



SMAIC

STATE MARINE ACCIDENT
INVESTIGATION COMMISSION

FINAL REPORT

024/22

very serious marine casualty

Delphia 24 Class Regatta Yacht (One Design)

**Drowning of 3 yacht crew members on the Gulf of
Gdańsk on 8 April 2022.**

April 2023



The investigation of the very serious marine casualty of the **Delphia 24 class regatta yacht (One Design)** was conducted under the State Marine Accident Investigation Commission Act of 31 August 2012 (Journal of Laws of 2019, item 1374) as well as norms, standards and recommended procedures agreed within the International Maritime Organisation (IMO) and binding the Republic of Poland.

The objective of the investigation of a marine accident or incident under the above-mentioned Act is to ascertain its causes and circumstances to prevent future accidents and incidents and improve the state of marine safety.

The State Marine Accident Investigation Commission does not determine liability nor apportion blame to persons involved in the marine casualty or incident.

The following report shall be inadmissible in any judicial or other proceedings whose purpose is to attribute blame or liability for the accident referred to in the report (Art. 40.2 of the State Marine Accident Investigation Commission Act).

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1. Facts

On 8 April 2022 at 10:15am LT¹, a group of four sailors on the yacht Delphia 24, side number 1, sailed from the Marina in the Yacht Basin² to conduct spring training before the sailing season after the winter break.

During one leg of straight downwind sailing with the mainsail reefed and hoisted gennaker, the yacht capsized at 11:21 and the crew found themselves in the water. Attempts made by them to turn the yacht to continue sailing were unsuccessful.

The low water temperature of 5-6°C, the strong storm wind, the effort in trying to lift the yacht and hold on to the hull which was sinking deeper and deeper, as well as the lack of warm clothing and wetsuits to delay the loss of body temperature, caused successive loss of consciousness due to the process of hypothermia by three crew members whose bodies were taken away by the wave and wind. The last crew member attempted to swim to the shore on his own.

Thanks to the rescue operation carried out, the above-mentioned sailor, already in the second stage of hypothermia, was found at 16:51³.

A further intensive search and rescue operation involving multiple vessels led to the discovery of the bodies of two yacht crew members and the sunken hull of the yacht.

The corpse of the last crew member was found in June 2022 on the Gulf of Gdańsk near Stegna.

¹ Local time.

² Mariusz Zaruski Marina Yacht Park in Gdynia.

³ In the second stage of hypothermia, the level of consciousness is reduced, speech and motor coordination are affected - muscles are stiff, movements are awkward, speech is gibberish, the person is apathetic and loses track of time. In this state, he/she already requires the help of others.

2. General information

2.1. Yacht particulars



Photo 1 – Delphia 24 class regatta yachts moored at the quay in the Yacht Basin

Name:	Delphia 24 Class Regatta Yacht One Design
Flag:	Polish
Owner:	GSC Yachting Sp. z o.o.
Technical supervision:	Sail Measurer licensed by the Polish Yachting Association (issues the yacht class certificate)
Yacht type:	regatta yacht
Displacement:	850 kg (design)
Year of build:	2006
LOA:	7.32 m
Width:	2.50 m
Hull material:	laminate, polyamide with glass fibre
Maximum available number of crew:	5 persons

2.2. Marine casualty or incident information

Type:	very serious marine casualty
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Date and time of the accident:	8 April 2022 at about 11:21 hrs
Position at the time of the accident:	$\varphi = 54^{\circ}30,5' \text{ N} : \lambda = 018^{\circ}35,4' \text{ E}$
Area of the accident:	Gulf of Gdańsk
Nature of the water region:	coastal waters
Weather at the time of the accident:	wind southwest to west 5 to 7°B, gusts 8 to 9°B, gusts up to 10°B in the north part of the basin
Consequences of the accident:	capsizing of the yacht, drowning of three crew members

2.3. Shore Services and Search & Rescue Action Information

Entities involved: SAR⁴, Border Guard, PSP⁵, WOPR⁶, MW⁷

Means used:

The following units took part in the search and rescue operation: the sea rescue helicopter 'Rescue 813', the SAR unit R-20 from the multipurpose SAR tug, 'Kapitan Poinc', the SAR unit 'Wiatr', the Border Guard units: nos. 203 and 211, the WOPR units: nos. R-8 and R-9, ORP Navigator (262), and additionally two PSP units with divers on board.

The search and rescue operations were coordinated by the rescue ship 'Sztorm'.

In addition, 3 RIB-type boats were involved in the search and rescue operation, as well as the motorboat 'Axopar 28C' belonging to the owners of regatta yachts moored in the Mariusz Zaruski Marina Yacht Park in Gdynia. The search and rescue operations were joined by the motorboat of an undetermined owner, as well as the sailing yacht 'Saristo'.

⁴ Maritime Search and Rescue Service.

⁵ State Fire Service.

⁶ Water Volunteer Rescue Service.

⁷ Polish Navy.

**Speed of response, action of search and rescue services:**

The emergency services, upon being notified that the yacht is missing, took immediate action. From 16:33 on 8 April 2022, successive rescue units joined the operation. The search continued on 9 April until 00:50 hrs, resumed again at 05:26 hrs and at 08:50 hrs a decision was taken to abandon it.

Action taken:

The search, initially conducted individually, was co-ordinated at 17:02 hrs by the Master of the SAR ship "Sztorm" that joined the action at 16:55 hrs.

Results achieved:

At 16:51 hrs the helmsman of the yacht was found in the water in the profound hypothermia condition. After being handed over to the Medical Rescue Team, he was transported to the hospital where he underwent the required hospital procedures with all vital functions restored. Another crew member was found at 17:10 hrs. Unfortunately, ongoing resuscitation was unsuccessful, and he was pronounced dead.

The third crew member was found during the ongoing search at 21:45 hrs, but he was pronounced dead after being retrieved from the water.

