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Naufragio Bayesian: pubblicate da Marine Accident Investigation Branch le prime ipotesi sulla cause

Nicola Capuzzo · Thursday, May 15th, 2025

Il Bayesian, affondato lo scorso 19 agosto mentre si trovava lungo le coste siciliane in rada a Porticello, potrebbe essere affondato perchè non in grado strutturalmente di resistere alle violente condizioni del vento che lo hanno investito quella notte. Questo è quanto emerge dalle prime risultanze pubblicate dall'agenzia britannica Marine Accident Investigation Branch, che indaga sul naufragio del super yacht a vela Bayesian in parallelo alla magistratura italiana e che pone quindi in evidenza il fatto che la barca fosse in qualche modo vulnerabile di fronte a violenti fenomeni atmosferici puntando il dito su possibili difetti di progettazione dello scafo realizzato in Italia e varato nel 2008 a Viareggio da Perini Navi.

Nella sintesi dei risultati si legge: "L'indagine ha stabilito la cronologia degli eventi a bordo del Bayesian e li ha documentati per quanto possibile con le informazioni raccolte. Le informazioni sulla stabilità presentate si basano sui documenti recuperati e sulle informazioni raccolte, e sull'ipotesi che le condizioni dello yacht al momento della perdita (la condizione di perdita) fossero simili alla condizione di "arrivo a pieno carico" (cioè con il 10% di materiali di consumo a bordo)".

Queste, più nel dettaglio, le prime e ancora provvisorie ipotesi: "Gli effetti del vento sull'albero, sul boma, sul sartiame e sulle parti superiori del Bayesian sono stati valutati utilizzando le informazioni disponibili sulla costruzione e sull'equipaggiamento dello yacht. Attraverso una valutazione 'a tavolino', l'inchiesta di sicurezza ha stabilito che, nella condizione di naufragio ipotizzata, una volta che il Bayesian avesse sbandato con un angolo superiore a 70,6° (l'angolo di stabilità che svanisce) non c'era alcuna possibilità per la chiglia di tornare a una posizione regolare. L'indagine ha inoltre stabilito che, nella condizione di perdita ipotizzata, una velocità del vento superiore a 63,4 nodi sul baglio era sufficiente a far sbandare lo scafo. È possibile che il Bayesian fosse altrettanto vulnerabile a venti inferiori a 63,4 nodi. Queste vulnerabilità (in condizioni di navigazione a motore con vele ammainate, deriva centrale alzata e 10% di materiali di consumo a bordo) non sono state identificate nel manuale di informazioni sulla stabilità presente a bordo. Di conseguenza, queste vulnerabilità non erano note né al proprietario né all'equipaggio del Bayesian". Una tesi che evidentemente, se confermata, potrebbe giocare a favore sia dell'equipaggio che del management dello yacht.

L'indagine della Marine Accident Investigation Branch poi ancora precisa: "Lo studio del Met

Office e le osservazioni locali indicavano la probabile presenza transitoria di venti di forza uragano ben superiori a 64 nodi al momento dell'incidente. Questi venti erano sufficienti a far superare al Bayesian il suo angolo di stabilità massimo".

La stessa agenzia britannica conclude specificando che "la safety investigation sul naufragio del Bayesian è in corso. L'esame del relitto dello yacht, una volta recuperato, dovrebbe migliorare la comprensione da parte degli investigatori delle condizioni effettive di perdita dello yacht, compreso il carico, la portata lorda trasportata, i punti di galleggiamento e la posizione della deriva centrale, al fine di convalidare o migliorare la valutazione teorica già condotta. Una comprensione più approfondita delle vie di accesso e di uscita, della disposizione interna e della posizione della zattera di salvataggio consentirà all'inchiesta di giungere a conclusioni di sicurezza relative alla sopravvivenza. Fino al completamento delle indagini e alla pubblicazione del rapporto finale, il contenuto di questo rapporto provvisorio deve essere considerato indicativo delle circostanze dell'incidente".

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

INTERIM REPORT

VERY SERIOUS MARINE CASUALTY

MAY 2025

Extract from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 – Regulation 5:

"The sole objective of a safety investigation into an accident under these Regulations shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of such an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

As the full investigation report will not be published within 12 months of the accident date, this interim report is published, pursuant to Regulation 14(2)(b) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012.

