



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

# **Summary**

## **Investigation Report 558/07**

**Serious Marine Casualty**

**Grounding of the Motor Vessel**  
**LADOGA-3**  
**off the Darss peninsula, Baltic Sea on**  
**16 November 2007**

**1 April 2008**

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

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

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

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

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## **1 Summary of the marine casualty**

On 15 November 2007 the motor vessel LADOGA-3 was in ballast on a voyage from Papenburg, Germany to Police, Poland. After passing the Kiel Canal the vessel sailed the Kiel-Baltic Route, at 19:00<sup>1</sup> the Master took over the watch. Before going on watch, the Master had consumed alcohol. The last position fixing was recorded at 23:00. A course change that would have become necessary approx. 50 minutes later in the Kadetrenden<sup>2</sup> was not executed. The LADOGA-3 continued its voyage on the same course and at unchanged speed.

On 16 November 2007 at 00:55 the vessel ran aground just off the Darss Peninsula, approx. 4.5 nm south of the Darsser Ort lighthouse.

The investigations carried out by the Waterways Police determined the Master's alcoholisation. A test revealed a blood alcohol concentration value of 2.5‰.

The LADOGA-3 was towed off in the morning of 17 November 2007 through the joint action of the multipurpose vessel ARKONA and the tug FAIRPLAY 26.

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<sup>1</sup> All times in the Report are local times = UTC + 1; LADOGA-3 board time = UTC + 2

<sup>2</sup> TSS South of Gedser

## 2 Scene of the accident

Type of event: Serious marine casualty, grounding  
 Date/Time: 16 November 2007/00:55  
 Location: Darss, Germany  
 Latitude/Longitude:  $\phi$  54°24,31'N  $\lambda$  012°26,82'E