The corpse of the last crew member was found in June 2022 on the Gulf of Gdańsk near Stegna. At 17:09 hrs the wreck of the yacht was found and at 19:25 hrs the called PSP divers inspected the interior of the yacht looking for crew members. At 22:10 hrs towed yacht reached the quay in the Yacht Basin. The next day the yacht was lifted ashore and inspected.

3. Circumstances of the accident

A group of four sailors, amateurs of regatta sailing, having found out about the organisation⁸ of the regatta training on the Gulf of Gdańsk, on Delphia 24 class yachts, declared their willingness to participate in it on a fixed date.

⁸ by GSC Yachting Sp. z o.o.



The sailors were a team taking part previously (in 2021) in training and regattas organised in various ports on the Polish coast and on inland waters as part of the Polish Sailing League competition⁹.

They represented the Garden Space Sailing Club and after the 2021/2022 winter break they were going to start active sailing, using the knowledge and experience of successful sailors in their planned training.

The training scheduled on 8 April 2022 included three days of exercises.

On the first day, sailors interested in the training had the opportunity to rent a yacht from the owner who had several identical Delphia 24 yachts to offer. This day was known as the ‘free sailing’ and each team had the opportunity to carry out sailing and selected manoeuvres as they wished. On the next day, training was provided with a team of experienced regatta sailors on a RIB boat, who took turns with the practising sailors demonstrating the correct principles of the regatta sailing.

On the last, third day, the owner was organising a regatta in which the yachts he had made available for rent were to participate. Also on this day, the yachts were to be assisted by motorboats belonging to the owner and organiser of the training regatta.

On the eve of the scheduled meeting in Gdynia, in the Yacht Basin where the yachts were moored, it turned out that due to family reasons, the helmsman, who was also the founder of the Garden Space Sailing Team, will not take part in the training on the first day. To avoid wasting the scheduled training session, one of the crew members contacted a sailor from Gdynia with extensive experience of sailing regatta yachts, proposing him to take part in the scheduled training session and replace the helmsman who was unable to attend.

On 8 April 2022, the sailors met at 10:08 hrs on the jetty in the Yacht Basin, where the Delphia 24 yachts were moored. After greeting the sailor who was to act as a helmsman and getting to know each other, the sailors left the Yacht Basin at 10:40 hrs and started training on the Gulf of Gdańsk. As there was a forecast of strong westerly stormy winds (from the shore)¹⁰, the owner of the yacht sent an email to one of the crew members the day before recommending to

⁹ Polish Sailing League - sailing club regatta organised since 2015 in the form of a league, on identical yachts supplied by the organiser, at 3 levels: Champions League, 1 League, 2 League, organised on various bodies of water in Poland.

¹⁰ The weather forecast for the Gulf of Gdańsk reported southwest to westerly winds 5 to 7, gusts 8 to 9, and to 10 B scale in the north part of the Gulf. The Bureau of Meteorological Maritime Forecasts of the Polish Institute of Meteorology and Water Management at 02:05 hrs on 08.04.2022 issued a meteorological warning No. 65 for a strong storm in the Polish coastal zone.



conduct the training using the seal and reefed mainsail. This recommendation was repeated to the yacht's crew members by an owner's employee present at the Yacht Basin on the day of the sailing.

After leaving the Yacht Basin, the crew agreed that they would sail in the training area adjacent to the Seaside Boulevard, taking advantage of the shore protection from the waves caused by the strong wind. The plan was to sail downwind (from the shore), additionally using the gennaker for downwind sections, then tacking and making planned turns upwind (to the shore). At 11:21 hrs¹¹ while tacking a straight downwind leg a problem occurred with lowering the gennaker. The yacht was gaining speed moving away from the shore and during a stronger gust of wind she capsized. The crew found themselves in the water with the yacht turned almost upside down. The yacht's crew noticed that the centreboard, which is also the yacht's ballast had slipped out of the centreboard box and fallen into the water. They also noticed that the rudder had slipped out of the lower mounting yoke but remained attached to the hull due to the upper hinge fixed to it. Due to the loss of the centreboard ballast, all efforts by the crew to turn the yacht keel down failed. The crew tried to change the position of the yacht's hull enough to reach the watertight bag located in the yacht's cabin to get the mobile phones hidden there. The mobile phone, which was in the possession of one of the crew members, could not be activated. Attempts to reach the bag were unsuccessful due to the need to dive. Efforts by sailors to climb onto the hull to signal their presence and call for help were unsuccessful. Despite other vessels passing nearby, a helicopter flying three times almost over the capsized yacht, the presence of people walking on the Boulevard, vessels at anchors on the road, no one noticed the sailors signalling their presence and calling for help. The yacht's hull began to submerge further and further, and it became virtually impossible to stay on her for any longer period of time. The three sailors from the team, whose intention was to train after the winter break, one by one lost consciousness due to the process of hypothermia and drifted away from the yacht carried by the wind. They had no clothing to protect them from the prolonged cold, as they assumed the training would involve intensive movement and physical exertion. They were all wearing safety vests. At around 12:50 hrs, the only person left on the hull of the submerged yacht was the yacht's helmsman wearing a wetsuit to protect his body from the rapid loss of heat in the water environment. After some time, seeing no chance of anyone noticing him, he decided to swim

¹¹ Time was determined by recording the yacht's movement track in the Garmin GPS system.



initially to the GS buoy and then to the shore as he considered this as the only reasonable solution in such a critical situation.

The second team on a similar yacht, Delphia 24, consisting of five sailors, departed from the Yacht Basin at 12:58 hrs. However, the sailing crew members were concerned about the strong winds and apparent violent gusts (turbulence) and went to the breakwater of the Yacht Basin to assess the situation before departing. At that time, they already did not see the Delphia 24 yacht that had sailed earlier at 12:10.

After the second Delphia 24 had left the Yacht Basin, the crew sailed a short distance, using the foresail and reefed mainsail, along the main breakwater from the South entrance and found the weather conditions too difficult and dangerous and returned to the Marina at 13:30 hrs.

