Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation

Investigation Report 138/22

Very Serious Marine Casualty

Person Over Board Resulting in Fatality on Board the Sailing Yacht SPEEDY GO on the Flensburg Firth on 8 April 2022

1 June 2023

This 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). According to said Law, the sole objective of this investigation is to prevent future accidents. 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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Table of Amendments

Page	Amendment	Date
48	In Table 2, the words “fire extinguishers and fire blankets” were replaced with the term “fire-fighting appliances”. Background: Since 2020, fire blankets should no longer be used in the commercial and public sector. Source: German Social Accident Insurance (DGUV), Department of Fire Services, Rescue Services, Fire Safety: https://publikationen.dguv.de/widgets/pdf/download/article/3703.	2023-07-06

Table of Contents

List of Tables

Table of Figures

List of Abbreviations

ADAC	Allgemeiner Deutscher Automobil-Club e. V. [German motoring organisation]
AIS	Automatic identification system
BMDV	Federal Ministry for Digital and Transport
BRM	Bridge resource management
BSH	Federal Maritime and Hydrographic Agency
BSU	Federal Bureau of Maritime Casualty Investigation
CEST	Central European Summer Time
CM	Crew management
DGzRS	German Maritime Search and Rescue Service
DMYV	German Motor Yachting Association
DSC	Digital selective calling on VHF
DSV	German Sailing Association
DWD	Germany's National Meteorological Service
EPIRB	Emergency position indicating radio beacon
GTC	General terms and conditions
JRCC	Joint Rescue Coordination Centre
MCA	Maritime and Coastguard Agency
MRCC	Maritime Rescue Coordination Centre
OSR	World Sailing Offshore Special Regulations
POB	Person over board
Ref.	File reference
RYA	Royal Yachting Association
SART	Search and rescue radar transponder
SBF	Sportbootführerschein [international certificate for operators of pleasure craft]
SchBesV	German Ordinance on Safe Manning
SchSG	German Ship Safety Act
SchSV	German Ordinance for the Safety of Seagoing Ships
SeeSchStrO	German Traffic Regulations for Navigable Maritime Waterways
SeeSpbootV	German Ordinance on Seagoing Recreational Craft
SHS	Sporthochseeschifferschein [comparable with the British Yachtmaster® Ocean]
SKS	Sportküstenschifferschein [international certificate for operators of pleasure craft in coastal waters not exceeding 12 nm]
SOLAS	International Convention for the Safety of Life at Sea
SpFV	German Pleasure Yachting Navigating Licences Ordinance
SportSeeSchV	German Offshore Cruising Licences Ordinance
SRC	Short range certificate
SSS	Sportseeschifferschein [international certificate for operators of pleasure craft in coastal waters not exceeding 30 nm]
STCW	Standards of Training, Certification and Watchkeeping for Seafarers
UTC	Universal time coordinated
VHF	Very high frequency

1 SUMMARY

The skipper of the commercially used sailing yacht SPEEDY GO, 13.50 m in length, fell overboard and drowned at 1219 (CEST) on 8 April 2022 after an unsuccessful sailing manoeuvre. The casualty went to the foreship because the headsail's sheets had become entangled there during a gybe. After clearing the lines, he straightened up simultaneously with the wind blowing into the sail as well as the yacht heeling and picking up speed. The skipper fell backwards over the guardrail into the water. The fellow sailors did not manage to get the casualty back on board the yacht, even though he was at the stern shortly after. One of the co-sailors went into the water to help, lost contact with the yacht and was rescued suffering from hypothermia by the other sailors. A rescue helicopter recovered the skipper but all attempts at resuscitation were unsuccessful.

The cause of the skipper falling overboard was a lack of self-protection against falling overboard with a lifeline when he went onto the foreship in conjunction with adopting an unsafe position on the yacht's leeward side. The main reason for the skipper drowning was the fact that he was not wearing a lifejacket. Several other aspects were identified as contributing factors to the accident.

Potential for improvement was noted with regard to the vessel operator's safety and quality management, sailing trip preparation and (safety) familiarisation, crew management, safe conduct on deck, vessel equipment, emergency management and the content of the examinations for commercial recreational boating. Safety recommendations were addressed to the Federal Ministry for Digital and Transport, the German Maritime Search and Rescue Service, as well as the vessel operator and the shipyard of the SPEEDY GO.

2 FACTUAL INFORMATION

2.1 Photograph of the Ship

Figure 1: Sailing yacht SPEEDY GO under sail[1]

2.2 Ship Particulars

Name of ship:	SPEEDY GO
Type of ship:	Recreational craft, sail-training vessel; sailing yacht, Salona 44
Flag:	Germany
Port of registry:	Hamburg
IMO number:	n/a
Call sign:	DG2167
Owner:	Schoenicke + Reinecke Yacht GmbH
Shipping company/operator:	Jochen Schoenicke SKIPPERTEAM Ges.m.b.H.
Year built:	2014
Shipyard:	AD-BOATS Ltd., Croatia
Classification society:	Germanischer Lloyd
Hull length:	13.50 m
Length of waterline:	11.45 m
Breadth (overall):	4.19 m
Draught (max.):	2.10 m
Gross tonnage:	n/a
Deadweight:	n/a

[1] Source: Vessel operator. In this photo, a larger headsail is rigged than on the day of the accident.

Displacement:	9.50 t
Engine rating:	41.0 kW
Main engine:	Yanmar 4JH 5-E
Hull speed:	8.2 kts (calculated)
Hull material:	Glass-fibre reinforced plastic (GRP)
Hull design:	Built using the vacuum infusion process, 'Strongback'[2] made of stainless steel
Minimum safe manning:	1 (2)[3]
Sail area:	135 m² in total. Headsail: 35 m²

2.3 Voyage Particulars

Port of departure:	Flensburg, Germany
Port of destination:	Marstal, Denmark
Type of voyage:	Other shipping, international
Cargo information:	n/a
Crew (skipper):	1
Draught at time of accident:	D_f= 2.1 m, D_a= 2.1 m
Pilot on board:	No
Number of fellow sailors:	5

2.4 Marine Casualty Information

Type of marine casualty:	Very serious marine casualty (VSMC), person overboard resulting in fatality
Date, time:	8 April 2022, 1219 (CEST)
Location:	Flensburg Firth
Latitude/Longitude:	φ = 54°53.20'N, λ = 009°35.62'E
Voyage segment:	Restricted waters
Place on board:	Foreship
Human factors:	Yes, the course of the accident and actions of the people involved were affected by organisation on board, personal factors (including physical condition, pre-accident activities, social interaction, knowledge and training) and shorebased safety management
Consequences:	Death of the skipper, hypothermia of a fellow sailor

[2] Reinforcement of the hull for the distribution and absorption of the forces in the boat, into which the shrouds are inserted and from which the keel is suspended.

[3] If the yacht is sailed for more than ten hours within a 24-hour period, she must have an additional crew member (qualified with an international certificate for operators of commercial pleasure crafts on the waterways navigable by seagoing ships) in addition to the skipper (qualified with an international certificate for operators of pleasure craft in coastal waters not exceeding 12 nm).

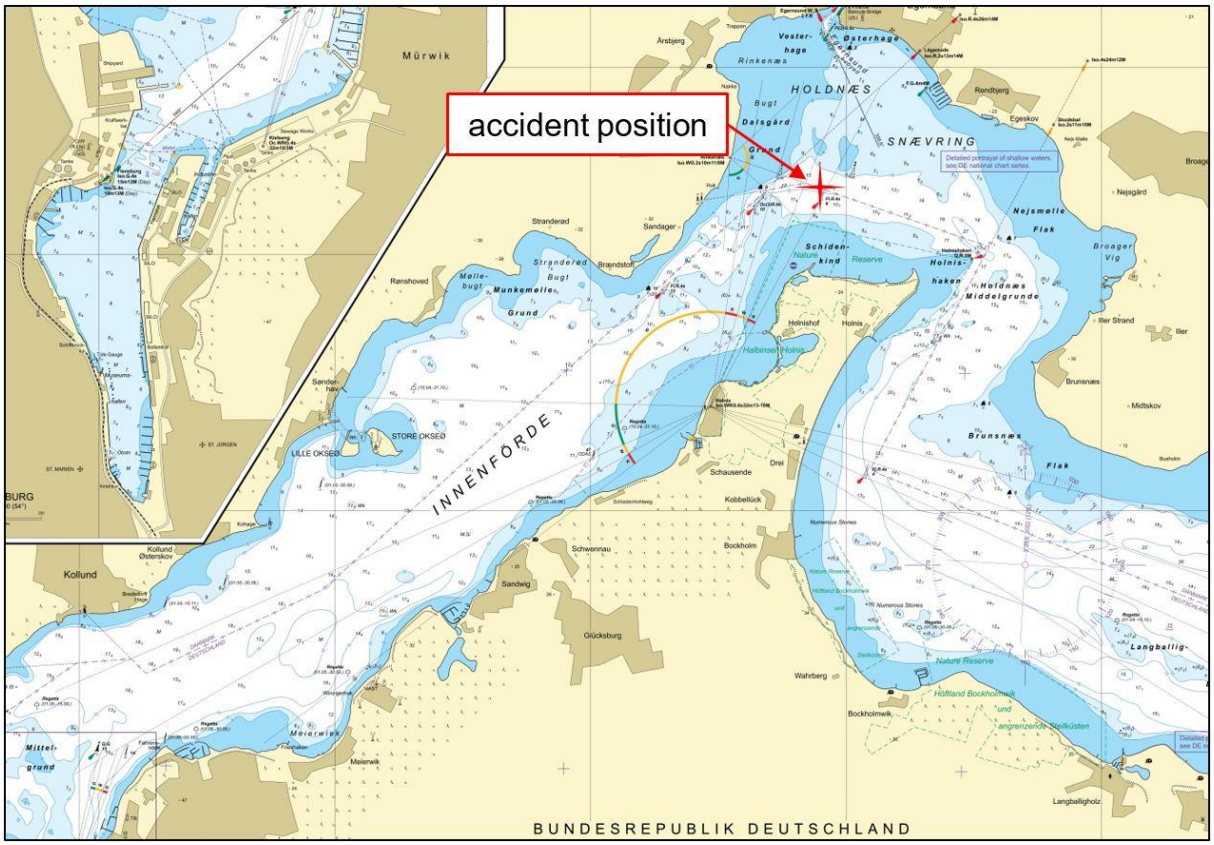


Figure 2: Extract from Navigational Chart DE26 – Flensburger Förde, INT13600[4]

2.5 Shore Authority Involvement and Emergency Response

Agencies involved: Lyngby Radio, JRCC[5] Denmark, MRCC[6] Bremen, Danish fire service Sønderborg Brand & Redning, Danish South and Sønder Jutland police, German-Danish police liaison office (joint centre in Padborg), Waterway Police Flensburg

Resources used: <u>On board:</u>
Horseshoe lifebuoy with line, POB[7] marker buoy with additional horseshoe lifebuoy, bathing ladder, VHF[8] radio with DSC[9], mooring line, blankets, mattress

[4] Source: Federal Maritime and Hydrographic Agency (BSH).
[5] JRCC: Joint Rescue Coordination Centre, responsible for coordinating all search and rescue (SAR) activities for both aviation and shipping.
[6] MRCC: Maritime Rescue Coordination Centre, coordinates SAR activities at sea.
[7] POB: Person overboard.
[8] VHF (very high frequency): Designation for radio communications in the very high frequency range (from 30 MHz to 300 MHz) between maritime (ships) radio stations and coastal radio stations, as well as internally on ships using handheld radios.
[9] DSC: Digital selective calling for the establishment of a radio connection with selected radio stations, e.g. for communication during emergencies at sea.

External:
German rescue boat WERNER KUNTZE, Danish fire service rescue boat ALSIN, several ships and yachts in the area (VIKING, FINNJA, LOOP, TRÄUMCHEN), Danish SAR helicopter M 405, German SAR helicopter, ambulance (RTW)-Glücksburg

Actions taken:

On board:
Horseshoe lifebuoy with line thrown to the casualty – establishment of a line connection, yacht engine started, sails recovered, tack[10] over port bow, distress call on DSC and emergency communication with Lyngby Radio on VHF channel 16, bathing ladder mounted, mattress thrown overboard, bowline tied in mooring line and another fellow sailor floating in the water hoisted on board, pyrotechnic distress signals fired, search for the skipper east of accident position

External:
Request for rescue units by Lyngby Radio, hypothermic co-sailor picked up by the WERNER KUNTZE, skipper recovered from the water by SAR helicopter M 405, both people transferred to different hospitals

[10] Sailing manoeuvre in which the bow goes through the wind and the sails are then operated on the other side of the vessel.

3 COURSE OF THE ACCIDENT AND INVESTIGATION

3.1 Course of the Accident

The account of the course of events leading up to and during the accident as well as the ensuing rescue operation is based on information gathered from

- statements of the fellow sailors on board the SPEEDY GO;
- statements of other witnesses at the scene;
- the route of the yacht saved as a GPX track by another fellow sailor;
- AIS[11] recordings of MarineTraffic.com;
- the mission log and audio recordings of the radio traffic from the German Maritime Rescue Coordination Centre (MRCC Bremen);
- JRCC Denmark's mission log, and
- general statements of the vessel operator.

The BSU received notification of the fatal accident on board the SPEEDY GO on 11 April 2022 from the waterway police and surveyed the yacht in Flensburg on the following day. In addition to two co-sailors, the vessel operator could also be interviewed.

3.1.1 Preparing for the Sailing Trip and Familiarisation

There were six people on board the SPEEDY GO at the time of the accident: one skipper and five fellow sailors. The day of arrival for the planned five-day 'heavy weather sailing trip'[12] from/to Flensburg was Thursday 7 April 2022. The skipper was already there because he had led the previous sailing trip and the co-sailors boarded at between 1745 and 2200 in Flensburg. In addition to the SPEEDY GO, three other yachts belonging to the same operator were due to set off on a heavy weather sailing trip on the following day: the EASY GO, MARIN and PIRANJA.

Co-sailor Alpha[13] was the first to be accompanied on board by the skipper at 1745. Three other co-sailors (Bravo, Charlie and Delta) arrived at the marina at 1900. The vessel operator had arranged for them to be picked up at Hamburg airport and taken to Flensburg together. Upon arrival, they stowed away the provisions for the forthcoming sailing trip, the skipper prepared supper and they ate together. During the meal, Charlie showed an interest in how fresh water consumption was managed on board and how much water was on board – in the knowledge that water usually has to

[11] Automatic identification system: Standardised radio system for exchanging ship particulars; used for collision prevention and shorebased traffic monitoring.
[12] Expression by the vessel/tour operator, see also chapter 3.2.5.2.
[13] To enhance legibility and at the same time preserve the anonymity of all parties involved, the fellow sailors have been named from A – Alpha to E – Echo (international phonetic alphabet) in this report.

be used sparingly on recreational crafts due to the limited bunkering capacity. The skipper replied that there was sufficient water, stating how much water was on board.

The skipper and his fellow sailors did not know each other before the sailing trip. Several of the co-sailors stated that the skipper had not introduced himself to them by name and that the welcome on board was rather brief. However, they all knew the names and contact details of each other due to the publication of a crew list beforehand by the vessel operator. The skipper did not prompt a round of introductions, did not ask the co-sailors about their previous sailing experience and knowledge, nor did he assign any tasks.

During the evening, at about 2200 and just before fellow sailor Echo was the last to come on board, the skipper took his leave for a meeting with the skipper of the EASY GO, as they were long-standing colleagues and had not seen each other in person for about three years. Meanwhile, the fellow sailors spoke with each other about past experiences at sea but did not talk extensively about their expertise and knowledge. Their expectations of the heavy weather sailing trip was not a topic of conversation. All co-sailors stated that they went to bed at between 2300 and midnight. No one could say exactly when the skipper came back on board after his meeting, as all the fellow sailors were already asleep by then. According to the skipper of the EASY GO, they returned to the berth together at between midnight and 0030.

The fellow sailors got up at different times on the morning of 8 April, Charlie being the first at 0530. He prepared breakfast on his own initiative and co-sailor Bravo went jogging in the town. When Delta asked the skipper whether the latter had not spent the night on board, it turned out that he had spent the night in the yacht's saloon and not in his berth. All the fellow sailors had breakfast together at about 0800. The skipper merely drank a coffee that Charlie had taken to him up on deck. As on the previous evening, the skipper did not engage in conversation. The skipper did not address the fellow sailors by name, nor did he ask for their names as the morning continued. After breakfast, the skipper commented – in a manner that seemed rather gruff to the co-sailors – to Charlie, who had used fresh water for washing up and making coffee, that they needed to be careful with the water. This surprised Charlie, as the skipper had given the impression on the previous evening that there was no need to pay too much attention to the amount of water used.

After breakfast and after everyone was dressed, the skipper gave the co-sailors a (safety) familiarisation. He explained where the various items of equipment are on board (gas, seacocks, fire extinguishers, lifesaving appliances (horseshoe buoys attached to the guardrail), locker seats[14], radios and other equipment) and what the rules of conduct are on board. The skipper pointed out that in the event of a person-overboard manoeuvre, the engine should be started immediately and they should approach the person overboard, regardless of course sailed. Operation of the engine was not explained to the entire group of fellow sailors together. When Bravo was standing on deck next to the skipper, the latter spontaneously explained the operation to Bravo. Echo joined them and asked the skipper to demonstrate how to start and

[14] Bench or chest on board sailing boats/vessels used to stow equipment or personal belongings, the lid of which can be opened from above.

stop the engine. Meanwhile, Delta was on his mobile phone being congratulated on his birthday. He asked the skipper to once more demonstrate to him how to use the engine. The skipper did not do this but replied that the engine would be started again on the next day and there would reportedly be plenty of time for that during the sailing trip. Charlie asked the skipper if the engine check includes checking the oil level and was told it does not. However, the skipper asked Charlie if he would like to check the oil level himself. The engine looked very clean to Charlie and the oil level measured by him was within tolerance range.

All but one of the co-sailors described the (safety) familiarisation as short, superficial and incomplete. Some topics were not addressed at all or only when raised by the co-sailors (see 3.2.8.1). No muster list with the assignment of tasks in an emergency and no co-skipper[15] were defined. Various fellow sailors described that the atmosphere on board was one that suggested the skipper was not open to questions and criticism.

The skipper had already insisted that all fellow sailors don their lifejackets one hour before setting sail. The lifejackets had initially been stored in Alpha's cabin. The skipper told the fellow sailors that he had his own lifejacket. He stressed to the co-sailors several times that falling into the water was reportedly absolutely forbidden because the chances of survival were reportedly minimal due to the low water temperatures.

Using the navigational chart, the planned course of the voyage was briefly discussed with several fellow sailors. The SPEEDY GO's destination for the day was Marstal in Denmark. At this point in time, it did not seem clear whether there would be a berth available in the port of Marstal. If this was not the case, they would have to call at another port. They planned to call at Sønderborg in Denmark on the final day of the sailing trip. Intermediate destinations would depend on the weather and general situation.

Shortly before casting off, at about 1050, heavy gusts with sleet and hail reached the marina. They intentionally waited for this weather to pass before starting the departure manoeuvre afterwards. The yacht was moored fore and aft with several lines. A stern line was hauled in first. Charlie then coiled up the line and had intended to put it in the locker seat, where he saw a line that had already been coiled up and took it out to look at exactly how this line had been coiled up and how this is done on board. At that moment, the skipper stood next to him and asked what he was doing. Charlie replied that he just wanted to see how others did it, as it interested him. The skipper then said: “No, you do not need to do that. Just throw them in there and that’ll do!“ Charlie did not feel a sense of stress or urgency at this particular moment. All the other lines were still made fast.

[15] A co-skipper supports the skipper in all aspects of vessel management and is her/his deputy, i.e. assumes command on board and thus team leadership if the skipper is otherwise engaged.

3.1.2 Course of the Voyage before the Skipper Fell Overboard

The SPEEDY GO cast off after the PIRANJA as the last of the four yachts at 1057 and headed north out of the port of Flensburg. The skipper was at the helm during the departure manoeuvre under engine power. The fellow sailors later unfurled a headsail (working jib) in accordance with the skipper's instructions, while the skipper steered. The SPEEDY GO then continued to sail downwind with the engine switched off. Charlie asked if and why only the jib was being set, to which the skipper replied that he was only setting the jib because he also needed a gybe preventer[16] with the mainsail and was not keen on this kind of toing and froing – after all, his colleague on the PIRANJA had reportedly also sailed out with only the jib. One of the co-sailors also recalled afterwards that the skipper announced (without being asked about it) that no practice manoeuvres would be carried out.

When all the fellow sailors were in the cockpit and the skipper was at the helm after casting off and setting the jib, the latter asked the co-sailors who wanted to take over. Echo took over the helm first. The skipper then went down to the saloon, saying they did not all have to stand on top, as it was reportedly too cold for that. It would be better to go below for half an hour so as to warm up before going back up to continue. He gave instructions to follow the sailing yacht PIRANJA and keep clear of the buoys. Charlie also went below deck to put on another pair of socks. The skipper told him that he was tired and wanted to rest. He then laid on a bench/couch on the starboard side of the saloon and covered himself with a blanket. Charlie went back up to the cockpit. As the voyage continued, they did not use the navigational chart for navigation and the skipper made no entries in the logbook for 8 April 2022.

Bravo took over the helm from Echo for a while at about 1130 on a north-easterly compass course of about 052°. One of the crew members recalled that the skipper had been disturbed by the radio in the meantime, briefly went on deck and then laid down again. A westerly to north-westerly wind of force 5–6 Bft with gusts of 8–10 Bft prevailed (see 3.2.7). The water temperature was about 5 °C. The headsail was on the starboard tack and the helmsman on the port wheel accordingly, so as to have a good view ahead with the current sail position.

[16] Lanyard intended to prevent the main boom from suddenly swinging out of control to the other side of the vessel when sailing on a beam reach (downwind courses), also known as an accidental gybe.

Figure 3: View to starboard (abaft/abeam) at 1158[17]

[17] Source: Co-sailor Charlie.

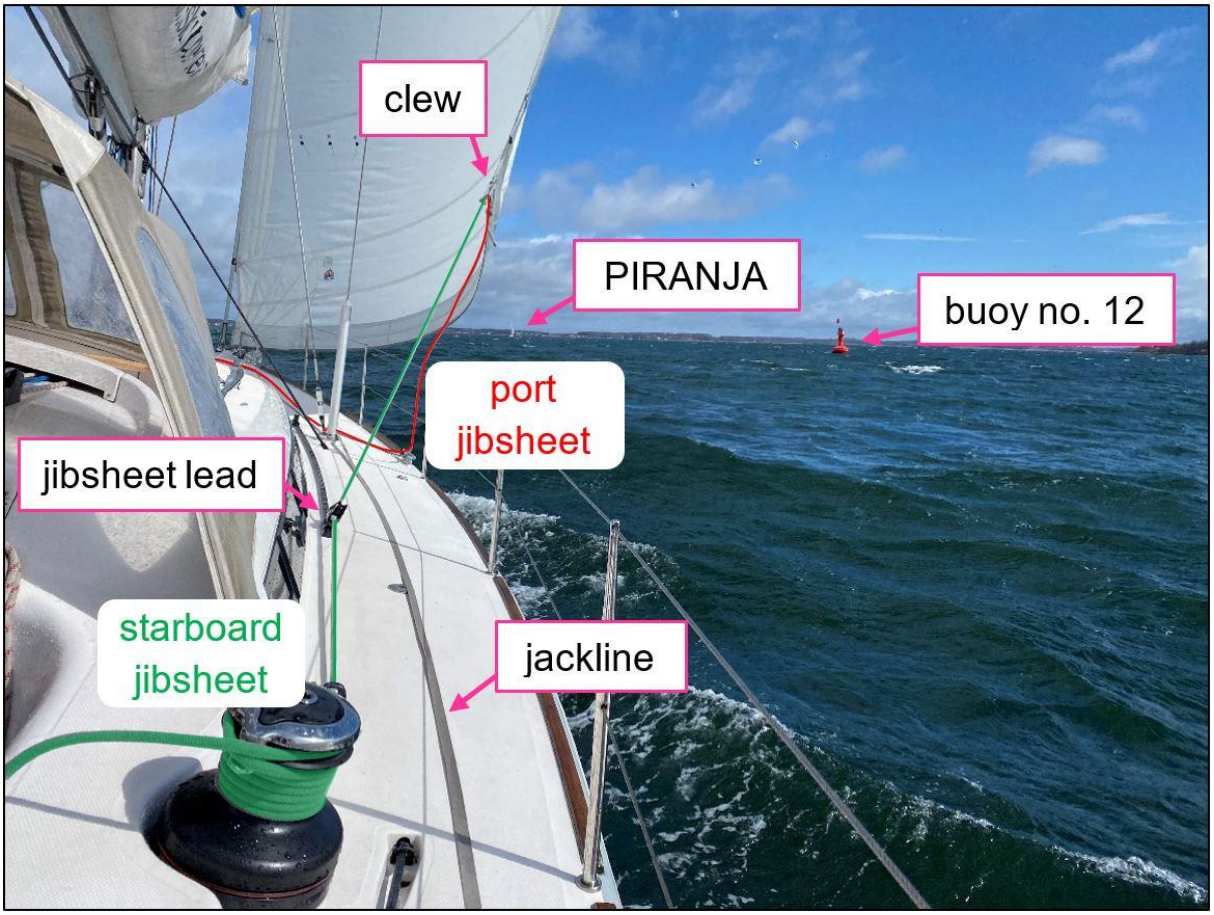


Figure 4: View ahead at 1206[18]

The skipper went back on deck at 1158 and instructed Alpha to move the port sheet's lead[19] all the way forward. Alpha complied and then took over the helm from Bravo. At 1207, 70 minutes after leaving the marina in Flensburg, the SPEEDY GO passed buoy pair 11/12 (see Figure 4) and approached buoy pair 9/10 at a speed of some 7 kts. Up until this point, the yacht had sailed on north-easterly compass courses of between 40° and 56° since passing Fahrensodde at about 1125 with almost no change in sail position (true course about 50° between buoy pairs 13/14 and 11/12). Ahead of the SPEEDY GO, the PIRANJA gybed[20] so as to steer onto an east-south-easterly course and continue following the Flensburg Fjord fairway towards Holnishaken. About five minutes after the PIRANJA's manoeuvre, Alpha asked the skipper whether the SPEEDY GO should now also gybe. The skipper answered yes but did not determine the course of the manoeuvre or distribution of the individual tasks.

Helmsman Alpha loudly asked the other fellow sailors: “Clear to gybe?” Two co-sailors replied: “Clear.” Delta and Bravo were sitting on the starboard side at the headsail sheet to be veered and Echo was on the port side at the sheet to be hauled. Delta looked at Alpha, who was at the helm, upon which Alpha told him to look at the sail

[18] Source: Co-sailor Bravo; labelling and colouring of jibsheets by the BSU.
[19] Deflection and routing of the sheet between the clew (attachment point of the sheet to the sail, usually with thimble) and loose end of the sheet, see Figure 4.
[20] Sailing manoeuvre in which the stern goes through the wind and the sails are then operated on the other side of the vessel.

instead. Standing next to Alpha, the skipper became – by the perception of the fellow sailors – somewhat impatient and stressed to Alpha: “Do it now!” Alpha then quickly initiated a rapid course alteration to starboard. Delta failed to release the starboard sheet in time and to veer it, whereupon the skipper shouted loudly at him: “Open, open, open!” Delta then finally opened the sheet.

During the manoeuvre, the headsail sheets became entangled underneath the end mount of the spinnaker pole[21], which was stored at the mast:

Figure 5: Spinnaker pole attached to mast – where the sheet became entangled[22]

There was hardly any speed left in the vessel, the wind came from astern, the yacht was relatively upright and not heeling, the headsail was beating in the wind and did not come free. The skipper spontaneously decided to go via the port side of the yacht to the foreship[23] to clear the sail and sheets himself. He was not wearing a lifejacket or any other safety harness to which a lifeline[24] could have been attached, meaning he was not attached to the vessel. When he arrived at the mast, he initially tried to release the sheets on his own but then called out to the fellow sailors in the cockpit that someone should come forward to help him. Charlie was standing at the sprayhood[25]

[21] The spinnaker pole is used between the mast and the windward sheet on the windward clew of the spinnaker to boom out the spinnaker to windward / keep it open against the wind.
[22] Source: BSU; survey on 12 April 2022.
[23] In this case, the deck area at the bow.
[24] Webbing strap with karabiners that acts as a safety line between the lifejacket/harness and a suitable anchor point on board to prevent people falling overboard (see Figure 21).
[25] The term used in English and German for a semi-cover on yachts, which protects the companionway and forward part of the cockpit from rain and spray water.

at the front of the cockpit and went to the foreship via the starboard side. He was wearing a lifejacket – as were all the other co-sailors – but did not secure himself with the three-point lifeline attached to the lifejacket.

The skipper instructed Charlie to release the sheets from the mount. He first stood next to Charlie, then went a little further aft on the port side and knelt on the side passageway between the mast and sprayhood. His centre of gravity was below the upper lifeline wire. Charlie knelt down on the starboard side of the slightly raised deck area just forward of the mast. He did not see the skipper from this position. Charlie was able to release one of the sheets by pushing it downwards and out from behind the end mount. Before he could release the second sheet, the skipper called out to him loudly: “Now, hurry, hurry, hurry!” Immediately afterwards, Charlie had released the second sheet. He slid backwards a little in a crouched position – from the raised deck area to the lower side deck passageway – and stood up. On his way aft to the cockpit, he turned around and saw that the skipper had gone towards the bow. Since the sheets were free again, wind filled the headsail, now on the port tack, causing the yacht to heel to the port side and pick up speed. At the same moment, the skipper straightened up on the raised deck area – roughly abeam of the mast or slightly further forward – and fell backwards over the guardrail and into the water.

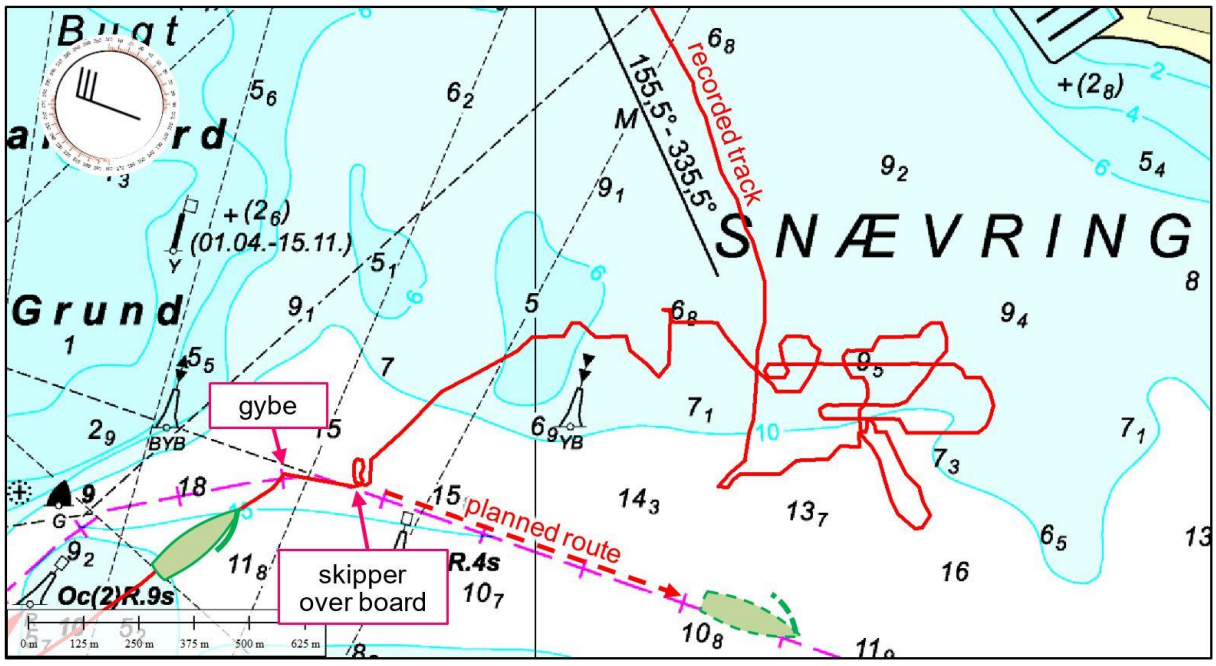


Figure 6: SPEEDY GO's track[26]

[26] Source: Navigational chart: BSH; recorded track: Co-sailor Bravo.

3.1.3 Rescue Measures

Charlie immediately called out loudly: “Man overboard!” Bravo loosened the horseshoe life ring on the starboard side behind him, which was attached to the POB buoy used for marking the position (see Figure 9 and Figure 15), and threw both overboard. Alpha continued to stand at the port side wheel. Bravo started the engine on the starboard side of the cockpit, took over the rudder there without communication and initiated a course alteration to port. In the meantime, Echo threw the horseshoe lifebuoy (see Figure 8) on the port side, which was attached to a self-feeding line, into the water. Bravo and Echo both had difficulty removing the lifesaving equipment, secured by thin rubber expanders, from the guardrail with their gloves on. To reduce the yacht's speed due to the propulsion from the headsail, the other co-sailors released both jibsheets. The jib beat loudly in the wind, causing unrest in the cockpit. Bravo and Charlie collectively took in the headsail.