Section from the Chart 2921, Federal Maritime and Hydrographic Agency

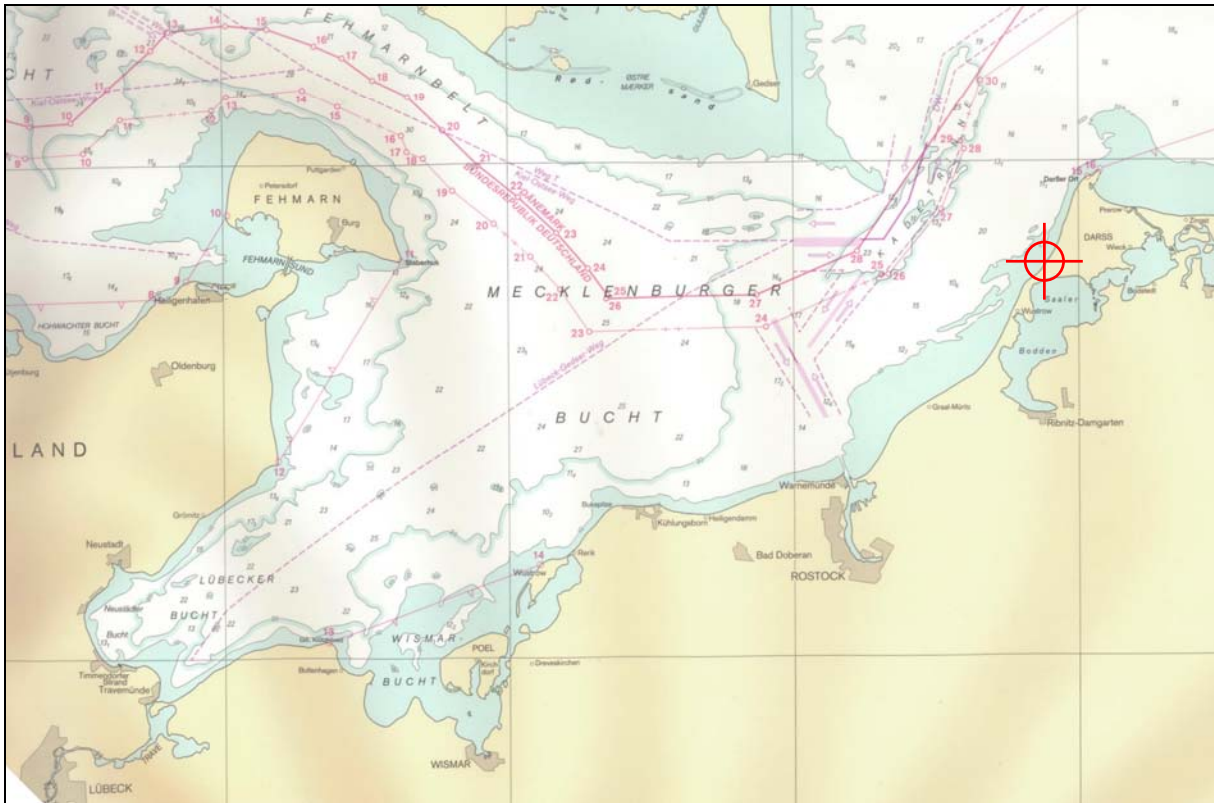


Figure 1: Chart showing the grounding position

### 3 Vessel particulars

#### 3.1 Photo



Figure 2: Vessel photograph, LADOGA-3

#### 3.2 Particulars

Name of the vessel:	LADOGA-3
Type of vessel:	General Cargo
Nationality/Flag:	Belize
Port of registry:	Belize City
IMO No.:	7304560
Call sign:	V3WP5
Vessel operator:	Aquarius Ship Management / Lithuania
Owner:	Andel Shipping LTD / Cyprus
Year built:	1973
Place built:	Finland
Classification society:	Russian Maritime Register of Shipping
Length overall:	81.01 m
Breadth overall:	11.94 m
Gross tonnage:	1,511
Deadweight:	2,201 t
Draft at time of accident:	D <sub>F</sub> 2.10 m, D <sub>A</sub> 3.10 m
Engine rating:	1280 kW
Main engine:	2 x 6NVD 48A-2U
Speed:	10.5 kn
Hull material:	Steel
Number of crew:	8

## 4 Course of the accident

### 4.1 Voyage

The MS LADOGA-3 was on a voyage from Papenburg, Germany to Police, Poland. The vessel was in ballast and under a 6 on - 6 off watch keeping routine shared between the Master and the Chief Mate.

Early on 15 November 2007 the vessel was navigating the North Sea heading for the mouth of the Elbe. At 01:00 the Master handed over the watch to the Chief Mate and resumed it at 07:00. At around 08:30 the LADOGA-3 was moored in the Brunsbüttel lock. At around 09:00 the voyage through the Kiel Canal was begun under pilot advice. As planned, the Master handed over the watch to the Chief Mate at 13:00. At 16:00 the vessel left the North Lock of Holtenau heading for the Baltic Sea. At 19:00 the Master once again resumed command of the vessel.

The last position entered in the ship's log is timed at 23:00 (24:00 time on board). At this point in time the ship was 3.3 nm before the western entrance to the Kadetrenden traffic separation scheme and was sailing eastbound at a speed of 10 kn. At this point in time the Master was evidently alone on the bridge.

Visibility was clear, with winds at 3 to 4 Bft from 250°.

### 4.2 Course of the accident

The next course change should have been made approx. 50 min later. The Master would have had to change the course from 90° to 36° true track, in order to follow the course of the traffic separation scheme. However, this did not take place.

The fact that the vessel left the traffic separation scheme at around 00:02 and entered the inshore traffic zone respectively was noticed on the one hand by the Vessel Traffic Service (VTS) Warnemünde and on the other hand by the Survey, Wreck Search and Research Vessel DENE<sup>3</sup>, lying south of the buoy E 71 . All attempts to contact the ship were unsuccessful. The LADOGA-3 continued her voyage towards the coast at unchanged course and speed. At 00:55 the vessel ran aground at  $\phi 54^{\circ}24,31'N \lambda 012^{\circ}26,82'E$ .

Shortly after the grounding it became possible to contact the Master on VHF Channel 16.

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<sup>3</sup> VWFS DENE<sup>B</sup>



### 4.3 Additional events

In consultation with VTS Warnemünde the DENEK launched a boat. It followed the LADOGA-3. When it reached the vessel at around 01:18, the engine was running astern and crewmembers were sounding the depth. The ship rested on the sandbar at a course of approx. 90°. The distance to the shore was approx. 100 m.

At this time, other vessels also arrived on the scene of the casualty. They were the Customs vessel HIDDENSEE, the Waterways Police boat WARNOW and the rescue cruiser ARKONA, as well as the emergency tug FAIRPLAY 26 at 02:20.