At 14:36 hrs, the helmsman of a yacht that had returned to the Yacht Basin notified by telephone an employee looking after Delphia 24 yachts that the yacht that had sailed earlier could not be seen and should have been searched for.

Notified about the problem, the employee of GSC Yachting Sp. z o.o. left the Yacht Basin on a motorboat to check whether the yacht is not inside the Gdynia harbour (manoeuvring).

As he had not found the yacht at 15:30 hrs he notified the owner of GSC Yachting Sp. z o.o. and Delphia 24 yachts about the problem. After receiving this message, the owner of GSC Yachting Sp. z o.o. tried to identify the names and telephone numbers of the missed yachtsmen to locate the searched persons that way.

The owner of the RS-21 classes yachts, which were moored at the marina on that day and a group of sailors who had just stayed in the marina, after short discussion decided at 16:16 hrs to contact the MRCC by phone with information about what had happened and a request for advice. The MRCC announced at 16:28 hrs that the rescue units are ready to sail for action. At 16:30 hrs, the sailors who stayed in the Marina notified the MRCC by telephone of the planned start of the search and rescue operation and the departure of the RIB type boats to the training area. At the same time, the SAR units were instructed to start the search and rescue operations on the designated area and from 16:33 hrs they started to join the operation one by one.

At 16:32 hrs two RIB boats owned by the company organising the Polish Sailing League and offering RS-21 regatta yachts, and a motorboat belonging to the Yacht Club Sopot, sailed into action from the Yacht Basin. At 17:30 hrs the owner of the Delphia 24 yacht rental company joined the search and rescue operations on the RIB boat.

At 16:51 hrs, one of the RIB boats that departed from the Yacht Basin found the helmsman of the yacht in the condition of profound hypothermia¹². After transporting the sailor to the Yacht Basin, he was taken to hospital by the Medical Rescue Team.

At 17:09 hrs, the marine rescue helicopter found the wreck of the yacht submerged in the water and a minute later another crew member of the yacht was found. He was taken on board the SAR unit 'Wiatr' and transported to the Yacht Basin. Resuscitation efforts by the Medical Rescue Team were unsuccessful and he was pronounced dead.



Photo 2 – Hull of the yacht when found by the rescue helicopter.

At 19:25 hrs, the previously called 2 teams of the State Fire Service from Gdynia and the Specialised Water and Diving Rescue Group from Gdańsk joined the operation. The divers went underwater and inspected the interior of the yacht's hull to make sure there was no one inside.

During the continuing uninterrupted search, at 21:45 hrs the SAR unit 'Wiatr' found the body of another sailor.

At 22:10 hrs towed yacht reached the quay in the Yacht Basin.

At 00:50 hrs on 9 April 2022, the active search and rescue operations were suspended. At 05:26 hrs SAR operations were resumed but the 4th crew member had not been found. At 08:50 hrs the search and rescue operations were terminated.

The corpse of the last sailor was not found until several months after the accident.

¹² Approximate position of finding the sailor on the Chart with positions marked 1 - Figure 1.

