



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

Investigation Report
118/02

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Very Serious Marine Casualty:
Sinking of
MV “Stadt Arnis”
on 10 October 2002
near Dahmeshöved

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Photo 1, Stadt Arnis

Vessel particulars

Name of vessel:	Stadt Arnis
Nature of incident:	Very serious marine casualty and sinking of the vessel
Date:	10 October 2002
Location:	Dahmeshöved, 1.5 sm on the beam, position 54°12,6' N 011°08,0'E
Type of vessel:	Tug, built as pilot boat, formally used as fisheries vessel
Nature of vessel:	Special vessel/tug
Ship's Call sign:	DJAA
Trade range:	National range
Building yard:	Bootswerft ARP, Laboe
Year built:	1956
Flag:	Federal Republic of Germany
Marine Shipping Register:	Flensburg
Port of Registry:	Kappeln
Classification:	None, See-Berufsgenossenschaft UVV-See
Construction:	Ship-building steel
Gross tonnage:	27 GRT
Length over all:	15.68 m
Draft:	F 1.50 m, A 2.18 m
Engine type:	Diesel
Speed:	9 kn
Engine rating:	114 KW
Persons on board:	Two
Personal injury:	Two injured
Property damage:	Rusting through of main deck, bulkhead between after peak/stowage compartment, bulkhead between stowage compartment/engine room

Marine casualty

On 10 October 2002 between 05.25h and 06.00h MV "STADT ARNIS" sank approx. 1.5 sea miles on the beam of Dahmeshöved (see Photo 11). The vessel was towing the pontoon "OSTSEEDIENST 8". Prior to sinking an emergency call was issued. The crew, consisting of the Master and a (female) ship's mechanic, were rescued by the rescue cruiser "BREMEN".

Course of the voyage

MV "STADT ARNIS" was steering a course of 180° coming from Fehmarnsund on a voyage from Kappeln to Travemünde. The wind was coming from an easterly direction at wind force 5 Bft and the significant wave height was 1.5 m. Visibility was good. During a check of the engine room the ship's mechanic ascertained water intake. An emergency call was issued and an attempt was made to water and activate the liferaft. The liferaft could not be activated and drifted in the water. MV "STADT ARNIS" sank and the shipwrecked crew went into the water with their life jackets on.

Investigation

The surveys of MV "STADT ARNIS", which has been lifted in the meantime (see Photo 1), revealed that the vessel was in a poor general condition. The deck and the bulkheads as well as the air pipes and ventilators had rusted. In the port side alley main deck on a level with the front engine bulkhead there was an opening with a diameter of approx. 250 mm that was closed with a brass lid (see Photo 3). The hatch to the after peak (see Photo 2) could not be closed weather-tight.

The sailing permit was issued on 17. 05. 2001, and subject to the necessary surveys and seaworthiness would have been valid until 31. 12. 2005. The last annual inspection took place on 26.10.01.

The Ship Safety Construction and Equipment Certificate was issued on 17. 05. 2001 and would have been valid until 31. 12. 2005. No entries had been made concerning conversion, modification or any major conversion to the vessel. One of the conditions issued for MV "STADT ARNIS" was that it could only carry out towing voyages with a long line. According to the Directory of Equipment a liferaft for six persons, six lifebelts and ten life jackets should have been on board.

The vessel is divided into five water-tight compartments (see Photo 10). In the construction drawings the plating of the bulkheads is stated as 6 mm in the underwater area and 4 mm above the water line.

Under the given weather conditions and with the towed pontoon, MV "STADT ARNIS" took water in the aft part of the vessel that could not flow off completely. The water made its way via the leaky hatch into the after peak.

A loosely installed lubricating oil line was driven through the bulkhead between the aft peak and stowage compartment in the aft peak at frame No. 4 above the water line (see Photo 4). The passage was sealed with polyurethane (see Photo 5). Directly next to the passage was a round iron bar in the bulkhead with a diameter of approx. 8 mm, and approx. 20 cm long, that additionally damaged the GRP-coating of the bulkhead. The polyurethane sealing enabled the intake of water. The GRP-coating was used as protection against corrosion.