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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Interim report on the investigation into the foundering of the yacht *Bayesian*, with the loss of seven lives, 0.5 nautical miles south-east of Porticello, Italy on 19 August 2024

This interim report contains information from the investigation completed to date, including a simplified narrative of events; factual detail and analysis of the environmental conditions; details of *Bayesian*'s stability, as documented; and a summary of a study into how the yacht was likely impacted by the environmental conditions experienced.

The 'desktop' assessment of *Bayesian*'s capsize is based on available documents and information that will be validated and, as necessary, iterated and improved following detailed examination of the wreck once it is salvaged.

Readers are cautioned that there is the possibility that new evidence may become available that might alter the circumstances as depicted in this report.

INVESTIGATION

Image courtesy of Karsten Börner (skipper of *Sir Robert Baden Powell*)

Bayesian

Following the accident the Marine Accident Investigation Branch (MAIB) initiated a safety investigation into the circumstances of the loss of *Bayesian*. This safety investigation is being conducted in parallel to a criminal investigation being led by the Termini Imerese Public Prosecutor's Office, Sicily, Italy. That criminal investigation has restricted the safety investigation's access to the wreck and other material elements of primary evidence. Consequently, this interim report is based on a limited amount of verified evidence. The circumstances depicted in this report may alter following the release of evidence held by the Italian authorities at the time of publication or following examination of the wreck.

Some information about this accident, not otherwise available to the MAIB, has appeared in the public domain and there has been much speculation as to the circumstances of the accident. The safety investigation has purposefully not included information it has been unable to verify.

The MAIB's ongoing safety investigation is considering all aspects of the accident to determine its causes and circumstances. These include *Bayesian*'s design, stability, escape routes, operation and emergency procedures. The safety investigation has also considered the forecast weather and that experienced during the accident, as well as the available guidance to mariners on actions to be taken in extreme weather.

NARRATIVE

On 14 August 2024, the privately owned and operated yacht *Bayesian* **(Figure 1)** sailed from the port of Milazzo for a short excursion around the Aeolian Islands and the north coast of Sicily. There were 12 guests and 10 crew on board. The intention was to disembark the guests on 19 August before proceeding to Naples for a period of maintenance. On 18 August, *Bayesian* was anchored at Cefalù on the northern coast of Sicily.

Image courtesy of Perini Navi S.p.A.