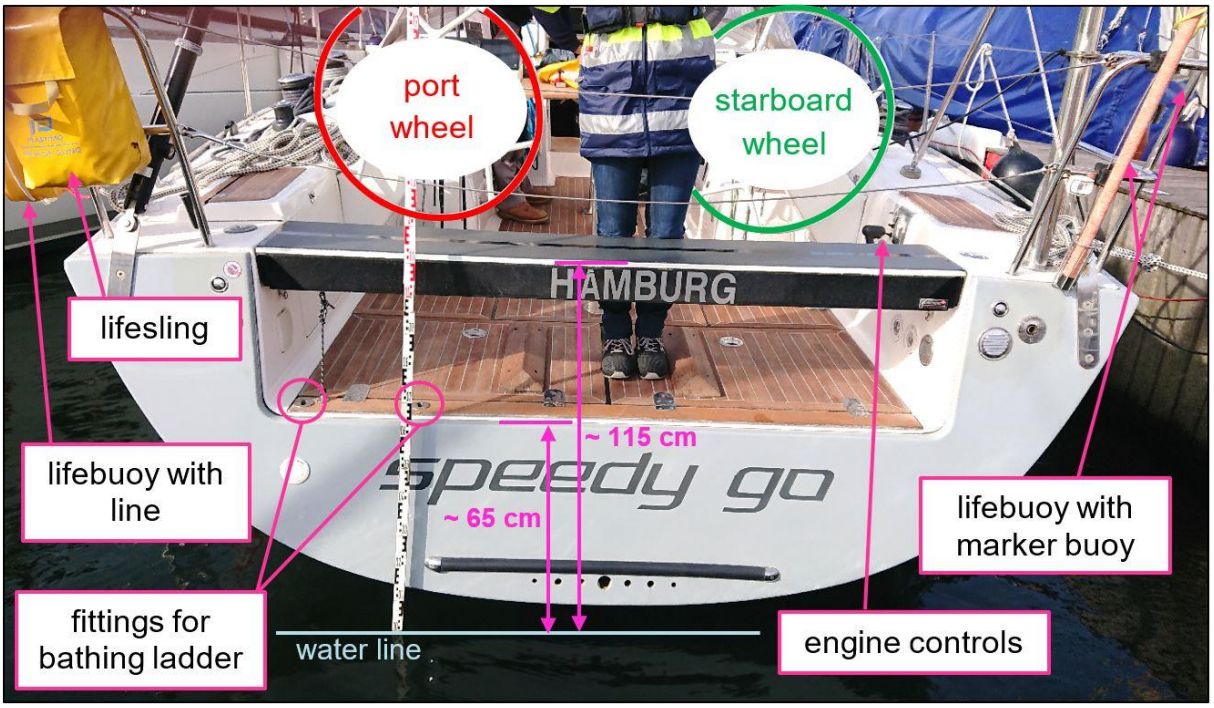


Figure 7: The SPEEDY GO's cockpit viewed from the aft[27]

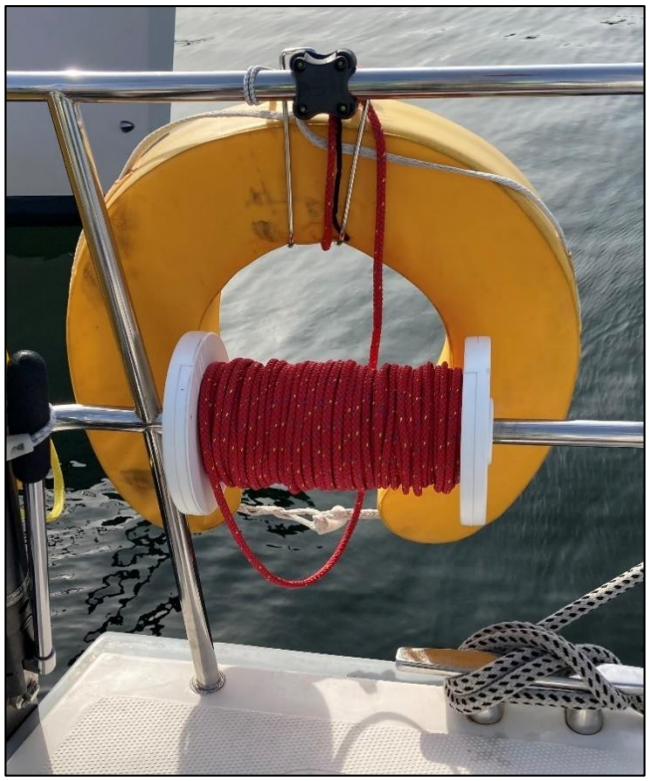


Figure 8: Port side horseshoe lifebuoy with line[27]

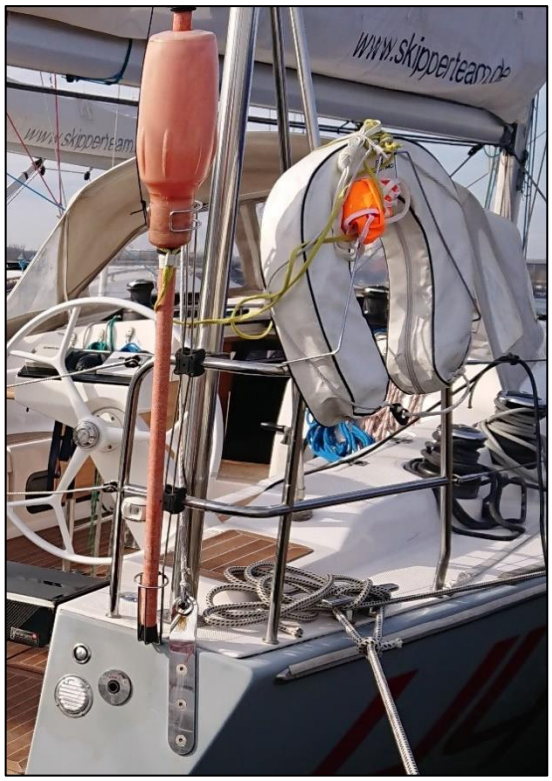


Figure 9: Starboard horseshoe lifebuoy with POB marker buoy[27]

[27] Source: BSU; survey on 12 April 2022.

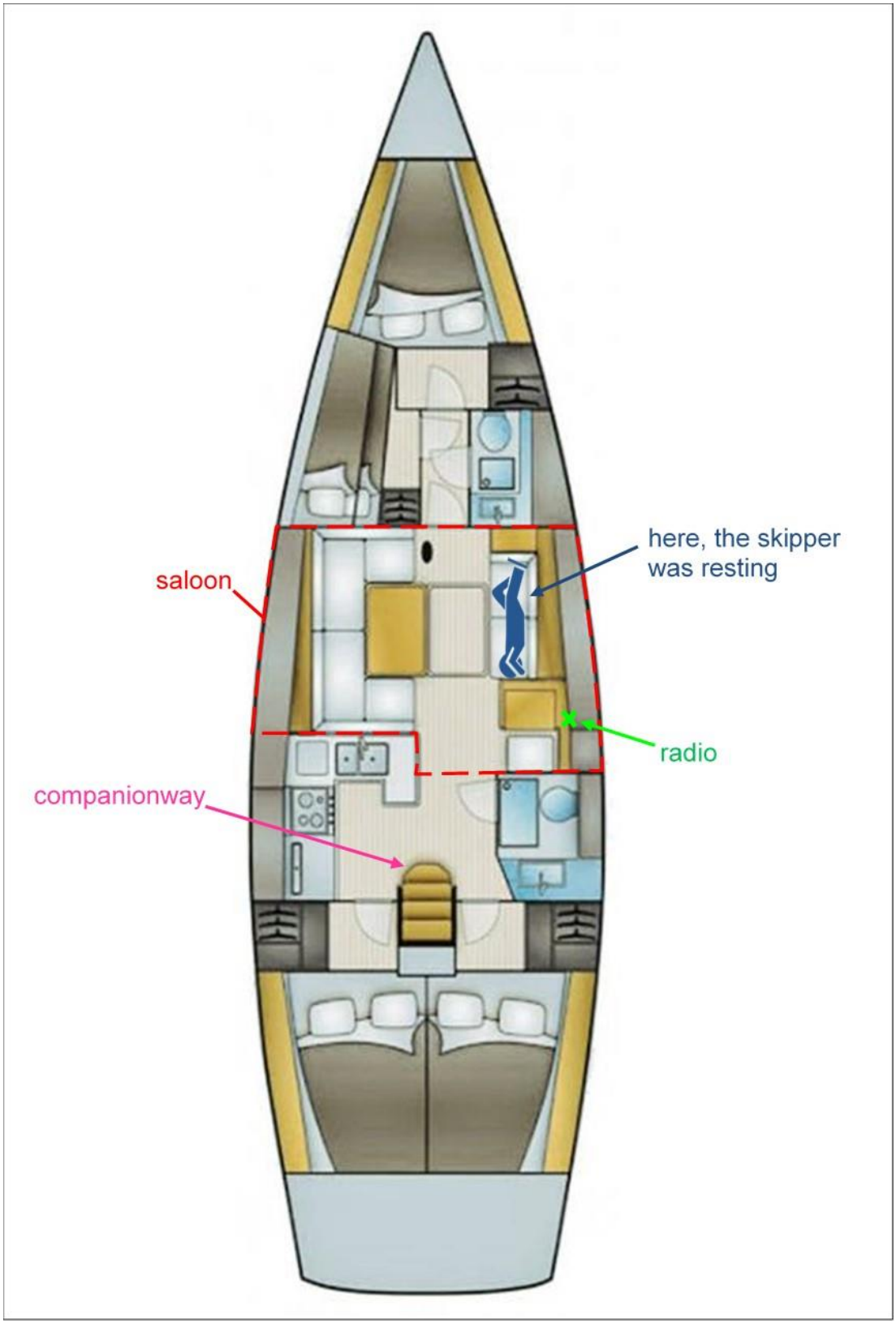


Figure 10: Top view of the SPEEDY GO's interior[28]

[28] Source: Vessel operator; notes and colouring by the BSU.

The skipper managed to swim in a prone position to the port-side horseshoe lifebuoy's line and take hold of it. He also held on to the lifebuoy and fellow sailors Delta and Echo were able to pull him to the stern of the yacht.

The skipper called out to the co-sailors from the water: “The bathing ladder!” Charlie retrieved the bathing ladder from the locker seat on the starboard side and inserted it into the fittings on the port side at the rear of the cockpit (see Figure 7 and Figure 12). He asked the skipper if he could put a leg on the ladder, to which the skipper just shook his head. The skipper did not say anything after this point, either. Charlie and another fellow sailor held the skipper by both hands, as he was no longer able to hold on to the ladder himself, until another co-sailor relieved Charlie.

Charlie told the other fellow sailors that one of them needed to make a distress call, whereupon Echo went below to the saloon and pressed the distress button on the radio. He then spent most of his time below deck and took care of the subsequent radio traffic with various radio stations.

Figure 11: Desk/chart table with radio and other equipment[29]

At 1225, Echo sent the following call on VHF channel 16: “*Mayday. Mayday. Mayday. MMSI 211664360, call sign DG2167, man overboard*.” The Lyngby Radio coastal radio station responded and asked questions about the SPEEDY GO's position and the person in the water. The SPEEDY GO was also instructed to keep the person in the water in sight and stay close to him.[30]

[29] Source: BSU; survey on 12 April 2022.
[30] Audio recording of the radio traffic provided by the DGzRS, see 9.5 Emergency communication.

Outside in the cockpit, Alpha climbed over the aft bench and then onto the top rung of the bathing ladder. He then attempted to grasp the skipper and pull him up together with two other co-sailors. He was not secured by a line while doing so. According to the fellow sailors, the skipper started to panic in the water and quickly lost strength. He appeared to be in a poor physical and mental condition.

Alpha then climbed onto the bathing ladder, descending two rungs to begin with and then all the way down into the water. Charlie watched this and thought that Alpha's actions were a bad idea for various reasons but did not express these concerns.

Alpha's lifejacket deployed immediately upon contact with the water and was very tight and snug around the collar. He moved behind the skipper in the water, put both arms around him, pushed a knee under his hip and tried to lift him up. Despite that, the fellow sailors only managed to pull the skipper out of the water up to about his chest.

Bravo then prepared one of the mooring lines and tied a bowline knot[31] in the end of it. He threw the line to the skipper and told him to put a foot through the eye and pull it up over his thigh to his crotch, which the skipper was unable to do. Alpha was also unable to help the skipper, as he could not reach very far into the water because of his lifejacket's inflated collar.

During the rescue attempts, crew members Bravo, Charlie and Delta had to constantly hold on to the bathing ladder because it kept lifting out of its fittings in the deck and had to be pushed backwards to keep it inside the elongated hole (see Figure 12). Bravo and the skipper held each other's arm above the wrist and Bravo watched as the skipper's face was repeatedly several centimetres under water before he resurfaced.

[31] Knot which forms a non-tightening, fixed loop with various uses.

Figure 12: Bathing ladder (reconstruction) SPEEDY GO[32]

To fix the bathing ladder in place, it was inserted into the fitting and then pushed backwards. The ladder shown here is a reconstruction that was manufactured immediately after the accident.

Nevertheless, the bathing ladder first disengaged completely on one side and then on both sides, went overboard and sank immediately. Alpha also had hardly any strength left at this point. He immediately drifted a few metres away from the boat. The fellow sailors on deck noticed that in contrast to the skipper, Alpha was very calm and could lie in the water thanks to the buoyancy of his lifejacket. In the meantime, the yacht made a little headway and they tried to compensate for this by using the engine in reverse gear. The fellow sailors did not succeed in bringing calm to the vessel.

At 1227, Echo called Lyngby Radio and reported the loss of the bathing ladder and at 1229 a second person in the water wearing a yellow lifejacket. Immediately afterwards, Lyngby Radio sent out a Mayday relay in English and Danish to all radio stations in the area with a request for assistance.

[32] Source: BSU; series of rescue tests in Flensburg on 26 October 2022.

Echo took a mattress from one of the berths next to the companionway (see Figure 10) and handed it to the others in the cockpit. The other sailors threw the mattress overboard in the hope that the skipper could hold on to it but he was not able to. The mattress drifted eastwards very quickly due to the strong wind but did not sink. The skipper was floating in the water on the port side of the yacht. Echo and Delta saw him drifting face down at this point and Delta expressed his fear that the skipper had already passed away.

Echo took the container with distress signals from one of the locker seats and fired several parachute rocket flares. In the meantime, Lyngby Radio had made several attempts to call the SPEEDY GO to advise that helicopters were now heading for the yacht's position.

Alpha called out from the water to the co-sailors on deck, telling them that they should go to the skipper, as he felt it was more urgent to rescue the skipper due to the low water temperature. Bravo asked everyone what they should do now and said that they had to make a decision. Nobody answered and after a moment Bravo said: “Then we will go to Alpha.” Nobody else commented, Bravo operated the engine controls and Charlie steered the yacht in the direction of the fellow sailor.

Using the line floating in the water from the port-side lifebuoy, Alpha reached the yacht's stern again and Bravo threw the mooring line with the bowline knot, which had been prepared earlier on, out to him. He climbed into the eye of the bowline knot with one foot, then pulled it further up around his thigh and held onto the line, which led up into the cockpit. Charlie placed the end of the line on a winch, thus also securing it against accidentally running out. Bravo yelled loudly to Charlie at the winch: “Winch, winch, winch!” Echo came up to the cockpit from below and saw the situation on deck. Alpha had already been pulled a little out of the water, Echo grabbed Alpha and let himself fall backwards with his weight. With their combined efforts and by winching up the line, the co-sailors thus managed to rescue Alpha from the water at about 1235. Since the fellow sailors were unable to loosen the fittings of the anthracite-coloured aft bench in the cockpit, Alpha had to be lifted about 1.15 m out of the water and over the bench (see Figure 7).

As soon as he was on deck, Alpha enquired about the skipper but was immediately taken below to the saloon by Delta, who also helped him take off his lifejacket and wet clothes and warmed him up with several blankets. Alpha then donned dry clothes alone in his cabin. At 1236, the SPEEDY GO reported to Lyngby Radio that one of the people in the water had now been rescued. In response, the fellow sailors were informed that the German rescue boat WERNER KUNTZE would arrive at the SPEEDY GO in about 15 minutes and that helicopters were also on their way.

Figure 13: Rescue boat WERNER KUNTZE[33]

Various vessels and yachts in the area reported in to Lyngby Radio between 1235 and 1238 in order to assist in the search and rescue operation (VIKING (passenger/excursion vessel, 28 m), FINNJA (sailing yacht, 12 m), LOOP (sailing yacht, 10 m)). VIKING stated she would be at the scene of the accident at about 1305, FINNJA at about 1300 and LOOP at about 1309. At 1240, Lyngby Radio informed the SPEEDY GO that helicopters would be at the scene in eight to ten minutes. The sailing yacht TRÄUMCHEN contacted the SPEEDY GO directly on the radio at 1245 in German. She had just left Marina Minde and wanted to assist in the search but did not participate in further radio communication.

The skipper was no longer in sight after the rescue of co-sailor Alpha. The POB marker buoy was no longer visible, either. Only the mattress that had been thrown overboard earlier and quickly drifted away could still be made out visually. Bravo decided to continue the search for the skipper further to the east under engine power at full speed. Since the mattress drifted in this direction, the fellow sailors assumed that the skipper would have drifted in a similar manner. The engine broke down at about 1245 due to an unknown cause but started again after several attempts.

The fellow sailors saw a rescue helicopter when the yacht was underway again. They drew attention to their emergency with another rocket. At 1246, Echo notified Lyngby Radio and the helicopter crew by radio that the skipper who had fallen overboard was no longer within sight of the yacht. However, the skipper was spotted from the air two minutes later and recovered from the water at about 1250, roughly half an hour after he had fallen overboard.

[33] Source: DIE SEENOTRETTER – DGzRS/Stephan Mühr: *Archive photograph.*

Figure 14: Rescue helicopter M 405 arrives at the scene at 1247[34]

At about 1251, Lyngby Radio thanked all private vessels assisting in the area for their assistance and stood them down from the operation.

The rescue boat WERNER KUNTZE, which was manned by volunteers and had sailed for the SPEEDY GO from Langballigau (4.5 nm away) about eight minutes after the distress call, arrived on scene about a minute later and went alongside the yacht. At the urging of co-sailor Bravo and the rescue boat crew, Alpha, wrapped in several woollen blankets, boarded the rescue boat and was first taken to Schausende and from there to a hospital in Flensburg by ambulance. It transpired that his core body temperature had dropped to 32 °C.

3.1.4 Subsequent Events

Shortly after the WERNER KUNTZE departed, the Danish fire service rescue boat ALSIN from the Municipality of Sonderborg (Sønderborg Brand og Redning) approached the SPEEDY GO. The crew of the ALSIN told the SPEEDY GO's fellow sailors that the sailing yacht should reportedly follow the ALSIN. They sailed together in convoy to a berth in Egernsund, Denmark, arriving there at 1320. The co-sailors had some reservations about this at first, as the skipper had previously said that fuel urgently needed to be bunkered. The fellow sailors had actually planned to set a course for Flensburg together with the PIRANJA. They had already plotted the course to be steered on the navigational chart.

[34] Source: Co-sailor Bravo.

Several officers from the local police were already waiting for the sailing yacht to arrive at the pier in Egernsund. Sonderborg fire service personnel assisted the fellow sailors at the scene and informed them that both the skipper and Alpha had been taken to hospital.

The Danish South- and Sønderjylland police later stated that the skipper had to be resuscitated after he was recovered from the water. The rescue helicopter took the casualty to Odense Hospital in Denmark. He arrived there at 1325 showing no signs of life, the attempts at resuscitation were continued and death was officially declared at 1400.

At 1500, the ALSIN sailed out of Egernsund to search for the casualty's lifejacket, which had been spotted by the rescue helicopter, for the Danish police. Contrary to the assumption of the rescue services, it was not a lifejacket but rather the horseshoe lifebuoy connected to the POB marker buoy. The ALSIN found the lifebuoy and marker buoy in the water at about 1530 and took them to Egernsund. After the police had inspected them there, both were returned to the co-sailors of the SPEEDY GO.

Figure 15: Rescue equipment of the SPEEDY GO secured by the ALSIN in the fjord[35]

The lifeboat WERNER KUNTZE agreed to pick up the fellow sailors in Egernsund and take them to Langballigau from where the vessel operator organised the return voyage to Flensburg.

The vessel operator's other three yachts (PIRANJA, MARIN and EASY GO) had overheard the radio traffic on VHF channel 16, seen the SPEEDY GO's flares and then turned around. They sailed back to Flensburg and the crews met in the afternoon and shared information.

The vessel operator organised psychological support and counselling in Flensburg for all fellow sailors but nobody made use of it. In addition to Alpha, who discharged himself from the hospital in Flensburg at about 1500, Charlie, Delta, as well as the skipper and two co-sailors on board the PIRANJA also ended the sailing trip early after the fatal accident involving the skipper of the SPEEDY GO. Bravo and Echo remained in Flensburg and continued the voyage, which was planned until 12 April, on the PIRANJA with another skipper and could therefore be interviewed in person by the BSU in Flensburg on the last day of the sailing trip. The interviews with the remaining crew members and other witnesses were conducted by phone.

The maritime psychosocial emergency care service of the German Seafarers' Mission offered those involved in the accident support in coming to terms with their experiences and the stresses associated with them, as well as appropriate psychotherapeutic help,

[35] Source: Syd- og Sønderjyllands Politi, South Jutland Police, Denmark, taken at 1410 on 8 April 2022.

if necessary. The BSU forwarded information about the contact with the psychosocial emergency care service to all co-sailors.

The following figure provides a chronological summary of the key events during the course of the accident:

Timeline of the Accident

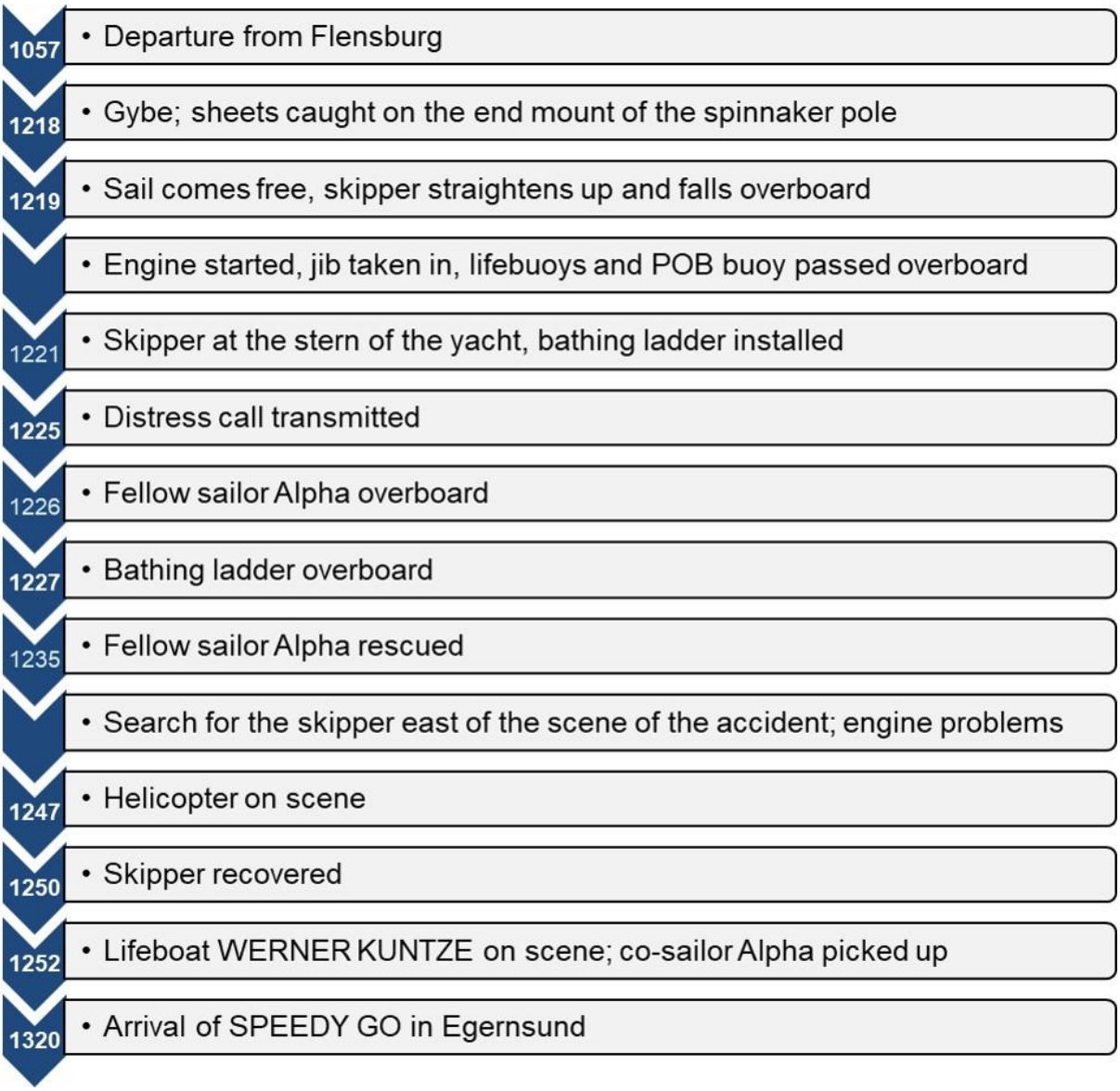


Figure 16: Timeline with key events

The times shown in bold white font were taken from various pieces of evidence, while all other times are approximate.

3.2 Investigation

3.2.1 Similar Accidents

“According to relevant analyses, the majority of accidents [in recreational boating] could be avoided through greater caution and care. Most accidents at sea happen because the boat's crew is inexperienced, not wearing lifejackets or does not know how to use the lifesaving appliances – i.e., they do not know how to indicate their position or cause of the accident in a radio distress call, for example. Even experienced skippers repeatedly overestimate their own competence, do not brief the crew on board on the rescue options or plan the voyage inadequately.”[36]

A summary of the key findings of previous BSU investigations into POB accidents on yachts (except single-handed sailors), ensuing actions taken and safety recommendations issued follows. In addition to the file number (Ref.) and a brief description, the following table shows four of the main factors identified that contributed to the respective accident or its severity. All the accidents listed ended fatally for at least one of the people who went overboard.

Table 1: Investigated POB accidents on yachts

Since the amended Maritime Safety Investigation Act (SUG) came into force on 1 December 2011, non-commercial recreational boating is for the most part no longer included in the material scope of application, meaning that a significantly lower number of accidents involving recreational crafts were investigated after 2011.

	Legend:
No lifejacket worn:	Either there were no suitable lifejackets on board or the prevailing environmental conditions did not warrant the wearing of a lifejacket from the crew's point of view.
Not secured with a lifeline:	Either there were no lifelines and/or suitable anchor points on board or lifelines were worn but not used or attached.
Inadequate familiarisation:	There was either no or an incomplete briefing at the beginning of the sailing trip.
Lifesaving appliances not used effectively:	Lifesaving appliances were unavailable, unready or unsuitable. Marking in bold font when existing lifesaving appliances were simply not used.

If a field is greyed out, this aspect was not addressed in the investigation report and could not be deduced from the context.

[36] FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020.

Ref.	Brief description	No lifejacket worn	Not secured with a lifeline	Inadequate familiarisation	Lifesaving appliances not used effectively
338/03	Loss overboard of a **crew member** of the SY LISA after an accidental gybe east of Fehmarn on 8 November 2003	X	X	X	X
122/04	Loss overboard of the **skipper** of the SY RENI in the Bay of Mecklenburg south-east of Fehmarn due to an extremely high wave on 31 May 2004	X	X		**X**
145/04	Loss overboard of the **skipper** of the SY ALENA while taking in the sails south-west of Gedser on 20 June 2004	X	X	X	**X**
149/05	Loss overboard of the inebriated **skipper** of the SY INA 2 north of Wustrow on 1 May 2005	X	X		X
191/05	Serious injury, loss overboard and rapid sinking of the **skipper** of the SY ANDREA after an accidental gybe in Swedish waters near Ellös on 28 May 2005	X	X		
327/05	Loss overboard of the **skipper** of the SY UNIKUM while setting the square sail off Warnemünde on 13 August 2005	X	X	X	X
356/07	Loss overboard of the **skipper** of the SY KLEINER LUMP while taking in the sails off Otterndorf, Elbe, on 7 August 2007	X	X		X
260/08	Loss overboard of the **skipper** of the SY HAPPY while lowering the engine into the water off Haffkrug/Neustadt Bay on 4 June 2008	X	X		**X**
94/09[37]	Loss overboard of **everyone on board** the SY KELBO when she heeled heavily between Mallorca and Ibiza on 29 March 2009	X	X		X
286/09	Loss overboard of the **skipper** of the SY CROSS MATCH from a bosun's chair while clearing the sails near Bornholm on 20 July 2009				X
143/11	Loss overboard of the **co-skipper** of the SY SPECIAL ONE after clearing the mainsheet off Fehmarn on 30 April 2011		X	X	X
402/15	Loss overboard of a **crew member** while taking in the sails on the SY DESDEMONA on 21 September 2015 in the Rostock approach channel between buoys 9 and 11	X	X		X

[37] Case investigated by the Spanish investigating authority, CIAIM (Comisión Permanente de Investigación de Accidentes e Incidentes Marítimos), and investigation published in Investigation Report A-08/2010, which can be viewed in German as an Annex to BSU Report 143/11.

Other general conditions contributing to fatal accidents involving people falling overboard on yachts included:

- POB manoeuvres were not practiced;
- POB manoeuvres were not executed according to the rules of good seamanship;
- lifejackets were lost because a crotch strap was either not provided or worn;
- sails were not reefed (in time)[38];
- accidental gybe;
- alcohol consumption;
- the accident position was not secured;
- rescue services were not alerted (no radio on board, for example).

Inter alia, the following recommendations were made in the various investigation reports for the cases referred to in Table 1, some of which were repeated in essence several times:

- compliance with the 'Sicherheitsrichtlinien zur Ausrüstung und Sicherheit von Segelyachten/Mehrrumpfbooten' [safety guidelines for the equipment and safety of sailing yachts/multi-hull boats] of the Cruiser Section of the German Sailing Association;
- compliance with Rule 7 of the ten safety rules for water sports enthusiasts from the 'Sicherheit im See- und Küstenbereich' [safety in maritime and coastal areas] pamphlet of the Federal Maritime and Hydrographic Agency (now 'Sicherheit auf dem Wasser' [safety on the water] published by the Federal Ministry for Digital and Transport);

  > *"7. Person overboard*
  > *Take steps to prevent people from falling overboard and review methods for rescuing people overboard. Arrange for lifejackets and safety harnesses to be donned in good time. Indicate suitable anchor points for safety harnesses. Practice person-overboard manoeuvres regularly. Check the options for and practice hauling on board people who are weakened, in particular."*[39]

- allocate roles and prepare for/practice applicable processes in an emergency;
- before or at the beginning of the sailing trip practice a POB manoeuvre (several times);

[38] Reef: Reduction of the sail area usually due to or in anticipation of strong wind.

[39] FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020. P. 6.

- practical performance of POB manoeuvres with a dummy or other heavy objects as part of the SBF examination;

- always wear lifejackets on deck and use lifelines, review of outfitting requirements with and wearing of lifejackets by the legislator;

- check equipment with lifesaving appliances and, if necessary, improvement with regard to their suitability (especially for small crews) by the vessel operator;

- wear protective clothing when helping people overboard from out of the water;

- avoidance of danger areas caused by sails/sheets/boom;

- constant monitoring of the course of the yacht's voyage, especially in changing winds and downwind courses;

- extensive safety familiarisation for co-sailors and passengers and actively requesting one from the skipper;

- improvement of the comprehensibility of safety-related equipment requirements for recreational crafts.

According to information given by the vessel operator, the loss overboard of the SPEEDY GO's skipper was the first time in the company's history that someone had fallen overboard on one of the vessel operator's yachts in low water temperatures. Most recently, someone is said to have fallen overboard on the lee side of a yacht in the Canary Islands at a water temperature of about 22 °C on the way back from the foreship to the cockpit. The person was rescued quickly and remained unharmed.

From January to October 2022, DGzRS sea rescue personnel deployed 614 times for sailors, including eight times due to people falling overboard.[40]

3.2.2 Legal Classification of the SPEEDY GO

Pursuant to Section 2(1)(6) of the German Ordinance on Seagoing Recreational Crafts (SeeSpbootV)[41], the SPEEDY GO is a recreational craft used commercially. Moreover, the yacht is categorised as a large recreational craft (see Section 2(1)(2) SeeSpbootV), as she has a cabin and sleeping accommodation and is suitable and intended for voyages seaward of the baseline (see 0 – built in accordance with Design Category A).

[40] *Panorama – Aus welchen Gründen die Retter ausrücken müssen.* Published in: *YACHT*, 2023, Issue 1, p. 8.

[41] German Ordinance on Seagoing Recreational Craft of 29 August 2002 (Federal Law Gazette I p. 3457), as amended by Article 3 of the Ordinance of 3 March 2020 (Federal Law Gazette I p. 412).

3.2.3 Required Vessel Documentation and Equipment

Given her length of 13.50 m, her year built, 2014, and the fact that she is a commercially used recreational craft, the SPEEDY GO has a mandatory requirement to carry the below documents:

- minimum safe manning certificate;
- safety certificate from the Ship Safety Division (BG Verkehr), for which the following items are a prerequisite:
  - CE[42] declaration of conformity with details of the modules and Annex I to the declaration of conformity and CE mark;
  - written declaration of the owner that the vessel is in the condition specified in the declaration of conformity and that no measures affecting the vessel's stability have been taken;
  - owner's manual;
  - document of compliance for liquefied gas installations on watercraft;
  - radio equipment approval.

In addition to the above documents, the SPEEDY GO must comply with the following requirements/equipment specifications before the safety certificate can be issued for Sea Area C[43], the sea area relevant to this accident, inter alia:[44]

- VHF marine radio installation approved by the German Network Agency;
- VHF handheld radio approved by the BSH[45], in accordance with MED[46] or CE;
- EPIRB approved by the BSH, in accordance with MED or CE;

[42] A CE marking indicates that the product bearing it complies with the applicable requirements of the harmonisation legislation of the European Community in accordance with Regulation (EC) No 765/2008.

[43] Sea Area C: Voyages along the coastline confined to a sea area located at a max. distance of 20 nm, measured from the mainland (coastline at mean high water) and/or from offshore islands situated at a distance not exceeding 40 nm from the mainland and/or from another island.

[44] Recreational craft form, German Social Accident Insurance Institution for Commercial Transport, Postal Logistics and Telecommunication, report on the survey of the safety equipment for commercially used recreational crafts with hull lengths of 8 m to 24 m, as at 04/2020. https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-dienststelle/vordruck-sportboote-04_2020.docx/%40%40download/file/Vordruck%20Sportboote%2004_2020.docx (24 February 2023).

[45] Federal Maritime and Hydrographic Agency.

[46] Wheel approval pursuant to the Marine Equipment Directive (2014/90/EU).

- 9 GHz radar transponder (SART) approved by the BSH, in accordance with MED or CE;
- muster list[47];
- approved lifejacket with safety harness, lifeline and karabiners for each person;
- approved liferaft(s) directly on deck or under a hatch opening directly onto the weather deck with sufficient capacity for everyone on board;
- storm jib;
- mainsail with at least two rows of reefing;
- two approved lifebuoys (one with 100 m of buoyant free-running line, one with self-igniting light, drogue and whistle – horseshoe lifebuoys are permitted);
- one marker buoy with pendant and flag;
- eight parachute flares;
- four hand flares;
- one employer's liability insurance association medical care box for offices and workshops according to DIN 13157c;
- items of equipment must be ready for use, quickly accessible and easy to deploy.

The SPEEDY GO has a valid safety certificate for Sea Area C and was built in accordance with Design Category A[48]. The outfitting requirements of the Ship Safety Division (BG Verkehr) have been met. A blank version of the muster list was on board but not completed before or at the start of the sailing trip.

In addition to the equipment stipulated by the Ship Safety Division (BG Verkehr), a lifesling attached to the aft guardrail and a buoy hook for attaching to a halyard[49] or the topping lift[50] were also available on board the SPEEDY GO as possible lifesaving appliances for people overboard (see 3.2.10.2).

[47] Plan for the organisation of safety on board, which assigns crew members a specific role in emergency situations.
[48] Design Category A: Wind force more than 8 Bft, significant average wave height more than 4 m.
[49] Line used for setting and striking or reefing the sails. It is attached to the head of the sail (top of the sail) and runs over the masthead (top of the mast) back to the deck, where it can be fastened.
[50] Line that holds the (main) boom in a horizontal position. It is attached to the boom head (outer end of the boom) and runs over the masthead back to the deck where it can be fastened.