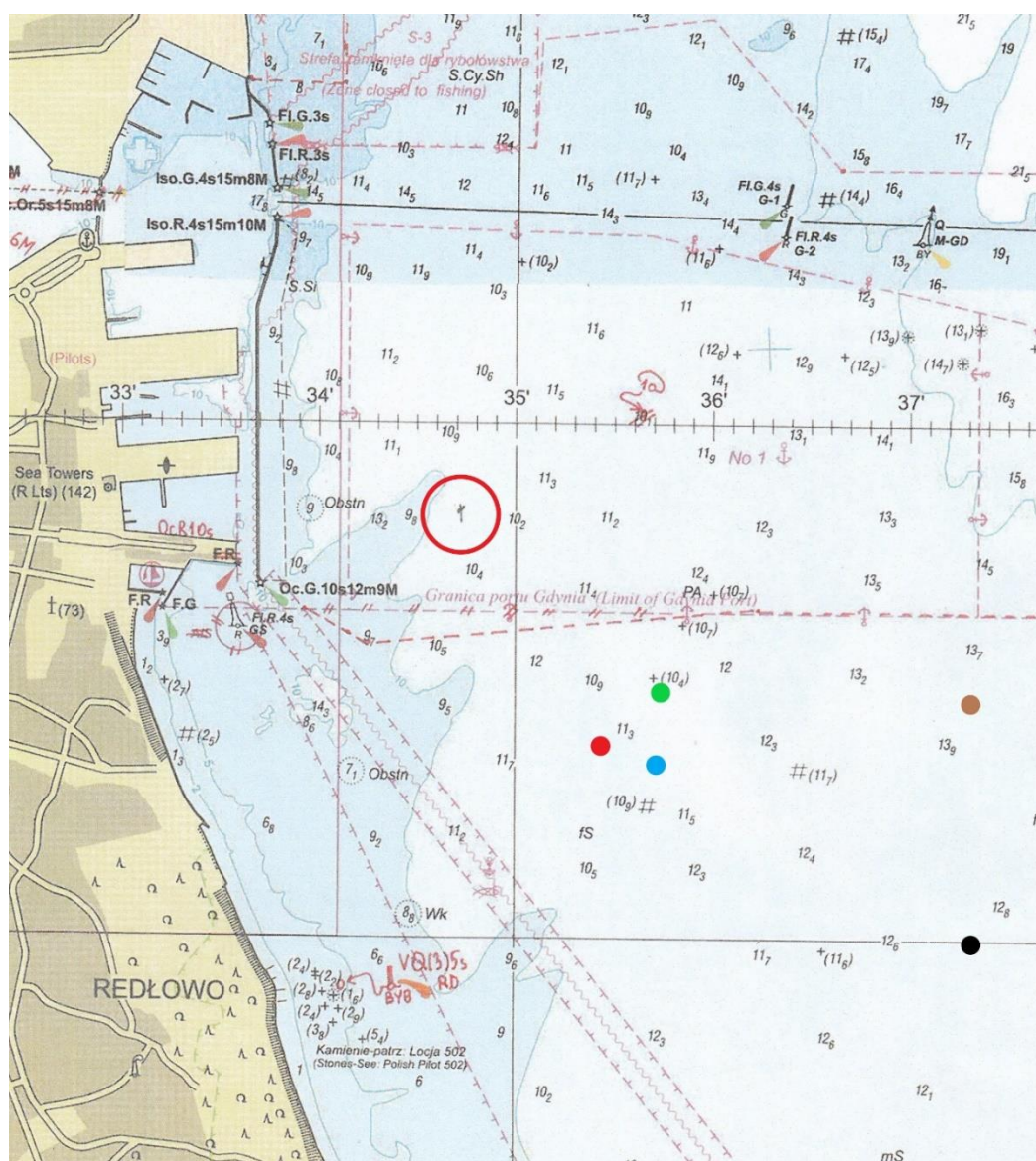


Fig. 1 – Chart with marked positions

1. Red circle, approximate position where the helmsman of the yacht was found (at 16:51 hrs).
2. Red dot, position of the yacht capsizes.
 $\varphi = 54^{\circ}30,5'N : \lambda = 018^{\circ}35,4'E$ (at 11:21 hrs).
3. Green dot, position reached by the drifting yacht at the time when the helmsman decided to swim ashore.
 $\varphi = 54^{\circ}30,7'N : \lambda = 018^{\circ}35,7'E$ at about 12:50 hrs¹³.
4. Blue dot, position of finding the yacht.
 $\varphi = 54^{\circ}30,5'N : \lambda = 018^{\circ}35,7'E$ (at 17:09 hrs)
5. Brown dot, position of finding one of the crew members.
 $\varphi = 54^{\circ}30,0'N : \lambda = 018^{\circ}37,3'E$ (at 17:15 hrs)
6. Black dot, position of finding of another crew member.

¹³ The helmsman of the yacht is convinced that he decided to swim to the shore not earlier than at 15:00 hrs.

$\varphi = 54^{\circ}30,7'N : \lambda = 018^{\circ}37,3'E$ (at 21:45 hrs)

4. Analysis and comments about factors causing the marine accident with regard to results of investigation and expert opinions

According to the information contained in the "Information on Stability" of Delphia 24 yachts, *"the yacht is a regatta yacht intended for the practice of tourism and water sports by a crew of medium qualifications. She is a ballast yacht with a 270 kg centreboard ballast fixed during sailing. She is an unsinkable and uncapsizable yacht of design category C intended for sailing with a maximum 5 crew on board."*

According to the Polish Standard EN ISO 12217-2:2017, *"a unit with a design category C is treated as ready for operation in winds of up to 6 degrees Beaufort or less and associated wave height of up to 2 metres"*.

On 9 April 2022, the submerged hull of the Delphia 24 regatta yacht towed to the Yacht Basin was lifted ashore and inspected on the following day.



Photo 3 – The sunken yacht hull during preparation for lifting to the quay

4.1. Mechanical factors



Photo 4 – The yacht when lifted from water

It is important to note that the yacht should not be allowed to operate due to technical deficiencies and repairs made that were not compliant with the class requirements. Part B of the "Delphia 24 One Design Class Rules" - Measurement Rules, contains a provision stating that *"maintenance and repair of the hull, deck, centreboard ballast, mast, boom, gennakerboom or fixed fitting may be carried out, but without violating these (class) rules. If a fixed fitting is damaged, it shall be replaced by another fitting complying with the Rules. The fitting or the item replacing it shall be of the same type as the original and shall be mounted in a place complying with the Rules"*.

Lack of proper maintenance and repeatedly allowing the yacht to operate in conditions that placed undue stress on her structure caused damage and constructional degradation during operation¹⁴.

¹⁴ During the sailors' hearings, they described the behaviour of the Delphia 24 yachts they had hired from GSC Yachting Sp. z o.o. and sailed in winds of up to around 25m/sec.

During the inspection of the yacht taken out of water, the following damages and equipment deficiencies were found, deviating from the requirements of the class standard to which the yacht's construction should conform:

- missed rudder yoke pin in its lower fitting on the transom. 5 twin yachts were visually inspected on the water for correct installation of the rudder yoke to the transom and it was found that the installation method was incorrect and not compliant with the documentation. Instead of a Ø12 pin coved to an M8 nut, a M10 full thread bolt was used.

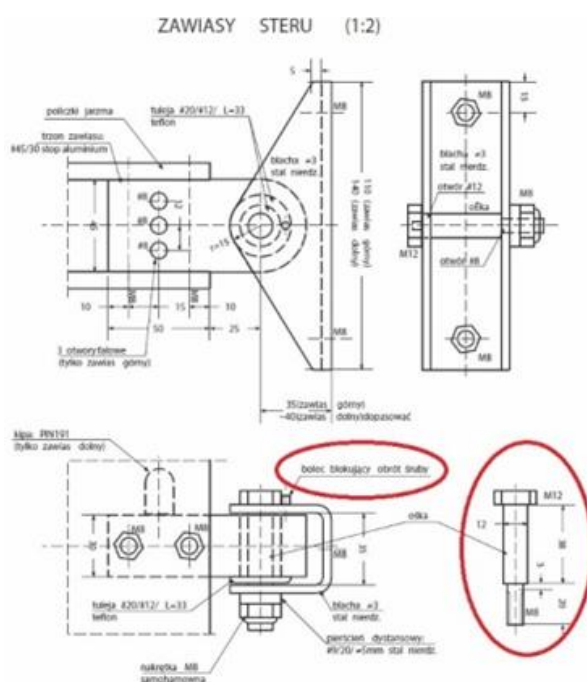


Fig. 2 – Drawing showing the correct fixing and securing of the pin to prevent it from falling out

2. complete cracking, disintegration of the deck-board joint (port side) from the stern at a length of about 2.2m and numerous damages. Visible signs of several repairs by various means. It is possible that the damage was enlarged during the rescue operation and during the lifting of the water-filled yacht.