There was an approx. 15 cm x 20 cm hole in the bulkhead at frame No. 20 beneath the water line between the stowage compartment and the engine room, that showed traces of anti-rust paint and GRP coating at the edges (see Photos 6, 7). The steel had rusted away so far that the bulkhead was in all probability destroyed by the water pressure in the store.

On the after deck a hole with a diameter of approx. 5 cm was discovered between the after peak and the store room during the survey on 05.12.2002. The hole presumably occurred after salvage (see Photos 8, 9).

The liferaft has not yet been found. The holder for the liferaft was empty. The water pressure trigger (valid until March/2002) and a piece of the trip line were secured. It was last inspected on 12.09.2002. No lifebelts and a weather protection suit that was reportedly on board have been found. The life jackets consisted of a jacket integrated in the Master's work jacket and for the second crew member a jacket that slipped on entering the water. The Master held the second crew member above water with his jacket for about 45 minutes until rescue arrived.

Assessment

It is to be assumed that the after peak ran full via the hatch and the water made its way along the lubricating oil line into the storage compartment and caused the hole to the engine room, so that the after peak, storage compartment and engine room ran full. After this MV "STADT ARNIS" sank. The polyurethane seal of the lubricating oil line promoted the intake of water. The attempt to use a portable drainage pump and a hand pump failed.

The hatch to the after peak could not be closed water-tight. Strips welded on were found before and after the hatch, onto which the hinges were welded forward and the brackets of the locking bolts with case nuts in the aft direction. The left side of the pressure fork struck against the left bracket of the starboard closure. This prevented uniform pressure on the rubber seal. Viewed from the after peak, a considerable air gap was discovered in the closed condition. It was not possible to ascertain when and by whom the work on the hatch had been carried out.

The trip line ruptured when the liferaft was activated. The liferaft did not unfold and floated on the water. The water pressure trigger seems to have been released, since the cutting mechanism severed the safeguard. In addition the lashings of the liferaft had been cut through. The torn-off end of the trip line is approximately 11,5 m in length. It was not possible to ascertain with certainty whether the trip line was ruptured by maintenance or wrong handling and whether "Stadt Arnis" had been equipped with sufficient and suitable rescue facilities at the time of casualty.

Conclusion

The cause of the accident was the incorrect repair of the hatch to the after peak, the incorrect – not complying with the standards – execution and sealing of the lubricating oil line between the after peak and the storage compartment, and the heavy rusting of the two aft bulkheads. Flooding couldn't be prevented by this means.

The liferaft could not be activated because the trip line ruptured prematurely. If the rescue cruiser "BREMEN" had not arrived at the scene of the accident soon after, the two shipwrecked persons who were taken to hospital with undercooling would probably not have survived.

Recommendations

The owner must comply with his obligations under the Marine Safety Law and report repairs that bring about changes in the structural condition to the supervisory institution, and maintain his vessel in an operationally safe condition at all times. If major rusting does not satisfy the specified rusting and wear tolerances, the relevant structural parts are to be renewed.

During the periodic survey by the supervisory institution more attention should be paid to defects such as hatch fastenings, that open outwards, and surveys of bulkheads that can conceal rusty places, as well as the lines on rescue facilities. The water intake could have been noticed earlier by the crew if the vessel had been equipped with a bilge alarm.

Sources

The Investigation Report refers to investigations by the River Police Lübeck-Travemünde, investigations by Bundesgrenzschutzamt See Neustadt/Holstein, a survey report by the See-Berufsgenossenschaft Hamburg, sources from BSH Hamburg, a survey report by Messrs. Zucker & Partner GmbH Hamburg, a survey at K & M Rettungsgeräte Liferaft Service GmbH Kiel, findings and questioning as well as an ship-inspection on site by the Federal Bureau of Maritime Casualty Investigation.

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 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.



