sound, four short sounds - one long sound, four short sounds) specified in accordance with § 6 Para. 1 SeeSchStrO in conjunction with Annex II.2 No. 2.1 at the latest at the moment the approach of MV GERMA was evident on the radar in order to make it clear that it had not yet properly taken up the waiting position at the dolphin. At any rate, however, there was an obligation to draw attention to threatening dangers with the (general) warning signal (one long sound). Thus the obligation to issue the warning signal was doubly required, on the one hand because of the "special traffic situation" in the meaning of § 6 Para. 1 SeeSchStrO in conjunction with Annex II.2 No. 1.2.1 and in addition because of the reduced visibility (Annex II.2 SeeSchStrO No. 3.1.1).

Moreover, as an alternative to the aforementioned national rules on sound signals, MV ESTECLIPPER and MV GERMA were obliged under Rule 35 (sound signals in reduced visibility) and Rule 36 (warning signals) to issue sound signals.

6.3 OTHER INFRINGEMENTS AGAINST EXISTING REGULATIONS

Within the framework of the investigation it was ascertained that the relevant bridge crewing regulations were not observed on board MV GERMA. In addition to the Master and the pilot, there should also have been a helmsman on the bridge.

This obligations exist irrespective of the fact that MV GERMA was classified in Traffic Group 2 because of its dimensions and is basically allowed to run with an automatic pilot, since it is stated in § 30 Para. 2 No. 3 SeeSchStrO: Conditions for sailing that:

"...if an automatic pilot system is used a helmsman must remain close to the wheel..."

The requirement for a helmsman is defined in more detail in the Publications of the Regional Directorate for Waterways and Shipping North (WSD Nord) on the German Collision Regulations referring to § 42 Para. 4 SeeSchStrO (Use of automatic steering or cable-remote operation systems on the Kiel Canal):

"24.1 Automatic steering systems may only be used by vessels ... of Traffic Groups 1 and 2 under the conditions set out in No. 24.2.

24.2 The use of automatic steering systems is only permitted if ... visibility is at least 2 sea miles and the vessel switches over to manual operation in good time prior to an encounter or overtaking manoeuvre."

Furthermore, the lookout compulsorily specified by Rule 5 International Collision Regulations, who would have been particularly urgently required in view of the prevailing visibility conditions, was lacking.

Thus the following results from the STCW Act Part 3 "Watch duty at sea" Part 3-1 "Principles to be observed for bridge watches":

- *"In agreement with Rule 5 of the International Rules of 1972 to prevent collisions at sea a proper lookout must be kept at all times..." (Para. 13)*
- *"The lookout must be in a position to devote himself completely to his task..." (Para. 14)*
- *"The functions of the lookout and the helmsman are to be carried out separately... The navigational watch officer can carry out the lookout alone by day..." (Para. 15)*
- *"When ascertaining whether the composition of the bridge watch is sufficient to be able to keep a proper lookout at all times, the Master must take into account all relevant visibility conditions... traffic density and other activities in the area in which the vessel is moving ..." (Para. 16)*

The pilot of MV GERMA should have instructed the Master on the omissions set out above regarding the bridge crewing before taking over his pilot activity. (§ 8 of the Regulation on sea pilot districts and their boundaries (General Pilot Regulation - ALV) "Performance of pilot activity:

"(2) The sea pilot can decline to carry out pilot activities due to intolerable conditions if the vessel or its equipment display serious shortfalls or the crew is not sufficient ..."

However, the pilot stated in his comment on the draft of this Investigation Report that on joining the vessel he had seen several crew members on deck and had therefore assumed that one of them would be carrying out his duty as look-out from the forecastle of the vessel.

(Note: Positioning the look-out on the forecastle is basically advantageous if visibility is reduced since he can perform his tasks (seeing and hearing) more efficiently in the forecastle area. However, the prerequisite for this is the possibility of unrestricted communication between the bridge and the forecastle. (cf. also Hilgert/Schilling, Kommentar zur KVR [Comment on the International Collision Rules], p. 20 ff. on Rule 5 "Look-out")

6.4 ADMINISTRATIVE FACTORS

It is initially remarkable that the Vessel Traffic Services NOK II was not integrated in the communication in connection with the (planned) passing operation between MV GERMA and MV ESTECLIPPER.