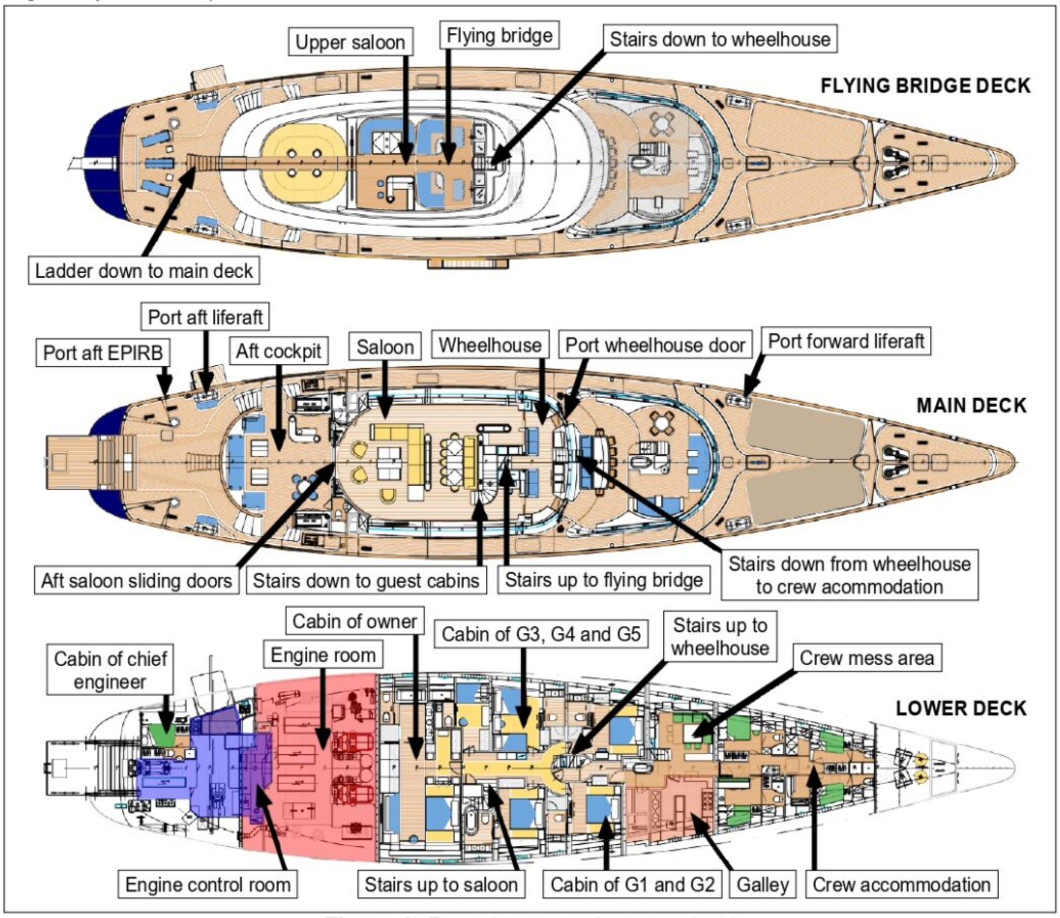

Figure 1: *Bayesian* general arrangement

With the wind increasing, it was decided to motor towards Porticello, 25 nautical miles (nm) to the west, to anchor for the night. This was both to shelter from the forecast weather and to allow for easy disembarkation of guests the following day. At 2124[1], *Bayesian* anchored to the east of the main breakwater. The centreboard[2] was in the raised position. The yacht *Sir Robert Baden Powell* was also at anchor nearby.

The seas were calm and there was a very light wind from the north-west. Thunderstorms had been forecast, and those on board *Bayesian* could see occasional flashes of lightning away to the west. *Bayesian*'s skipper left instructions to be woken by the overnight watchkeepers (deckhands DH1 and DH2) if the wind speed increased above 20 knots (kts) or if there were signs that *Bayesian* was dragging anchor. Having checked the latest weather forecast the skipper then went to bed. By 0030 the last guest had retired, leaving DH1 and the evening steward (S1) on duty. At 0100, DH2 took over the watch from DH1. The wind at this time was noted as being no more than 8kts, and there were no signs of *Bayesian* dragging anchor.

At 0300, DH2 noted the wind as being at 8kts from the west but thought that the thunderclouds and lightning seemed to be getting closer. At about 0330, two of the guests (G1 and G2) awoke but remained resting in

[1] All times are universal time coordinated (UTC)+2, unless otherwise stated.

[2] Also known as a swing keel.

their cabin. At approximately 0355, DH2 videoed the advancing storm and posted it to their social media feed. DH2 then went onto the deck and closed the forward hatches and cockpit windows to protect *Bayesian*'s interior from the rain that had started falling. DH2 noted that the wind had picked up to 30kts and was broad on the port bow. *Bayesian* was now listing to starboard and DH2 thought the vessel was dragging its anchor.

At around 0357, both *Bayesian* and *Sir Robert Baden Powell* started dragging their anchors in the rapidly worsening weather.

At around 0400, DH2 ran below and woke the skipper. Together they returned to the flying bridge. At about the same time, the chief engineer (C/E) woke up. Having experienced bad weather at anchor before, the C/E got up and walked to the engine control room to prepare the vessel for manoeuvring. After making sure that all three generators were running, the C/E went to the wheelhouse to start the steering pumps and hydraulic pumps for the controllable pitch propeller.

The chief officer (C/O), chief steward (CS), chef and stewards had also all been woken by the yacht's change of motion. They dressed and made their way out of the crew accommodation. At this time *Bayesian* was estimated by those on board to be listing between 10° and 20° to starboard. The owner started to make their way to the flying bridge to see if the taxis that were arranged for 0800 would have to be cancelled due to the weather.

The CS secured some loose items in the crew mess area then went to the upper deck to secure other items. The C/O went to the flying bridge, where the skipper gave an instruction for the rest of the crew to be woken as the anchor was dragging. Returning below, the C/O told the bosun and DH1 to go on deck to secure any loose items and standby for further orders. The chef was in the galley stowing cutlery, pots and pans and shouted, "*Good morning!*" to the C/O and the nearby stewards.