Photo 2, Manhole after peak



Photo 3, Main deck port side



Photo 4, After peak ahead



Photo 5, Stowage compartment astern



Photo 6, Stowage compartment starboard ahead



Photo 7, Engine room starboard astern



Photo 8, Salvage from 31.10.2002



Photo 9, Salvage from 31.10.2002

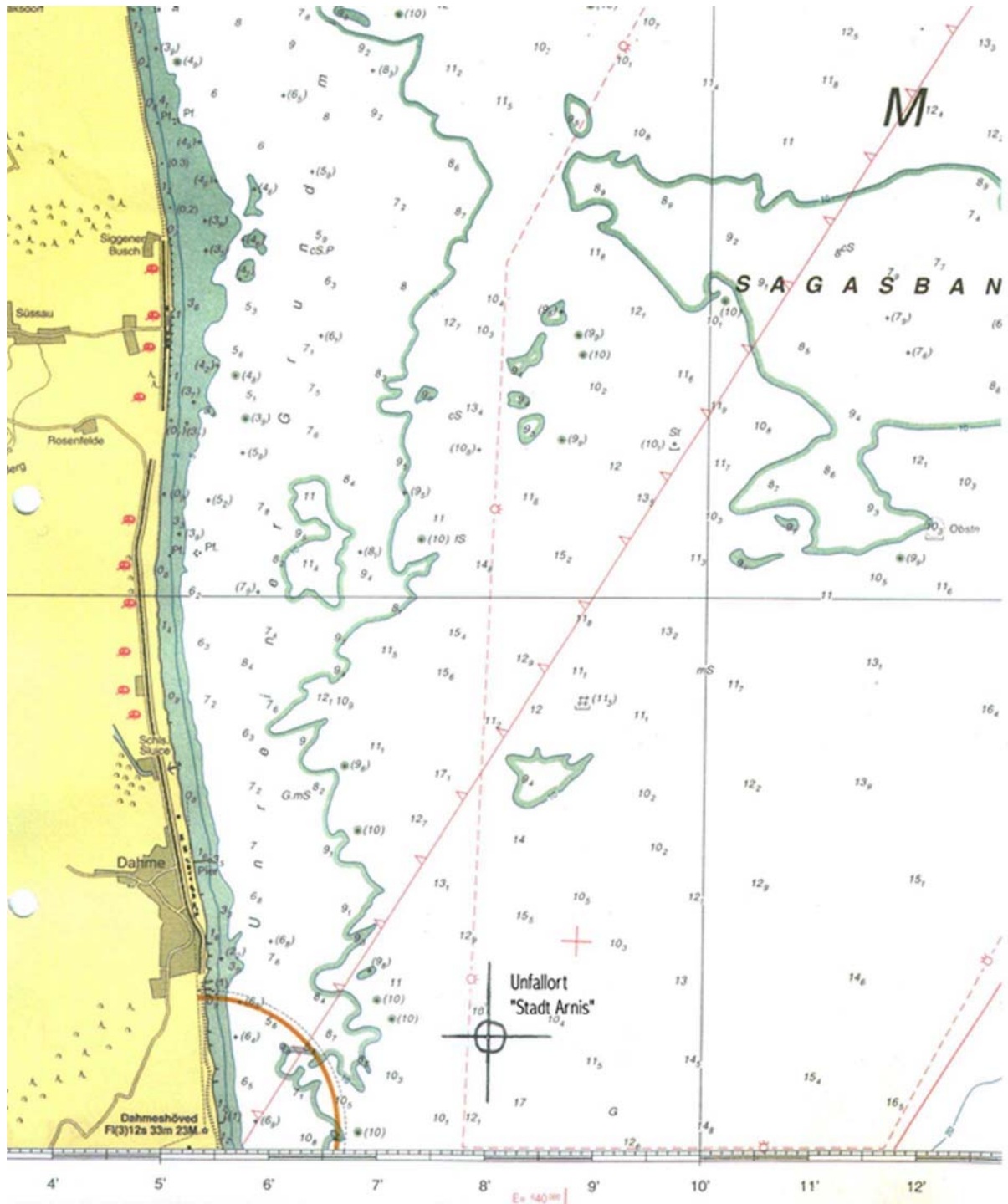


Photo 11, Scene of accident