3.2.4 Skipper

3.2.4.1 Qualifications and Experience

The casualty (aged 54 years) had worked on a freelance basis for the vessel operator of the SPEEDY GO since 2009. He had been on 148 sailing trips and according to the vessel operator's records had sailed some 47,060 nm on its yachts. Prior to the coronavirus pandemic, in 2019, he was on board for the vessel operator for more than 25 weeks, just under 14 weeks in 2020 and 12 weeks in 2021.[51] The planned heavy weather sailing trip from/to Flensburg starting on 7 April 2022 would have been the fourth such trip for the skipper. In addition to his work for the vessel operator of the SPEEDY GO, he occasionally assisted at a sailing school. He had held an international certificate for operators of pleasure craft in coastal waters not exceeding 30 nm (SSS) since 2009 and an SRC[52] since 2006.

The vessel operator explained the BSU that all skippers are given further training at the vessel operator's expense. According to the vessel operator, the skipper involved in the accident had attended the following training courses:

- the vessel operator's in-house skipper's seminar;

- ISAF[53] training
  Now referred to as World Sailing Safety Training – two days of World Sailing certified offshore survival training according to Appendix G (Model Training Course Offshore Personal Safety) to the World Sailing Offshore Special Regulations (OSR);

- 'Medizin an Bord'/OSR-compliant first aid course:
  Two-day training course for medical emergencies on board a yacht, which goes beyond an ordinary first aid course and is certified by the German Sailing Association and World Sailing according to Appendix H (model first aid training course) to the OSR;

- the vessel operator's in-house crew management training;

- the vessel operator's in-house risk management training.

The vessel operator did not document the exact time (month/year) of the skipper's attendance at the various seminars.

3.2.4.2 Personal Equipment

The vessel operator stated that the skipper usually took his own lifejacket on sailing trips. The fellow sailors stated that the skipper did not use any of the lifejackets stowed on board. The BSU investigation revealed that the skipper's personal lifejacket was at his home address on the day of the accident. Since no lifejacket was recovered from the water and all lifejackets were still on board the yacht after the accident, it is to be

[51] Times only apply to actual sailing trips and do not include waiting or departure/arrival times.
[52] SRC: Short range certificate – internationally and indefinitely valid radio operating certificate, as well as official authorisation to participate in the Global Maritime Distress and Safety System (GMDSS) for VHF on recreational crafts.
[53] ISAF: International Sailing Federation; renamed to 'World Sailing – A Sport for Life' (world federation of all sailing sports) in 12/2015.

concluded that the skipper was not wearing a lifejacket on board. Photographs of the co-sailors confirm this.

At the time of the accident, the skipper was wearing a pair of light-coloured trainers, dark work/cargo trousers, as well as a dark blue jumper beneath a dark blue rain jacket with a hood of the same colour and a dark knitted hat. One of the co-sailors felt that the skipper's equipment was somewhat sparse, especially given the weather forecast with strong wind and rain.

3.2.4.3 Autopsy

The Department of Forensic Medicine at Odense University Hospital (state forensic medicine for Funen and South- and Sønderjylland) performed an autopsy on the deceased skipper on behalf of the BSU on 13 April 2022.

A large amount of fluid was found in the lungs and sinuses of the deceased. External and internal injuries (e.g. fractured ribs) are attributed to the rescue operation and attempts to resuscitate. The body weight of the deceased was 93 kg.

The forensic examination of chemicals did not provide any evidence of alcohol, medication or addictive substances.

Based on the findings and reports, the cause of death is assumed to be hypothermia and suffocation by drowning.

3.2.5 Fellow Sailors

3.2.5.1 Qualifications, Experience and Equipment

All the fellow sailors on board the SPEEDY GO already had sailing experience before the planned heavy weather sailing trip from 7-12 April 2022.

For co-sailor Alpha (aged 64 years), the heavy weather sailing trip was the first of its kind. He had completed a six-day training course during the coronavirus pandemic in preparation for the practical examination for the international certificate for operators of pleasure craft in coastal waters not exceeding 12 nm (SKS), four days of skipper training together with his wife and four days of skipper training with his son. At the time of the accident, Alpha had held an SKS since October 2021 and an SRC since December 2020. He was issued the international certificate for operators of pleasure craft (SBF) in March 2020.

Co-sailor Bravo (aged 45 years) was preparing for the Swiss Certificate of Competence for Ocean Yachting at the time of the accident. The sailing trip on the SPEEDY GO and later on the PIRANJA was his fourth sailing trip at sea. He has been sailing on inland lakes for two years. By his own account, Bravo had sailed about 900 nm as of 12 April 2022. In September 2020, he was issued a Swiss Category C skipper's licence (sailing vessels).

Co-sailor Charlie (aged 63 years) acquired the SBF and the SRC in 2015 and has been holidaying on sailing yachts in the Mediterranean with his wife every summer since then. He completed a skipper training course in Croatia. In 2016 he did the SKS and

in 2019 the SSS. His reason for sailing on board the SPEEDY GO during the heavy weather trip was to gain experience in heavy weather and adverse conditions.

Co-sailor Delta (aged 71 years) stated that he has been sailing since the age of 17. He had already completed various sailing trips on other yachts belonging to the vessel operator of the SPEEDY GO before the coronavirus pandemic, including a heavy weather sailing trip. Delta used to own a sailing yacht on the French Atlantic coast. He has also made various sailing trips on other commercially operated sailing yachts. He has held an SBF since 2010, an SKS since 2011 and an SRC since 2012.

Co-sailor Echo (aged 46 years) had sailed some 400 nm before the sailing trip on the SPEEDY GO. He has held an SKS since October 2021 and an SRC since April 2021.

All the fellow sailors were equipped with professional sailing clothes (sailing shoes/boots, waterproof sailing trousers, high-visibility sailing jacket with hood) and some were wearing gloves, goggles to protect against spray water and/or a hat. After casting off, all fellow sailors on deck had their lifejackets on at all times.

3.2.5.2 Voyage Conditions

The vessel operator of the SPEEDY GO offers sailing trips on 14 different yachts in the form of so-called 'berth charters' (as at 22 May 2023). The sailing trips focus on various topics, including training for the acquisition of the SBF-See, SKS or SSS. As a general rule, the yachts are only chartered with a skipper chosen by the vessel operator.

Five-day heavy weather sailing trips are offered from Flensburg on several yachts in spring (middle/end of March to the middle of April) and autumn (end of September to the middle of November). The route is not specified in advance, but planned by the skipper on a daily basis based on weather conditions. One example of this is a sailing trip around Funen and in the Danish South Sea. In contrast to other sailing trips, where six people usually sail on each yacht, only five berths are sold for crew members on heavy weather sailing trips. The brief description adds: *“We sail out up to wind force 9. You will learn how a yacht behaves in harsh weather. We have appropriately small sails for this. For example, the mainsail has three reefs.”*[54] The sailing trip description on the vessel operator's website also includes an illustrated voyage report for a heavy weather sailing trip around Funen in strong to stormy south-south-westerly winds (6-8 Bft) and squalls.

About ten days before the start of the sailing trip, all participants receive a crew list with the contact details of the skipper and all other crew members, travel information and port maps.

[54] Source: SCHOENICKE SKIPPERTEAM: *Schwerwettertörn – Segeln im Sturm*. https://skipperteam.de/toerns/toernziele/schwerwettertoern (13 September 2022).

Several crew members stated that they had not been asked for any information about their previous sailing experience or qualifications when booking the sailing trip. The vessel operator told the BSU that sailing experience is requested by phone when a heavy weather sailing trip is booked and that novices should not be taken on a heavy weather sailing trip under any circumstances.

The nature of the sailing trips offered and the eligibility of novice sailors are addressed in general terms and in concrete terms, respectively, on the vessel operator's website: "*Beginners sail with us! It is your first time on a yacht and we are delighted to have you. We teach you on our training trips systematically. [Explanation of a possible sailing development path with basic yacht course, SBF, SKS and SSS.] This possible sailing development path is an excellent way to become a competent sailing enthusiast. But why not just sail with us for now? And all our sailing trips offer that. We will also take you across the Atlantic if you know exactly what you are getting into and if such a sailing trip is right for you. That is something we can discuss with each other.*"[55]

It goes on to explain that training is given on every trip. The whys and wherefores are always explained, as it is reportedly about learning and understanding. Practicing manoeuvres is reportedly only possible to a very limited extent during 'normal' sailing trips, but is the main focus of training trips.[55] The vessel operator told the BSU that all skippers employed also reportedly provide training and that it was reportedly received positively by co-sailors when training was carried out on board. A buoy-overboard manoeuvre is reportedly part of every sailing trip.

The reservation documents sent to fellow sailors comprise a cover letter, a co-sailing agreement, important advice on the sailing trip, as well as the general terms and conditions, which include the conditions for cancelling.

The following is clarified in both the co-sailing agreement and the general terms and conditions: "*You are a co-sailor on the booked sailing trip. Together with a skipper appointed by SKIPPERTEAM and the other co-sailors, your active involvement on board is explicitly desired by you and expected by us. You can swim and are healthy and fit. You have obtained information about the risks of offshore sailing.*"[56] "*The sporting nature of the sailing trip has priority. We expect you to be proactive and flexible with regard to any problems that may arise. Active participation also means supervised assistance with any repairs that need to be made and the rectification of damage, as far as your possibilities and abilities permit.*"[57]

[55] Source: SCHOENICKE SKIPPERTEAM: *Törncharakter und Segelanfänger*. https://skipperteam.de/toerns/segelanfaenger (13 September 2022).
[56] JOCHEN SCHOENICKE SKIPPERTEAM GESMBH: *Skipperhandbuch – MITSEGELVEREINBARUNG,* version dated 1 March 2019.
[57] JOCHEN SCHOENICKE SKIPPERTEAM GESMBH: *Skipperhandbuch – ALLGEMEINE GESCHÄFTSBEDINGUNGEN FÜR SEETÖRNS,* version dated 1 March 2019.

3.2.6 Safe Manning

As a commercially used recreational craft, the SPEEDY GO has a minimum safe manning certificate. Both this and the safety certificate are issued for Sea Area C. According to the document, the yacht is considered to be adequately manned by a skipper (master) who is an EU/EEA national and at least the holder of an SKS. If the yacht is operated as a training vessel and sails for more than ten hours within a 24-hour period, then she must also be manned by a holder of the SBF-See (chief mate).

As a holder of the SSS, the skipper's qualifications exceeded the requirements to operate the yacht alone. Several co-sailors held an SBF-See or a higher qualification, meaning that in formal terms voyages lasting more than ten hours would have been possible by arrangement.

The Ship Safety Division (BG Verkehr) issued the minimum safe manning certificate in accordance with the German Ordinance on Safe Manning (SchBesV)[58], as it classifies a commercially used recreational craft as a merchant vessel (see the Ship Safety Division (BG Verkehr)'s information on commercially used recreational craft[59], 8.1.1). The certificate issued corresponds to the model certificate for merchant ships and contains the nationality requirement for masters pursuant to Section 4 SchBesV. Otherwise, the certificate was issued in accordance with the national regulations in Annex 4 to Section 15(2) SeeSpbootV and not in accordance with the rules of the SchBesV.

3.2.7 Weather Conditions

Germany's National Meteorological Service (DWD) prepared a weather assessment for Flensburg Firth on 8 April 2022 on behalf of the BSU. The assessment was based on measurements and observations of the surrounding weather stations, analysis of various meteorological services, predictions made using different weather and wave forecasting models, as well as radiosonde observations, satellite and radar images.

On the day of the accident, a powerful storm depression (970 hPa) spread across southern Sweden into the northern Baltic Sea with the associated cold front veering across Flensburg Firth. The weather at the rear edge of the front was unsettled and stormy at times. A west-north-westerly wind of 5-6 Bft with gusts of up to 8 Bft prevailed due to unstable atmospheric stratification. Due to the topography of Flensburg Firth, additional channelling effects were possible, causing an acceleration of the wind with gusts of up to 10 Bft.

The significant wave height was less than one metre. The mean current in the layer from 0-5 m water depth at the scene of the accident set slightly to the east at 0.1-10 cm/s.

[58] German Ordinance on Safe Manning of 18 July 2013 (Federal Law Gazette I p. 2575), as amended by Article 1 of the Ordinance of 23 June 2021 (Federal Law Gazette I p. 1849).

[59] https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-dienststelle/informationsschreiben-sportboote.pdf (24 February 2023).

The results of the weather assessment are consistent with the co-sailor's descriptions of the weather conditions. The cold front described by the DWD reached the port of Flensburg at about 1050 on the day of the accident.

3.2.8 Seamanship on Board the SPEEDY GO/on Yachts

The term (good) 'seamanship' is used generically for the proper execution of almost every task on board a ship. However, 'rules of good seamanship' is also a legal term for assessing proper conduct, taking into account customary and/or standard maritime practice. "*The rules of good seamanship apply to all matters in the handling of a ship and are equally applicable to merchant shipping and recreational boating, as well as to navigation at sea and on inland waters."*[60] They go beyond statutory provisions, change as a result of technical advancement and are based on the recommendations of various bodies.[61]

Various institutions and other sources were consulted to assess the procedures on board the SPEEDY GO with regard to the rules of good seamanship:

- Federal Ministry for Digital and Transport (BMDV),
  - the 'Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler' [safety on the water – important rules and tips for water sport enthusiasts] pamphlet;

- German Maritime Search and Rescue Service (DGzRS),
  - inter alia, the 'Sicher auf See – Grundlagen für alle Wassersportler' [safe at sea – basics for all water sports enthusiasts] pamphlet;

- German Sailing Association (DSV),
  - publications: https://www.dsv.org/dsv/mitgliederservice/downloads/;
  - Cruiser Section: information for members (https://kreuzer-abteilung.org/vorteile/);

- German Motor Yachting Association (DMYV),
  - information on sailing trips (online: https://www.dmyv.de/toerninfo/);

- Allgemeiner Deutscher Automobil-Club e. V. (ADAC),
  - Skipper Portal (online: https://skipper.adac.de/);

- World Sailing Limited,
  - Offshore Special Regulations[62];

[60] ZÄHLE, KAI: Die Regeln guter Seemannschaft. Published in: *Neue Zeitschrift für Verkehrsrecht (NVZ),* 2015, Issue 10, p. 476-481.

[61] Ibid. and Chapter 3.2.7 of BSU Investigation Report 276/21 on the foundering of the sailing boat SILJA.

[62] As the world governing body for regatta sailing, World Sailing publishes international offshore safety regulations. The Offshore Special Regulations (OSR) are also recommended with regard to ship design, equipment, personal protective equipment and training, irrespective of competitive racing. The Cruiser Section of the DSV have summarised the guidelines in German.

- 'Seemannschaft – Handbuch für den Yachtsport' [seamanship – handbook for yachting], Delius Klasing Verlag, 32nd edition;

- 'Praxiswissen – Moderne Crewführung auf Sportbooten' [practical knowledge – modern crew management on recreational craft], Delius Klasing Verlag, 1st edition;

- the YACHT magazine, Delius Klasing Verlag.

3.2.8.1 Preparing for the Sailing Trip and Familiarisation

Every sailing trip must be well prepared for – from the seaworthiness of the vessel across planning the route, the (safety) briefing and the equipment of the crew to the appropriate distribution of tasks on board. Various technical publications list, for example, the donning of lifejackets, the operation of lifesaving appliances and other safety devices, safe movement on board, starting the engine, as well as the handling of sails as the absolute minimum that every person on board – be it crew members, other sailors or guests – must have been familiarised with before the sailing trip. Everyone on board should also be informed about the planned route, expected weather conditions and other specifics. The distribution of tasks is another point that needs to be discussed. Similar to the briefing, it must be adapted to the experience of co-sailors and should consist of both theory, demonstrations and practical exercises.

On one hand, carrying out practice manoeuvres before the actual start of the sailing trip gives all crew members the opportunity to familiarise themselves with the most important steps on board. On the other hand, the skipper can better assess crew members and their abilities, and distribute the tasks on board appropriately. In particular, the operation of the boat's engine, arrangement and execution of sailing manoeuvres (setting, reefing, striking), sailing manoeuvres (tacking, gybing, headings), as well as emergency manoeuvres (e.g. POB manoeuvres) must be practiced.

As the accident investigated here confirms, even the skipper is not immune to accidents or illness, which is why a suitable crew member should be briefed and designated as a substitute (co-skipper) for the event that the skipper is unavailable.

In recreational boating, ensuring that the entire crew is adequately equipped is also part of preparing for the sailing trip. The equipment includes both personal lifesaving appliances (see 3.2.8.3) and appropriate clothing that keeps water sports enthusiasts warm and improves the visibility of a person in the water who has fallen overboard by means of high-visibility colours (e.g. on the hood). The risk of hypothermia also exists at higher air temperatures, firstly due to the effect of wind and secondly due to spray water. The risk of hypothermia is at its greatest when a person falls overboard (see 3.2.10.3). In addition to suitable oilskins, underwear and footwear, depending on environmental conditions other items such as gloves, headgear, protective goggles and/or sunglasses, sunscreen and even a dry suit complete the equipment of a well-prepared water sports enthusiast or recreational boater.

Taking into account a wide range of aspects, and even though the scale is much smaller, the safe navigation of a yacht has about the same degree of complexity as the navigation of a merchant ship. Accordingly, it is advisable to go through a suitable checklist that is adapted to the yacht when briefing fellow sailors, so as to ensure all key areas are properly covered. The following questions were compiled from various sources[63] and supplemented and must be (positively) answered during a briefing (see also BSU Investigation Report 276/21 on the SILJA case, Annex 2):

Table 2: Model checklist for briefing co-sailors before a sailing trip

The right-hand column of the table shows which items are partly [(✓)] and completely [✓] included in the checklist of the vessel operator of the SPEEDY GO for the briefing of crew members by the skipper (see also Annex 9.1). All items in bold font indicate the minimum scope of a crew briefing according to the BMDV.

General Information about the Sailing Trip	
☐ What kind of sailing trip is planned (route, specifics, duration)?	
☐ Which ports and anchorages are on the route and can be steered for in an emergency?	
☐ What weather conditions are expected?	
Briefing on Facilities on Board	
☐ How are fenders and lines handled when mooring and unmooring (fending off, throwing and securing lines)?	(✓)
☐ **How do I operate the engine (start, stop, sail ahead and astern) and how do I make an emergency stop?**	(✓)
☐ How are the sails, running rigging[64] and winches operated safely (setting, furling, reefing, trimming[65] sails)?	
☐ What needs to be considered when anchoring?	(✓)
☐ How is the on-board power and equipment switched on?	
☐ How are important systems and equipment (e.g. bailer and other bilge equipment, seacocks and fuel valves, WC, fire-extinguishing system) operated and where are they located?	✓
☐ How is gas used on board and how is the gas supply turned off?	
☐ Where can the crew find additional clothing and weather gear?	

[63] GERMAN MARITIME SEARCH AND RESCUE SERVICE: *Sicher auf See – Grundlagen für alle Wassersportler*. Pamphlet. Bremen.
FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020.
GERMAN MOTOR YACHTING ASSOCIATION: *Törninfo – Basiswissen*. https://www.dmyv.de/toerninfo/basiswissen (7 October 2022).

[64] 'Running rigging' refers to all lines used to move the sails (and spars/booms), as well as all ropes and tackle that are not attached at both ends, i.e. can be moved.

[65] To 'trim' the sails means to adjust them for the course sailed and environmental conditions.

Code of Conduct on Board	
☐ What is the code of conduct on board?	(✓)
- No smoking in the berth, when bunkering fuel and windwards	(✓)
- Disposal of cigarette ends and matches in designated containers	
- Maintenance of cleanliness and environmental protection	✓
- Proper operation of electrical and gas appliances, no operation while bunkering	(✓)
- Wearing lifejackets and securing with lifelines	✓
- One hand for you, one for the vessel	✓
- Keep companionway/escape routes clear	✓
- etc.	✓
Safety and Emergency Management	
☐ Where are the lifejackets and lifelines stowed and how are they worn?	✓
☐ Are the lifejackets ready for use (visual inspection and quick check of operational readiness, maintenance interval, personal adjustment of size) and what equipment is available on them (oral valve, whistle, light)?	(✓)
☐ **How should I behave in an emergency (POB, fire, water ingress, engine failure, medical emergency, etc. → role allocation) and inform other people on board?**	(✓)
☐ How is the radio incl. DSC operated?	
☐ How is the vessel's position read from the GPS unit and where is the POB/MOB button?	
☐ How and to whom is a distress call transmitted (communication options, especially VHF distress channel and correct reporting)?	
☐ **Which bodies must be notified and under what circumstances (MRCC Bremen, vessel traffic information services, waterway police)?**	
☐ Where are signalling devices located and how/when are they used?	(✓)
☐ Where is the emergency bag and what does it contain?	
☐ **Where is the first aid kit and what (immediate) action should be taken in the case of people who are seasick, injured in an accident or in need of resuscitation?**	(✓)
☐ Where are safety equipment and lifesaving appliances (e.g. liferaft, lifebuoys, lifeslings, means of reboarding) and how are they operated?	✓
☐ **Who has what tasks during the POB manoeuvre and how are weakened/unconscious people brought back on board?**	✓
☐ **How can different fires on board be fought effectively?**	
☐ **Where are fire-fighting appliances and how are they used?**	(✓)

☐ **How and why is water-/airtight integrity established (bulkheads, hatches, portholes, ventilation flaps, etc.)?**	
☐ **How can leaks be contained?**	
☐ **How is the vessel abandoned quickly and safely and where are the emergency exits located?**	✓
☐ When and how is the liferaft lowered into the water?	✓
☐ What are the details of the emergency contacts (friends/family) of each person on board?	
☐ Was the voyage plan given to emergency contacts or the DGzRS's SafeTrx application used?	
Risk Management and Distribution of Tasks	
☐ In which situations must the skipper be informed?	✓
☐ What are the dangers on board and how can risks be mitigated (boom, blocks, winches and windlass, cleats, propeller, engine/shaft, mooring and unmooring → warn about crush injuries)?	✓
☐ **How do I work and move safely on deck and what are suitable anchor points for lifelines (jacklines)?**	✓
☐ Who has which responsibilities and duties on board (if necessary, division of watch and pantry duties)?	✓
☐ Who will take on the role of co-skipper?	

To prepare for the upcoming heavy weather sailing trip, the vessel operator gave the co-sailors the following information about necessary equipment:

Please bring the following: A duffel bag or bags, no hard suitcases
Oilskins, rubber boots and sailing shoes (with colour-fast soles!)
Very **warm clothing** (thermal underwear, fleece, hat, gloves, scarf, possibly ski goggles)
A fitted **sheet** (even if you bring a sleeping bag) and a **sleeping bag** (possibly a small pillow, **pillowcase**) / Towels and a dish towel
Lip balm, sunglasses, personal medication (especially for seasickness)
Passport/ID and travel documents

Figure 17: Information to co-sailors for heavy weather sailing trips from/to Flensburg.[66]

For further information to the co-sailors from the vessel operator about preparing for the sailing trip, please refer to the voyage conditions shown in Chapter 3.2.5.2.

[66] Source: Vessel operator, translated from German.

The vessel operator of the SPEEDY GO provides its skippers with the checklist shown at Annex 9.1 for briefing the co-sailors, which all fellow sailors must sign afterwards. The signed checklist is then forwarded to the vessel operator as confirmation that the briefing was carried out in accordance with the specifications. The vessel operator recommends that its skippers go through the first part of the checklist (below deck) with the co-sailors on the evening of the first day of the sailing trip (day of arrival). The second part of the checklist (on deck) should then be discussed on the following morning during daylight hours immediately before casting off.[67] The vessel operator's manual for skippers provides the following information and advice on the safety familiarisation:

7.3 Briefing: Information for All Sailing Trips

see Annex 9.1

Familiarisation, but how? A list for this is kept on board and can also be found here in the Annex. If you think anything is missing, add it to this list. Arrange for the list to be signed so that no crew member can claim they were not informed about something afterwards.

You then explain the individual cords and their importance to all crew members and assign a crew member to the corresponding position. Example: If we want to set the mainsail, the halyard is made ready at the mast and then we pull here. Can you do that, Hugo. The sheet remains tight and is not released until the last minute. Can you do that, Irene. Mooring and unmooring the same. You will then find the first manoeuvres easier. Depending on the product you are providing, parts of the crew familiarisation can be postponed until the evening. After all, the crew should listen and understand. You must also make an effort to go into the detail.

Pointless Familiarisation: Example: You explain: "The fire blanket is hanging there and in a fire you use it to cover the burning stove." Okay! Then Jochen comes up with an idea during a sailing trip in the Caribbean. The crew is still in the cockpit. "Can you please come down individually." Okay! Rolf is standing in front of the cooker, it is supposed to be burning now, take the blanket……. And he does not know how to get it out of the container.

Figure 18: Skipper's manual for the crew briefing[68]

In addition, the information on 'Modern Crew Management' (see Annex 9.2), and 'Risk Management' (see Annex 9.3) should be gone through on board after arrival and included in the familiarisation on board.

During the BSU's inspection of the SPEEDY GO on 12 April 2022, no completed and signed briefing checklist (see Annex 9.1) could be submitted and the co-sailors did not remember seeing or signing such a checklist. Not all lifesaving appliances kept on board were mentioned during the briefing, e.g. the lifesling in a square yellow tarpaulin container and also mounted on the guardrail (see Chapter 3.2.10.2 and Figure 30). The yacht's rigging or sails and crew or risk management did not form part of the familiarisation, which lasted about 45 minutes according to the fellow sailors. No manoeuvres were practiced. Instead, the first leg of the planned sailing trip began immediately after setting sail. The skipper did not ask about each co-sailor's experience with different boat/ship types or different tasks on deck, nor about their

[67] Explanations of the vessel operator to the BSU on 12 April 2022.

[68] Source: JOCHEN SCHOENICKE SKIPPERTEAM GESMBH: *Skipperhandbuch – 7. Skipperbriefing, 7.3 Briefing: Infos für alle Törns,* version of 1 March 2019. Supplemented by the BSU, translated from German.

expectations of the forthcoming sailing trip. No muster list or co-skipper was defined (see 3.1.1).

Based on past experience, the vessel operator pointed out that a safety familiarisation reportedly takes about an hour. However, it also noted that it was reportedly difficult for the skipper to distribute emergency roles among fellow sailors appropriately at the start of a sailing trip because the skipper was reportedly not able to make a reliable assessment of the abilities of the co-sailors at that point in time. According to statements given by the co-sailors, the skipper did not make any effort to learn about the sailing experience and knowledge of the crew members on the day of arrival or next morning.

Crew member Echo had the impression that the SPEEDY GO had been well maintained and did not notice any defects or missing equipment on board. This assessment is also shared by the BSU after the survey of the yacht four days after the accident. The vessel operator stated that it invested large sums of money in the maintenance of its yachts every winter and that it was reportedly in regular contact with the Ship Safety Division (BG Verkehr) in this regard.

With regard to the personal equipment of the skipper and crew members, reference is made to Chapters 3.2.4.2 and 3.2.5.1.

3.2.8.2 Crew Management

“Gone are the days when the skipper acted as an authoritarian lone wolf.”[69] Used in aviation for many years with proven results and also applied to other sectors, such as shipping and medicine, crew (resource) management (CM) is the organisation of a team so as to ensure safety in all operating procedures.

According to Table A-II/1 of the STCW Code, bridge resource management (BRM) is part of maintaining a safe navigational watch and mandatory standards of competence on merchant ships ≥ 500 GT. BRM is understood to mean the management of all available resources to perform necessary tasks, effective communication, assertiveness (see below) and leadership, situational awareness and consideration of the experience of team members.

In terms of a sailing yacht, effective team organisation means that the skipper is a team player and actively involves crew members in the management of the vessel. This does not mean a loss of authority or leadership, but rather building on the competence of everyone present and using it to make decisions and explain them transparently.

[69] LASSE JOHANNSEN: YACHT-Serie Seemannschaft – Teil 1: Stressfrei Segeln. Published in: *YACHT*, 2022, Issue 6, p. 22-35.

Successful CM contributes to safety on board, as the crew functions better as a team and can thus deal with threatening situations more confidently. “Members of a functioning team look out for each other, make each other and the skipper aware of hazards, make proposals to improve operating processes, communicate with each other with the intention of mutual understanding and thus avoid accidents.”[70]

The skipper's deployment and utilisation of crew member resources is predominantly based upon

- open communication that is both factual and relation-oriented;
- the demand and appreciation of assertiveness[71];
- a positive culture of learning from mistakes;
- consideration of basic human needs in teams, and
- actively promoting competence among all parties involved.[72]

Stefan Strohschneider's so-called 'tank metaphor' defines the basic needs of people in a group as **determination** (understanding what is happening), **control** (influencing events) and **affiliation** (integrating into the group). Skippers can meet such needs among co-sailors by explaining their own actions and decisions transparently, actively involving fellow sailors, requesting cooperation, and sending signals of appreciation and affiliation.[73]

Active competence development among crew members also includes the skipper teaching them emergency manoeuvres, e.g. for the event that she/he falls overboard. Inter alia, this requires an assessment of the existing knowledge of fellow sailors and an appropriate approach by the skipper.[74] A co-skipper – a substitute for the skipper – can also provide additional certainty, especially for inexperienced co-sailors or on difficult sailing trips. This substitute supports the skipper in tricky situations or in training the fellow sailors and assumes command if the skipper is otherwise engaged. One alternative for experienced co-sailors could be to delegate command of the vessel to each sailor for one day at a time. Although overall responsibility for the safety of the crew and the yacht remains with the skipper, she/he takes on more of an observer role and thus enables others to gain experience in commanding the vessel.

[70] CARSTENSEN, B.; JESKE, R.: *Praxiswissen – Moderne Crewführung auf Sportbooten*. 1st edition Bielefeld, Delius Klasing Verlag, 2017. – ISBN 978-3-667-10911-8. P. 13.
[71] In the context of CM: Courage and tenacity in addressing critical aspects and personal observations (speaking up) vis-à-vis managers (or the skipper) and other crew members.
[72] CARSTENSEN, B.; JESKE, R.: *Praxiswissen – Moderne Crewführung auf Sportbooten*. 1st edition Bielefeld, Delius Klasing Verlag, 2017. – ISBN 978-3-667-10911-8, p. 16.
[73] Ibid., p. 24 and 29.
[74] Ibid., p. 32 f.

Regardless of the destination and nature of the sailing trip, CM begins with an initial briefing – separate from the safety briefing given later on – before the vessel casts off. “It is used to assemble the crew and set the team formation process in motion [...] and thus lays the foundation for co-existence on board.”[75] The following points should be covered at the initial briefing:

- words of welcome and introduction of the skipper by name;
- introduction of the co-sailors;
- announcement of the destination and nature of the sailing trip;
- CM-related explanations by the skipper:
  - responsibility of the skipper;
  - the sailing trip as a team effort;
  - calling for assertiveness, speaking up and feedback;
  - positive culture of learning from mistakes;
- organisation of life on board (e.g. watch and pantry schedule);
- rough explanation of the voyage plan based on the navigational chart;
- querying [and considering] ideas, wishes, expectations, fears and open questions;
- explanation of the schedule for the next few hours (e.g. safety and technical briefing, time of departure, etc.).[76]

During the sailing trip, a briefing should be carried out with everyone involved before each manoeuvre in order to establish a common mental model. The objective and course of the manoeuvre are explained, roles are assigned, means and channels of communication are arranged (e.g. commands or hand signals), and finally it is ensured that everyone has understood the content of the briefing.[77]

Unlike other sectors (e.g. aviation or merchant shipping), the principles of CM in (commercial) recreational boating can usually only be trained extensively with the leaders, i.e. the skippers, but not with fellow sailors. Accordingly, it is the responsibility of the skipper alone to establish a culture of 'speaking up' on board through her/his leadership style, the atmosphere on board and explanations.[78]

[75] Ibid., p. 90.
[76] Ibid., p. 91 ff.
[77] Ibid., p. 64 ff.
[78] Ibid., p. 40.

The vessel operator of the SPEEDY GO calls for 'modern crew management' from its skippers. According to the manual for skippers, every skipper must address this issue:

"Modern crew management requires a skipper who sees her-/himself as a team player. Pointers from fellow sailors are explicitly desired and will be acknowledged by you saying 'Thank you for the hint.'

Modern crew management demands you! Now it's all coming together: Less chatting, more listening. Demand active participation from your fellow sailors. Instruct, train, justify decisions – and do so on every sailing trip!"[79]

The book 'Moderne Crewführung auf Sportbooten' [modern crew management on recreational crafts] (see Footnote 70) is recommended in the manual for skippers and the vessel operator provides it to interested skippers free of charge.

In addition to Chapter 7.1 of the manual for skippers, the information shown in Annex 9.2 is also provided to skippers. The vessel operator believes modern crew management is a system of partnership for everyone on board with the aim of:

- broadening personal competence;
- accepting and calling for mutual control;
- being involved in managing the vessel as a crew member, and
- increasing safety by everyone thinking proactively and looking out for each other.

The vessel operator's guiding principle here is: 'You look out for me, and I will look out for you.'[80]

The co-sailors did not have the impression that the skipper of the SPEEDY GO practiced CM on the first two days of the planned heavy weather sailing trip (day of arrival and day of departure from Flensburg). He did not engage in conversation, did not try to bring the fellow sailors together as a crew and did not contribute to a positive atmosphere on board. The co-sailors had the impression that he was dominant when assigning a task but at the same time unapproachable. The skipper's demeanour and communication conveyed the general feeling that nothing should be asked or that questions from the fellow sailors were not welcome.

As already discussed, there was no distribution of tasks before the start of the sailing trip or planned manoeuvres. Relevant information about forthcoming manoeuvres was not shared with the co-sailors.

[79] JOCHEN SCHOENICKE SKIPPERTEAM GESMBH: *Skipperhandbuch – 7. Skipperbriefing, 7.1 Briefing: Modernes Crewmanagement,* version dated 1 March 2019.

[80] JOCHEN SCHOENICKE SKIPPERTEAM GESMBH: *Skipperhandbuch – Modernes Crewmanagement bei allen Törns des Schoenicke SKIPPERTEAMs,* version dated 1 March 2019.

3.2.8.3 Wearing Personal Lifesaving Appliances

Personal or individual lifesaving appliances on sailing yachts mainly include lifejackets, the safety of which can be enhanced further by additional equipment. Additional equipment includes a crotch strap, a light, an emergency transmitter, a spray hood[81] or also a lifeline (see 3.2.8.4). Other personal lifesaving appliances include emergency lights – which can be worn on the arm or integrated into POB marker buoys as person-overboard lights – and cold protection/survival suits.[82]

“All safety-conscious water sports enthusiasts – including good swimmers – wear lifejackets on the water!”[83] Failure to put on a lifejacket will result in a person who has gone overboard becoming incapacitated more quickly, meaning that they are then no longer able to actively participate in the rescue. This ultimately increases the risk of drowning considerably.

With regard to the lifejacket performance levels according to ISO standards, strength requirements, the legal framework for servicing and use, but also recommendations for various lifesaving appliances from the perspective of rescue personnel (DGzRS and helicopter crew of the German Navy SEA KING MK41), reference is made to BSU Investigation Report 276/21 on the SILJA case.