Photo 5 – damage to the deck-board junction



Photo 6 – damages to the shroud futtock

3. cracked plastic caps of control hatches Ø117/150 in the transom and the cockpit, lack of protection against losing the caps. Damaged control hatch caps should be replaced and should have overboard protection (the manufacturer provides them in the package).

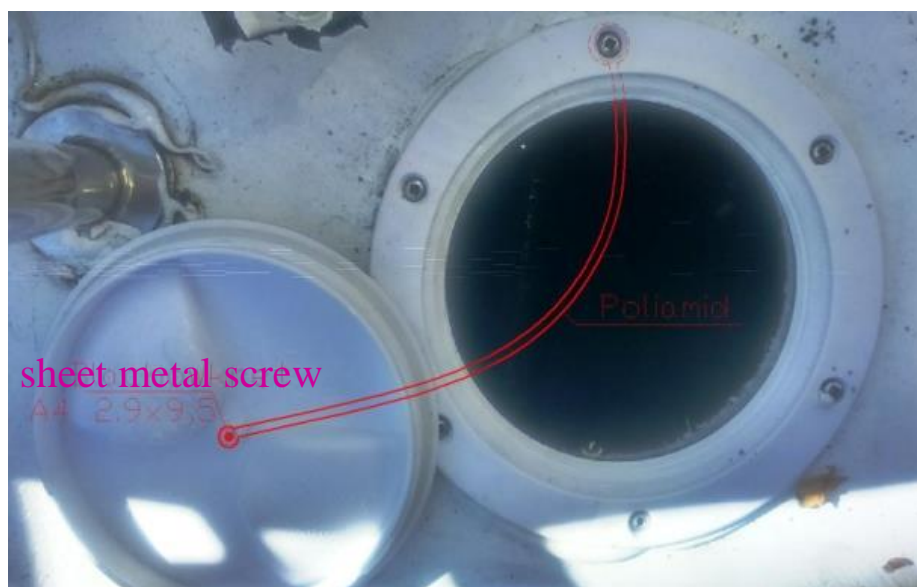


Photo 7- no protection against falling out



Photo 8 – damaged cap of the control hatch

4. absence of a centreboard and absence of a cotter pin to prevent it from falling out. The lack of proper protection (full insertion of the cotter pin into all holes of the centerboard locking slot) was the direct cause of the loss, slipping out of the centerboard from the centerboard case. The visual inspection carried out on the twin yachts on the water to determine potential causes of the loss of the centerboard showed that on two of the

yachts the cotter pin was not inserted (retracted) into all the holes of the ballast locking sockets due to their non-linear alignment (bending). Several of the screws securing the ballast sockets were not stainless and deviated from the standard required to secure it. In the next two units, the cotter pins were unmovable with hammering signs.



Photo 9 – the holes in the centreboard locking seat are not aligned and do not allow the ballast fin to be properly secured.

5. the bow buoyancy chamber was found to be completely flooded to the height of the unselected water from the yacht. This indicated that the chamber was not watertight. It is likely that the bilge water conduit through the chamber was delaminated.

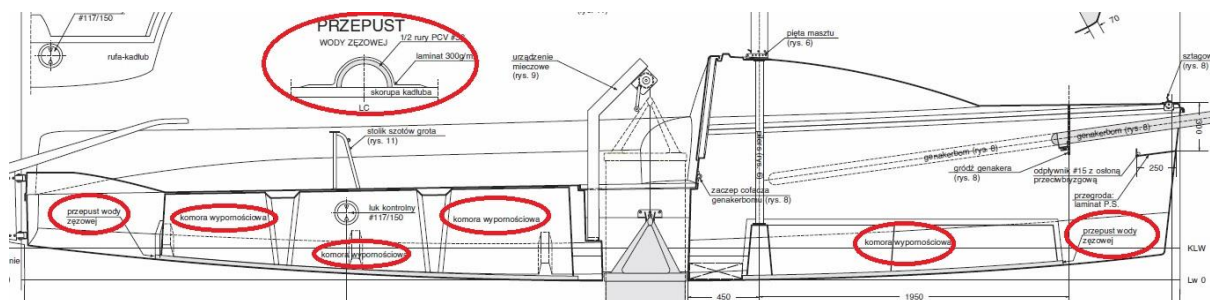


Fig. 3 – location of buoyancy chambers and bilge water conduits

6. lack of a bow drain, which prevents water from entering the yacht through structural leaks in the passage of the gennakerboom pipe through the bow end.



Photo 10 – bow construction not compliant with the documentation

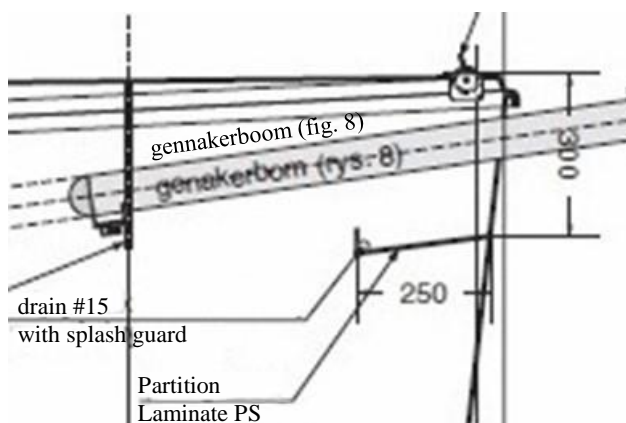


Fig. 4 – a drawing showing the installation compliant with the CE technical documentation

7. Neglected yacht interior with rust stains.



Photo 11 – condition of the yacht interior



Photo 12 – rust stains due to the use of inappropriate materials

4.1.1. Effect of damages on the yacht stability

Due to the information derived from the stability documentation that the yacht is unsinkable and uncapsizable, the static stability was analysed under different conditions at a heel angle of 90°.