According to the "Administration Regulations of the Directorate for Waterways and Shipping of the Federal Republic of Germany (VV-WSV 2408) with the supplementary administrative regulation Regional Directorate for Waterways and Shipping North 24-2 for the operation of the Vessel Traffic Services NOK I and NOK II of 1999" the mariner on duty on the Kiel Canal not only has an advisory status, but is also responsible for controlled shipping traffic on the Kiel Canal. Since the lock area up to the Schwartenbek siding area is even monitored by radar, it appears expedient for the Vessel Traffic Services to become involved with precarious encounters, especially in times of reduced visibility, in order to assume its task of controlling traffic responsibly. The corresponding obligation of the VTS results, moreover, from § 20 of the administrative regulation cited, "Need for action in liner traffic":

"In liner traffic there is basically a need for action by the Vessel Traffic Services if...safe passage cannot be expected on the grounds of the special conditions..."

...

The auxiliary features available are to be used to determine this. If radar systems are used, the following functions especially are to be made use of in addition to the vessel's data processing:

- *Way-time diagram,*
- *Vectors ahead,*
- *Simulations of future traffic developments,*
- *Querying passage data."*

The Local Office for Waterways and Shipping (WSA) Kiel-Holtenau responsible for the operation of VTS Kiel Canal II and the Regional Directorate for Waterways and Shipping North as superior authority have agreed in their comments on the question of the VTS possibly exerting influence on approaching dangerous encounters. Both authorities point out that

- the radar facilities, installed in parts of the Kiel Canal only, did not technically allow the possibility of recognising the exact situation and position of vessels or the course of critical situations;
- the position determination only served the purpose of displaying the location of the vessel in a longitudinal direction and thus of ascertaining whether or not the vessels were within the limits of the siding area.

Because of this restricted functionality of the radar surveillance, which moreover is limited by its relation to the past, the Canal-specific close passing distances and unavoidable shading effects at close quarters, it was not possible to recognise hazardous situations, let alone intervene in and steer traffic matters on the basis of radar findings.

Moreover the above authorities stressed that on the basis of the measures open to the mariner on duty (traffic steering), the mariner could have assumed that traffic was proceeding safely.

Finally, need for action on behalf of the VTS was denied with reference to §§ 21 and 24 of the aforementioned administrative regulation WSV 2408:

It was evident from § 21 Para. 1 that conclusions must not be drawn on the basis of inadequate information, especially inadequate radar information. Moreover the responsibility of the vessel's command and the requirement that the VTS may not intervene in vessel behaviour in areas in which vessel manoeuvres could no longer be analysed as regards the targeted success were evident from § 24.

The Local Office for Waterways and Shipping (WSA) considers the involvement of the VTS in all passing operations to be neither possible nor appropriate with the present resources, staffing of the watches, and the existing traffic guidance and control tasks. Only the vessel commanding officers at the scene and where appropriate the advising pilots had a direct overview of the relevant, current, local traffic situation.

Viewed in isolation, the above considerations - according to which no reliable situation analysis including recognition of possible dangers and malfunctions and traffic steering measures based on these are possible on the basis of radar information alone - give no rise to objection.

However, it should be noted that in addition to the findings of the radar image analysis there are further factors that can and must be taken into account within the scope of analysing situations in order to identify possible dangers and malfunctions in time.

Accordingly § 18 Administrative Regulation WSV 2408 expressly includes the "availability and quality of other technical aids" and "communication problems" as marginal conditions for proper situation analyses.

Moreover as already mentioned above, although § 24 of Administrative Regulation WSV 2408 prohibits the VTS from intervening in vessel behaviour in unclear situations, at the same time it stipulates that warnings to the command of the vessels concerned are not affected by this.

Accordingly, taking the existing law and regulation landscape into account, and on the basis of the actual happenings, it can be noted that the mariner on duty could certainly have acted to reduce the danger in the passing operation at an early stage. In particular in view of the inadequate optical visibility conditions he could have enquired of the vessels involved via VHF whether the intended passage in the Schwartenbek siding area had been sufficiently agreed and what the current status of the passing was.

The competent authorities rejected the BSU'S conception of equipping the siding areas with video technology as an additional source of information for the mariner on duty as not very practicable. It is true that the use of corresponding cameras cannot supply a comprehensive and always reliable information basis for the flow of traffic in the relevant siding area. On the other hand, however, video monitoring would definitely be an expedient supplement to the other possible sources of information, whereby the

costs of this would probably remain within justifiable limits by comparison with the costs involved by property damage that cannot be clarified.¹

Finally, the relevant comment by the responsible authorities is discussed here in advance of the following Safety Recommendations on amending the regulations on overtaking in the siding areas of the Kiel Canal.