Everyone (including the skipper) on board the yacht was provided with an automatically inflatable lifejacket with three-point lifeline (see Figure 21 and Figure 19). The NAUTOMATIC ALTERNA lifejackets were made by KADEMATIC and had a crotch strap and buoyancy of 150 N. The service interval was maintained. The vessel operator had marked all the lifejackets with the name of the yacht and a serial number. This makes it possible to assign a personal lifejacket which is adapted to individual body measurements (circumference of the lifejacket and length of the crotch strap) to everyone on board at the beginning of the sailing trip.

Before the start of the sailing trip the skipper instructed crew members to distribute the lifejackets among themselves and to adjust the size individually. The lifejacket worn by Alpha triggered on contact with water, as intended. According to the vessel operator, the skipper usually used a lifejacket that he had procured privately. During the investigation, it transpired that the skipper's lifejacket was not on board at the time of the accident but rather at his home. It was not possible to establish why he did not wear one of the lifejackets on board instead.

[81] Protects the face from spray and splashes. Source: See Footnote 82.
[82] FACHVERBAND SEENOT-RETTUNGSMITTEL E. V.: *SICHERHEIT AN BORD – Rettungsmittel*. https://fsr.de.com/wordpress/wp-content/uploads/FSR-Brosch%C3%BCre.pdf (21 October 2022).
[83] FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020.

Figure 19: Vessel's own lifejacket no. 6 with lifeline[84]

3.2.8.4 Self-Protection on Deck

On recreational crafts like the SPEEDY GO, self-protection on deck with a lifeline is possibly more important than wearing a lifejacket. In low water temperatures, heavy seas, darkness, with a small crew and e.g. on yachts with a high freeboard, falling overboard is especially dangerous – even with a lifejacket. Under such conditions, the probability of losing sight of the person in the water or of the person in the water no longer being able to assist in reboarding, e.g. due to hypothermia (see 3.2.10.3), is greatly increased in such cases. Accordingly, wearing lifelines and selecting suitable anchor points is especially necessary in adverse environmental conditions, as well as when working on deck or during sailing manoeuvres in order to prevent falling overboard from the outset. Not all anchor points on board are suitable. Depending on the length of the lifeline, points should preferably be chosen that are as far amidships as possible or on the windward side, as the likelihood of going overboard is greater on the leeward (low) side.

[84] Source: BSU; survey on 12 April 2022.

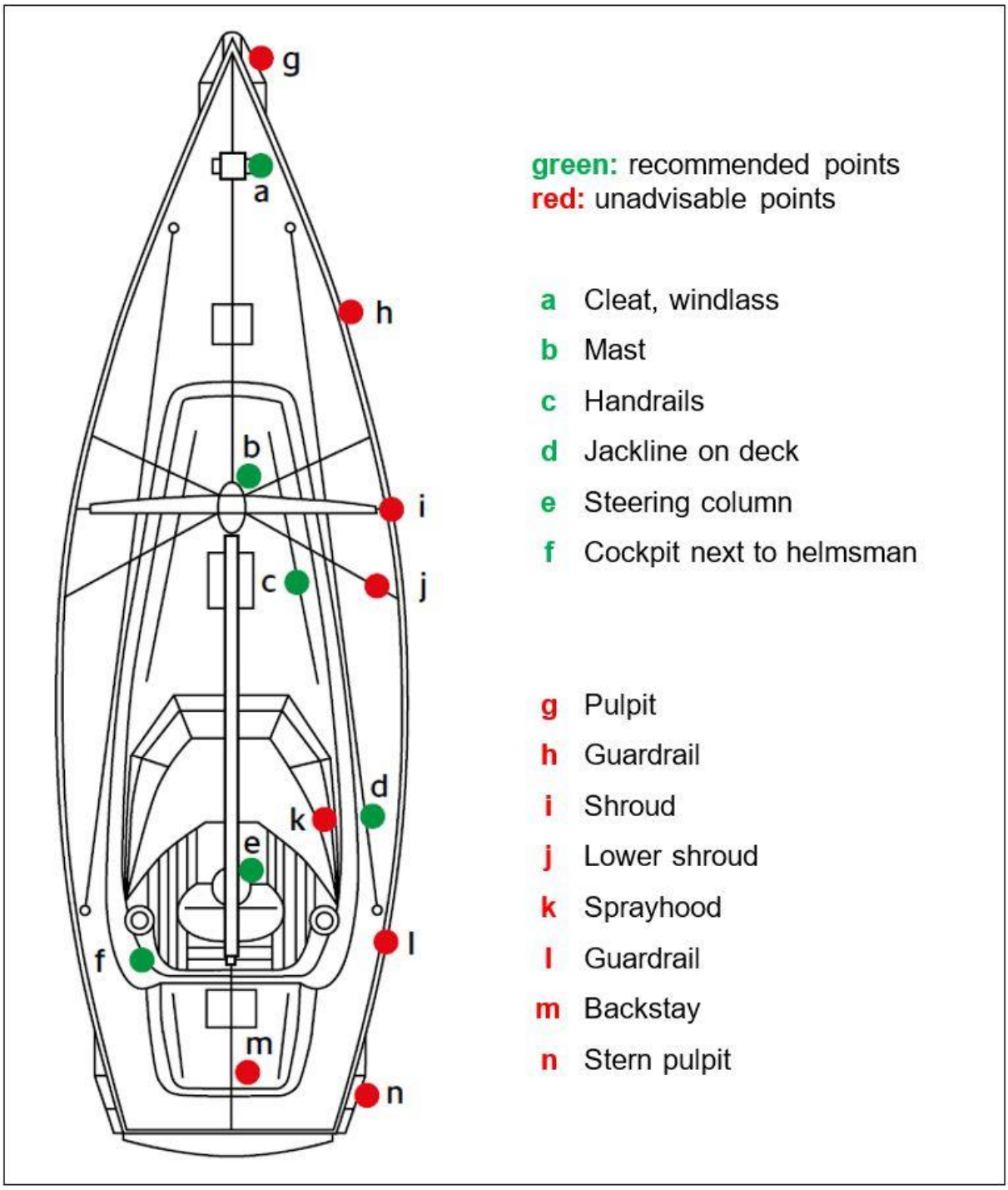


Figure 20: Lifeline anchor points on board a sailing yacht[85]

In addition to the use of lifelines, safety-conscious behaviour on board can also reduce the risk of a POB accident, e.g. keeping a clean and tidy deck, but also always having three points of contact with the vessel (e.g. two feet and one hand) and staying crouched when moving on deck.

[85] FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020. P. 59; edited by the BSU.

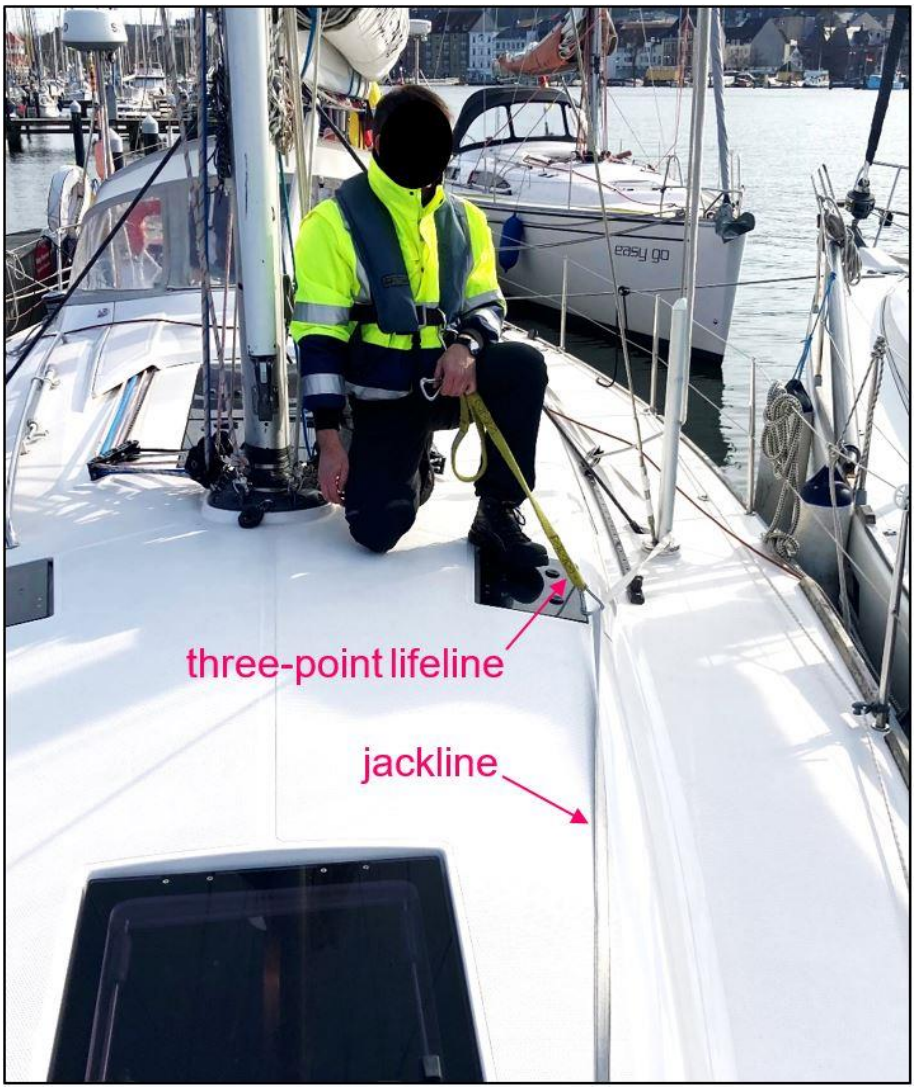


Figure 21: Use of the vessel's lifejacket with lifeline[86]

At the time of the accident, jacklines made of belt straps were deployed on the SPEEDY GO's deck to facilitate self-protection by means of a lifeline. It is unlikely that the jacklines on deck will prevent a fall over the guardrail, as they run uncrossed in the gangboard and therefore the slack is pulled out of the system under load. There are several other options for clipping the lifeline's karabiner directly at the mast, preventing the risk of falling overboard in case of a loss of balance.

According to the vessel operator, skippers are required to ensure that everyone on board wears a lifejacket and uses the lifeline when leaving the cockpit and going onto the foreship. Nobody should move on deck unsecured. While all the co-sailors on board the yacht wore lifejackets with crotch strap, no one used the lifelines for self-protection on deck – not even after the skipper fell overboard and during the rescue attempts. None of the fellow sailors could recall that the use of lifelines on deck was part of the safety familiarisation given by skipper.

[86] Source: BSU; survey on 12 April 2022.

3.2.9 Design and Equipment of Vessel

The following section examines equipment that proved to be a hindrance and/or led to accident events – the spinnaker pole stowed at the front of the mast that caught the jibsheets, the bathing ladder that went overboard and sank during the rescue attempt, as well as the thin rubber expanders used to secure various items of lifesaving equipment to the guardrail.

3.2.9.1 Spinnaker Pole at the Mast

The sheets of the headsail caught on the hook-shaped end mount of the spinnaker pole during the gybe (see 0). The spinnaker pole on board the SPEEDY GO was stowed on the front of the mast (see Figure 5).

The BSU investigation revealed that stowing the spinnaker pole on the mast is one of several common stowage options. For example, in addition to being stowed in front of the mast, the spinnaker pole can also be stowed in a deck bracket or along the guardrail on yachts of this size.[87] Each option for stowing the spinnaker pole on board in port or while sailing without a spinnaker has pros and cons that will not be discussed in greater detail here. In all stowage methods, there is a risk in different situations that running rigging will get caught on the spinnaker pole or its holder.

In the case of the SPEEDY GO, no evidence was found to suggest that the way in which the spinnaker pole was stowed in front of the mast poses an increased risk when handling the running rigging during manoeuvres with a headsail. On the foreship (of any yacht) there are fittings and other points on which rigging can become entangled. The BSU's findings suggest that the rapid course alteration during the gybe and the late release of the starboard jibsheet may have facilitated the entanglement of the sheet on the spinnaker pole. Moreover, the operator of the SPEEDY GO was not aware of any recurring problems in its fleet with the spinnaker poles stowed on the mast.

3.2.9.2 Bathing Ladder and Emergency Ladder

The review of various bathing ladders by the YACHT magazine determined that good bathing ladders should have the following characteristics:[88]

- ability to be used as a rescue ladder (permanently installed);
- folding mechanism that can be unlocked from the water;
- lowest step at least 60 cm below the water surface and at least two steps under the water;
- vertical ascent without overhang;
- rungs wide enough to stand with both feet side by side on one rung.

[87] SCHMIDT, HAUKE: Raum-Ausstattung – Wohin mit dem Spibaum? Published in: *YACHT*, 2019, Issue 22, p. 95.

[88] RINCK, M.; PETERSON, H.: Skippers Magazin – Komm hoch!. Published in: *YACHT*, 2015, Issue 11, p. 88 ff.

Two different means of reboarding the SPEEDY GO were fitted at the shipyard: a retractable emergency ladder installed in the transom and a bathing ladder, which was not permanently installed at the stern but rather stowed in one of the locker seats. The bathing ladder was used in the attempt to help the skipper out of the water and back on deck but was lost overboard in the process. Co-sailors described having to keep pushing the ladder in the deck fittings towards the stern because it repeatedly disengaged, until finally disengaging from the fittings on both sides, falling overboard and sinking (see 0).

An enquiry made with the SPEEDY GO's shipyard revealed that the bathing ladder supplied with the yacht could be secured on each side with knurled thumb screws to prevent it from slipping out of the deck fittings. This information coincides with the findings of an earlier investigation by the BSU into the very serious marine casualty involving the sailing yacht SPECIAL ONE (Ref.: 143/11. Yacht type: Salona 45) in 2011. Moreover, scratch marks indicating that the bathing ladder was not only inserted but also secured with knurled thumb screws in the past are clearly visible on the deck fittings of the SPEEDY GO (see Figure 22):

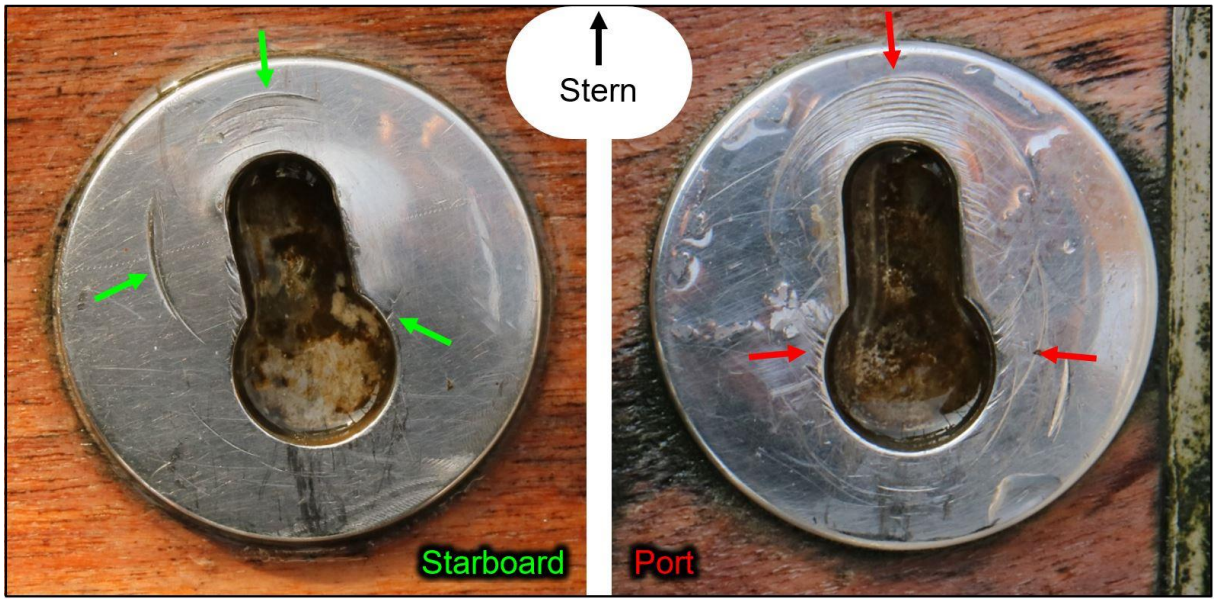


Figure 22: Deck fittings/mounting points for the bathing ladder at the stern of the SPEEDY GO[89]

The scratch marks on the port-side fitting indicate that the knurled thumb screw did not always hold the bathing ladder securely in the fitting's elongated hole.

[89] Source: BSU.

Figure 23: Original bathing ladders of Salona Yachts

Left: Original bathing ladder of the SPEEDY GO; taken on 10 October 2014.[90]

Middle: Close-up of the knurled thumb screw of an identical bathing ladder; taken on 19 December 2022.[90]

Right: Knurled thumb screw of the SY SPECIAL ONE's bathing ladder; taken on 1 May 2011.[91]

In addition to a removable bathing ladder, the SPEEDY GO was also equipped with an emergency ladder to meet the requirements of the EU Recreational Craft Directive (Directive 2013/53/EU). Annex I to the Directive (Essential requirements) reads:

"A.2.3. Protection from falling overboard and means of reboarding

Watercraft shall be designed to minimise the risks of falling overboard and to facilitate reboarding. Means of reboarding shall be accessible to or deployable by a person in the water unaided."

The emergency ladders installed by the SPEEDY GO's shipyard are purchased from an Italian company called 'Osculati' and have the dimensions shown in Figure 24:

[90] Source: Salona Yachts.
[91] Source: BSU.

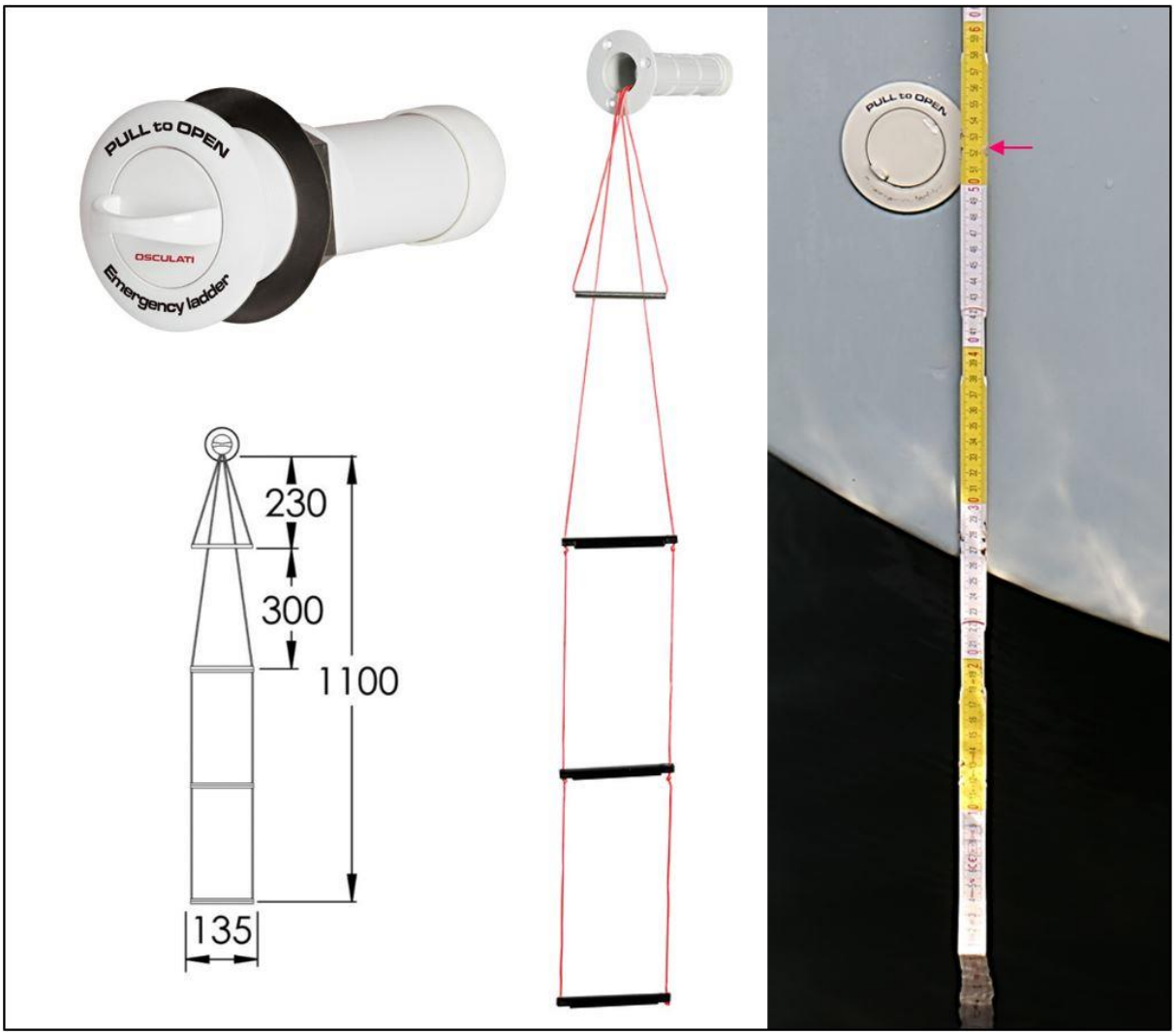


Figure 24: Dimensions of the SPEEDY GO's emergency ladder[92]

The handle of the emergency ladder inserted into the yacht's transom is about 52 cm and the highest point of the actual ladder about 50 cm above the water surface. Since the ladder's length is 1.10 m, it reaches about 60 cm below the surface of the water. The plastic handle for pulling out the ladder at the stern of the SPEEDY GO (see top right Figure 24) had broken off on an unknown date and possibly before the marine casualty investigated here. Accordingly, the emergency ladder could not be tested on 26 October 2022 during the series of rescue tests in Flensburg (see 3.2.12).

[92] Source (left): OSCULATI – *Emergency ladders - Recess-fit 3-step emergency ladder*. https://www.osculati.com/en/11629-m-022632/recess-fit-3-step-emergency-ladder (2 January 2023). Source (right): BSU; series of rescue tests in Flensburg on 26 October 2022.

The Ship Safety Division (BG Verkehr) does not currently verify the existence of bathing/emergency ladders (as at 29 November 2022), as the Directive on safety requirements for sport vessels used commercially for training purposes in accordance with Section 52a SchSV (of 25 August 1997), which is currently still in force, does not require this.[93] [94]

3.2.9.3 Attachment of Lifesaving Appliances

Depending on type and manufacturer, lifesaving appliances are stowed on board yachts and secured against falling overboard in different ways. The aft cockpit, in particular the stern pulpit, guardrail or backstay, is a common place for personal flotation devices, the POB marker buoy, lifesling and lifelines. Care must be taken to ensure that lifesaving appliances are ready for use quickly and easily at all times, as well as within the immediate reach of the helmsman. Lifesaving appliances should not be additionally secured with ratlines (short thin lines), as this delays making them ready in an emergency.[95]

The lifesaving appliances on board the SPEEDY GO were also located aft of the cockpit (see Figure 7 ff.). Several fellow sailors described the difficulty of releasing the lifesaving equipment, secured by thin rubber expanders, from their mounts on the guardrail with their gloves on. (see 0)

3.2.10 Emergency Response Management

3.2.10.1 POB Manoeuvre

Various technical publications (see 3.2.8) recommend the following course of action for POB manoeuvres (loss overboard immediately noticed):

- The manoeuvre should be performed under engine power in an emergency.
- The person in the water should not be approached directly when shooting head to the wind (risk of injury). It is better for the yacht to stop alongside the person so that the latter is directly next to the vessel level with the shrouds or cockpit.
- It is not possible to give a basic recommendation for a successful POB manoeuvre, as various factors, such as weather, wind and sea state, the yacht's manoeuvring characteristics, crew strength and experience, time elapsed since the person fell overboard, as well as the initial course and position to the wind if under sail must also be considered.

[93] Statement of the Ship Safety Division (BG Verkehr); DEUTSCHE FLAGGE: *Sportboote – Sportboote im Seebereich, Überblick*. https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-dienststelle/sportboote-grafik.pdf (21 December 2022).

[94] DEUTSCHE FLAGGE: *Sportboote – Sportboote im Seebereich, Besichtigungen und Abnahmen*. Https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-dienststelle/vordruck-sportboote-04_2020.docx (21 December 2022).

[95] DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 164.

- Course of action:

  1. throw lifebuoys, POB marker buoy and/or other conspicuous buoyant objects in the direction of the person and press the MOB/POB button on the GPS unit;

  2. designate a person (if available) whose sole responsibility is to watch the person in the water at all times. Visual contact must not be lost;

  3. put the helm to windward – start the engine, bring the bow into the wind;

  4. strike the sails (if sufficient crew members available, otherwise just release the sheets and the gybe preventer if necessary) and sail back to the scene of the accident under engine power → the priority here is to reach the person overboard as quickly as possible and not lose sight of her/him;

  5. make a distress call – Mayday in case of imminent danger (see 3.2.10.3).

“Every skipper should go through this manoeuvre with a fender once with his crew to ensure safety prevails in an emergency.”[96]

If the crew loses sight of the person in the water or did not immediately notice the latter fall overboard, then it is recommended that the sails be struck, that a countercourse be sailed under engine power, and that starting from the probable scene of the accident a search pattern be used to systematically sail the sea area in the casualty's presumed direction of drift (see also IMO IAMSAR (International Aeronautical and Maritime Search and Rescue) Manual Volume III). “In medium daylight and moving seas [the distance between the course lines in the search pattern] should not exceed 50 m. The engine should be switched off from time to time in order to listen for any calls or whistles.”[97] The search procedure is determined by the local rescue coordination centre (e.g. an MRCC or JRCC) and directed by the OSC (on-scene coordinator).

The vessel operator's manual for skippers provides the following information and instructions for POB manoeuvres:

- The horseshoe lifebuoy with POB marker buoy should be passed overboard first.

- All sails must be taken in at the end of the POB manoeuvre, as the yacht will quickly drift after virtually shooting head to the wind under sail.

- Using the second lifebuoy with a long buoyant line, the person overboard should be brought close to the yacht after the POB manoeuvre.

[96] DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 378.
[97] Ibid.

- The stern is the best place to rescue a person from the water. Alternatively, the person can also be rescued at the side. If necessary, the guardrail can be cut open with bolt cutters.

- If the person is unconscious or too weak, she/he should be rescued by means of a buoy hook lashed to a genoa halyard. Otherwise, the lifesling is referred to.

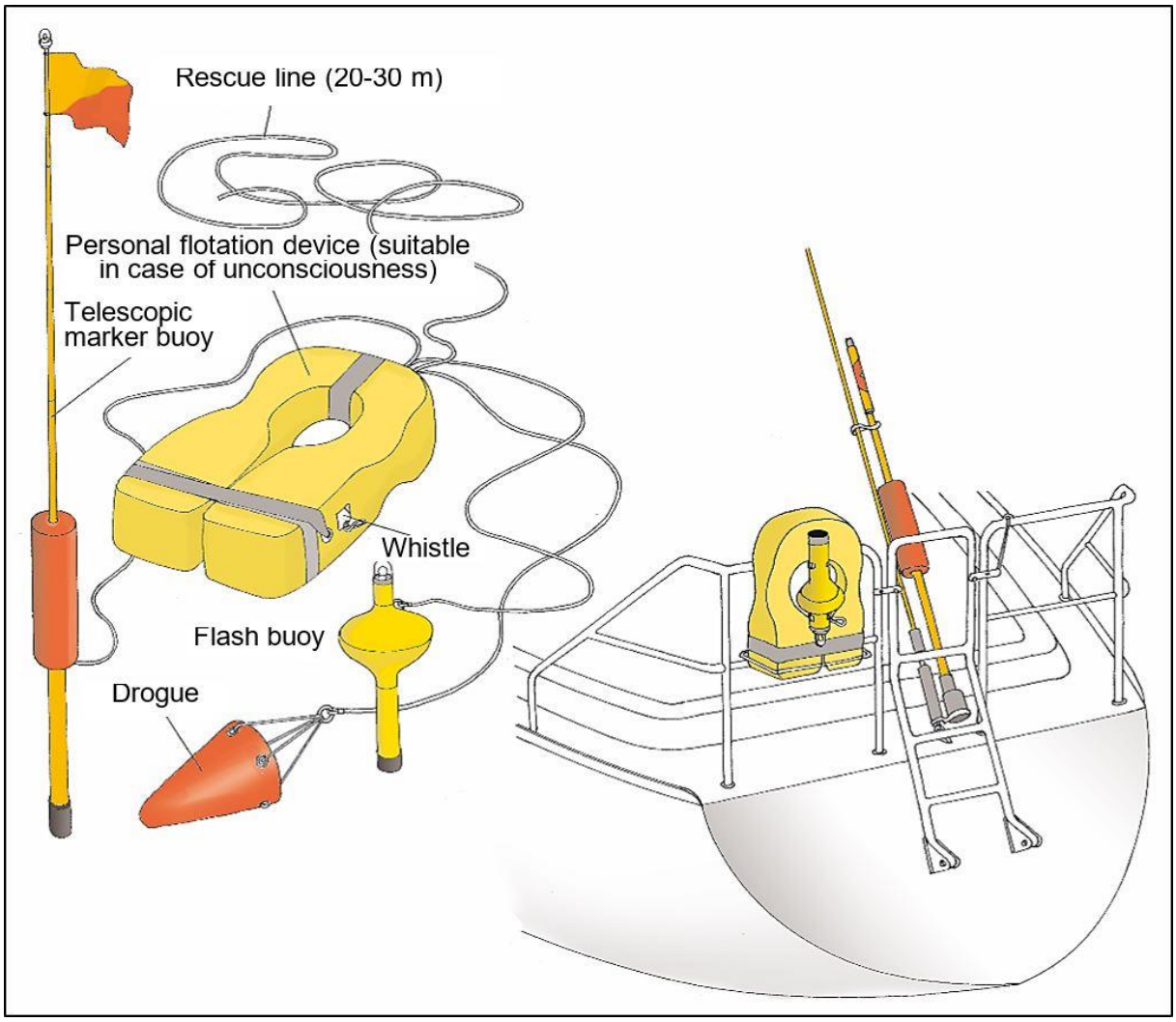


Figure 25: POB marker buoy with accessories (required)[98]

After the skipper fell overboard, the fellow sailors immediately initiated a POB manoeuvre under engine power (tack over port bow) and struck the sails. The lifebuoys (with line and POB marker buoy) attached to the guardrail in the cockpit were deployed and the skipper was quickly moved to the stern of the yacht. A distress call was made on VHF channel 16 about six minutes after the skipper fell overboard (see 0).

[98] Source: DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 163. Translation by BSU.

3.2.10.2 Rescuing People from the Water

If the yacht was moved to the casualty in the water under engine power, then the engine should be switched off to minimise the risk of the propeller injuring the person in the water. The casualty should not be approached in reverse, either. For a successful rescue from the water, the yacht must be brought to a standstill because it is impossible to work against the current even at low speeds through the water.

From a freeboard of 75 cm and more it is almost impossible to get back on deck without assistance. The design and equipment of the yacht, environmental conditions and the skills of both the crew and the casualty in the water determine which option is the most suitable. Several options for rescuing a person from the water from a sailing yacht are outlined below, but they are not universally applicable to all yachts.

0. Board via the rescue/bathing ladder or the yacht's open transom
   The only means of getting back on deck unassisted; requires enormous physical effort and quick reactions, especially in heavy seas;

1. Rescue lift with two three-part blocks permanently attached to the shroud or shackled to the halyard, as in Figure 26 (1)
   The lower block of the tackle is clipped into the lifejacket's safety harness or lifebelt, the upper block is hoisted/attached at a height of about 2 m above the deck; in the absence of an eyelet on the lifejacket or safety harness, a bosun's chair or a double bowline can be used as a seat; requires the assistance of the person in the water;

2. Hoisting via halyard winch in headsail (Figure 26 (2)) or mainsail
   Headsail: The sail tack and clew are lashed to the guardrail, the sail head is shackled to the spinnaker halyard. A fold of the sail is pushed into the water and the person in the water swims into the sail or is pulled in, e.g. carefully with the help of a boat hook or rescue line.

   Mainsail: Lower the sail from the mast and bring it down so that it hangs in the water with a large fold; tighten the boom; manoeuvre the person into the sail; hoist the halyard via the halyard winch.

   Stanchions and pull-throughs may need to be removed from the guardrail for both methods;

3. Haul up with topping lift and mainsheet (Figure 26 (3))
   Raise main boom as far as possible and use hauling part of the topping lift as a rescue line; haul mainsheet downwards and thus hoist the person; requires the assistance of the person in the water when attaching the topping lift to the rescue harness as well as a topping lift running outside the mast;

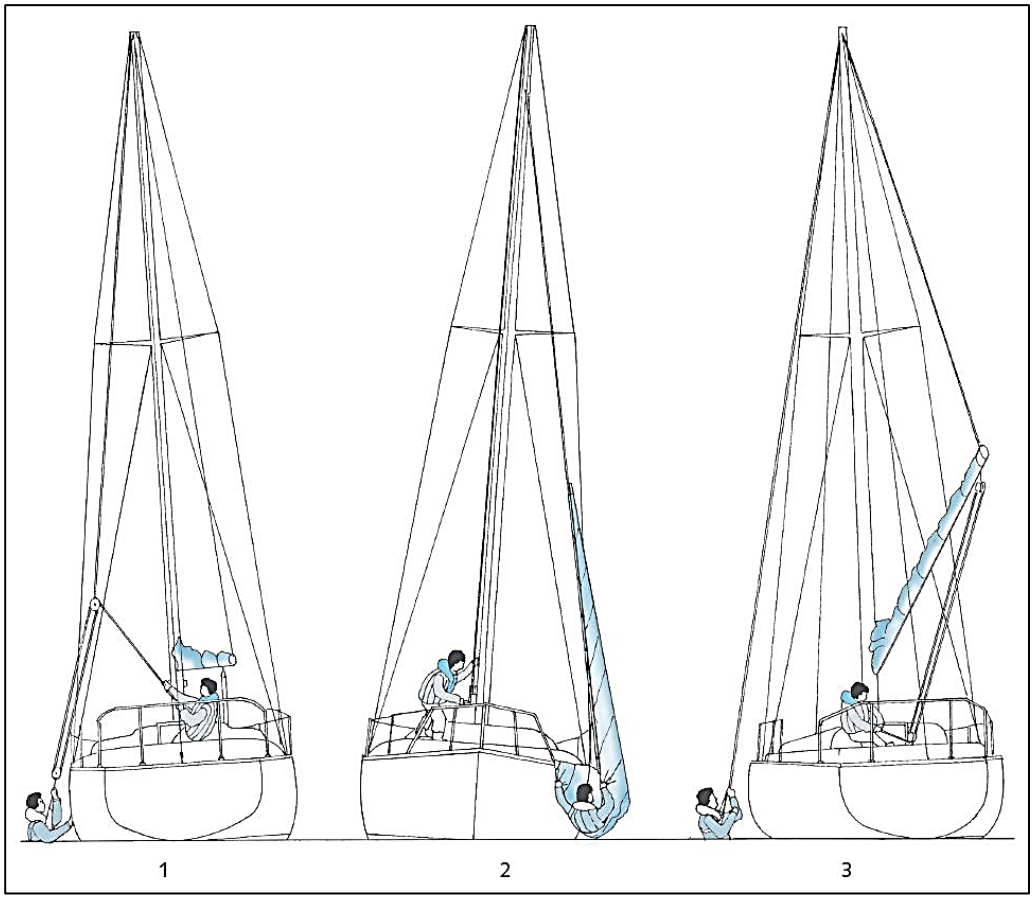


Figure 26: Rescuing a person from the water with a sailing yacht[99]

4. Boom out main boom and use mainsheet as a rescue lift
   Release stand-up block of mainsheet and swing boom sideways; fix boom with topping lift, gybe preventer and, if necessary, spinnaker guy; clip stand-up block of sheet to the lifebelt and haul sheet, if necessary using a winch; requires the assistance of the person in the water;

[99] Source: DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 382.