a. Stability of the yacht in full working order - structural condition

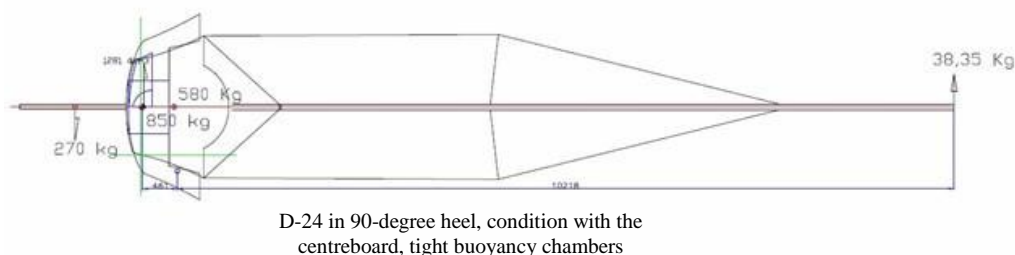


Fig. 5 – static stability in an undamaged condition

The yacht has good static stability.

b. Static stability - structural condition without the centreboard.

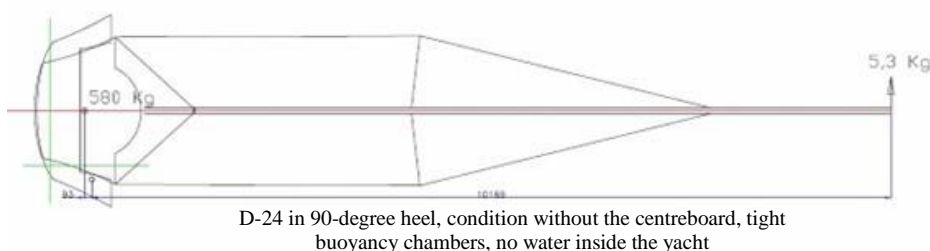


Fig. 6 – static stability in an undamaged condition

Static stability on the limit of turning the yacht upside down.

c. Static stability - the condition after the yacht's interior, including the buoyancy chambers, have been completely flooded.

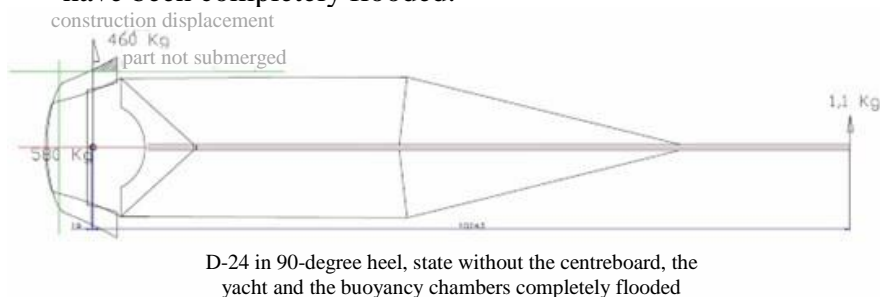


Fig. 7 – the yacht when completely flooded



The yacht, when completely flooded with water, including the buoyancy chambers, with a structural displacement of approx. 460 dcm³ should sink. 580 kg - 464 kg = 116 kg (assumed water density 1.008 kg/dcm³).

Positive buoyancy was ensured by the starboard tight deck-board connection. An air “bubble” of more than 116 dcm³ was created there, which protected the yacht from sinking¹⁵, and a minimum positive righting moment of 8 - 11 kgm, provided the buoyancy at an angle of approximately 90°.

4.2 The influence of external factors, including those related to the marine environment, on the occurrence of the marine casualty

The weather conditions experienced during the scheduled training not only had an impact on the occurrence of the accident, but also on the crew members' ability to survive in the water. Given the clothing that some of the sailors were wearing, the strong stormy wind¹⁶ and sea condition, and above all the low water temperature of 5° to 6°C, it can be assumed that the maximum survival time in such water was limited to 30 minutes.

According to the weather forecast prepared by the Bureau of Meteorological Maritime Forecasts in Gdynia for the Gulf of Gdańsk for the period from 07:00 to 19:00 hrs on 8 April 2022, southwest to westerly winds force 5 - 7°B with gusts to 8 - 9°B, and up to 10°B in the north part of the Gulf were predicted. The sea state of 3 to 4, later 4 to 5.

The weather forecast was supplemented with a "Meteorological Warning No. 65" covering the period from 05:00 to 13:00 on 8 April 2022 containing a severe storm warning - 3rd degree¹⁷, with a course in line with the earlier information from the weather forecast.

The aim of the training was to sail on a training basin. The exact coordinates of this area are provided in the Navigation Information on the website of the Gdynia Harbour Master's Office¹⁸.

¹⁵ See photo 2 - page 10.

¹⁶ Cool polar-marine air was flowing in. Air temperature around 8°C.

¹⁷ Possible wind gusts above 10°B.

¹⁸ The sailors who were listened and spoke with the members of the Commission claimed that training was always held in the so-called training basin. However, they were unable to specify where it was exactly located. The term was most often used to describe the waters adjacent to the Feliks Nowowiejski Seaside Boulevard in Gdynia.

The coastal region of the training basin, close to the high shore, causes wind direction and speed to change rapidly, especially with strong winds blowing from and to the shore. The air streams cause rapid changes in wind speed and this phenomenon is called the "shore effect"¹⁹.