Once on board, the representatives of the different authorities determined that the Master was alcoholised. The Waterways Police took the Master to Rostock. A test carried out there revealed a blood alcohol concentration value of 2.5‰.

Three salvage attempts were made on 16 November. They were undertaken by the multipurpose vessel ARKONA<sup>4</sup> working in conjunction with the tug FAIRPLAY 26. The work was impaired by freshening winds force 7 to 8 Bft and was ultimately unsuccessful. Salvage efforts were discontinued at 17:00.

The first attempt made on 17 November 2007 to tow the LADOGA-3 off the sandbank succeeded. The vessel anchored in deep water and was examined for damage. No spillage of harmful substances could be determined. Subsequently the LADOGA-3 called at the port of Rostock under its own power.

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<sup>4</sup> aka PRV ARKONA – Pollution Response Vessel ARKONA

## 5 Investigation

### 5.1 Ability of taking over watch

The LADOGA-3 had reached the port of Papenburg on 11 November 2007 at 14:19 in order to discharge its cargo there.

The new voyage began on 14 November 2007 at 14:00. The vessel sailed downstream the river Ems, disembarked the pilot at 16:40 and passed the Westerems buoy at 19:48 (20:48 board time).

The Master stated that he had been overtired when taking over the watch on 15 November 2007 at 19:00. He justified this on the one hand with the stress resulting from the nautically difficult waters and the amount of traffic and on the other hand with an event concerning his personal life.

He stated having consumed hard liquor before going on watch.

Scientific studies carried out on behalf of foreign maritime casualty investigation agencies<sup>5</sup> have revealed that the 6 on, 6 off watch keeping routine by itself already leads to persistent, cumulative fatigue. Other events also not falling within the standard watch keeping routine, such as berthing and casting off, safety drills or administrative tasks, but also the not infrequently unpredictable shipboard activities during port calls can then quickly lead to fatigue with the corresponding performance impairment.

The additional stresses indicated in this case by the Master could not be fully verified and therefore reproduced in the investigation. The ship had spent three days loading its cargo in Papenburg. The BSU is not aware of any particular events concerning this lay time. Based on the sea watch routine, it can be assumed that on the river Ems the vessel was under the command of the Chief Officer. The Master took over watch only once the vessel was on the open seas. There are also no indications of any particular difficulties of a navigational nature in regard to the subsequent Elbe passage. Entry into the lock and the first part of the Canal passage then took place under the Master's command, so that this did not result in overtime for the Master. The only unplanned interruption of his rest period was in connection with the passage through the lock at Holtenau.

As a result of the abovementioned persistent fatigue due to the two-watch rhythm, exacerbated by personal problems and alcohol consumption, the excessive tiredness experienced by the Master when assuming his watch at 19:00 on 15 November 2007 is nonetheless credible.

### 5.2 Voyage

When the Master took over watch in the evening of 15 November 2007 the ship was on the Kiel-Baltic-Route between Kiel and Fehmarn. According to the ship's log, four successive charts were used for the voyage from Kiel onwards. The charts used were Nos. 28126, 23108, 23107 and 23106. The last three abovementioned charts are at a scale of 1:100.000.

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<sup>5</sup> Cf. e.g. [http://www.maib.gov.uk/cms\\_resources/Bridge\\_watchkeeping\\_safety\\_study.pdf](http://www.maib.gov.uk/cms_resources/Bridge_watchkeeping_safety_study.pdf)

The ship's log showed three position entries after the time when the Master had taken over the watch at 19:00. The first entry was made 67 min after the start of the watch. At this time the vessel was at the course change point near buoy KO 6 - T 63, north of Fehmarn. The Master made another entry 2.5 hours later. This was again done at a course change point, close by buoy KO 10 - T 67/68. The last entry was made at midnight, 23 min after the previous position fix. All positions were determined by GPS.

No watch alarm was used although the Master was alone on the bridge. The courses to be followed and the waypoints had been entered into the navigating device. According to the Master's statements, this device also sounded an alarm. However, he stated having noticed it only once it had already been too late.

There was however no warning from the echo sounder's shallow water alarm.