5. Skiff hook on the topping lift
   Remove topping lift from main boom and attach a buoy hook with which the eyelet or lifting loop of the lifejacket or a safety harness can be 'fished' (option chosen by the vessel operator of the SPEEDY GO);

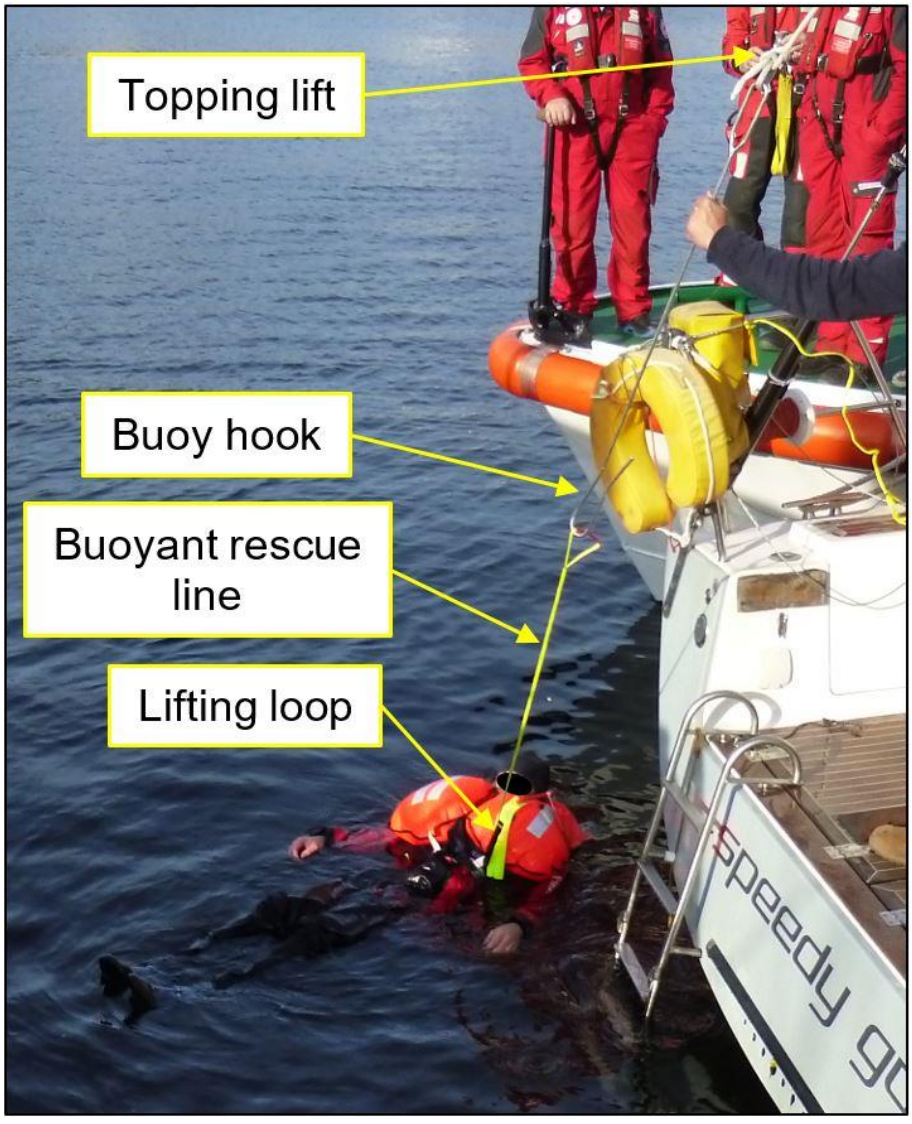


Figure 27: Rescue using a buoy hook attached to the topping lift[100]

[100] Source: BSU; series of rescue tests in Flensburg on 26 October 2022.

6. Use of rescue equipment designed specifically for yachts
   Various manufacturers have developed POB recovery systems for sailing yachts. Examples of such systems are shown below:

   <u>CATCH and LIFT Rescue System</u>
   The case weighing nearly 5 kg [E] (see Figure 28) contains a buoyant messenger line [D] with karabiner and rescue sling [B], a pulley [A], which is clipped to the end of the main boom or a wire clamp [F] in the shrouds, and a drogue [C]. As soon as the person in the water is secured with the rescue sling [B], the drogue [C] is passed overboard. The drogue opens in the water, causing the person to move towards the yacht at very slow headway (1 kts) and then be pulled out of the water to the height at which the pulley [A] was mounted. Requires the assistance of the person in the water.

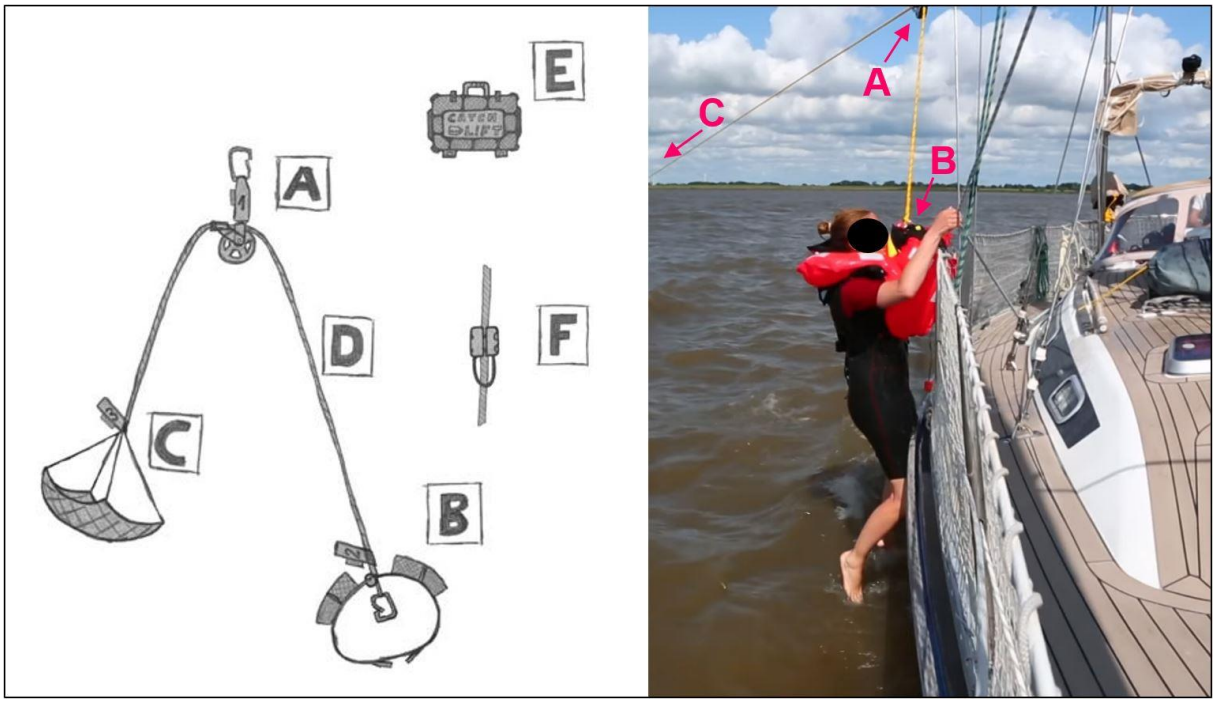


Figure 28: CATCH and LIFT POB rescue system[101]

[101] Sources:
MS SAFETY GMBH: *CATCH AND LIFT: Technical – System components*. https://www.catchandlift.me/index.php/en/technical (14 November 2022).
BLAUWASSER.DE: *Catch and Lift – ausprobiert von Blauwasser.de*. On YouTube https://www.youtube.com/watch?v=6yEyQNRzebQ (11 October 2022).
Highlighting by the BSU.

POB NET
Weighing about 1.5 kg, the system consists of a flat bag containing an automatically deploying rescue net attached to the guardrail. The net is put vertically over the person in the water, then brought into a horizontal position using a heaving line on the net and the karabiner is transferred from the guardrail to a shroud. Connected to a halyard, the person in the net can now be hoisted over the guardrail. Does not require the assistance of the person in the water.

Figure 29: POB NET POB rescue system[102]

Other rescue systems include rescue ladders (e.g. from kim, LAZILAS or awn), rescue nets (e.g. from WALDEN or TOPLICHT), recovery sails (e.g. Baltic PICKUP SAIL or from SeaCurity), rescue slings (e.g. Plastimo RESCUE-SLING, SEATEC Safesling or Besto MOB-RESCUE), JASON'S CRADLE.[103]

7. Use of an inflatable boat or a liferaft
   Take to the water in an inflatable dinghy or liferaft attached to the yacht and begin by getting the person in the water into the boat or raft (less freeboard); from there onto the yacht or towed to the nearest port.

[102] Source: YACHT TV (N. GÜNTER): *Mensch-über-Bord: 3 neue Systeme im Test*. On YouTube https://www.youtube.com/watch?v=jHB3PP_6F9Q (11 October 2022).

[103] A.W. NIEMEYER: *Sicherheit – Rettungsmittel – Mann über Bord*. https://www.awn.de/collections/sicherheit-rettungsmittel-mann-ueber-bord (24 October 2022).
TOPLICHT: *Sicherheit & Funk – MOB Rettungsmittel & Bergesysteme – MOB Bergesysteme*. https://www.toplicht.de/de/sicherheit-funk/mob-rettungsmittel-bergesysteme/mob-bergesysteme (24 October 2022).
SVB: *Sicherheit – Rettungs-Ausstattung für Boote*. https://www.svb.de/de/kategorie/sicherheit-rettungs-ausstattung.html (28 November 2022).

In all the above procedures, the more the person in the water can assist, the more likely they are to be successfully rescued – e.g. putting on the lifesling, getting into a bosun's chair or the eye of a bowline, as well as clipping/fastening tackle and lines. If the person is already completely exhausted, assistance must be provided from the yacht.

The question arises as to whether another crew member, well protected with lifejacket and lifeline, should go into the water to assist from there. When making a decision, various factors should be weighed up, such as the water temperature, crew size, as well as the fitness and equipment (e.g. dry suit) of the person entering the water. If the crew is small and/or the water temperature very low, it is strongly recommended not to do this, as the risk of not being able to rescue the second person from the water is too high.

“Every responsible offshore sailor is well advised to not only rehearse the buoy-overboard manoeuvre with her/his fellow sailors, but also to try to rescue a person from the sea at some point.”[104] Experts agree that practicing the POB manoeuvre, including rescuing a person from the water with the other fellow sailors, and checking what options there are on board for also rescuing weakened people from the water are part of good seamanship for you as the skipper. Very few rescue systems enable weaker people to lift a casualty with wet clothes out of the water unassisted.

Figure 30: Lifesling (not mandatory)[105]

The lifesling attached to the aft guardrail (see Figure 30) and the buoy hook in conjunction with the topping lift or a halyard (see Figure 27) were not made use of on board the SPEEDY GO. Accordingly, the co-sailors only used the equipment stipulated by the Ship Safety Division (BG Verkehr). The additional lifesaving equipment was not addressed in the skipper's safety familiarisation and no (emergency) manoeuvres were

[104] DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 383-384.

[105] Source: DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 163.

practiced at the beginning of the sailing trip. Alpha went into the cold water of the Baltic Sea to assist the skipper. He wore a lifejacket but was not secured to the yacht with a lifeline or any other line. A rescue method involving the use of a mooring line with bowline was improvised, with which the crew members managed to rescue Alpha from the water by him putting one foot into the eye of the bowline, then pulling it further up around his thigh, after which the crew members winched him up. The skipper was no longer able to make a connection with the eye of the mooring line by placing it around a leg or his torso (see 3.1.1 and 0). The liferaft on board was not used.

3.2.10.3 Hypothermia, Behaviour in the Water

We speak of hypothermia when the core body temperature drops below 35 °C. Inter alia, this can cause an extreme slowing of the heart rate (bradycardia), reduced performance or even unconsciousness, and can be fatal at ≤ 27 °C.[106]

In addition to occurring in cold water, hypothermia is also possible in the air due to wind and spray water. "Hypothermia, even mild cases, decreases crew efficiency and increases risk of costly accidents."[107]

At a water temperature of + 10 °C, a person in the water without protective clothing is able to provide active assistance during rescue manoeuvres for only about 10 minutes.[108] In addition to a rapid response by the fellow sailors on board and effective rescue systems, people falling into the water can also influence their chances of survival through their behaviour. Associated literature gives the following advice on behaviour:

- “Keep calm. Do not panic because the yacht may be moving away quickly. She may need room for the rescue manoeuvre.

- Move as little as possible. [...] In order to avoid heat loss and save energy, do not swim. Only attract attention by waving when there is a chance of being seen.

- Remove heavy objects from pockets but never take off clothing, as the air trapped inside provides additional buoyancy. If saturated with water, it prevents the rapid direct exchange of heat between body and water temperature. […]

- It is essential to remain with the signalling devices that have been thrown overboard. Tie them to the body as a precaution. When it is dark, in particular, an attempt must be made to reach a flash buoy [or to attract attention with a lifejacket light (if available) or POB emergency locator beacon]. […]

- Never attempt to swim after or towards the yacht.

[106] MARITIME MEDICAL SERVICE OF THE SHIP SAFETY DIVISION (BG VERKEHR): *Maritime Medical Handbook*. Dingwort Verlag, Hamburg, 1st edition 2019. PP. 85-86.
[107] WORLD SAILING: *2020-2021 Offshore Special Regulations Governing Offshore Racing for Monohulls & Multihulls* © ORC Ltd. 2002, Revision 12/2020. Appendix J.
[108] FEDERAL MINISTRY FOR DIGITAL AND TRANSPORT: *Sicherheit auf dem Wasser – Wichtige Regeln und Tipps für Wassersportler*. Berlin, December 2020. P. 15.

- Never give up on yourself and the hope of being rescued."[109]

- "If in the water, crew should stay together near the boat. This makes everyone easier to find, helps morale."[110]

Throwing floating objects (e.g. lifebuoys) to the person in the water is only useful if the object can be brought directly to the person. If a buoyancy device without a line and drogue is passed overboard and if it drifts even a short distance away from the casualty due to wind, current and swell, it is almost impossible for the person in the water to reach the object by swimming.[111]

Another factor influencing the chances of survival and rescue is the proper handling of lifesaving appliances thrown into the water from the yacht (rescue sling, conventional lifebuoy, horseshoe lifebuoy, (safety) line, etc.). Falling into the water and the initial cold shock response (uncontrollable hyperventilation) is followed by swim failure (motor skills and ability to swim and grip severely impaired).[112] For example, if a conventional lifebuoy is held only by hand, then the risk of losing it is greater than when held more securely with the arm or around the body.

On board the SPEEDY GO, it was possible to immediately establish a connection with the skipper who had fallen overboard by means of the horseshoe lifebuoy with line. The crew members watched the skipper swimming in a prone position (breaststroke). He was holding on to the lifebuoy with his hands. The crew members had the impression that the skipper quickly lost strength in the water, was very anxious and restless. After a few minutes in the cold water, he could no longer hold on to the bathing ladder. After losing contact with the yacht, he could no longer keep his face above water without a buoyancy device (see 0).

Alpha lay supine in the water after the loss of the bathing ladder, floating some distance away from the skipper – supported by his lifejacket's inflated buoyancy chamber. After about nine minutes in the water, his core body temperature had dropped to 32 °C (see 0).

[109] DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 380.
[110] WORLD SAILING: *2020-2021 Offshore Special Regulations Governing Offshore Racing for Monohulls & Multihulls* © ORC Ltd. 2002, Revision 12/2020. Appendix J.
[111] DEUTSCHER HOCHSEESPORTVERBAND »HANSA« E. V.: *Seemannschaft – Handbuch für den Yachtsport*. 32nd edition Bielefeld, Delius Klasing Verlag, 2022. – ISBN 978-3-667-11658-1. P. 378.
[112] KOHFAHL, Dr. med. J.: Überleben nach Sturz ins (kalte) Wasser. Published in: *Schiff & Hafen*, April 2013, No. 4, p. 68-70. https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-sonstige/sturz-ins-kalte-wasser.pdf (5 January 2023).

3.2.10.4 Alerting of the Rescue Services

In an emergency at sea, there are various options for alerting rescue services. Reference is made to various chapters in BSU Investigation Report 276/21 on the SILJA case:

- 3.2.10.2 Recommendations of the DGzRS
  - 3.2.10.2.2 Communication
  - 3.2.10.2.3 SafeTrx
  - 3.2.10.2.4 EPIRB
  - 3.2.10.2.5 AIS devices
  - 3.2.10.2.6 Distress Signals
- 3.2.11 Personal Locator Beacons
- 3.2.12 Distress Call/Emergency Number

The installed VHF radio that formed part of the required equipment on commercially operated recreational crafts was used for alerting on board the SPEEDY GO. According to the co-sailors, a DSC alert was sent first using the distress button. This happened about six minutes after the skipper went overboard. Immediately afterwards, at 1225, the radio call "*Mayday. Mayday. Mayday. MMSI 211664360, call sign DG2167, person overboard"* was sent on VHF channel 16 and received by Lyngby Radio. Lyngby Radio directed further communication, which was in English. The entire radio communication can be seen in Annex 9.5.

There were some minor misunderstandings between the sailing yacht and the coastal radio station, as well as discrepancies between the information given by the SPEEDY GO over the radio to Lyngby Radio and subsequent statements by the crew members or findings of the investigation. For example, Lyngby Radio understood that the skipper was wearing a yellow lifejacket, but this was not the case (see Annex 9.5).

3.2.11 Certificates of Proficiency for Recreational Boating

Under German law, there are various certificates of proficiency for navigating maritime waterways, coastal waters and the high seas in recreational boating:

- International certificate for operators of pleasure craft on the waterways navigable by seagoing ships (SBF-See)
- International certificate for operators of pleasure craft in coastal waters not exceeding 12 nautical miles (SKS)
- International certificate for operators of pleasure craft in coastal waters not exceeding 30 nautical miles (SSS)
- Sporthochseeschifferschein [comparable with the British Yachtmaster® Ocean] (SHS)
- Short Range Certificate (SRC)
- Long Range Certificate (LRC)

More information on the respective scope of validity and requirements for the acquisition of the various certificates of proficiency can be found at Annex 9.6.

The content and methods of training for the SBF, SKS, SSS and SHS are not regulated. Only the respective examination content is laid down for the SBF-See in Annexes 3 and 4 to Section 8(1)(4) of the German Pleasure Yachting Navigating Licences Ordinance (SpFV)[113], as well as for the SKS, SSS and SHS in the guidelines for executing the tasks under Section 2 of the German Offshore Cruising Licences Ordinance (SportSeeSchV)[114].

In the theoretical component of the SBF-See examination, applicants should demonstrate that they have at least a sufficient knowledge of the navigation police regulations relevant to the navigation of a recreational craft and the nautical and technical knowledge necessary for the safe navigation of a recreational craft (Annex 3 to Section 8(1)(4) SpFV).

In the practical component of the SBF-See examination, candidates must demonstrate that they have mastered the manoeuvres and skills necessary for the safe navigation of a recreational craft (with the respective means of propulsion) on maritime waterways and are capable of applying the theoretical knowledge (Annex 4 (to Section 8(1)(4)) SpFV).

[113] German Pleasure Yachting Navigating Licences Ordinance of 3 May 2017 (Federal Law Gazette I p. 1016, 4043), as amended by Article 1 of the Ordinance of 1 December 2022 (Federal Law Gazette I p. 2211).

[114] German Offshore Cruising Licences Ordinance, as amended and promulgated on 3 March 1998 (Federal Law Gazette I p. 394), as amended by Article 5 of the Ordinance of 3 March 2020 (Federal Law Gazette I p. 412).

The examination for the acquisition of the SKS, SSS and SHS should show whether the applicant has

1. sufficient knowledge of the relevant maritime regulations, and
2. the necessary technical knowledge of seafaring and navigation for the safe navigation of a yacht in the respective waters

and, in the case of the SKS and SSS, the competence needed for their practical application (Section 7 SportSeeSchV).

Further information on the examination content for the acquisition of the SBF-See, SKS, SSS and SHS can be found in Annex 9.6.

For the subsequent evaluation of the training in recreational boating, the German certificates of proficiency described above will be compared, inter alia, in specific points with the requirements for the British certificates of proficiency of the Royal Yachting Association (RYA, commissioned by the Maritime and Coastguard Agency (MCA)), which are known globally and also acquired by German sailors:

- RYA/MCA Yachtmaster® Coastal
- RYA/MCA Yachtmaster® Offshore
- RYA/MCA Yachtmaster® Ocean

As with the various recreational craft licences in Germany, Great Britain does not have any formal training courses for obtaining the Yachtmaster® certificates of proficiency that are subject to approval by a competent authority. The necessary skills and knowledge must be demonstrated in various examinations.

Further information on the respective scope of validity, on the requirements for acquisition and on the examination content can be found in Annex 9.6.

3.2.12 Series of Rescue Tests by the BSU

On 26 October 2022, the BSU carried out a series of tests on various rescue options for a person who had fallen overboard with the SPEEDY GO – moored at the pier – in the port of Flensburg in cooperation with her vessel operator and the DGzRS (rescue boat WERNER KUNTZE). This involved a person wearing a dry suit and lifejacket entering the water. The water temperature was 14 °C, the water surface was calm and there was almost no wind between the yachts.

The following tests were carried out:

Active person in the water

- use of the (reconstructed) **bathing ladder**
  - with a 150 N lifejacket from the vessel and the aft bench seat installed;

Figure 31: Test No 1[115]

[115] Source: BSU.

- with a 150 N lifejacket from the vessel and the aft bench seat not installed;

Figure 32: Test No 2[116]

- with a 275 N lifejacket from the BSU and the aft bench seat not installed;

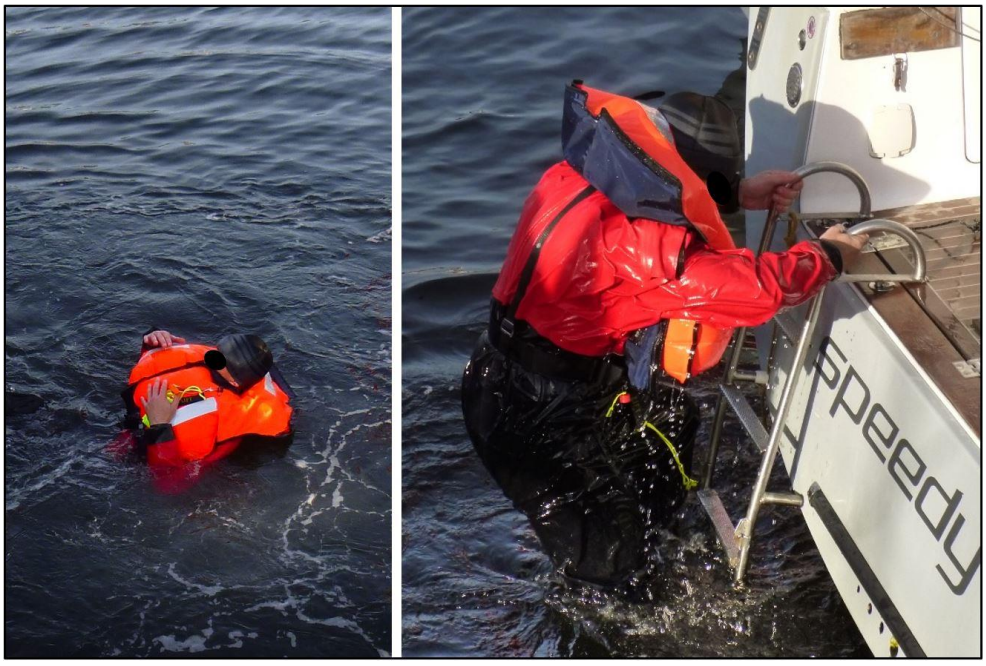


Figure 33: Test No 3[117]

[116] Source: BSU.
[117] Source: BSU.

Person in water is passive (no active assistance during the rescue)

- haul up using a **lifesling** with the assistance of the topping lift in conjunction with the vessel's buoy hook;

Figure 34: Test No 4[118]

[118] Source: BSU.

– haul up using the **lifting loop on the lifejacket** and 'MOB Lifesaver®'[119] (with the assistance of the topping lift in conjunction with the vessel's buoy hook, which was hooked into the triangular loop on the MOB Lifesaver – see also Figure 27);

Figure 35: Test No 5[120]

[119] Buoyant HMPE lifeline (length: 3 m; spliced into a ring → effective length: 1.5 m), connected on one side to the lifejacket's lifting loop and with a handle (reinforced triangular loop) on the other side (see https://moblifesavers.com/).

[120] Source: BSU.

– haul up using a **round sling**;

Figure 36: Test No 6[121]

– haul up using a **round sling and scoop stretcher**;

Figure 37: Test No 7[122]

[121] Source: BSU.
[122] Source: BSU.

– rescue using a round sling and scoop stretcher by the **WERNER KUNTZE**.

Figure 38: Test No 8[123]

The following findings were made: (extract)

– Both with and without the aft bench seat, the test subject (height: 1.76 m, weight: 74 kg) was able to climb the bathing ladder and reboard without any problems. Due to the larger buoyancy chamber on the 275 N lifejacket, the freedom of movement in the water is restricted and the test subject barely able to reach the ladder uprights with his arms. Some air or CO_2 was therefore drained manually before the ladder was climbed with this lifejacket on.

– When the reconstructed bathing ladder, which was not bolted down, was shaken lightly, it quickly came loose from its anchorage on the deck and disengaged. (see Figure 12)

– For the rescue using a lifesling, the assistance of the person in the water is needed, as the pick-up harness has to be put on. The person can be hoisted out of the water without suffering any pain.

– Hoisting a person using the lifejacket's lifting loop is very unpleasant for the person in the water (the back is exposed to a strong load). Accordingly, the fifth test was aborted early.

[123] Source: BSU.

- For the person in the water, a round sling and scoop stretcher offers the most comfortable method of rescue. In the case of a larger freeboard (as at the stern of the SPEEDY GO), the assistance of three people on deck is necessary. The assistance of the person in the water is not necessary in calm seas. (This rescue method directly at the stern of the yacht can be dangerous in rougher seas, as there is a risk of getting caught under the stern of a pitching yacht due to hydrodynamic effects.).

- The side gate of the rescue boat makes rescue much easier, as only a height difference of about 15-20 cm between the surface of the water and aft deck has to be overcome. The lateral arrangement of the gate reduces the risks posed to people in the water by movements of the rescue boat.

4 ANALYSIS

4.1 Factors Requiring Exclusion

After examining all available evidence and conducting further investigations and research, the following factors can be ruled out as having possibly caused or contributed to the accident:

- deficient or missing equipment on board – *all equipment required under German law was present and ready for use, in particular lifejackets with lifeline for everyone on board*;

- lack of anchor points – *various anchor points were available for lifelines from the cockpit to the foreship, as well as near the mast*;

- inadequate manning of the yacht – *the yacht was adequately manned for safe navigation, even well in excess of the statutory requirements if all co-sailors are taken into consideration*;

- design and use of the yacht – *yacht according to Design Category A suitable for wind forces > 8 Bft and significant wave heights > 4 m, sails appropriate for wind conditions*;

- weather conditions – *no significant influence on the loss of the skipper overboard*[124]*; no extreme, unusual or unpredicted weather conditions*;

- lack of competence or experience of the skipper – *the skipper held the SSS and as such was adequately qualified formally, received additional training from the vessel operator and had several years of experience on yachts with always new co-sailors*;

- influence of alcohol, drugs or addictive substances – *no such substances were detected during the forensic examination of chemicals*;

- storage of the spinnaker pole at the mast – *entanglement of the sheets more likely due to the execution of the manoeuvre*;

- POB manoeuvre by the crew members – *the yacht was turned successfully and swiftly and the skipper taken to the stern using the lifesaving equipment*;

- emergency communication by the crew members with Lyngby Radio – *minor misunderstandings did not delay or obstruct the rescue operation, alerting of rescue services was successful*;

- lack of a strategy for rescuing people from the water – *lifesling and buoy hook were intended as lifesaving equipment and available, but not known to the crew members*.

[124] However, it should be noted that the wind conditions made it harder to rescue the skipper due to the constant drifting of the yacht.

4.2 Contributing Factors

In particular, the investigation identified the following factors as having contributed to the accident, some of which are explained in more detail in the chapters below:

4.2.1 Personal Circumstances

- skipper suffering from fatigue – *the skipper did not appear to be rested, which may have contributed to inattentiveness*;

- skipper's behaviour in the water and physical condition – *the skipper did not use the horseshoe lifebuoy as intended, quickly lost strength and appeared to give up hope of rescue, facilitated by the lack of a lifejacket's buoyancy*.

4.2.2 External Conditions

- low water temperature – *cold shock response, rapid swim failure, hypothermia*.

4.2.3 Crew Management

- skipper pressuring the helmsman before course alteration ("Do it now!") – *Alpha initiated a hard-over course alteration and thus a rapid gybe, which may have contributed to the sheets being caught on the spinnaker pole*;

- execution of the course alteration manoeuvre without prior planning and discussion – *the fellow sailors were not aware of the skipper's expectations nor the course of action among themselves and were not given any instructions, which led to the fact that co-sailor Delta missed opening the starboard sheet in good time, inter alia*;

- lack of delegation by the skipper – *he left the cockpit instead of delegating the clearing of the sheets to fellow sailors and monitoring the situation himself*.

4.2.4 Self-Protection

- lack of self-protection on deck against falling overboard – *neither the skipper nor the crew members used lifelines*;

- adoption of an unsafe position by the skipper on deck after the sheets were released – *the skipper straightened up on the leeward side at the same moment as the yacht heeling and picking up speed*;

- absence of self-protection against drowning – *the skipper was unable to keep his head above water without the added buoyancy of a lifejacket; there was no anchor point for a rescue line or similar due to the lack of a metal eyelet*;

- skipper's clothing not appropriate for the weather conditions (cold, wind, precipitation); not completely water-resistant and without high-visibility colours – *hypothermia sets in faster and poor visibility in the water*.

4.2.5 Safety Management

- meagre safety familiarisation – *the co-sailors did not know that the lifesling and buoy hook were available as lifesaving equipment*;

- no designation of emergency roles or a co-skipper and no practice manoeuvres at the beginning of the sailing trip – *spontaneous, undirected action of the fellow sailors and slightly delayed transmission of the distress call*.

4.2.6 Miscellaneous

- bathing ladder not fixed in place but merely suspended – *crew members did not know how to secure the bathing ladder properly; bathing ladder went overboard*;

- skipper and crew member Alpha did not stay together in the water after losing contact with the yacht – *the other crew members lost sight of the skipper*.

4.3 Safety Deficiencies

The investigation revealed various safety deficiencies, including those related to the factors mentioned above in 4.2, which are evaluated below.

4.3.1 Comparison with Similar Accidents

An investigation of 12 comparable accidents between 2003 and 2015 (see Table 1, no accidents involving single-handed sailors, predominantly yachts operated privately) revealed the following:

- all POB accidents reported to the BSU and investigated in the past occurred on sailing yachts, many of them during sailing manoeuvres (setting, striking, clearing, gybing);

- in most cases (9/12) the skipper had to be rescued from the water by fellow sailors; in only two accidents did co-sailors fall into the water; in one accident everyone on board fell into the water;

- a lack of self-protection with lifejacket (10/12) and lifeline (11/12) contributed to the fatal outcome of the accidents in most cases; those wearing a lifejacket slipped out of it for lack of a crotch strap;

- in most cases (11/12), lifesaving appliances were not used successfully – they were not present, not ready for use, not suitable or simply not used;

- both skippers and co-sailors have acted contrary to the principles of good seamanship in many cases, endangering themselves and others in the process;

- many of the BSU's previous safety recommendations were not implemented or heeded.

All the aspects listed above also played a role in the very serious marine casualty involving the SPEEDY GO and generally underline a need for action in terms of safety in commercial and private recreational boating.

4.3.2 Seamanship

4.3.2.1 Preparing for the Sailing Trip and Familiarisation; Safety Management of the Vessel Operator

The vessel operator of the SPEEDY GO has systematically laid the foundation for controlling risks and preparing for sailing trips appropriately through various measures:

- specific advice on the equipment necessary for each sailing trip sent to co-sailors;
- information on the requirements and/or what is expected of co-sailors (e.g. active participation) in a co-sailing agreement and the general terms and conditions;
- preparation of a risk assessment;
- establishment of a wind limit for departure from port (9 Bft);
- equipping the yacht with a smaller headsail (working jib) and triple-reefed mainsail for heavy weather sailing trips;
- provision of numbered and thus personalisable lifejackets with lifeline for everyone on board;
- provision of a checklist for the (safety) familiarisation of co-sailors by the skipper;
- instruction and further training of skippers through internal and external courses, as well as information on the requirements and/or what is expected of skippers in the manual for skippers.

However, safety deficiencies were identified in some of the above points during the investigation:

- <u>Implementation/application of the risk assessment:</u>

The control and protection measures defined in the risk assessment are not consistently referred to and required in other procedural instructions, such as the familiarisation checklist or skipper's manual. For the risk of falling overboard and drowning, the wearing of a lifejacket and use of a lifeline are mentioned (see Annex 9.4). However, the use of a lifejacket is not explicitly required in any other document. The familiarisation checklist requires clipping on deck only in 'heavy weather', which is not defined in greater detail. The skipper's manual does not even address whether increased attention must be paid to self-protection on deck in certain situations (e.g. in heavy weather or cold temperatures) or for certain actions (e.g. when leaving the cockpit). Skippers are not required in writing to enforce the obligation to wear/use lifejackets and lifelines among co-sailors or to observe this themselves. The “crew familiarisation and safety instruction” checklist (see Annex 9.1), which co-sailors are also able to view according to the procedural instructions, states: “Everyone should don a harness and lifejacket if they wish to, even without being told to by the skipper.”

This means that co-sailors are at liberty to protect themselves if there is no instruction from the skipper. It is questionable whether fellow sailors who have no previous experience on yachts can correctly assess the risks on board such a vessel in various situations and conditions – even if they have obtained information about the risks of offshore sailing (in accordance with the requirements of the general terms and conditions, see 3.2.5.2). This is confirmed by the fact that even the crew members on the SPEEDY GO, some of whom were highly experienced and trained in sailing, did not secure themselves with lifelines on the foreship or during the rescue operation.

- "Crew familiarisation and safety instruction" checklist:

As shown in Table 2, certain items are not or only partially covered by the vessel operator's checklist, meaning it does not meet the recommendations of the BMDV.