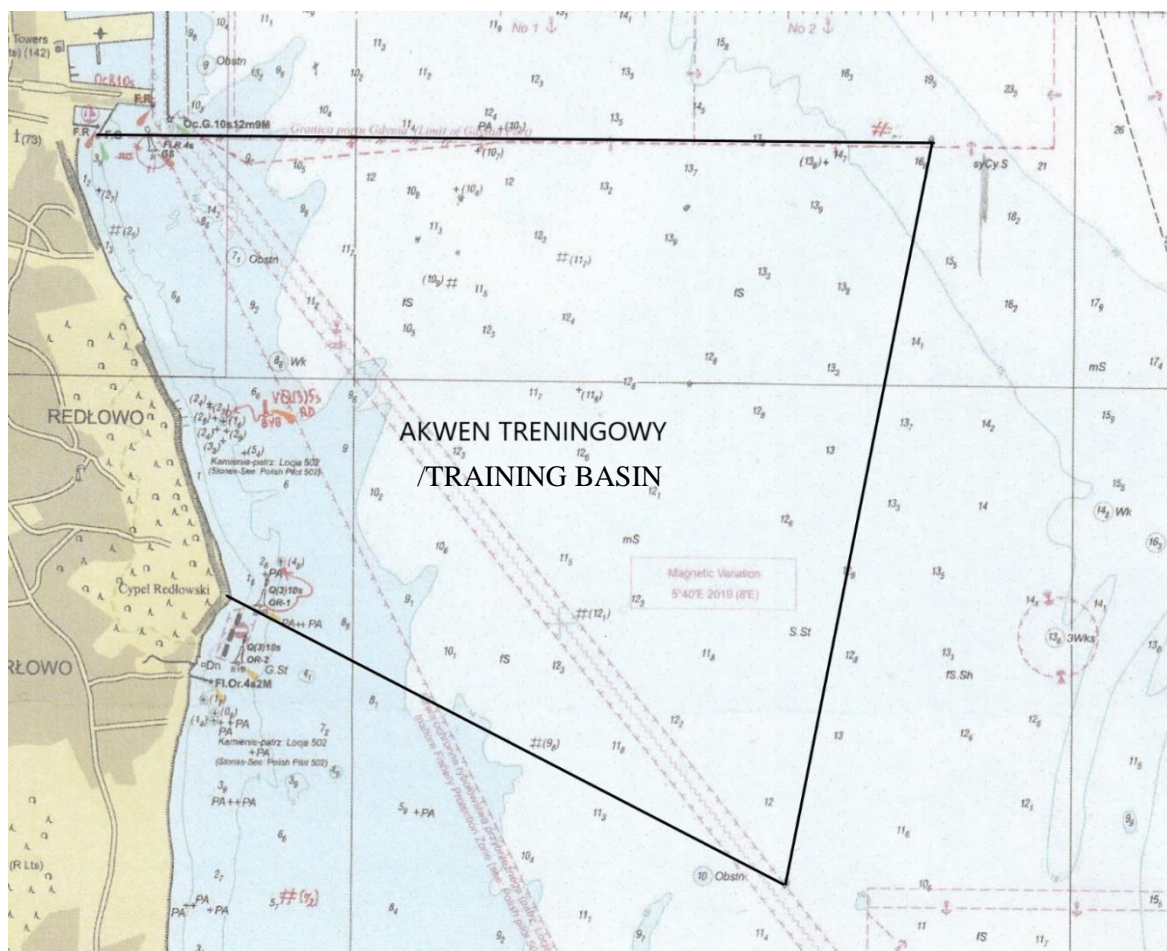


Fig. 8 – Chart with the marked training basin

It was this wind phenomenon that the helmsman of the second yacht noticed when he sailed from the Yacht Basin for a short time. He described the wind as very strong with violent gusts (turbulence) from an unspecified direction, but mainly from the land side. Therefore, he decided that the conditions were not suitable to continue training and sailed back to the Yacht Basin.

4.3 Human factors

The stormy weather conditions were well-known to both the owner of the Delphia 24 yachts, who offered the yachts for training and to the sailors planning the training themselves.

¹⁹ Sailing Directions - Baltic Sea (Southern Part), Polish Coast (502), the Hydrographic Office of the Polish Navy (Impact of the shore).



Both the owner of the yachts and the helmsman on the yacht that capsized were aware of the local conditions and knew that the high shoreline close to the Yacht Basin and Seaside Boulevard creates the impression of calm water with no waves and falsifies the picture of real and dangerous sailing conditions just a short distance from the shore²⁰.

Despite the limitations of the design category for Delphia 24 yachts which indicated that the unit should be used in winds of up to 6°B²¹, the owner of the Delphia 24 yachts made them available for training, simply informing the sailors that they should sail using the foresail and the reefed mainsail.

The helmsman of the yacht who agreed to replace the absent sailor rated the conditions as 'challenging' but assumed that with experienced sailors he could take part in the training.

Despite the condition communicated by the yacht's owner concerning sailing on the foresail and the reefed mainsail, the crew hoisted the gennaker using the wind from shore while sailing backstay²².

During one tack of the backstay sailing, the yacht sailed a considerable distance from the shore. It began to increase speed due to strong gusts of wind, while the planned securing of the gennaker was delayed by problems with its lowering. Two sailors were standing close to the mast trying to lower it. At this moment the yacht overturned. It is highly probable that the yacht suffered the so-called "capsize"²³ at 13.1 knots. Acting centrifugal forces caused a list of about 90°, in which the loose gennaker took on water causing the list to rise above 90° to, most probably, 110°. At this list, due to the lack of full passage of the pin through the slots protecting the centreboard ballast, the 270kg centreboard fell into the water and sank. Deprived of the basic mass giving a positive righting moment to the yacht, she was flooded with water through the open stormdeck of the companionway²⁴.

The yacht rental company did not have any information about the sailors who rented the yacht, which was the additional factor delaying the attempt to contact the crew.

²⁰ Due to the stormy weather, the owner of the RS 21 regatta yachts moored in the Yacht Basin close to the Delphia 24 yachts cancelled the previously scheduled training sessions.

²¹ According to the class requirements "13.8 m/s – the maximum average wind speed for 10 minutes"

²² A backstay is a course where the wind is blowing obliquely in the sector between the traverse and the stern.

²³ Rapid change from the full to half tack.