Figure 3: Course of the voyage of the LADOGA-3; black positions – position fixing by the Master; red positions – further course of the voyage; Detail of chart 64 BSH

### 5.3 Measures taken by the Vessel Traffic Service Warnemünde

The VTS Warnemünde also monitors the traffic passing through the Kadetrenden. This is accomplished by using the AIS signals<sup>6</sup> transmitted by the ships themselves. This identification system enables direct contact via VHF.

VTS staff noticed the LADOGA-3's irregular course after it had entered the inshore traffic zone. At 00:15 there was an information exchange with the DENEb on this subject. The DENEb was requested to follow the ship.

<sup>6</sup> AIS – Automatic Identification System

Ref.: 558/07

Attempts at radio contact were made on VHF channels 16 and 73 until the LADOGA-3 ran aground. Because of a fault in the transmitter unit that was not perceptible to VTS staff, however, for an extended period of time only a corrupted signal was transmitted.

At the same time, the emergency tug FAIRPLAY 26 was alerted and the Maritime Emergency Reporting and Assessment Centre in Cuxhaven, the Waterways Police, the German Federal Police and the Maritime Rescue Co-ordination Centre (MRCC) were notified between 00:20 and 00:30.

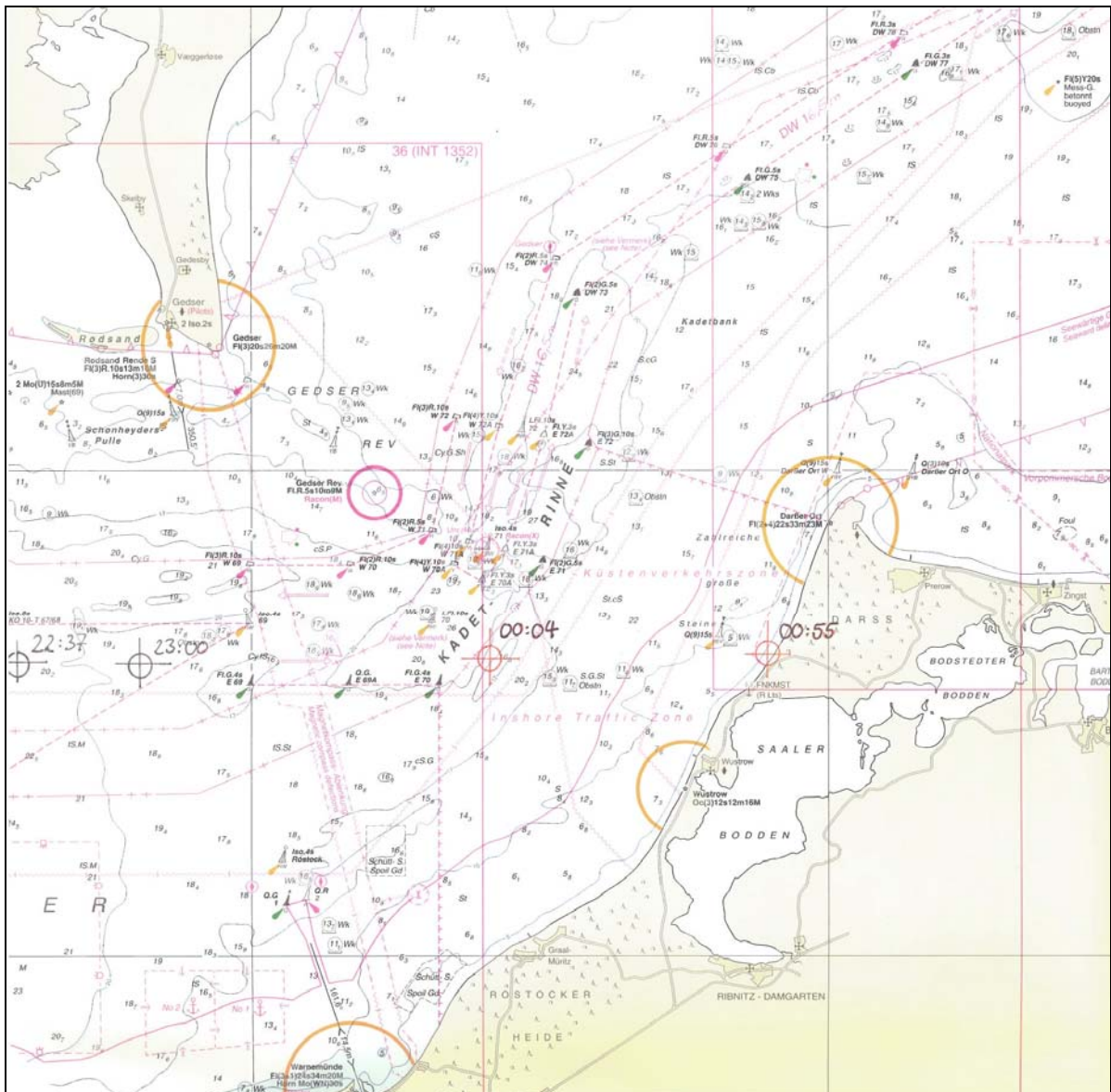


Figure 4: Course of the voyage of the LADOGA-3, position at the time of the accident and Kadettendamm; black positions – position fixing by the Master; red positions – further course of the voyage; Detail of chart 64 BSH

#### **5.4 Measures taken by the DENE B**

The DENE B anchored approx. 2 nm south of buoy E 71. From 00:10 onward the officer on watch observed the course of the voyage of the LADOGA-3, passing at a distance of one nautical mile. At that time, the LADOGA-3 was illuminated by the searchlight of the DENE B. The DENE B's crew later attempted VHF contact. In addition, two AIS messages were sent to the LADOGA-3. All these measures were unsuccessful.

As it was too late to follow the ship with the DENE B itself, a daughter boat was launched. However, it reached the LADOGA-3 only once the latter had already run aground.

#### **5.5 Salvage**

After receiving the alert at 00:22, the tug FAIRPLAY 26 left its berth at Groß Klein in Rostock, reaching the scene of the accident at around 02:20. After receiving the order to salvage, the crew started running out the towing line. It was supported in this task by the daughter boat of the Customs vessel. Impediments due to weather conditions, technical problems and poor communication on the part of the LADOGA-3 caused the salvage attempt to be abandoned.