While certain items on the checklist are described in greater detail (e.g. specific instructions on what to do in a POB situation, which are not complete, however), other aspects are not further addressed (e.g. operation of the radio equipment). The checklist also contains information that is less relevant to co-sailors and mainly concerns or is the responsibility of the skipper (e.g. that all rescue equipment must be ready for use or that the diesel fuel always requires a biocide additive). Still other items are mentioned several times on the checklist (e.g. informing the skipper in unclear situations or the importance of a clean bilge). Explanations of the function and use of various items of equipment are mixed with rules of conduct and mentioned together in places, sometimes without a directly recognisable connection (e.g. "explain bilge pumps (explain cleanliness) wear sailing shoes, never barefoot"). This makes the checklist appear unsorted, unclear and confused. Safety-related aspects are not highlighted.

- Effectiveness of the guidelines of the vessel operator and implementation of good seamanship by the skipper of the SPEEDY GO:

The guidelines of the vessel operator and the principles of good seamanship were not effective on the day of the accident because they were not complied with or followed:

- according to witness statements, the (safety) familiarisation was incomplete in the following points:
  - lifesling;
  - bouy hook;
  - use of the bathing ladder;
  - role allocation during manoeuvres;
  - muster list, including the definition of safety tasks;
  - modern crew management;
- safety familiarisation not documented;
- no entries in the logbook;

- no practice manoeuvres carried out;
- no implementation of CM principles.

- Further training of skippers by the vessel operator

The exact time (month/year) at which skippers attend the various seminars offered and/or financed by the vessel operator is not documented by the vessel operator (see 3.2.4.1). This means that it is not possible to trace how much time has passed since the last attendance of a certain course and whether the skipper of the SPEEDY GO's knowledge was up to date.

Section 3 of the German Ship Safety Act (SchSG)[125] states that the operator of a seagoing vessel has the following duties, inter alia:

"Whoever operates a ship in maritime service shall ensure she is operated safely and in particular that she and her equipment are kept in a condition that permits safe operation, that she is navigated safely and that the necessary arrangements are made for the protection of third parties [...] emanating from her operation. This shall include the effective selection, guidance, instruction, observation and assistance of people appointed within the shipping company and on the ship."

In order to guide, instruct, and assist skippers effectively within the meaning of Section 3 SchSG, the knowledge acquired in the courses offered should be regularly refreshed and updated. For example, new findings are regularly made in the field of medicine, in particular, meaning that recommendations for action can change.

4.3.2.2 Crew Management

The skipper's behaviour, as well as lack and manner of communication facilitated the failure of the gybe, resulting in people having to leave the cockpit to clear the sheets. As the first sailing manoeuvre of the sailing trip, the gybe in particular should have been planned and talked through in a structured way. Given that the skipper was below deck for a longer period and at no time made any effort to get to know his fellow sailors and their sailing skills, it was difficult for him to assess the level of instructions and explanations needed for a successful manoeuvre.

Due to a poor safety culture and the skipper's handling of co-sailors, no crew member drew the skipper's attention to the fact that he was not wearing a lifejacket or expressed concerns about the lack of self-protection on deck with lifelines or the high-risk actions of Alpha when he went overboard. The skipper did not encourage the co-sailors to ask questions or get involved.

The skipper left the cockpit to look at the entangled sheets instead of delegating this task and monitoring the overall situation himself from the cockpit. He did not share his plans and assessment of the situation with the fellow sailors, meaning they could not act together as a team with the skipper.

As with merchant shipping, the physical distance between the SPEEDY GO's skipper and the shorebased management team means that improper behaviour on the part of

[125] German Ship Safety Act of 9 September 1998 (Federal Law Gazette I p. 2860), as amended by Article 1 of the Ordinance of 21 July 2022 (Federal Law Gazette I p. 1374).

skippers is difficult to identify. According to the vessel operator, since feedback from co-sailors is not actively requested, often only especially positive or especially negative feedback would be received.

4.3.2.3 Wearing Personal Lifesaving Appliances

A sufficient number of lifejackets were on board the SPEEDY GO for all six people, meaning the relevant equipment requirements of the Ship Safety Division (BG Verkehr) were met (see 0). It is contradictory and incomprehensible why the skipper instructed the co-sailors to wear a lifejacket but failed to wear one himself and in so doing act as a role model.

There is no statutory obligation to wear lifejackets and the vessel operator of the SPEEDY GO does not require in writing that its skippers wear one.

4.3.2.4 Self-Protection on Deck

The lifelines provided by the vessel operator to mitigate risk and corresponding instructions to skippers proved ineffective in this case, as neither the skipper nor co-sailors used or followed them. It is incomprehensible why the skipper placed so much emphasis on the wearing of lifejackets at the beginning of the sailing trip yet did not enforce the use of the lifelines outside the cockpit. That the skipper did not secure himself when he went to the foreship to inspect the caught sheets may have contributed to the fact that co-sailor Charlie did not think about using or consider it necessary to use a lifeline himself.

In addition to the existing safety equipment, there were also suitable options for self-protection on deck due to the vessel's design. Although it is unlikely that being secured to a jackline would have prevented a person near the mast from falling overboard (see Figure 21), there would have been a connection with the yacht, which would have facilitated a rescue and put the crew members in less danger. Moving in accordance with the principles of good seamanship and for personal safety primarily on the windward side of the yacht in a crouched position was not implemented by the skipper.

4.3.3 Design and Equipment of Vessel

4.3.3.1 Bathing Ladder and Emergency Ladder

The superficial familiarisation of the co-sailors on the various items of equipment on the yacht meant that they were not aware of the bathing ladder's fastening mechanism with knurled thumb screws. The failure to fasten the bathing ladder is considered to be the cause of its subsequent loss.

The SPEEDY GO's bathing ladder cannot be considered a suitable means of reboarding, as it was usually stowed in the locker seat when at sea and not permanently mounted. The emergency ladder served as a substitute for such a device. Since the handle for pulling out the emergency ladder had broken off, the SPEEDY GO did not comply with the requirements of Annex I, A.2.3 to Directive 2013/53/EU. None of the ladders on board could have been deployed from the water. Since the design of an emergency ladder makes it far more difficult to climb than a conventional, stable

bathing ladder[126], the lack of a handle is not considered to have contributed to the drowning of the skipper. He was not even able to climb the rigid bathing ladder after a very short period due to the cold shock response and rapid swim failure. An intact recess-fit ladder would not have been a suitable lifesaving appliance in this particular case, either. Due to its movement and the extremely narrow rungs of 13.5 cm (see Figure 24), it is possible to use “only with strength and skill”[127], as well as handholds on the transom.

Inter alia, DIN EN ISO 15085 'Small craft – Man-overboard prevention and recovery' forms the basis for certification of the SPEEDY GO according to Directive 2013/53/EU. This standard applied from 2003 and was amended in 2009 and 2018.

Accordingly, only the first amendment is relevant for the SPEEDY GO (year built: 2014). The requirements of 16.1 and 16.2 of DIN EN ISO 15085:2009 regarding options for reboarding were met. Sections 16.3 and 17 (Table 7) require that the procedure for reboarding must be described in the owner's manual for each vessel. However, neither the bathing ladder, the emergency ladder, nor other means and options for reboarding are mentioned or illustrated in the 'Owner's / skippers Manual' [sic]. Accordingly, Safety Recommendation 7.4 from BSU Investigation Report 143/11 to this very shipyard that the means of reboarding be described in the owner's manual was not implemented.

In 2018, the requirements for means of reboarding were specified and tightened in DIN EN ISO 15085. Today, a person in the water must be able to access or deploy means of reboarding unaided (as required by Directive 2013/53/EU). Detailed requirements have been laid down for rigid and non-rigid ladders: (extract)

- The operating device for a deployable means of reboarding, such as the SPEEDY GO's emergency ladder (recess-fit ladder), must not be more than 500 mm above the waterline. (DIN EN ISO 15085:2018, 16.1)

- Non-rigid ladders must have fixed rungs with a minimum width of 250 mm. (DIN EN ISO 15085:2018, 16.3)

- Non-rigid ladders must be mounted at a minimum of two points of at least one rung width apart. (DIN EN ISO 15085:2018, 16.3)

- The lowest step/rung of a non-rigid ladder must be at least 1,200 mm below the waterline. (DIN EN ISO 15085:2018, 16.3)

The recess-fit rope ladder on board the SPEEDY GO satisfies none of the above requirements. Moreover, according to information given by the yacht's shipyard to the BSU, it will still be installed in this manner on newer yacht models in conjunction with portable bathing ladders.

[126] RINCK, M.: Sprosse für Sprosse. Published in: *YACHT*, 2016, Issue 20, p. 92.
[127] RINCK, M.; PETERSON, H.: Skippers Magazin – Komm hoch!. Published in: *YACHT*, 2015, Issue 11, p. 91.

4.3.3.2 Attachment of Lifesaving Appliances

Although the lifesaving appliances stipulated for the SPEEDY GO were kept within reach of the helmsman, they were not ready for use quickly due to the attachment with rubber expanders. This led to a slight delay in the lifebuoys and the POB marker buoy being passed overboard.

4.3.4 Emergency Response Management

4.3.4.1 POB Manoeuvre

The co-sailors immediately initiated the POB manoeuvre and executed it successfully. The lifesaving appliances known to the crew members were used properly. The distress call was slightly delayed (six minutes after the skipper fell overboard) and the scene of the accident was not marked or secured on the GPS device or electronic chart display. However, given the timing of the rescue operation it is reasonable to assume that the outcome of the rescue would not have been influenced if the rescue services had been alerted slightly earlier or the scene of the accident secured in this particular case. It should also be noted that although the crew members were formally qualified to carry out the POB manoeuvre, no emergency roles were specified during the safety familiarisation by the skipper and the actual handling of the various lifesaving appliances was not explained. The execution of a POB manoeuvre was neither discussed in detail nor practiced before the start of the sailing trip.

4.3.4.2 Rescuing People from the Water

The rescue equipment stipulated by the Ship Safety Division (BG Verkehr) does not include any devices or operating procedures that enable helpless people to be brought back onto the deck of a yacht from the water. Means of reboarding are only helpful if the person in the water is still able to climb them. The very serious marine casualty involving the SPEEDY GO shows that it is necessary to have both suitable equipment and a tried and tested strategy for bringing (helpless) people in the water back on board a yacht. Accordingly, owners and skippers are urged to develop, implement, test and regularly practice with the selected lifesaving appliances an individually appropriate strategy on their vessels. In the case of changing crews, in particular, co-sailors must be familiar with the means of rescuing people from the water before the start of a sailing trip and be able to operate them independently.

On board the SPEEDY GO, the lifesling would probably have been the only way to bring the skipper back on deck immediately after he fell overboard, i.e. when he was still partially able to actively assist in a rescue. However, the co-sailors did not know about this lifesaving appliance because it was not included in the safety familiarisation. A rescue tackle was not on board. The co-sailors would hardly have been able to haul up the skipper in the headsail or mainsail via the halyard winch, with topping lift and mainsheet or via a boom out of the main boom with the mainsheet as a rescue tackle (see 3.2.10.2 points 2-4). On the one hand, they were not familiar with the configuration of the SPEEDY GO's running rigging, as neither were included in the familiarisation and not even 90 minutes had passed since the start of the sailing trip. On the other hand, it would not have been easy to convert the headsail to a recovery sail due to the furling system without travellers. The mainsail was not set and the SPEEDY GO's mainsheet is run in the rather unusual 'German mainsheet system' (see Figure 39 and

Chapter 4.4 of BSU Investigation Report 143/11). This would have complicated the use of the mainsheet for rescue, as the sheet has two ends that would have had to be operated and secured.

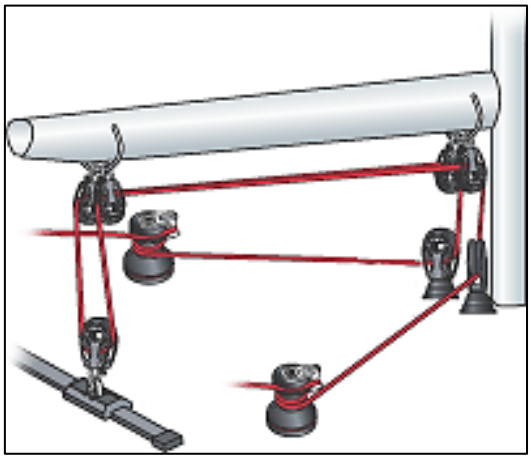


Figure 39: Main sheet configuration in the German mainsheet system[128]

Since the skipper was not wearing a lifejacket, it was not possible for the fellow sailors to use the metal eyelet near the lifejacket's fastener as an attachment point for a line or similar. This means that the buoy hook intended for use on board as an item of rescue equipment could not have been used because there was no connection point on the casualty.

In general, the series of rescue tests conducted by the BSU in Flensburg in cooperation with the vessel operator and the DGzRS (see 3.2.12) confirmed that the vessel operator's strategy for rescuing people from the water with a buoy hook is suitable and practicable. The strategy was ineffective on board the SPEEDY GO because the skipper had failed to communicate it to the crew members.

In view of the low water temperature in the Flensburg Firth at the time of the accident, co-sailor Alpha exposed himself to great danger when he went into the water without self-protection and connection to the yacht. That he could be brought back on board without suffering more severe hypothermia or a further loss of motor skills is something he owes to his fellow sailors (especially Bravo), who steered the yacht to him first. The rescue of their fellow sailor was prioritised, as the chances of success were deemed greater. That the co-sailors focused on rescuing Alpha, which had become necessary in the meantime, after the bathing ladder was lost contributed to losing sight of the skipper, inter alia. In the end, however, this did not adversely affect the recovery of the skipper because the helicopter crew found him in the water within about two minutes of arriving at the scene.

When it became clear that the skipper would not be able to get back on board unassisted and that it was also not possible for the fellow sailors to bring him back on board using only physical strength, partly due to the freeboard of the yacht, the liferaft on board could have been used as a last resort (see 3.2.10.2 point 7). One of the co-sailors would then have had to climb into the liferaft in order to first hoist the skipper

[128] Source: BSU Investigation Report 143/11, p. 34.

into it. However, it would not be reasonable to expect the co-sailors to consider and know all the options for a rescue. Due to the inadequate safety familiarisation, the short period on board the SPEEDY GO and the sailing trip nature of a holiday voyage, the co-sailors must be regarded more as passengers and less as crew members, despite their own recreational craft licences and experience.

4.3.4.3 Hypothermia, Behaviour in the Water

The skipper and co-sailor Alpha each behaved differently in the cold water, which also affected each of them to differing extents in their physical condition. This is due to various factors, which are set against each other below in Table 3.

Table 3: Situation in the water – skipper vs. co-sailor Alpha

Skipper	Co-Sailor Alpha
– sudden, unexpected fall into cold water ➢ cold shock response ➢ panic – held onto the lifebuoy only at the beginning and with his hands ➢ contact was lost ➢ the skipper had no flotation device – did not wear a lifejacket ➢ lack of buoyancy ➢ greater effort to stay above water ➢ rapid exhaustion, hypothermia ➢ body sank in a vertical position ➢ inability to keep head above water – poorer condition ➢ fatigue – in the water for longer (about 30 minutes)	– went into the water intentionally ➢ lower cold shock response ➢ kept calm – wore a lifejacket ➢ no hectic swimming movements ➢ able to float in horizontal position without any effort ➢ less rapid cooling (also due to proper sailing clothes) – remained in the water for about 9 minutes

Another factor that may have reduced the skipper's chances of survival is the abandonment of hope of a successful rescue. At the beginning of the sailing trip, he had expressed to fellow sailors that there was almost no chance of survival if they fell into the water. Some of the co-sailors also mentioned the 'transfigured' look on his face when he was unable to climb the bathing ladder and the ladder was then lost. Resignation and an abandonment of hope may have contributed to a lack of vital stress hormones. “Numerous accounts of shipwrecked people exist which show that the will

to survive led to a successful rescue after periods in the water [...] that were not thought possible."[129]

This marine casualty has once more demonstrated that wearing a lifejacket radically increases the chance of surviving the first stages of an immersion accident (cold shock response and swim failure).

4.3.5 Certificates of Proficiency for Recreational Boating

Training in recreational boating in both Germany and Great Britain is regulated solely by the content of the respective examinations. The different requirements for manning commercially used recreational craft and the different areas of validity (size of yacht, area of operation) of the respective qualifications should not be the subject of this evaluation.

In Great Britain, more varied and extensive practical experience is required to pass the examination, e.g. in tidal waters, at night, on longer passages. Moreover, various additional certificates and a certificate of fitness for service at sea are required in Great Britain to operate commercially used yachts (see Annexes 9.6.1 and 9.6.2).

There are also significant differences in the performance and content of the examinations, which will be compared here using the example of the minimum qualification for operating commercially used yachts in a coastal area (see Annexes 9.6.3.3 and 0):

Table 4: SKS vs. Yachtmaster® Coastal examination

Sportküstenschifferschein	**Yachtmaster® Coastal**
Type and duration of examination	
– written examination lasting three hours in total – practical examination lasting no more than 30 minutes	– no written examination – practical and simultaneous oral examination of at least six to ten hours (one candidate) or eight to 14 hours (two candidates)
Examination content (extract relating to safety, POB and CM)	
<u>theory:</u> – 15 different examination sheets, comprising a total of 418 out of the 492 questions published; five out of 15 sheets contain questions on POB situations, the safety familiarisation and/or the muster list – ≥ 65% needed to pass	– taking responsibility for safety on board - giving a safety familiarisation - safety harnesses - lifejackets - distress signals and rescue procedures – establishing a safety culture on board

[129] KOHFAHL, Dr. med. J.: Überleben nach Sturz ins (kalte) Wasser. Published in: *Schiff & Hafen*, April 2013, No. 4, p. 68-70. https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-sonstige/sturz-ins-kalte-wasser.pdf (5 January 2023).

practical:

- POB manoeuvre (without bringing a person/dummy back on board; compulsory task)
- one out of four possible seamanship-related tasks:
  - safety briefing,
  - emergency role,
  - handling of lifebelt/lifeline **or**
  - use of lines when mooring and unmooring
- four to five more practical tasks on other topics

- POB manoeuvre (without bringing a person/dummy back on board)
- crew management and communication skills (critical)
  - crew management
  - delegation
  - rules of conduct and etiquette

The examination for the Yachtmaster® Coastal is therefore far more challenging than that for the SKS, especially in terms of time frame. In contrast to the [German] recreational craft licence examinations, the instructor or person helping a candidate prepare for the Yachtmaster® examination may also be the examiner, meaning an impartial assessment of candidates may not be guaranteed.

In Germany, CM is not part of the examination content, while in Great Britain, crew management and communication skills are critical to passing the examination. The co-sailors on board the SPEEDY GO described different experiences during their own non-state-mandated training for the SKS or the Swiss Certificate of Competence for Ocean Yachting. CM was reportedly addressed for one person but for others not at all or only superficially.

The demonstration of a safety familiarisation may not be necessary at all in the practical examination for the SKS if the examiner selects one of the other three possible seamanship-related tasks. For example, if – for the sake of simplicity – the use of lines when mooring and unmooring is an examination task, no practical tasks on ship safety are set except for the obligatory POB manoeuvre. Moreover, the demonstration of an appropriate safety familiarisation in addition to ten other required practical tasks would not even be possible with the maximum duration of a practical examination of only 30 minutes. The points of a familiarisation published by the BMDV as the minimum scope (see Table 2) alone would take up a large part of or even the entire examination. In general terms, it is virtually impossible for an examiner to holistically assess the candidate's practical ability to safely operate a yacht with all the aspects that entails within 30 minutes.

In the examination for the next higher qualification, the SSS, various criteria for modern and safe yacht navigation are also absent. However, the organisation and management of the crew in a given emergency situation as well as boat management at sea (including justifying crew allocation) are some of the compulsory practical tasks. The rescue/recovery of a person from the water should be planned but not carried out. Although the SSS permits the operation of yachts up to 30 nm from the mainland (SKS = 12 nm), this does not justify why the practical examination content referred to above

does not also belong to the compulsory part for the SKS. In Great Britain, the content of the Yachtmaster® Coastal examination does not differ from that of the Offshore examination, merely a different level of experience is expected.[130]

The POB manoeuvre is a compulsory task in both Germany and Great Britain, although in each case there is no requirement to actually rescue a person or dummy from the water. Stopping the yacht alongside a fender or lifebuoy previously passed overboard and then fishing it out with the boat hook is sufficient.

This marine casualty and the evaluation of comparable accidents (see 4.3.1) illustrate how important it is for the safety of the yacht and people on board that

- the skipper gives crew members a comprehensive familiarisation;
- an adequate safety culture is established on board;
- a proven strategy for rescuing people from the water exists on board and is communicated and practiced, and
- everyone on board acts as part of a team.

To achieve this, a certain level of social and management competence possessed by the skipper is one of the basic requirements for functioning crew management. It is incomprehensible why modern crew management skills and the observance of basic safety aspects are not a prerequisite for issuing a certificate for operating a commercial yacht.

4.4 Miscellaneous – Minimum Safe Manning Certificate

Contrary to the information documented on the SPEEDY GO's minimum safe manning certificate, it was not issued in accordance with Regulation V/14(2) SOLAS. According to this Regulation, a vessel flying the flag of Germany could not be manned by fewer than two people, e.g. so as to comply with the requirements of Section 13 of the German Ordinance for the Safety of Seagoing Ships (SchSV)[131].

By issuing this certificate, the Ship Safety Division (BG Verkehr) has classified the SPEEDY GO as a merchant ship. From a legal standpoint, the certificate entry 'Sportboot (pleasure craft)' cannot give rise to the application of regulations from the SeeSpbootV. STCW regulations would become mandatory for commercially used recreational craft classified as merchant ships. It is not without reason that the BMDV has adopted a different regulation for traditional ships (see Annex 1a Part 3 to the SchSV). If it is desirable to provide commercially used recreational craft with a minimum safe manning certificate without reference to merchant ships and the STCW Convention, then it is appropriate to adopt a legal

[130] THE ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster® Scheme – Syllabus & Logbook*. Southampton, 2022. – ISBN 978-1-910017074. P. 72.

[131] German Ordinance for the Safety of Seagoing Ships of 18 September 1998 (Federal Law Gazette I p. 3013, 3023), as amended by Article 2 of the Ordinance of 3 March 2020 (Federal Law Gazette I p. 412).

procedure in the same way as for traditional shipping or there should be a legal review as to whether recreational craft should indeed be classified as merchant ships.

Since the SchSV is currently under revision and the problems with the classification of commercially operated recreational craft discussed above are not a factor that has contributed to the accident, this problem will not be addressed further in this investigation report.

5 CONCLUSIONS

After investigating and evaluating all available information, the BSU has arrived at various conclusions. Building upon this, specific safety recommendations are given subsequently so as to avoid comparable accidents in the future.

5.1 Cause of the Accident

The fatal POB accident was caused by an unsuccessful gybe in which the jibsheets became entangled in the end mount of the spinnaker pole, causing people to leave the cockpit to restore seaworthiness. The cause of the skipper falling overboard was a lack of self-protection against falling overboard with a lifeline when he went onto the foreship in conjunction with adopting an unsafe position on the yacht's leeward side. The main reason for the skipper drowning was the fact that he was not wearing a lifejacket. The factors discussed in Chapter 4.2 contributed to the accident.

5.2 Comparison with Similar Accidents

- Since the risk of fatal POB accidents in recreational boating is greater on sailing yachts (compared to motor yachts), measures should be taken to reduce both the probability of occurrence and severity of the impact of such accidents. – *Self-protection against drowning and against falling overboard must be consistently observed on sailing yachts, especially when going onto the foreship, e.g. during sailing manoeuvres.*

- To enable skippers to monitor the overall situation from the cockpit, they should ensure that and permit co-sailors to perform works on the foreship independently. – *The risk of skippers falling overboard and thus also the risk of crew members having to perform a POB manoeuvre and rescue independently would be reduced.*

5.3 Seamanship

- No action was taken to ensure that the principles of good seamanship and that the control and protection measures from the risk assessment were implemented. – *The vessel operator's safety management system, consisting of various documents[132] and training for skippers, is partly incomplete and was ineffective in the present case because requirements were not followed.*

- It is virtually impossible for the shorebased management team to trace implementation of the vessel operator's requirements and the principles of good seamanship by skippers for safe navigation without feedback from co-sailors. – *A feedback tool that automatically evaluates the results of a questionnaire could contribute to effective quality management with little effort. The observation of the person responsible for safe navigation (the skipper) would be ensured within the meaning of Section 3 SchSG (see 4.3.2.1).*

[132] Skipper's manual, risk assessment, safety familiarisation checklist, etc.

5.3.1 Preparing for the Sailing Trip and Familiarisation; Safety Management of the Vessel Operator

- A comprehensive (safety) familiarisation of the co-sailors, the allocation of emergency roles and the execution of practice manoeuvres must take place before or at the beginning of the sailing trip. – *Since accidents can happen immediately after the start of a sailing trip, as in the present case, doing this (partially) at a later point in time is not expedient.*

- The safety familiarisation and practice manoeuvres must enable crew members to independently deal with emergency situations even when the skipper is not available. – *If the skipper is incapacitated, there are usually no other competent individuals available to assist crew members, meaning that they are left to their own devices when managing an emergency.*

- A (safety) familiarisation checklist provided by the vessel operator must be structured, complete and comprehensible. – *It acts as a guide during the briefing or helps experienced skippers to ensure that all aspects have been covered or all questions answered at the end of the briefing.*

- Skippers should receive appropriate training from the vessel operator in accordance with Section 3 SchSG. – *This should also include regular refresher training.*

5.3.2 Crew Management

- Inadequate or absent CM facilitates unsafe situations on board and the failure of manoeuvres. – *CM and the implementation of a safety culture reduce the risk of serious accidents.*

5.3.3 Wearing Personal Lifesaving Appliances

- The vessel operator should instruct skippers and crew members to wear lifejackets on deck at all times during the voyage. – *Wearing a lifejacket increases the chances of survival after falling overboard (see also 0 and 5.5.3).*

5.3.4 Self-Protection on Deck

- The skipper endangered himself and his fellow sailors due to his lack of self-protection on deck. – *Exemplary behaviour according to the principles of good seamanship could have prevented the skipper from falling overboard and encouraged co-sailors to protect themselves on deck.*

- Self-protection on deck is of particular importance in adverse weather conditions (e.g. strong wind and swell, low water temperatures). – *The risk of falling overboard must be reduced, as adverse environmental conditions make rescue from the water even more difficult.*

5.4 Design and Equipment of Vessel

5.4.1 Bathing Ladder and Emergency Ladder

- The fastening mechanism with knurled thumb screws for the bathing ladders installed by the shipyard is neither intuitive nor practicable. – *The bathing ladder cannot be mounted quickly as intended. An improperly fastened ladder will quickly disengage and may go overboard, especially in rough seas.*

- Mobile bathing ladders should not be installed and are not a suitable means of reboarding according to Directive 2013/53/EU. – *In the case of mobile bathing ladders, it is not ensured that they are accessible to people in the water at all times without external assistance.*

- Non-rigid ladders (e.g. Jacob's ladders) are safe and usable only if the requirements of DIN EN ISO 15085:2018 are met. – *Narrow rungs, missing handholds and short lengths make them unusable. The recess-fit rope ladder (see Figure 24) cannot meet the requirements of DIN EN ISO 15085:2018 because it is attached at only one point.*

- Means of reboarding that comply with DIN EN ISO 15085:2018 should belong to the outfitting requirements for yachts used commercially for training or similar sport and leisure purposes. – *It is important to ensure that such yachts have a functional means of reboarding, as required by Directive 2013/53/EU.*

5.4.2 Attachment of Lifesaving Appliances

- An (additional) attachment of lifesaving appliances with cords or rubber expanders may delay readiness for use in an emergency. – *In a POB situation, it must be possible to quickly remove lifesaving appliances from a suitable holder and passed overboard.*

5.5 Emergency Response Management

5.5.1 POB Manoeuvre

- Talking through the manoeuvre in theory (e.g. as part of the safety familiarisation) cannot replace a practical exercise. – *It is only possible to determine whether the co-sailors can implement or are proficient in, e.g. the operating procedure for recovering/rescuing a person from the water during a practical drill.*

- To achieve an efficient manoeuvre, the roles of the people on board must have been defined in advance. – *The definition of tasks prevents an uncoordinated approach, which contributes to wasted time and forgetting necessary measures.*

5.5.2 Rescuing People from the Water

- An individual, yacht-based procedure for recovering/rescuing (helpless) people from the water should be mandatory for yachts used commercially for training or similar sport and leisure purposes. – *It is important to ensure that a practicable strategy exists on such yachts.*

- Wearing a lifejacket not only prevents drowning, but also assists in rescuing people from the water. – *The majority of procedures for rescuing (helpless) people from the water require either the assistance of those in the water or that they wear a lifejacket, the metal eyelet or lifting loop of which can be used for attaching lifesaving equipment to.*

- To ensure that the safety of those providing assistance is not endangered and they do not find themselves in an emergency situation, the self-protection of the people still on board should have priority over rescuing the people in the water. – *The possibility of a successful rescue drops as the number of people that have to be rescued rises.*

5.5.3 Hypothermia, Behaviour in the Water

- Wearing a lifejacket plays an important role in slowing down the onset of hypothermia in cold water. – *Without a lifejacket or other flotation device, it was almost impossible for the skipper to behave in the water in accordance with recommended practice[133] and in so doing increase his own chances of survival.*

- The proper handling of lifesaving appliances (e.g. lifebuoy, lines, lifesling, etc.) by the person or people in the water should form part of the safety familiarisation. – *The effectiveness of lifesaving appliances and the success of a rescue is influenced by the handling of the equipment, inter alia.*

5.6 Certificates of Proficiency for Recreational Boating

- Experience and lessons learned from other examination systems can be useful for reforming the examination system in one's own country. – *Internationally established good professional practice (industry best practices) should be taken into account for the continuous development and improvement of training for increased safety and competence in recreational boating.*

- The maximum time frame set for the practical examinations (especially for the SKS) is not sufficient to demonstrate all possible examination tasks to an adequate extent. – *A longer time frame for the practical examination would allow examiners to adequately assess a candidate's skills and behaviour on board.*

[133] See 3.2.10.3 and
KOHFAHL, Dr. med. J.: Überleben nach Sturz ins (kalte) Wasser. Published in: *Schiff & Hafen*, April 2013, No. 4, p. 68-70. https://www.deutsche-flagge.de/de/redaktion/dokumente/dokumente-sonstige/sturz-ins-kalte-wasser.pdf (5 January 2023) and
INTERNATIONAL MARITIME ORGANIZATION: *IMO946 A Pocket Guide to Cold Water Survival, 2012 Edition*. – ISBN 9789280115659.

- Every candidate should be required to demonstrate that she/he can give an adequate safety familiarisation. – *Comprehensively briefed co-sailors can assess hazards and support emergency management when needed better, which can turn into a personal life insurance for the skipper.*

- Implementation of the principles of CM as an important aspect of safety and the practical implementation of rescuing a person, dummy or other heavy object from the water should be part of the examination. – *Prospective skippers in commercial recreational boating should be made aware of these topics and be able to assess any challenges that arise.*

- The content of the SKS and SSS examinations should not differ significantly, in particular with regard to important aspects of safety. – *Dangerous situations can also occur at a shorter distance from the coast and yacht skippers must be able to deal with them.*

6 ACTIONS TAKEN

6.1 Modification of the SPEEDY GO's Bathing Ladder

After the loss of the bathing ladder during the rescue operation on 8 April 2022, the vessel operator immediately ordered another portable bathing ladder to be manufactured as a replacement (see Figure 12, Figure 24 and Figure 32 ff.). The lowest rung of the reconstructed bathing ladder was about 52 cm below the water surface. The distance between the rungs was about 27 cm. This bathing ladder could be climbed without any problems during the series of rescue tests carried out on 26 October 2022 by the BSU in cooperation with the vessel operator and the DGzRS (see 3.2.12). However, if the ladder was jolted, as would be unavoidable in stronger wind and swell, it lifted out of its anchorage easily because it could not be secured with knurled thumb screws like the original ladder.

The bathing ladder was then permanently installed at the stern of the yacht during the planned call at the shipyard in the winter of 2022/23:

Figure 40: The SPEEDY GO's permanently installed bathing ladder after modification[134]

Permanent installation at the stern means that the new ladder is always ready for use and accessible to a person in the water without assistance. The BSU did not verify if the new, permanently installed bathing ladder meets the requirements of DIN EN ISO 15085:2018.

[134] Source: Vessel operator.

6.2 Introduction of Additional Lifesaving Equipment

During the series of rescue tests on 26 October 2022, the vessel operator stated that it intended to purchase the round sling used by the DGzRS for rescuing people from the water as an additional item of lifesaving equipment for all its yachts. Due to the yacht's higher freeboard (compared to a lifeboat with a side gate), the sling would have to be used slightly differently. During the sixth and seventh rescue tests, it was placed on the back of the test subject under their arms so that two people from aboard the yacht could pull the person from the water onto the deck. The vessel operator does not believe the scoop stretcher additionally used in the seventh test is feasible as an additional item of equipment for reasons of space.

6.3 Wearing Lifejackets

In BSU Investigation Reports 402/15 on the fatal accident on board the charter yacht DESDEMONA and 211/19 on the collision between the traditional vessel No.5 Elbe and the container vessel ASTROSPRINTER, safety recommendations were made to the legislator with regard to the mandatory wearing of lifejackets on recreational craft and traditional ships. These recommendations have yet to be followed.

Nevertheless, the accident involving the sailing boat SILJA (BSU Investigation Report 276/21) and this marine casualty involving the SPEEDY GO demonstrate that wearing lifejackets saves lives and forms part of good seamanship.

7 SAFETY RECOMMENDATIONS

The following safety recommendations do not constitute a presumption of blame or liability in respect of type, number or sequence.

7.1 Federal Ministry for Digital and Transport

The Federal Bureau of Maritime Casualty Investigation recommends that the Federal Ministry for Digital and Transport

.1 revise the guidelines for executing the tasks under Section 2 SportSeeSchiffV with regard to the content and execution of the SKS and SSS examinations (see Chapter 5.6) in cooperation with the German Sailing Association and the German Motor Yachting Association.

.2 stipulate that means of reboarding conforming to DIN EN ISO 15085:2018 and required under Directive 2013/53/EU must form a mandatory part of the safety equipment on yachts used commercially for training or similar sport and leisure purposes, and that arrangements be made for them to be inspected during surveys.[135]

.3 to make it mandatory for yachts used commercially for training or similar sport and leisure purposes that a practicable procedure for recovering/rescuing (helpless) people from the water must be implemented for the respective vessel and make arrangements for this to be inspected during surveys.[135]

7.2 Federal Ministry for Digital and Transport and the German Maritime Search and Rescue Service

The Federal Bureau of Maritime Casualty Investigation recommends that the Federal Ministry for Digital and Transport and the German Maritime Search and Rescue Service

.1 coordinate the content of their publications (pamphlets, website, etc.) and revise it if necessary so as to avoid different information and, in each case, refer to the information and advice in the other's publication so as to increase the reach and raise awareness of the issue of safety among as many addressees as possible.