²⁴ Cases of the so-called "capsize" on the gennaker are quite common in D-24 class regattas. Heeling in conditions up to 4-5°B "capsize" reaches 50-60 deg. With no loss of the centreboard, the correct righting moment is in operation and the crew are safe. Regatta organisers often prohibit to use the gennaker in winds of 5-6°B.



The yacht was hired for training for a strictly limited period of time. The lack of supervision and control of the training caused a significant delay in the launch of the rescue operation, what was crucial for its success.

4.4 Organisational factors

Regatta class yachts²⁵ have been excluded from the provisions of the Regulation of the Minister of Maritime Economy and Inland Navigation of 28 February 2012 on safe navigation by sea yachts (Journal of Laws of 2016, item 1557).

As they are designed exclusively for regattas and sporting events, they do not have the rescue equipment required for marine units, and their design is different from typical recreational yachts. The consequence of competitive sailing on these types of units is capsizing and other incidents sometimes requiring help from assisting units. For this reason, the above-mentioned Regulation stipulates that during training or regattas on sea waters, the area in which sailing takes place must be under constant supervision and lifeguard protection.

This was not organised on the training day for the two Delphia 24 yachts.

The return of the yacht at the planned time was not controlled. The rescue operation, led by SAR Rescue Services, was launched thanks to the initiative of the owner of the RS 21 regatta yachts, who became aware of the situation and who contacted the owner of the Delphia 24 yachts by phone informing him about the situation. It was delayed by more than 5 hours which had a direct impact on the result of the search and rescue operation.

The helmsman of the yacht, who had many years of experience on regatta yachts, met other crew members who had relatively limited experience of sailing on sea waters. The fact that sailors have a regatta licence cited as evidence of their experience is unconvincing. An amateur or sporting licence issued by the Polish Yachting Association is a document authorising sailor to participate in the national system of sporting competition organised by the Polish Yachting Association and not a confirmation of sailing qualifications.

Although the sailors met the helmsman for the first time it was not fully established who should be in command of the yacht. Decisions to undertake the training and how it should be carried

²⁵ The division of yachts into classes is only relevant for regatta sailing. Each class has strictly described technical parameters, so that the competition between crews is equal on the same yachts. It is primarily the skill of the sailors that determines the results achieved. An example of a class yacht is the monotype Delphia 24 One Design. Delphia 24 yachts should be repeatable in every detail. The same materials and production technologies shall be used. Fixed fittings, the mast, the boom, the gennakerboom, the steering gear, the centerboard ballast, shall be manufactured by the same producers.



out were made in the form of expressions of opinion, and the helmsman in charge of the yacht as a substitute felt that he met the expectations of the sailors, who had a pre-planned training course.

5 Description of Investigation Findings Including the Identification of Safety Issues and Conclusions

Produced in 2006 by the manufacturer Delphia Yachts Kot sp.j. in Warsaw by the Olecko branch, the sports yacht was surveyed by the Polish Register of Shipping and received the EC Type Examination Certificate OR/RCD/135/2006 of 5 May 2006²⁶.

Another document required by the Class Rules for the Delphia 24 One Design class should be the Classification Certificate issued by the appointed surveyor of the Delphia 24 Regatta Association²⁷.

This is practically the only inspection of the technical condition of the yacht during its lifetime. Additional checks may be required prior to admission to the regatta by surveyors appointed by the organisers.

In case of regatta (class) yachts, they do not undergo periodic technical inspections.

It is therefore the owner's responsibility to take care of the technical condition of the yacht(s) so that they will remain in a group classified as class yachts, ensuring safe sailing.

When investigating this very serious marine casualty that occurred on the Gulf of Gdansk during the training session on the Delphia 24 regatta yacht, the State Marine Accident Investigation Commission concluded that proposing additional formal restrictions would not contribute to improving the safety of regatta sport, which by definition is exposed to certain forms of risk. Therefore, it makes the following recommendations to the yachting community involved in competitive yachting sports.

²⁶ Declaration of Conformity of the craft with Directive 2003/44/EC.

²⁷ The owner of the Delphia 24 yacht did not have this document.



6 Safety recommendations

1. The limitations of the design categories in relation to the prevailing weather conditions must be respected. Operating yachts in conditions beyond their design limitations will result in gradual damage, not always clearly visible.
2. Sailors' clothing when sailing should be selected according to the weather conditions and temperatures experienced. The chances of survival in water at low temperatures are very limited. Only in temperatures of 19 - 20°C do they increase significantly. The helmsman of the yacht was dressed in a wetsuit and foam shoes, which, together with his personal predisposition, allowed him to survive in the water for almost 5 hours.
3. Clothing and life jackets should be brightly coloured. Dark colours (grey, blue) are not easily visible when searching for people in water.
4. Yacht crews should be equipped with means of communication. Primarily waterproof VHF transceivers having channel 16 as a minimum and a working channel for communication with the training organiser. The use of individual PLB would be advantageous, although the possible longer activation period of the system and the required pre-registration of the device by name should be borne in mind. Mobile phones cannot be considered as a device for calling for assistance and use in distress on the sea.
5. Responsibility for the technical condition of the rented equipment is the sole responsibility of the owner. In order for a yacht to be classified as a regatta yacht she must meet all the requirements described and contained in the "Class Rules"²⁸.
6. Sports yachts with racing classes participating in training or regattas on sea waters must be under constant observation and lifeguard protection²⁹.

7. Information sources

Notification of the accident

Materials from hearing of the sailing yacht crew members.

Yacht registration documents and certificates.

Expert report prepared by Piotr Adamowicz from SMAIC.

Expert report prepared by Roman Streubel from SMAIC

Report on the rescue operation by the Polish SAR service.

²⁸ The document created to standardise the Delphia 24 One Design monotype class by the Board of the Delphia 24 Racing Association,

²⁹ Regulation of the Minister of Maritime Economy and Inland Navigation of 12 August 2016, item 1407.



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10. Composition of the accident investigation team

Team leader - Marek Szymankiewicz - Secretary of the SMAIC

Team member – Tadeusz Gontarek – Member of the SMAIC