The multipurpose vessel ARKONA arrived on site at approximately 11:00. Following consultation concerning further action, a Boarding Team went on board the LADOGA-3.

After the towing line broke for the third time, salvage work was discontinued for the day.

At lesser wind strengths of 4 to 5 Bft and slightly higher water level, salvage work was resumed on 17 November 2007 at around 08:00. The LADOGA-3 was towed free at 10:20 and anchored in open waters.

#### **5.6 Summary**

As a result of alcohol consumption, the Master was unable appropriately to carry out his watch duties. He fell asleep and omitted to execute the necessary course change. This subsequently resulted in the grounding of his ship.

The absence of a lookout and the failure to make use of technical aids, more particularly of a watch alarm, further contributed to the course of events.

In the opinion of the BSU, the measures implemented by the VTS Warnemünde and the participating craft were purposeful and functional.

The course of the accident here under investigation is very similar to that of the British vessel MV LERRIX on 10 October 2005<sup>7</sup>. Over and beyond the issue of crews comprising only two watch officers, in the present case of the LADOGA-3 the alcoholisation of the Master in command of the ship plays a crucial role. To this extent, however, this marine casualty did not provide any new investigation results that would be of particular significance for safety at sea. The enquiry of the Federal Bureau of Maritime Casualty Investigation will therefore be concluded with a summary investigation report.<sup>8</sup>

<sup>7</sup> Investigation by the British Marine Accident Investigation Branch in collaboration with the BSU; investigation report published at [http://www.maib.gov.uk/cms\\_resources/Lerrix.pdf](http://www.maib.gov.uk/cms_resources/Lerrix.pdf)

<sup>8</sup> q.v. § 15 Para 1 SUG [Maritime Safety Investigation Law] in conjunction with § 18 Para. 4 FIUUG.

## 6 Sources

- Findings of the Waterways Police (WSP)
- Statement by the vessel's command and ship's log entries
- Witness statements
- Intervention reports VTS Warnemünde, FAIRPLAY 26, ARKONA and DENEK
- Charts and vessel particulars by the Federal Maritime and Hydrographic Agency (BSH)
- AIS record of the VTS Warnemünde
- Report of the Marine Accident Investigation Branch 14/2006, *Report on the investigation into the grounding of MV Lerrix off the Darss Peninsula, Baltic Sea Germany, 10 October 2005*
- Photo: Jesper T Andersen / jtashippphoto.dk