.2 in addition to Safety Recommendation 7.2.1 in the BSU's Investigation Report 276/21 on the foundering of the SILJA, develop a uniform and comprehensive checklist for the safety familiarisation for people on board before the start of a sailing trip (by way of example, see Table 2) and make it available to water sports enthusiasts by appropriate means.[136]

[135] In a statement of 30.03.2023 within the framework of the consultation phase pursuant to § 27 SUG, the BMDV stated that the topics mentioned in safety recommendations 7.1.2 and 7.1.3 had already been taken up and that corresponding draft ordinances were currently being prepared.

[136] See also Safety Recommendation 7.2.1 in BSU Investigation Report 276/21 – Foundering of the sailing boat SILJA and death of a crew member in the Accumer Ee tidal inlet on 26 August 2021.

7.3 Vessel operator

The Federal Bureau of Maritime Casualty Investigation recommends that the vessel operator of the SPEEDY GO, Jochen Schoenicke SKIPPERTEAM Ges.m.b.H.,

.1 revise its safety management system to address safety deficiencies, in particular with regard to

.1 the crew familiarisation and safety instruction checklist (see Chapters 5.3.1 and 5.5.3, as well as Table 2);

.2 the implementation of the control and protection measures from the risk assessment and the drafting of important requirements as well as the regular refresher training for courses offered to skippers (see Chapter 4.3.2.1).

.2 if at all necessary, additionally fasten lifesaving equipment only with suitable cords or rubber expanders in order to ensure rapid readiness for use.

.3 monitor the implementation of safety and procedural requirements by skippers, including in the context of quality management (e.g. by means of an automated feedback tool for co-sailors).

.4 regularly instruct its skippers to follow the following principles of good seamanship:

1. consistent use of lifelines and safe movement on deck;
2. consistent wearing of lifejackets;
3. comprehensive (safety) familiarisation before the start of a sailing trip;
4. assignment of emergency roles before the start of a sailing trip;
5. execution of practice manoeuvres at the start of a sailing trip;
6. wearing of appropriate sailing clothes;
7. implementation of the principles of crew management;
8. correct behaviour after a fall into cold water.

7.4 Shipyard

The Federal Bureau of Maritime Casualty Investigation recommends that the SPEEDY GO's shipyard, AD-BOATS Ltd. (Salona Yachts)

.1 discontinue equipping its yachts with portable bathing ladders, as they are not a suitable means of reboarding according to Directive 2013/53/EU (see Chapter 5.4.1).[137]

.2 in the event of equipping yachts with portable bathing ladders, choose a more practicable fastening mechanism with automatic securing, which dispenses with knurled thumb screws or similar (see Figure 22 and Chapter 5.4.1) for safety reasons.

.3 discontinue equipping its yachts with emergency ladders that do not comply with the requirements of DIN EN ISO 15085:2018 (e.g. recess-fit rope ladders, see Chapters 4.3.3.1 and 5.4.1).

.4 describe in the 'Owner's / skippers Manual' [sic] means of reboarding in accordance with DIN EN ISO 15085:2018 Chapter 17 and recommend that they be kept ready for deployment and available at all times.[137]

[137] See also Safety Recommendation 7.4 in BSU Investigation Report 143/11 – Death of a crew member of the sailing yacht SPECIAL ONE on 30 April 2011 off Fehmarn.

8 SOURCES

- Mission logs of the German Maritime Rescue Coordination Centre (MRCC Bremen) and JRCC Denmark
- Audio recordings of the radio traffic made by MRCC Bremen
- Written explanations/submissions
  - Vessel operator
  - Shipyard
  - Ship Safety Division (BG Verkehr)
- Testimony of all co-sailors
- Vessel movement data from MarineTraffic.com and the smartwatch of a co-sailor
- Documents of the vessel operator for safety management
- Autopsy report from the State Department of Forensic Medicine for Funen, South- and Sønderjylland
- Navigational charts, Federal Maritime and Hydrographic Agency (BSH)
- Official weather report of Germany's National Meteorological Service (DWD) of 3 June 2022
- Various national and international guidelines, standards and pieces of legislation identified and explained above
- Internet and literature sources identified accordingly as footnotes

9 ANNEXES

9.1 Crew Familiarisation and Safety Instruction Checklist

CREWEINWEISUNG und SICHERHEITSBELEHRUNG

Unter Deck:

⇒ Toilette jedem einzeln erklären, bei Fehlbedienung wieder jedem einzeln neu: **Kein Klopapier in die Bordtoilette!!!** erklären (Fäkalientanks 1x pro Woche mit Chlorreiniger über Nacht stehen lassen zur Vorbeugung!)
⇒ Ringe, Ketten, Schmuck ablegen, Brille und lange Haare mit Band sichern, Sonnencreme, Wasserflasche und Sonnenhut.
⇒ Schiff sauber u. ordentlich halten, eine verschmutzte Bilge kann lebensgefährlich bei Wassereinbruch sein!
⇒ Verbrauch von Süßwasser, Verbrauch von Strom
⇒ Gasherd erklären (gesamte Gasanlage)
⇒ Feuerlöscher erklären, Bordapotheke zeigen und erklären
⇒ Alle Seeventile zeigen und Absperrhähne 1x bewegen
⇒ Rauchen unter Deck und in den Kabinen ist verboten, ebenso unter der Sprayhood!!!
⇒ Bedienung der Technik: Verstellen der Radargrundeinstellungen ist verboten!
⇒ Bilgepumpen erklären (Thema Sauberkeit erklären) Bordschuhe tragen, nie barfuß.
⇒ Motor (Öl, Wasser) / Generator / Batterien
⇒ Rettungsmittel / Musterweste u. Rettungswege besprechen, Luken richtig schließen und öffnen (nie halb offen)
⇒ Logbuch führen, Wetterbericht aufschreiben, Verluste von Ausrüstung vermerken + für Ersatz sorgen, Liste erstellen
⇒ Wachen einteilen falls nötig. Ruder und Navigation immer besetzt / Übergabe der Wachen besprechen (pünktlich!)
⇒ Backschaftsplan wenn nötig
⇒ Bordkasse anlegen als Formular oder App, Zahlmeister und Einkäufer festlegen, Endreinigung besprechen
⇒ bei Törns ab deutschen Häfen MARPOL- Blatt zeigen + erklären

Über Deck:

⇒ Eine Hand für Dich, eine für das Schiff, die Gräten sind wichtiger als das Material
⇒ Bei schwerem Wetter geht man geduckt und eingepickt über Deck bzw. kriecht!
⇒ Skipper bei jeder unklaren Situation informieren auch wenn er gerade Pause macht!
⇒ Alle probieren Sicherheitsgurt / Schwimmweste an. Bei schwerem Wetter ist verstellen zu spät! Einpickpunkte klären.
⇒ Jeder sollte sich, auch ohne Anweisung des Skippers, Gurt und Schwimmweste anziehen, wenn er will.
⇒ Rolleneinteilung Seenotfall vornehmen, Szenarios besprechen: Mann über Bord - was nun? Rettungsring außenbords, Fahrt aus dem Schiff (anluven), laut schreien! Wassereinbruch, Wantbruch, Mastbruch, Grundberührung, etc.
⇒ Nie mit dem Bein, sondern mit dem Fender die Yacht abhalten
⇒ Auf Gefahren bei der Halse/Patenthalse hinweisen, versch. Großbaumhöhen auf See / im Hafen erklären, dazu die Dirk
⇒ Die Mitsegler müssen den Skipper bei jeder unklaren Situation wecken. Sie tragen die moralische Verantwortung für alle, die schlafen!!!
⇒ Rettungsinsel / Rettungsmittel erklären – **Das komplette Rettungsequipment muss einsatzklar sein, klarieren falls nicht!** Notrollen besprechen und einteilen bei Seetörns und Nachtsegeln
⇒ Ankerwinsch, Ankersicherung und Fernbedienung zeigen
⇒ Motor starten / stoppen
⇒ Winschenbedienung (Gefahren beim Fieren), Kurbel raus, Handklemmgefahr
⇒ Rolleneinteilung bei Manövern (Segel / Maschine) Segel setzen und bergen besprechen
⇒ Es ist nicht egal, ob ein Manöver klappt oder nicht!
⇒ Niedergang freihalten, Backskistendeckel nicht fallen lassen (ist keine Motorhaube)
⇒ Nicht über Bord pinkeln!
⇒ **Diesel tanken: egal in welchem Revier immer mit Biozid-Zusatz!!!**

RISIKOMANAGEMENT UND MODERNES CREWMANAGEMENT SIND FÜR EURE SICHERHEIT WICHTIG
REDET IMMER WIEDER DARÜBER ☺ HALTET EUCH DARAN ☺
CREW: PASST AUF EUREN SKIPPER AUF! SKIPPER: PASS AUF DEINE CREW AUF!

Ja, wir haben über „Risikomanagement" und über „Modernes Crewmanagement" gesprochen, wir haben diese Creweinweisung und Sicherheitsbelehrung erhalten und verstanden.

Datum:.....Skipper:.....

Unterschriften der Crew:

....

....

....

....

Source: Vessel operator.

Translation:

CREW FAMILIARISATION and SAFETY INSTRUCTION

Below deck:

⇒ Explain WC to everyone individually, again to everyone individually if incorrectly used: **No toilet paper in the on-board WC!!!** (Leave waste water tanks with chlorine cleaner overnight once a week as a precaution!)
⇒ Take off rings, necklaces, jewellery, secure glasses and long hair with a ribbon, sun cream, water bottle and sun hat.
⇒ Keep the vessel clean and tidy, a dirty bilge can be life-threatening in the event of water ingress!
⇒ Consumption of fresh water, consumption of electricity
⇒ Explain gas cooker (entire gas system)
⇒ Explain fire extinguishers; show and explain first-aid kit
⇒ Show all seacocks and move stopcocks once
⇒ Smoking below deck and in the cabins is prohibited, also under the sprayhood!!!
⇒ Operation of technical equipment: Adjustment of the radar's basic settings is prohibited!
⇒ Explain bilge pumps (explain the topic of cleanliness) wear sailing shoes, never barefoot.
⇒ Engine (oil, water) / generator / batteries
⇒ Lifesaving appliances / discuss sample lifejacket and escape routes; close and open hatches properly (never half open)
⇒ Keep logbook, write down weather report, note losses of equipment + arrange for replacements, make list
⇒ Assign watchkeeping duties if necessary. Helm and navigation always manned / discuss the handover of watches (punctual!)
⇒ Pantry schedule if necessary
⇒ Create on-board cash record as a form or app, appoint purser and buyer, discuss final clean-up
⇒ Show and explain MARPOL sheet when sailing from German ports

Above deck:

⇒ One hand for you, one for the ship, bones are more important than material
⇒ In heavy weather, you crouch and clip – or crawl – your way across the deck!
⇒ Inform the skipper of any unclear situation, even if he is taking a break!
⇒ Everyone tries on harness / lifejacket. It is too late to make adjustments in heavy weather! Explain anchor points.
⇒ Everyone should don a harness and lifejacket if they wish to, even without being told to by the skipper.
⇒ Assigning roles for the event of an emergency at sea, discuss scenarios: Man overboard – what now? Lifebuoy overboard, slow down the vessel (head up), shout loudly! Water ingress, broken shroud, broken mast, grounding, etc.
⇒ Never stop the yacht with a leg but rather with a fender
⇒ Point out the hazards posed by a gybe/accidental gybe, explain the different heights of the main boom at sea/in port, also the topping lift
⇒ Co-sailors must wake the skipper in any unclear situation. They bear the moral responsibility for anyone who is asleep!!!
⇒ Explain the liferaft / lifesaving appliances – **Every item of rescue equipment must be ready for use. If not, make ready!** Discuss and allocate emergency roles when night sailing and on sea sailing trips
⇒ Show anchor winch, anchor securing device and remote control
⇒ Start / stop engine
⇒ Winch operation (hazards when veering out), crank out, risk of hand getting caught
⇒ Role allocation during manoeuvres (sail / engine) discuss setting and striking sails
⇒ It does matter if a manoeuvre succeeds or not!

⇒ Keep companionway clear, do not drop locker seat lid (is not a car bonnet)
⇒ No urinating over the side!
⇒ **Bunkering diesel: Irrespective of area, always use a biocide additive!!!**

RISK MANAGEMENT AND MODERN CREW MANAGEMENT ARE IMPORTANT FOR YOUR SAFETY
TALK ABOUT IT REPEATEDLY ☺ STICK TO IT ☺
CREW: LOOK AFTER YOUR SKIPPER! SKIPPER: LOOK AFTER YOUR CREW!

Yes, we have discussed 'risk management' and 'modern crew management', we have received and understood this crew familiarisation and safety instruction.

Date: …… Skipper: ……

Signatures of the crew:

…… ……

…… ……

…… ……

…… ……

9.2 Information on Modern Crew Management

Modernes Crewmanagement bei allen Törns des Schoenicke SKIPPERTEAMs.

Aktiv Segeln beim Skipperteam, das heißt: Du machst mit bei unserem modernen Crewmanagement. Ob als Skipper oder als Crewmitglied, Du bist bereit mit deinem Einsatz am Gelingen Deiner Reise mitzuwirken. Modernes Crewmanagement: Darunter verstehen wir ein System der Teilhabe aller Personen an Bord mit dem Ziel:

- Persönliche Kompetenzen zu erweitern
- Gegenseitige Kontrolle zu akzeptieren und zu fordern
- Als Crewmitglied in die Schiffsführung eingebunden zu sein
- Die Sicherheit durch „Mitdenken“ , „Kontrolle“ und „Aufpassen“ zu erhöhen

Als Skipper bist Du Teil der Crew und besonders gefordert modernes Crewmanagement umzusetzen. Je besser die Besatzung deines Törns „zusammenspielt“ und je besser ihr alle aufeinander „eingespielt“ seid, desto schöner wird der Törn.

Du als Skipper hast eventuell die meiste Erfahrung, aber Du bist genauso wie jedes andere Crewmitglied nicht davor gefeit morgen den dümmsten und blödesten denkbaren Fehler zu machen. Daher muss deine Crew auch auf dich aufpassen! Dein Motto als Skipper oder als Crewmitglied muss sein:

„ Passt ihr auf mich auf , ich pass auf euch auf“

Insbesondere Du als Skipper hast bei allen Törns die Aufgabe:

- Vorausschauende Planung zu vermitteln
- Jedes Manöver auf See oder im Hafen begründen können
- Allen Crewmitgliedern notwendige Fähigkeiten beizubringen
- Alle Crewmitglieder entsprechend ihrer Fähigkeiten einzusetzen
- Mitsegler –innen, auch wenn sie wenig erfahren sind, ausdrücklich zu ermuntern sich zu melden, wenn ihnen „etwas komisch vorkommt“

Beispiele:
„Wieso schwimmen vorne in der Toilette die Bodenbretter auf?“
„Der andere Segler hinter der Genua, siehst du den?“
„Die Tonne kommt aber bedrohlich näher“

Wir wünschen Euch einen schönen Törn !
ANKE, ANDREAS, JOCHEN

Source: Vessel operator.

Translation:

Modern Crew Management on all Sailing Trips of the Schoenicke SKIPPERTEAM.

Active sailing at Skipperteam means: You are involved in our modern crew management. Whether as skipper or crew member, you are ready to contribute to the success of the sailing trip with your effort and commitment. Modern crew management: We understand this to be a system of participation for everyone on board with the aim of:

- broadening personal competences
- accepting and calling for mutual control
- being involved in managing the vessel as a crew member
- increasing safety by 'thinking proactively', 'monitoring' and 'paying attention'

As a skipper, you are part of the crew. In particular, you are required to implement modern crew management. The better the crew on your sailing trip 'interacts' and the better you are all 'in tune' with each other, the more enjoyable the sailing trip will be.

As the skipper, you may well have the most experience, but – just like any other crew member – you are not immune to making the stupidest and silliest mistake imaginable tomorrow. That is why your crew also has to look out for you! Your motto as skipper or as crew member must be:

'You look out for me, I will look out for you'

In particular, you as the skipper are responsible on all sailing trips for:

- communicating forward-looking planning
- being able to justify every manoeuvre at sea or in port
- teaching all crew members necessary skills
- tasking all crew members according to their abilities
- explicitly encouraging crew members to speak up if something seems odd to them, even if they are not very experienced

Examples:
"Why are the floor boards floating forward in the toilet?"
"The other sailor behind the genoa, do you see him?"
"That buoy is coming ominously close"

We hope you have a great sailing trip!
ANKE, ANDREAS, JOCHEN

9.3 Information on Risk Management

Schoenicke Skipperteam: RISIKOMANAGEMENT

RISIKEN sind durch vorbeugende Organisation und Planung zu MINIMIEREN. Die Erfahrung lehrt, dass menschliches Versagen in Form von Selbstüberschätzung oder plötzlichen unerklärlichen Blackout das mit Abstand größte RISIKO ist, und dass das menschliche Versagen für fast alle Unfälle verantwortlich ist. Skipper und Crew sind nicht davor gefeit schon in der nächsten Stunde den größten und dümmsten Fehler zu machen! Deshalb: PASST AUF EINANDER AUF!

RISIKO:
Dichtes Passieren einer Tonne insbesondere bei starker mitlaufender Strömung !
MANAGEMENT:
Der Skipper muss an Deck sein und nicht am Smartphone unter Deck ! Alle Mitsegler, die an Deck sind, müssen die Gefahrenquelle beobachten und gegebenenfalls warnen !

RISIKO:
Dichtes Passieren einer Tonne oder einer Landspitze oder einer Untiefe oder eines anderen Schiffes ohne erkennbaren Grund !
MANAGEMENT:
Das ist grundsätzlich zu vermeiden. Immer wenn es geht, muss ein gehöriger Sicherheitsabstand eingehalten werden !

RISIKO:
Der Skipper wird vom verantwortlichen Mitsegler nicht informiert !
MANAGEMENT:
Ein verantwortlicher Mitsegler muss eingeteilt werden, wenn der Skipper ein Nickerchen macht oder wenn er auf dem „Pott" sitzt. Gibt es Wachen ist ein Wachführer zu bestimmen. Der haftet auch vor dem Gesetz dafür, dass der Skipper in auch nur UNKLAREN SITUATIONEN informiert wird.

RISIKO:
Ein verantwortlicher Mitsegler verlässt seine Position ohne Ersatz zu organisieren und ohne den Skipper zu informieren.
MANAGEMENT:
Der Mitsegler soll ein auf Kollisionskurs befindliches Schiff beobachten und muss plötzlich aufs Klo. ER MUSS diese Aufgabe einem anderen Crewmitglied übertragen, und darf seine Aufgabe nicht einfach unterbrechen, ohne Ersatz auf dieser Position.

RISIKO:
Nachts durchsegeln bei Ausbildungstörns!
MANAGEMENT:
Bei Ausbildungstörns sollen Mitsegler und Skipper tagsüber fitt für die Durchführung der speziellen Aufgabe sein. Nachts Segeln in engen Gewässern, erfordert die Anwesenheit des Skippers oder eines qualifizierten Mitseglers als Wachführer an Deck. Falls der Skipper nicht an Deck ist, trägt der wachhabende Mitsegler auch nach RECHT UND GESETZ die Verantwortung für die anderen Crewmitglieder, die in der Yacht schlafen. Nachts durchsegeln beim Ausbildungstörn in der Ostsee soll nicht sein !

Diskutiert diese und weitere Risiken ! Macht die Sicherheitseinweisung !
SKIPPER: PASS AUF DEINE CREW AUF! CREW: PASST AUF EUREN SKIPPER AUF!

Source: Vessel operator.

Translation:

Schoenicke Skipperteam: RISK MANAGEMENT

RISKS should be MINIMISED by precautionary organisation and planning. Experience tells us that human error in the form of overconfidence or temporary, inexplicable lapses is by far the greatest RISK, and that human error is responsible for almost every accident. Neither skipper nor crew is immune to making the biggest and silliest mistake in the next hour! Therefore: LOOK OUT FOR EACH OTHER!

RISK:
Passing a buoy at close quarters, in particular in a strong aft current !
MANAGEMENT:
The skipper must be on deck and not down below on his smartphone ! All co-sailors on deck must observe the source of danger and warn if necessary !

RISK:
Passing a buoy or a headland or a shoal or another vessel at close quarters for no apparent reason !
MANAGEMENT:
Avoid this as a matter of principle. An appropriate clearance must be maintained whenever possible !

RISK:
The skipper is not informed by the co-sailor responsible !
MANAGEMENT:
Responsibility must be assigned to a co-sailor when the skipper is taking a nap or in the WC. If watches are kept, a watchkeeper must be assigned. He is also liable before the law for informing the skipper in SITUATIONS that are merely UNCLEAR.

RISK:
A co-sailor with responsibility leaves his position without organising a replacement and without informing the skipper.
MANAGEMENT:
The co-sailor is supposed to monitor a ship on a collision course and suddenly has to visit the WC. HE MUST assign this task to another crew member and must not simply interrupt it without a replacement at this position.

RISK:
Sailing through the night on training trips!
MANAGEMENT:
On training trips, co-sailors and skippers should be fit to perform the specific task during the day. Sailing in confined waters at night requires the presence of the skipper or a qualified co-sailor on deck as watchkeeper. If the skipper is not on deck, then the co-sailor on watch is also responsible by LAW for the other crew members asleep in the yacht. You should not sail through the night during training trips in the Baltic Sea !

Discuss these and other risks ! Do the safety familiarisation !
SKIPPER: LOOK AFTER YOUR CREW! CREW: LOOK AFTER YOUR SKIPPER!

9.4 General Risk Assessment

Überprüfung der Gefährdungsbeurteilung an Bord einer Segelyacht (Schoenicke Skipperteam, vom 20.06.2008)

im Wachdienst	**Mögliche Kontroll- + Schutzmaßnahmen**
Mögliche Gefährdungen:	
Kollision	Ausguck immer besetzt
Grundberührung	Funktionsfähige Navigationsausrüstung (BSH-Funkabnahme), ein Navigator eingeteilt
Schlechtwetter, Seegang, Schwell +	Strecktaue an deck zum Einpicken, Pädeyes im Cockpit, Sturmhaken an Schapps, Sturmfock + 3. Reff
Schiffsbewegungen	im Groß einsatzklar
Verminderte Sicht	Radar einsatzbereit, Schallsignallanlage einsatzbereit
Verkehrsaufkommen	Warnnachrichten über NAVTEX abhören
Manövrierfähigkeit eingeschränkt	entsprechende Lichterführung
Kälte / Nässe	Ölzeug und Stiefel für die Crew, bei Fahrtgebiet A Thermoschutzanzüge
Witterung	
Alleinarbeit	keine Einzelwachen, immer 2 Mann im Cockpit
Müdigkeit	Wachplan einteilen
im techn. Betrieb	
Mögliche Gefährdungen:	
Ausfall Motor	Anker klar zum Fallen im engen Gewässer
Kollision	Ausguck permanent besetzt, AIS und Radar nutzen
Wassereinruch über Ventile	Leckstopfen bereit halten
Mastbruch	Wantenschneider an Bord bereit halten, ebenso Beil und Eisensäge
Im Manöver	
Patenthalse	nicht an Deck stehen, Bullentaille verwenden
An-/Ablegen	nicht springen, Boot nicht per Hand oder Fuß abhalten

Ankern	Ankerwache
Mast besteigen	immer mit Bootsmannstuhl und 2 Fallen
Bewegen an Deck	geduckt gehen, auf Vorschiff immer eingepickt + mit Rettungsweste
Segeln mit Krängung	Im Cockpit an padeyes einpicken und an Deck an der Laufleine
Mögliche Gefährdungen:	
Quetschen / Stoßen	Aufklärung Verhalten: keine Körperteile zischen Pier + Boot, Deckslicht be Dunkelheit nutzen, nicht im Bereich des Travellers sitzen
Ausrutschen / Fallen	Leinen klarieren, rutschfeste Bordschuhe/Stiefel tragen
Über Bord fallen, ertrinken	Rettungsweste tragen, anleinen
Brechende, schlagende Leinen	Nicht nah an den Schoten sitzen,
Schmuck, der sich verhakt	Ringe + Ketten ablegen
Sicherheit	
Mögliche Gefährdungen:	
Notfall	
Brand	Notrolle, Feuerlöscher gewartet, Brandschutzdecke in Pantry vorhalten
Verlassen des Schiffes	Rettungsinsel, EPIRB, SART, Hand-VHV, Rettungsmittel + Grab-Bag klar halten
MOB, Rettung + Bergung	Rettungsequipment muss immer einsatzklar sein, Lifesling und Rettungshaken am Fall zur Bergung
medizinischer Notfall	Funkarzt oder über Sat.Phone, Bordapotheke
Rettungsmittel	Intervalle zum Ersetzen einhalten
Nicht einsatzbereit	
Feuerlöscher	Regelmäßig zur Wartung
Nicht einsatzbereit	

Source: Vessel operator; highlighting by the BSU.

Translation:

Review of the Risk Assessment on Board a Sailing Yacht (Schoenicke Skipperteam, dated 20 June 2008)

on watchkeeping duty	**Possible Control + Protection Measures**
Possible hazards:	
Collision	Lookout always manned
Grounding	Functioning navigation equipment (BSH radio approval), one navigator assigned
Bad weather, sea state, swell + vessel movements	Jacklines on deck for clipping onto, padeyes in the cockpit, storm hooks on lockers, storm jib and third reef in main ready for use
Restricted visibility	Radar ready for use, sound signalling system ready for use
Traffic volume	Warning messages on NAVTEX
Manoeuvrability restricted	Appropriate display of navigation lights
Coldness / wetness	Oilskins and boots for the crew, thermal protection suits in Sea Area A
Weather	
Working alone	No one-person watches, always two people in the cockpit
Fatigue	Arrange watch schedule
during tech. operation	
Possible hazards:	
Engine failure	Anchors ready to drop in confined waters
Collision	Lookout permanently manned, using AIS and radar
Water ingress via valves	Keeping emergency plugs ready
Broken mast	Holding shroud cutters ready on board, also hatchet and hacksaw
Manoeuvring	
Accidental gybe	Do not stand on deck, use bull tackle
Mooring and unmooring	Do not jump, do not stop boat with a hand or foot
Anchoring	Anchor watch
Climbing the mast	Always with bosun's chair and two halyards

Moving on deck	Move in a crouched position, on foreship always clipped and with lifejacket
Sailing with heel	Clip onto padeyes in the cockpit and onto the lifeline on deck
Possible hazards:	
Crush injuries / impacts	Explain behaviour: no body parts between the pier + boat, use deck light when it is dark, do not sit in the area of the traveller
Slipping / falling	Clear lines, wear non-slip sailing shoes/boots
Falling overboard, drowning	Wear lifejacket, use lifeline
Parting lines, flailing line ends	Do not sit close to the sheets
Jewellery getting caught	Take off rings + necklaces

Safety

Possible hazards:	
Emergency	
Fire	muster list, fire extinguisher serviced, keep fire blanket available in pantry
Abandoning the vessel	Keep liferaft, EPIRB, SART, hand VHF, lifesaving appliances and grab bag ready
POB, rescue + recovery	Rescue equipment must always be ready for use, lifesling and rescue hook on the halyard for recovery
Medical emergency	Radio doctor or on satphone, first-aid kit
Lifesaving appliances	Observe replacement intervals
Not ready for use	
Fire extinguisher	Regular service
Not ready for use	

9.5 Emergency communication

Abbreviations:
SG – SPEEDY GO
LR – Lyngby Radio
WK – WERNER KUNTZE
H/C – Danish rescue helicopter M 405

The content of the following table is taken from audio recordings of MRCC's emergency communications; transcribed by the BSU; translations from German highlighted.

Time (UTC)	Speaker	Message
102543	SG	MAYDAY, MAYDAY, MAYDAY. MMSI 211664360, call sign DG2167, Man overboard.
102559	LR	Station calling Lyngby Radio, this is Lyngby Radio. SPEEDY, what is your position?
102610	SG	Position: 54°53,361' N 009°35,935' E
	LR	And you have a man over board, is that correct?
	SG	Man over board, yes, correct.
	LR	Are you in Flensburg Fjord?
	SG	Repeat, come again?
	LR	Are you in Flensburg Fjord?
102637	SG	We are north of […] a cardinal sign, from an eastern cardinal sign.
102710	LR	MAYDAY, Lyngby Radio. Can you see the man in the water?
	SG	Yes, we can see the man in the water and we have him near our boat. We have him near our boat. The person is already 10 min in the water. He is at our vessel but we can't heave him in.
	LR	Ok. Is he attached to the boat? Can you help him on to the boat?
	SG	Yeah, we […] the ladder. We […] the ladder.
	LR	Very good. Ok. Just a moment, please.
102746	SG	We lost the ladder. We lost the ladder. He is back in the water.
	LR	[…] We are trying to get someone to your position. Please, keep a sharp lookout for the person in the water.
102800	SG	We keep a sharp lookout for the person in the water.
	LR	Yes. Does he wear a life vest?
102810	SG	Yes, he does.
	LR	Ok. What is the colour of the vest? And he is close?
102828	SG	Yellow, yellow. The person has a yellow life jacket and he is 50 m behind the boat. He has the ladder.
	LR	Understood. Please, turn around and try to follow him the best you can. We are trying to find some help for you.

Time (UTC)	Speaker	Message
102901	SG	Second person in the water. Second person in the water.
	LR	Second person in the water. Did he jump or is he…
	SG	He tried to help. This is the guy who is 50 m behind the vessel. Attached to a line, attached to a line.
	LR	That is understood. Thank you very much. We are trying to get some help for you. Stand by.
103008	LR	MAYDAY Relay, MAYDAY Relay, MAYDAY Relay, all stations, all stations, all stations, this is Lyngby Radio, Lyngby Radio, Lyngby Radio
103025	LR	MMSI No. 002191000 MAYDAY. We have two persons in the water from a sailing boat near Flensburg Fjord in the position 54°53,361'N 009°35,935'E. A man has fallen overboard and a second man has jumped to help him. They are unable to enter back to the ship so we need immediate assistance. Ships in the area, please go to assistance. Lyngby Radio. [same message in Danish but name of the boat was mentioned]
103227	LR	SPEEDY GO, SPEEDY GO. Lyngby Radio.
103250	LR	SPEEDY GO, SPEEDY GO. Lyngby Radio.
103316	SG	MAYDAY, MAYDAY, MAYDAY, MMSI 211664360, call sign DG2167, [inaudible]
	LR	SPEEDY GO, this is Lyngby Radio. We have helicopters approaching your position as soon as possible. Helicopters are on their way.
103436	LR	SPEEDY GO, SPEEDY GO, Lyngby Radio. I hope you can hear me. We have helicopters on their way to your position. Helicopters approaching your position as soon as possible.
103526	VIKING	Lyngby Radio, Viking, DC4510
	LR	Viking, Lyngby Radio.
	VIKING	We're just leaving Glücksburg and we would need approximately 30 minutes to that position. Eh… How fast are they […]
	LR	Probably faster but for now, please go towards the position.
	VIKING	Jep. Yeah… we, we are […] we will go to that position.
	LR	Very good. Thank you very much, VIKING.
103608	LR	SPEEDY GO, SPEEDY GO, SPEEDY GO. MAYDAY SPEEDY GO, SPEEDY GO. This is Lyngby Radio. I hope you can hear me. Helicopters are on their way to your position. Helicopters on their way to your position.
103639	SG	Ok, Ok, SPEEDY GO, SPEEDY GO.
	LR	Very good. What is your situation out there?
	SG	Situation is: Two men were overboard. One is rescued. One still over board. [audibly out of breath]

Time (UTC)	Speaker	Message
	LR	Understood.
	SG	Thank you. [audibly out of breath]
103707	LR	Ok, SPEEDY GO. I repeat: Helicopters on their way and German rescue boat WERNER KUNTZE on its way, too. They will be there in approximately 15 minutes. I'm not sure when the helicopters will be there but they are on their way. And please keep sharp look-out for the man in the water. Please, don't lose him.
	FINNJA	Lyngby Radio, Lyngby Radio, Lyngby Radio, this is German sailing yacht FINNJA, sailing yacht FINNJA.
	LR	FINNJA, Lyngby Radio.
	FINNJA	FINNJA is leaving the Glücksburg harbour with speed nearly seven knots and we are on our way to the reported position.
	LR	Thank you very much, FINNJA. Do you have an approximate time for the area?
	FINNJA	Time to the area approximately…, estimated time of arrival will be in 20-25 minutes.
	LR	Thank you very much. Please go to the position. Thank you.
	FINNJA	We are going to the position and are standby. Over.
	LR	Thank you.
	SG	This is SPEEDY GO, SPEEDY GO. One person still in the water, one person in the boat. One person in the water, one person in the boat.
	LR	MAYDAY SPEEDY GO, Lyngby Radio. That is understood. Please, try your best to keep a sharp look-out for the man in the water so that you don't lose sight of him.
	WK	Lyngby Radio, Lyngby Radio for rescue boat WERNER KUNTZE.
	LR	WERNER KUNTZE, Lyngby Radio.
	WK	We arrive in 15 minutes.
	LR	That's understood. Very good, thank you.
	WK	Standby on 16.
103849	LOOP	Lyngby Radio, Lyngby Radio, this is sailing vessel LOOP.
	LR	LOOP, Lyngby Radio.
	LOOP	We are also on the way to the spot. We are close to Glücksburg.
	LR	Ok, so how long… approximately 30 minutes or so?
	LOOP	Approximately 30 minutes, yes.
	LR	Thank you very much.
104031	LR	SPEEDY GO, SPEEDY GO, this is Lyngby Radio.
104037	SG	SPEEDY GO, can you repeat please? [audibly out of breath]

Time (UTC)	Speaker	Message
	LR	Yes, SPEEDY GO, this is Lyngby Radio. […] MAYDAY. We have helicopters on their way. They will be at your position in approximately eight to ten minutes from now.
	SG	Thank you. [Audibly out of breath and relieved]
104307	VIKING	WERNER KUNTZE von der VIKING.
104504	TRÄUMCHEN	DH5862 TRÄUMCHEN. We are coming to assist you now. We have just cast off from Marina Minde and will be helping you with the search. We are just coming out now. If you could send us a message, roughly where we should start searching. [much of it inaudible]
104556	WK	Lyngby Radio, Lyngby Radio for rescue boat WERNER KUNTZE.
	LR	WERNER KUNTZE, Lyngby Radio.
	WK	One person is in the water, that's right?
	LR	That is the last message we got, yes. One person in the water, still, one person out of the water.
	WK	Is the person seen or is it lost?
	LR	Last message: They could still see him and I told them to keep a sharp look-out, as good as possible, for the man in the water.
	WK	Ok. The helicopter is still here.
	SG	This is SPEEDY GO, this is SPEEDY GO. One person in the water, but the person is lost. We can't see him, we can't see him.
	H/C	This is Danish rescue helicopter [inaudible]
	LR	Ok, all rescue vessels and helicopters in the area for man over board: The man is lost, out of sight from the boat now. They can not see him anymore from the boat.
104659	LR	MAYDAY Lyngby Radio. Message: The man in the water is wearing a yellow life vest, yellow life vest.
	H/C	Copied, yellow life vest. […] on the rescue helicopter.
104732	H/C	SPEEDY GO, from the rescue helicopter.
	SG	SPEEDY GO.
	H/C	What was the last time you saw the person?
	SG	5 minutes ago, we saw the person.
	H/C	5 minutes ago. Is he wearing […]?
	SG	No, the person is not near the ship position. It is probably near from […] position.
104802	H/C	Copy that.
	SG	Person is not near the ship.
	H/C	Copy that. The lost person is not near the ship.
104815	SG	Correct.
104843	H/C	SPEEDY GO from the helicopter. We have located the man and […]
	SG	Please, repeat, helicopter.