It is stated that in view of the special situation in the Kiel Canal (classification of the vessels into various traffic groups and overtaking bans building on this) the subject regulation has proved successful in practice without any additional outlay on communication or sound signals.

This appraisal must be doubted at the latest on considering the marine casualty giving rise to this Investigation Report.

¹ See also THB of 29. June 2004 page 13

"Erste IMO-ISPS-C.C.T.V.-Sicherheits-Systeme im Einsatz" ("First IMO-ISPS-C.C.T.V. safety systems in operation")

(Manufacturer and installation of video monitoring systems)

SUMMARY OF THE ANALYSIS

1. There was **only an oral agreement** between MV ESTECLIPPER and MV GERMA that MV GERMA would pass the MV ESTECLIPPER lying in front of the signal. This agreement took place approx. **20 minutes before the incident**. The Vessel Traffic Services were not informed of this.
2. **No sound signals** were given directly before passing, neither by MV ESTECLIPPER, that had not yet completed its manoeuvre, nor by MV GERMA, whose command could not know due to the optical visibility conditions alone whether MV ESTECLIPPER had completed its necessary measures for the safe passage of MV GERMA.
3. Thanks to the radar display the Vessel Traffic Services would have been in a position to observe the situation and to become involved in the happenings in time via VHF in order to cater to its responsibility for the Canal traffic.
4. The bridge of MV GERMA was undercrewed with only the Master and the pilot. There was demonstrably a lack of helmsman and outlook.
5. The pilot on board MV GERMA should have drawn attention to the lack of the helmsman.
6. An urgent need for regulating unclear passing situations in the siding areas of the Kiel Canal has become evident since only the concept of overtaking is sufficiently defined, but not that of passing vessels waiting for signals when it is not clarified whether or not they have already achieved their waiting position at the dolphin, especially in cases of reduced visibility conditions and oncoming traffic.

7 SAFETY RECOMMENDATIONS

- The ship-ship and ship-VTS-ship communications, especially during passing through the Kiel Canal, must be intensified in accordance with the situation.
- All vessel commands are called upon to arrange their watch schedules in such a way that they are carried out in accordance with the regulations.
- The pilots are called upon to work towards bridge crewing in accordance with regulations and if appropriate to inform the VTS of under-crewing in order to allow the VTS to prevent the vessel from sailing further.
- The Directorate for Waterways and Shipping is called upon to review the regulatory content of von § 49 Abs. 3 German Collision Regulations. In particular it is not immediately clear why passing vessels not entitled to continue their voyage in siding areas of the Kiel Canal should be treated differently than passing vessels entitled to continue their voyage if the hazard potential is objectively the same. In cases of doubt the commanding officer of the passing vessel is confronted with the basic difficulty of having to decide at short notice whether he must observe the rules for an overtaking manoeuvre or not. These problems can only be resolved by all passage operations in the Kiel Canal dealt with here being carried out with mediation by the VTS.
- It is known that the modernisation measures on the Kiel Canal are leading to a reduction in siding area staff, some of whom are to be replaced by radar facilities that will be monitored by Vessel Traffic Services. However, the radar facilities do not show the position or situation of the vessels or the progress of critical situations on the Kiel Canal. That is why video cameras or the like would be advisable.

SOURCES

The Investigation Report refers to the investigations by the Federal Bureau of Maritime Casualty Investigation (BSU), the River Police Rendsburg, the Local Offices for Waterways and Shipping (WSA) Kiel-Holtenau and Brunsbüttel, and to

- written statements/comments by the commanding officers of the vessels
- technical article by WSD Nord
- comments on the draft report by the Regional Directorate for Waterways and Shipping North (WSD-N), Local Office for Waterways and Shipping (WSA) Kiel-Holtenau, pilots and the Master of MV GERMA
- official weather expertises by Deutscher Wetterdienst (DWD)
- testimony by the pilots
- chart of the Kiel Canal – issued by Wasser- und Schifffahrtsdirektion Nord – Kartenstelle – 1995,
- sketch of the Kiel Canal – WSD Nord,
- photo of the siding areas Schwartenbek – WSA Kiel-Holtenau and
- photos of the vessels MV ESTECLIPPER and MV GERMA – Foto Hasenpusch
- Hilgert/Schilling, Kollisionsverhütung auf See – Ein Kommentar der internationalen Kollisionsverhütungsregeln (KVR), [Prevention of collisions at sea – a comment on the International Collision Prevention Regulations], Hanseatischer Verkehrsverlag Rostock