Time (UTC)	Speaker	Message
	H/C	[…]
	LR	SPEEDY GO, Lyngby Radio. If you read me: The helicopter can see the man. They are trying now to pick him out of the water. Lyngby Radio, MAYDAY.
	SG	SPEEDY GO, understood.
104949	VIKING	Lyngby Radio, VIKING.
	LR	VIKING, MAYDAY Lyngby Radio.
	VIKING	Yes, we would still need 20 minutes. Eh… Is there anything we can do, or…could we leave […]?
	LR	If you are not going that way anyway, then you can leave the situation for now. We have other boats on the way, as well.
	VIKING	Ok, thank you very much. So, we will turn around if it's alright that we can turn around again.
	LR	Thank you very much, VIKING. Thank you.
105048	?	Lyngby Radio, Lyngby Radio for [message interrupted by next radio message]
	?	You are loud and clear.
	WK	Sailing boat, this is rescue boat WERNER KUNTZE […]
105109	?	Please, repeat this.
	H/C	This is […] from the rescue helicopter. Can you confirm that only one person in the water and we […]
	SG	This is sailing boat SPEEDY GO, sailing boat SPEEDY GO. We confirm: One person in the water, one person has been rescued already.
	H/C	That is understood. Only one person in the water and we have rescued one person and we will take that person […]
	SG	Only one person in the water, correct.
105148	LR	MAYDAY FINNJA and LOOP, Lyngby Radio. You are released, you are released. No need for your assistance anymore but thank you very much from Lyngby Radio.
105208	FINNJA	Lyngby Radio, this is FINNJA. We read you loud and clear. We are leaving the situation. We are leaving the situation and […]
	LR	Thank you very much, FINNJA. Thank you very much for your assistance and a good journey home.
	FINNJA	Well understood. Over.
105240	LR	MAYDAY, LOOP, Lyngby Radio. Did you get my message before?
105252	LOOP	Lyngby Radio for sailing vessel LOOP.
	LR	Yes, LOOP, Lyngby Radio. Did you get my message? You are released. No need for your assistance anymore but thank you so much.
105315	LOOP	Lyngby Radio for sailing vessel LOOP.

Time (UTC)	Speaker	Message
	LR	Yes, LOOP, Lyngby Radio, MAYDAY. LOOP, you are released. No need for your assistance anymore. You are released, but thank you very much.
	LOOP	Thank you. Out.
105811	LR	MAYDAY, all stations, all stations, all stations. This is Lyngby radio, Lyngby Radio, Lyngby Radio. Concerning man over board: The situation is under control. SILENCE FINI [same message in Danish]
110701	SG	PIRANJA, PIRANJA, PIRANJA. This is SPEEDY GO, SPEEDY GO, SPEEDY GO, DG2167
110739	PIRANJA	SPEEDY GO this is the PIRANJA.
	SG	SPEEDY GO.
	PIRANJA	Follow me to Flensburg. I will sail with you to Flensburg. You can see me, yes?
	SG	All right, we will follow you to Flensburg. All right.
	PIRANJA	Okay, we will moor in Flensburg first and then we will help you. Follow me. All right. Bye.
	SG	Understood. Out.
110818	MARIN	SPEEDY GO, MARIN is also coming back in.
110825	SG	PIRANJA, PIRANJA, PIRANJA. This is SPEEDY GO, SPEEDY GO.
110839	PIRANJA	This is PIRANJA, say again.
	SG	SPEEDY GO. We have to follow the Danish officials. We have been intercepted by one of those Danish boats with blue light or they have come to us and we are following them to Sønderborg. They are guiding us to Sønderborg.
	PIRANJA	Okay, I will forward that. I will call you in a moment.
111003	PIRANJA	SPEEDY GO this is the PIRANJA.
	SG	SPEEDY GO receiving.
	PIRANJA	Yes, it would be better if you come with me to Flensburg. Sønderborg is not a good idea.
	SG	Yes, but we cannot sail to Flensburg. We have to follow them.
	PIRANJA	I do not understand the situation. Over.
111029	SG	Situation is clarified, but we are supposed to follow the ship that is sailing to Sønderborg.
	PIRANJA	Yes, ask them if they would rather go to Flensburg with us. I will come to you now. I will be with you in a moment.
	SG	Okay, understood.
111104	SG	Danish rescue boat, Danish rescue boat, Danish rescue boat for SPEEDY GO, for SPEEDY GO, for SPEEDY GO, DG2167.
111116	SG	This is SPEEDY GO for the PIRANJA.
	PIRANJA	They are sailing to Egernsund.

Time (UTC)	Speaker	Message
	SG	Danish rescue boat, Danish rescue boat for SPEEDY GO, for SPEEDY GO, for SPEEDY GO.
111205	LR	SPEEDY GO for Lyngby Radio. The Danish boat you are calling is named ALSIN, ALSIN.
111312	SG	ALSIN, this is SPEEDY GO.
111331	PIRANJA	SPEEDY GO, they are sailing for Egernsund!
	SG	They said we have to follow them, PIRANJA.
	PIRANJA	Okay, then do that. You sail to Egernsund and I will sail to Flensburg. I have a car there. Then I will come, okay?
	SG	All right.

9.6 Qualifications and Examinations in Recreational Boating

9.6.1 Overview of the Qualifications in Germany

International certificate for operators of pleasure craft on the waterways navigable by seagoing ships (SBF-See)

Scope:	Recreational craft (no length limitation) used for sport or pleasure and **not commercially** on **navigable maritime waterways** (according to Section 1(1) of the German Traffic Regulations for Navigable Maritime Waterways – SeeSchStrO[138]) (Section 2 of the German Pleasure Yachting Navigating Licences Ordinance – SpFV[139]); required for recreational craft with a propulsion engine power rating of **> 15 bhp** (Section 5 SpFV)
Acquisition, requirements:	Theoretical and practical examinations (Section 8 SpFV), at least 16 years of age (recreational craft with propulsion engine) or 14 years of age (recreational craft under sail) (Section 6 SpFV), medical certificate for recreational craft licence applicants, motor vehicle driving licence or certificate of good conduct (Section 7 SpFV)
Validity:	Unlimited

International certificate for operators of pleasure craft in coastal waters not exceeding 12 nautical miles (SKS)

Scope:	The operation of yachts with a propulsion engine and under sail in coastal waters (all seas **up to 12 nm** away from the mainland); required for operating recreational craft used **commercially** (Section 15 SeeSpbootV in conjunction with Section 1 SportSeeSchV)
Acquisition, requirements:	Theoretical and practical examinations, SBF-See, record of nautical miles sailed (300 nm on yachts with the respective means of propulsion in coastal areas) (Section 6 SportSeeSchV), at least 16 years of age
Validity:	Unlimited

[138] German Traffic Regulations for Navigable Maritime Waterways, as amended and promulgated on 22 October 1998 (Federal Law Gazette I p. 3209; 1999 I p. 193), as amended by Article 2 Section 12 of the Ordinance of 21 September 2018 (Federal Law Gazette I p. 1398).

[139] German Pleasure Yachting Navigating Licences Ordinance of 3 May 2017 (Federal Law Gazette I p. 1016, 4043), as amended by Article 1 of the Ordinance of 1 December 2022 (Federal Law Gazette I p. 2211).

International certificate for operators of pleasure craft in coastal waters not exceeding 30 nautical miles (SSS)

Scope:	The operation of yachts with a propulsion engine and under sail in near coastal waters (all seas **up to 30 nm** away from the mainland and the whole of the Baltic Sea, North Sea, English Channel, Bristol Channel, Irish Sea, Scotia Sea, Mediterranean Sea, Black Sea); required for operating recreational craft used **commercially** (Section 15 SeeSpbootV in conjunction with Section 1 SportSeeSchV)
Acquisition, requirements:	Theoretical and practical examinations, SBF-See and record of nautical miles sailed (after acquisition of the SBF-See 1,000 nm on yachts with the respective means of propulsion in sea areas as a watchkeeper or assistant watchkeeper, including ≥ 500 nm before the theoretical examination) or SKS and record of nautical miles sailed (after acquisition of the SKS 700 nm on yachts with the respective means of propulsion in sea areas) (Section 6 SportSeeSchV), at least 16 years of age
Validity:	Unlimited

Sporthochseeschifferschein [comparable with the British Yachtmaster® Ocean] (SHS)

Scope:	The operation of yachts with a propulsion engine and under sail **in all parts of the world** (all seas); required for operating recreational craft used **commercially** (Section 15 SeeSpbootV in conjunction with Section 1 SportSeeSchV)
Acquisition, requirements:	Theoretical examination, SSS for yachts with the respective means of propulsion, record of nautical miles sailed (1,000 nm as a watchkeeper on yachts with the respective means of propulsion in sea areas, including ≥ 500 nm before the first partial examination), at least 18 years of age (Section 6 SportSeeSchV)
Validity:	Unlimited

Short Range Certificate (SRC)

Scope:	Participation in the **maritime mobile service** with marine radiotelephone stations for VHF and radio facilities of the Global Maritime Distress and Safety System (GMDSS) for **VHF** (range up to about 35 nm) on recreational craft (Annex 3(A.2.6) (to Section 13(4a)) SchSV)
Acquisition, requirements:	Theoretical and practical examinations, at least 15 years of age (Annex 3(A.3.1 a) (to Section 13(4a)) SchSV)
Validity:	Unlimited

Long Range Certificate (LRC)

Scope:	**Unrestricted** participation in the **maritime radio service** with marine radiotelephone stations, ship earth stations and **worldwide** radio facilities of the GMDSS on recreational craft (Annex 3(A.2.6) to Section 13(4a) SchSV)
Acquisition, requirements:	Theoretical and practical examinations, at least 18 years of age (Annex 3(A.3.1 b) to Section 13(4a) SchSV)
Validity:	Unlimited

9.6.2 Overview of the Qualifications in Great Britain

Similar to Germany, yachts in Great Britain are divided into different categories depending on sea area. Distances are measured to the nearest safely navigable port:[140]

Category	*Required qualification*
4: < 20 nm in daylight hours and good weather 3: < 20 nm	Skipper: RYA/MCA Yachtmaster® Coastal
2: ≥ 20 nm and < 60 nm	Skipper: RYA/MCA Yachtmaster® Offshore 2nd pers.: Experience (no qualification required)
1: ≥ 60 nm and < 150 nm	Skipper: RYA/MCA Yachtmaster® Offshore 2nd pers.: RYA/MCA Yachtmaster® Coastal
0: ≥ 150 nm	Skipper: RYA/MCA Yachtmaster® Ocean 2nd pers.: RYA/MCA Yachtmaster® Offshore

[140] MARITIME AND COASTGUARD AGENCY: *Code of Practice for the Construction, Machinery, Equipment, Stability, Operation and Examination of Sailing Vessels, of Up To 24 Metres Load Line Length, in Commercial Use and which Do Not Carry Cargo or More Than 12 Passengers (Blue Code)*. London, The Stationery Office, 1998. – ISBN 0 11 551184 9.

RYA/MCA Yachtmaster® Coastal[141]

Scope:	The operation of yachts < 24 m / ≤ 200 GT on (shorter) coastal sailing trips
Acquisition, requirements:	Practical examination; LRC or SRC[142]; first-aid certificate; minimum sea time on yachts with the respective means of propulsion in the last ten years, including 50% in tidal waters: 30 days on yachts < 24 m or upon presentation of a certificate of completion of an RYA Coastal Skipper Practical course or RYA/MCA Yachtmaster® Coastal certificate of competency in another means of propulsion, 12 days on yachts < 24 m or 30 days on yachts ≤ 500 GT; two days as skipper on yachts < 24 m; 12 hours at night; at least 17 years of age
Validity:	Unlimited, 'commercial endorsement' and so-called 'STCW endorsement' max. five years

RYA/MCA Yachtmaster® Offshore[143]

Scope:	The operation of cruising yachts < 24 m/ ≤ 200 GT on trips in which the yacht is no further than 150 nm away from port
Acquisition, requirements:	Practical examination; LRC or SRC[142]; first-aid certificate; minimum sea time on yachts with the respective means of propulsion in the last ten years, including 50% in tidal waters – without prior qualification: 50 days on yachts ≤ 500 GT, five days as skipper on yachts < 24 m, 2,500 nm on yachts ≤ 500 GT, five passages > 60 nm, including two overnight and two as skipper; – with prior qualification (RYA/MCA Yachtmaster® Offshore certificate of competency in another means of propulsion): 25 days on yachts ≤ 500 GT, three days as skipper on yachts < 24 m, 1,250 nm on yachts ≤ 500 GT, three passages > 60 nm, including one overnight and one as skipper; at least 18 years of age
Validity:	Unlimited, 'commercial endorsement' and so-called 'STCW endorsement' max. five years

[141] ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster Coastal Exam*. https://www.rya.org.uk/training/certificates-of-competence/yachtmaster-coastal (14 December 2022).
[142] or a comparable GMDSS-compliant marine radio certificate.
[143] ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster Offshore Exam*. https://www.rya.org.uk/training/certificates-of-competence/yachtmaster-offshore (14 December 2022).

RYA/MCA Yachtmaster® Ocean[144]

Scope:	Skippering yachts < 24 m/ ≤ 200 GT on passages of any length in all parts of the world
Acquisition, requirements:	Theoretical examination (oral and written); RYA/MCA Yachtmaster® Offshore certificate of competency or MCA certificate of competency as an officer in charge of a navigational watch for yachts < 3,000 GT; voyage on a yacht up to 500 GT with the respective means of propulsion in the last ten years meeting the following criteria: 600 nm (of which ≥ 200 nm at 50 nm from the shore or objects that can be used for navigation), length at least 96 h, full participation of the candidate in planning and preparing for the voyage, including: passage plan, inspection of the technical condition of the yacht and her equipment, stowage of spare equipment, fuel, water and provisions, candidate must have acted independently in sole charge of a watch or as skipper, performance/application of celestial navigation; at least 18 years of age
Validity:	Unlimited, 'commercial endorsement' and so-called 'STCW endorsement' max. five years

Holders of one of the qualifications listed above require a '**commercial endorsement**' which must be renewed every five years for the operation of a British recreational craft < 24 m used **commercially**. In addition to the Yachtmaster® certificate of competency and relevant application forms, further documents must be submitted to obtain this endorsement:[145]

- certificate of successful completion of the 'Professional Practices and Responsibilities' online course;
- ML5 or ENG1 (for Category 1 and/or 0 waters) medical certificate of fitness for sea service;
- certificate of successful completion of the RYA 'Basic Sea Survival' course or the STCW 'Personal Survival Techniques' course;
- GMDSS-compliant marine radio certificate (e.g. LRC).

In addition to the commercial endorsement, holders of the RYA Yachtmaster® Offshore or Ocean certificate of competency may also apply for a so-called 'STCW

[144] ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster Ocean Exam*. https://www.rya.org.uk/training/certificates-of-competence/yachtmaster-ocean (14 December 2022).
[145] ROYAL YACHTING ASSOCIATION: *Professional Qualifications – Commercial Endorsement. https://www.rya.org.uk/training/professional-qualifications/commercial-endorsements (15 December 2022).*

endorsement'[146], which is required by some employers and flag states. For such an endorsement, the following documents must also be submitted:[147]

- RYA Yachtmaster® Offshore or Ocean certificate of competency with a commercial endorsement or all application documents for this;
- certificate of successful completion of the STCW 'Personal Safety and Social Responsibility' course (half day, STCW Code Table A-VI/1 (2.1.4));
- certificate of successful completion of one of the following courses:
  - STCW Elementary First Aid (one day, STCW Code Table A-VI/1-3);
  - STCW Medical First Aid (four days, STCW Code Table A-VI/4-1), or
  - STCW Medical Care (five days, STCW Code Table A-VI/4-2);
- certificate of successful completion of the STCW 'Proficiency in Fire Prevention and Fire Fighting' course (two days, STCW Code Table A-VI/1-2);
- certificate of successful completion of the STCW 'Personal Survival Techniques' course (one day, STCW Code Table A-VI/1-1).

All the certificates in blue font can also be acquired as part of the STCW basic safety training and replaced by the corresponding certificate.

In addition to the certificates of proficiency with commercial endorsement listed in this section, further requirements must be met on commercially operated British yachts:[148]

- in Category 1 waters, one of the two people forming part of the minimum safe manning should be familiar with the operation and maintenance of the main propulsion engine and have attended an approved course on the subject;
- in Category 0 waters, one person on board should be familiar with the operation and maintenance of the main propulsion engine and associated equipment and have attended an appropriate course;
- depending on sea area (4 - 0), the skipper or another person on board should be able to demonstrate knowledge of first aid appropriate to the sea area;
- on all yachts, there should be at least one person on board with a marine radio certificate for the radio equipment on board.

[146] The so-called 'STCW endorsement' is not an endorsement according to the STCW Convention.

[147] ROYAL YACHTING ASSOCIATION: *Professional Qualifications – STCW Endorsement.* https://www.rya.org.uk/training/professional-qualifications/stcw-endorsements *(15 December 2022).*

[148] MARITIME AND COASTGUARD AGENCY: *Code of Practice for the Construction, Machinery, Equipment, Stability, Operation and Examination of Sailing Vessels, of Up To 24 Metres Load Line Length, in Commercial Use and which Do Not Carry Cargo or More Than 12 Passengers (Blue Code)*. London, The Stationery Office, 1998. – ISBN 0 11 551184 9.

9.6.3 Overview of the Examination Content in Germany

Theoretical examination content of importance to the analysis of this marine casualty is listed below by way of example. All the practical examination content is also listed, some of which is highlighted if relevant to this investigation.

9.6.3.1 International Certificate for Operators of Pleasure Craft on the Waterways Navigable by Seagoing Ships (SBF-See)[149] [150]

Theoretical written examination

- multiple-choice questionnaire, 30 questions worth 1 point each, ≥ 5 points out of seven basic questions and ≥ 18 points out of 23 sea-specific questions needed to pass, for example:
  - In the context of the ordinary practice of good seamanship, what safety measures must the skipper take for the protection and safety of the people on board before setting sail? (Safety familiarisation for everyone on board.)
  - Which aids can be used to bring a person floating in the water back on board quickly and safely? (Line connection, rescue sling, recovery net, tackle, bathing ladder, main boom.)
  - What can be done to prevent people from falling overboard in heavy seas? (Span jacklines, put on safety harness and clip at the designated places.)
- navigation task, one point is awarded for each correct answer, ≥ 7 out of a total of 9 points needed to pass
- total time allowed: 60 minutes

Practical examination

- five compulsory tasks, all of which must be rated as 'sufficient' by the second attempt:
  - rescue manoeuvre under engine power (POB)
  - mooring and unmooring under engine power
  - steering by compass
  - bearings; simple cross bearing

[149] Annexes 3 and 4 to Section 8(1)(4) SpFV of 3 May 2017 (Federal Law Gazette I p. 1016, 4043), as amended by Article 1 of the Ordinance of 1 December 2022 (Federal Law Gazette I p. 2211).

[150] FEDERAL WATERWAYS AND SHIPPING ADMINISTRATION, ELWIS: *Bewertungsschlüssel - Theoretische Prüfung Sportbootführerschein*. https://www.elwis.de/DE/Sportschifffahrt/Sportbootfuehrerscheine/Bewertungsschluessel/Bewertungsschluessel-page.html?nn=d48c1d09-4d64-4b02-956b-8d0ea17d7fa2 (16 December 2022).

- three out of five possible other manoeuvres, two of which must be rated as 'sufficient' by the second attempt:
  - stopping on course
  - turning in a confined space
  - steering by aids to navigation/landmarks
  - donning a lifejacket/safety harness
  - manoeuvring signal (one of three possible signals)
- seven out of nine possible knots, six of which must be sufficiently executed and their use correctly explained by the second attempt.

9.6.3.2 International Certificate for Operators of Pleasure Craft in Coastal Waters Not Exceeding 12 Nautical Miles – SKS (Under Sail)[151] [152]

Theoretical written examination

- questionnaire "with a well-balanced cross-section of questions from the fields of navigation, shipping law, meteorology and **seamanship"**[153], 30 (out of 492 possible) questions worth 1 point each, ≥ 39 points needed to pass, oral review at 33-38 points, 90 minutes allowed for completion, for example:

  Topic: Navigation

  - What is the effect of operating the MOB button on GPS devices? (Storage of current position, indication of true bearing to this position.)

  Topic: Seamanship

  - What is the minimum information that should be recorded in the logbook on board? (Names and functions of the crew members, start and finish of a voyage, as well as the position, course, speed, current, weather and atmospheric pressure at appropriate intervals.)
  - What aids can you use to bring a person overboard back on deck? (Movable (and secured) bathing ladder, possibly the mainsheet, weighted foot sling, rescue tackle, pick up with small sail, lifesling, dinghy.)

[151] Guidelines for executing the tasks under Section 2 SportSeeSchiffV by the DMYV and the DSV, as amended by Decree of 29 March 2016 (Official Gazette of the BMVI of 2016, p. 338). https://www.elwis.de/DE/Sportschifffahrt/Verzeichnis-Rechtsverordnungen/SportSeeSchiffV.pdf?__blob=publicationFile&v=9 (15 December 2022).

[152] FEDERAL WATERWAYS AND SHIPPING ADMINISTRATION, ELWIS: *Sportbootführerscheine – Fragenkatalog SKS.* https://www.elwis.de/DE/Sportschifffahrt/Sportbootfuehrerscheine/Fragenkatalog-SKS/Fragenkatalog-SKS-node.html (16 December 2022).

[153] Guidelines for executing the tasks under Section 2 SportSeeSchiffV by the DMYV and the DSV, as amended by Decree of 29 March 2016 (Official Gazette of the BMVI of 2016, p. 338). https://www.elwis.de/DE/Sportschifffahrt/Verzeichnis-Rechtsverordnungen/SportSeeSchiffV.pdf?__blob=publicationFile&v=9 (15 December 2022), 6.2.1.

- What immediate action should be taken if someone has fallen overboard? (1. Shout "Person overboard!" 2. Throw lifesaving appliances. 3. Keep a lookout; keep sight of the person. 4. Start engine. 5. Initiate person-overboard manoeuvre. 6. Send distress message. 7. Throw flash buoy. 8. Possibly press MOB button on a satellite-based navigation device. 9. Execute recovery.)

- What action can be taken to prevent people falling overboard? (Don safety harnesses and clip, install jacklines from bow to stern, show crew members the anchor points (clipping points for karabiners).)

- Name the basic steps and their objectives for rescuing a person overboard. (1. Start engine. 2. Search, establish visual contact with the person overboard. 3. Person-overboard manoeuvre, approach the person floating in the water and establish an initial line connection. 4. Recovery/rescue, bring the person back on board safely and quickly. 5. First aid, care. 6. Send distress alert if necessary.)

- What aids can be used to secure the datum for the search for a person overboard? (Flash buoy, MOB button on a satellite-based navigation device (e.g. GPS).)

- What forms part of the safety familiarisation for the entire crew before the start of a voyage? Give at least six examples. (Brief on the use and operation of lifejackets and safety harnesses, liferaft, signalling equipment, bilge pumps, seacocks and the on-board WC, cooking appliances, fire extinguishers, engine system, electrical system, radio and VHF marine radio equipment, behaviour in the event of a person overboard, recognition and behaviour in the event of seasickness.)

- Which technical installations/equipment must the skipper brief the crew on before the start of the voyage? Give at least six examples. (Anchor gear, bilge equipment, fire extinguishing equipment, engine system, seacocks, VHF marine radio equipment, MOB button on satellite-based navigation equipment (e.g. GPS), distress signals, emergency steering equipment.)

– chart task, 30 points, ≥ 20 points needed to pass, oral review at 17-19 points, 90 minutes allowed for completion

Practical examination

– six compulsory tasks, all of which must be rated as 'sufficient' by the second attempt:

  - **rescue manoeuvre** (under sail and with engine assistance);

  - mooring and unmooring with propulsion engine;

  - tacking or gybing/Q-tack;

  - heaving/lying to;

- other tasks selected by the examiner, of which three out of four must be rated as 'sufficient':
  - **one out of four** possible tasks on seamanship/skills:
    - **safety familiarisation**;
    - **emergency role**;
    - **handling of lifebelt and lifeline** or
    - **use of lines** when mooring and unmooring;
  - one meteorology task;
  - one out of three navigation tasks;
  - one out of three engine / electrical system / gas system tasks;
- at least one and a maximum of two further tasks selected by the examiner, one of which must be rated as 'sufficient':
  - three possible manoeuvre-with-propulsion-engine tasks;
  - three possible manoeuvre-under-sail tasks;
- the maximum time allowed for the practical test is 30 minutes

9.6.3.3 International Certificate for Operators of Pleasure Craft in Coastal Waters Not Exceeding 30 Nautical Miles – SSS (Under Sail)[154]

Theoretical written examination

- navigation, time allowed: 120 minutes;
- seamanship, time allowed: 45 minutes;
- shipping law, time allowed: 60 minutes;
- meteorology, time allowed: 45 minutes;
- maximum number of points attainable per subject: 40, in each case, ≥ 26 points needed to pass, oral review if 22-25 points are attained.

[154] Guidelines for executing the tasks under Section 2 SportSeeSchiffV by the DMYV and the DSV, as amended by Decree of 29 March 2016 (Official Gazette of the BMVI of 2016, p. 338). https://www.elwis.de/DE/Sportschifffahrt/Verzeichnis-Rechtsverordnungen/SportSeeSchiffV.pdf?__blob=publicationFile&v=9 (15 December 2022).

Practical examination

- nine compulsory tasks, all of which must be rated as 'sufficient':
  - **rescue manoeuvre** (with reasons for crew allocation, choice of manoeuvre and **planning of the rescue/recovery** based on the specific situation), yacht under sail at the start of the manoeuvre
  - organisation and **management of the crew in** a given **emergency situation** (e.g. fire, water ingress, grounding, etc.)
  - **boat management/command** at sea (with reasons for crew allocation, choice of individual manoeuvres and explanations of the traffic situation based on the specific situation)
  - boat management/command in port (with reasons for crew allocation, choice of individual manoeuvres and explanations of the traffic situation based on the specific situation)
  - monitoring, deployment, definition of sources of error and repairs on the engine, gas system, electrics and electronics
  - selection, correction, handling and organisation of paper navigational charts and navigational literature
  - electronic chart system (ECS): operation, correction, definition of sources of error, route planning, test bearings, etc.
  - radar: operation, situational overview, sources of error, position fixing, interpretation, etc.
  - assessment of the weather situation and development at the location and time of the examination, reading the weather instruments and analysis of the data
- the maximum time allowed for the practical test is 90 minutes

9.6.3.4 Sporthochseeschifferschein [comparable with the British Yachtmaster® Ocean] – SHS (Under Sail)[155]

Theoretical examination

- written:
  - navigation, maximum number of points attainable: 60, 150 minutes
  - handling of a sextant, 10 minutes
  - shipping law, maximum number of points attainable: 40, 45 minutes
  - meteorology, maximum number of points attainable: 40, 45 minutes

[155] Guidelines for executing the tasks under Section 2 SportSeeSchiffV by the DMYV and the DSV, as amended by Decree of 29 March 2016 (Official Gazette of the BMVI of 2016, p. 338). https://www.elwis.de/DE/Sportschifffahrt/Verzeichnis-Rechtsverordnungen/SportSeeSchiffV.pdf?__blob=publicationFile&v=9 (15 December 2022).

- in each case, oral review if 55-64% of the number of points possible in one subject is attained

- oral:

    - yacht handling, 15 minutes.

9.6.4 Summary of the Examination Content in Great Britain

There are no specific lists of tasks and/or questions for the RYA/MCA Yachtmaster® examinations. The requirements for the candidates are published in: "G158 RYA Yachtmaster® Scheme – Syllabus & Logbook". The following key areas are defined for all Yachtmaster® practical examinations:[156]

- navigation;

- yacht/boat handling/manoeuvring;

- **person overboard** (**manoeuvre** only, not bringing a person/dummy back on board – the yacht must be stopped alongside the person in the water);

- safety (understanding and following safety regulations, giving a **safety familiarisation**, **safety culture**, taking **responsibility** for the safety of the crew and yacht);

- meteorology;

- adverse weather conditions;

- **skippering ability** (yacht must be fully under control and command of the candidate, crew management and **communication** skills critical to passing the examination);

- long passages (> 24 h).

Candidates are also asked theoretical questions during the practical examinations. However, the main objective is to demonstrate knowledge, understanding and competence in the management of yachts and their crew. The RYA offers various practical and theoretical courses for preparing for the Yachtmaster® examinations (see 9.6.4.3). Attendance of these courses is not compulsory.

[156] THE ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster® Scheme – Syllabus & Logbook*. Southampton, 2022. – ISBN 978-1-910017074. P. 64 f.

9.6.4.1 RYA/MCA Yachtmaster® Coastal and Offshore[157]

Practical examination

- questions on the International Regulations for Preventing Collisions at Sea (Rules 1-37, Annexes II and IV);
- knowledge of the responsibility of skippers with regard to ship safety (in particular, **safety familiarisation**, **safety harnesses**, **lifejackets**, **distress signals**, **rescue procedures**, stability, fire prevention and firefighting);
- answer questions and demonstrate skills on
  - yacht handling/manoeuvring;
  - general seamanship, including maintenance;
  - navigation;
  - meteorology;
  - responsibilities of a skipper;
    - yacht and **crew management**
    - **communication** with the crew
    - **delegation** of responsibilities and **organisation** of watchkeeping
    - emergency and distress situations
    - rules of conduct and etiquette
    - […]
  - all the training content from every practical and theoretical RYA course up to Yachtmaster® Coastal.
- minimum duration of examination:

  Yachtmaster® Coastal: 6-10 h for one candidate, 8-14 h for two candidates

  Yachtmaster® Offshore: 8-12 h for one candidate, 10-18 h for two candidates

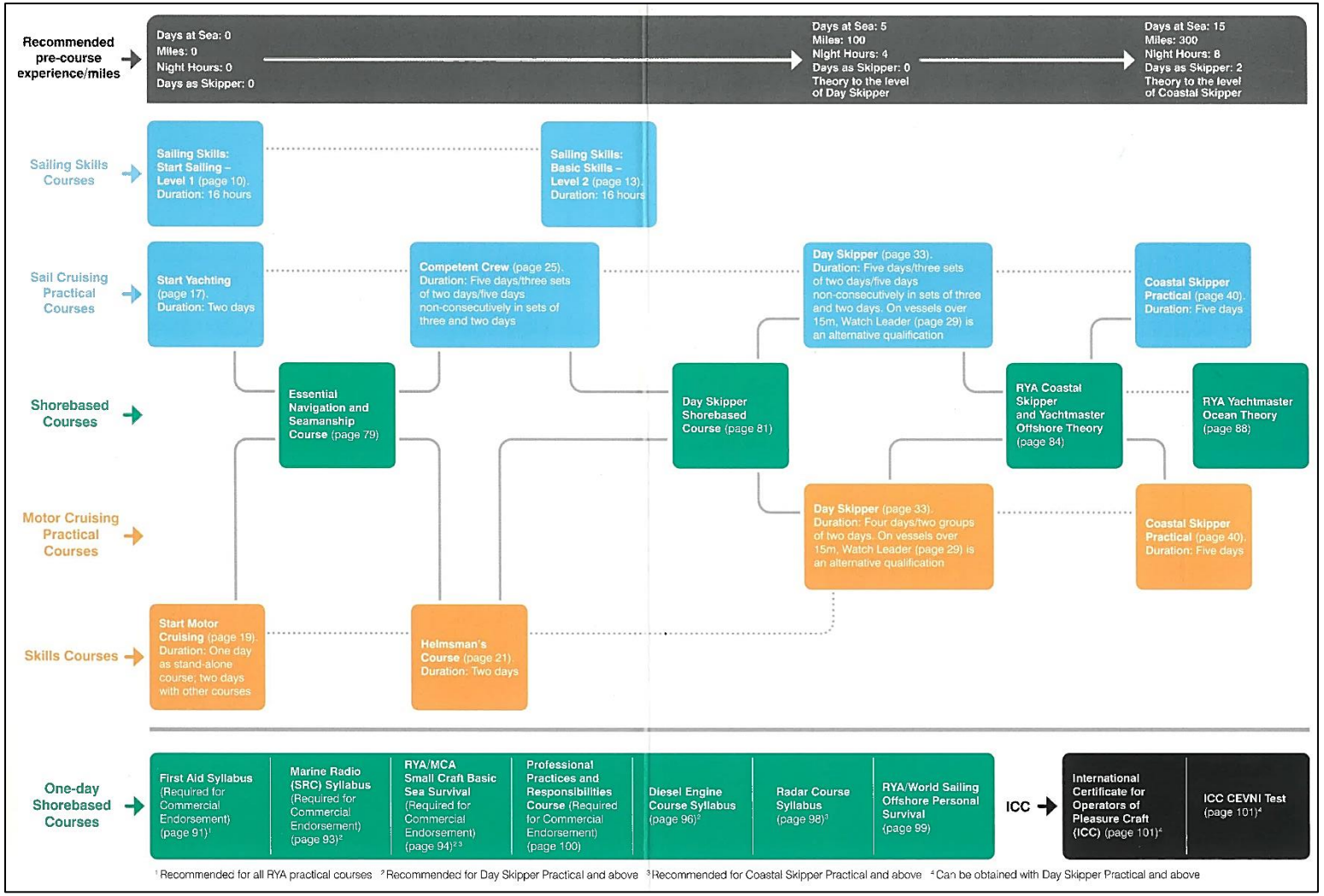
[157] THE ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster® Scheme – Syllabus & Logbook*. Southampton, 2022. – ISBN 978-1-910017074. PP. 66-74.

9.6.4.2 RYA/MCA Yachtmaster® Ocean

Theoretical examination

- oral:
  - narrative account of the planning and execution of the qualifying passage (see 9.6.2, 600 nm sailing trip);
  - submission of navigational recordings originating from the qualifying passage or from aboard a yacht on the high seas and demonstrate that the candidate navigated the yacht without electronic aids to navigation (celestial navigation);
  - questions on all aspects of a sailing trip on a yacht (e.g. voyage planning, navigation, global meteorology, **crew management**, yacht preparation, maintenance and repairs);
- written:
  - questions on bearings, the basis for position lines and global meteorology;
- minimum duration of the examination: about 90 minutes.

9.6.4.3 RYA Practical and Shorebased Navigation and Seamanship Courses



Source: THE ROYAL YACHTING ASSOCIATION: *RYA Yachtmaster® Scheme – Syllabus & Logbook*. Southampton, 2022. – ISBN 978-1-910017074. P. 0 (cover).