Bayesian was lying with the wind about 60° off the port bow and moving at 1.8kts south-south-east of its original position **(Figure 2)**. *Sir Robert Baden Powell* was also dragging its anchor at a similar rate in a similar direction.

Two of the guests (G3 and G4) had been woken as *Bayesian* took on the list and decided to head to the saloon with their baby (G5).

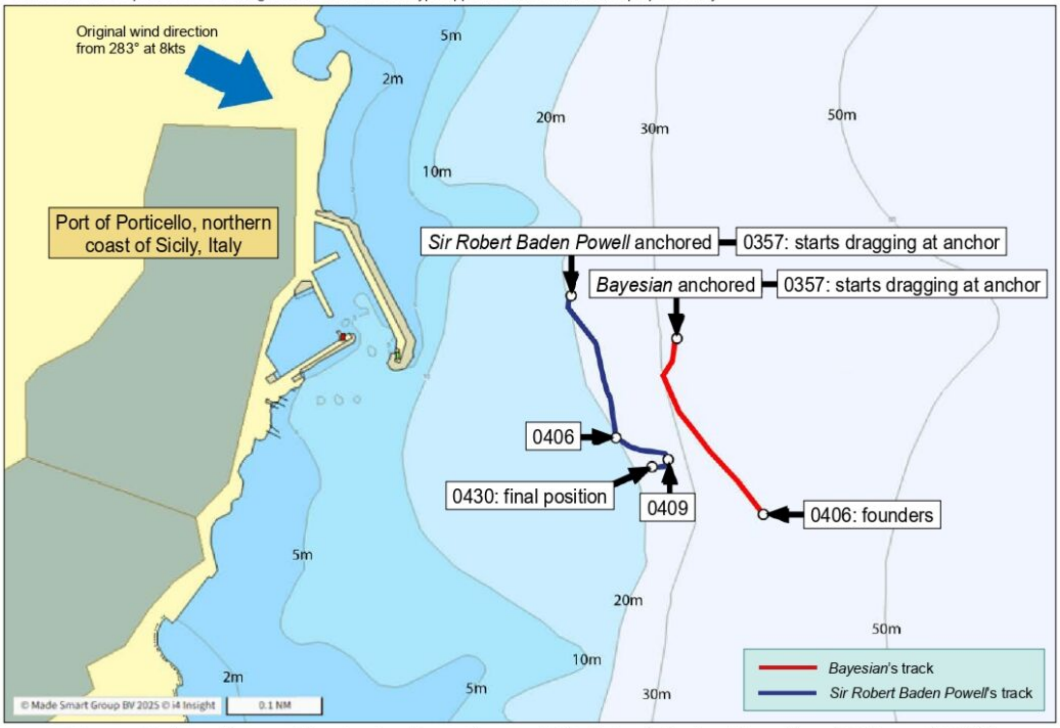

Figure 2: Location and tracks for *Bayesian* and *Sir Robert Baden Powell* on 19 August 2024

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The C/O returned to the flying bridge and briefed the skipper on the crew activities. The skipper told the C/O to check to see if the C/E had started the engines and pumps so that they could manoeuvre *Bayesian* into the wind. On arriving in the wheelhouse, the C/O saw the C/E there and was informed that *Bayesian* was ready to manoeuvre. The C/O then shouted up to the flying bridge to inform the skipper.

The owner, G3, and G4 (carrying G5) arrived in the saloon and wheelhouse area as the rain-soaked CS came in from the upper deck.

As the skipper prepared to manoeuvre *Bayesian* up into the wind from their position on the flying bridge, the wind suddenly increased to more than 70kts. The awning over the flying bridge ripped from port to starboard. At 0406, *Bayesian* violently heeled over to 90° to starboard, taking less than 15 seconds to do so. People, furniture, and loose items fell across the deck. The generators shut down immediately and battery-supplied emergency lighting came on.

The skipper, G4, the owner, the bosun and S2 were all injured, either by falling or from things falling on them. DH2 had been thrown into the sea from their position by the helm on the flying bridge. In their cabin, G1 and G2 used the furniture drawers as an improvised ladder to exit the space, escaping along the internal walls of the central alleyway and climbing out into the saloon area. S1 and DH1 climbed up the walls of the forward staircase, exiting from the crew mess area into the wheelhouse. There was no indication of flooding inside *Bayesian* until water came in over the starboard rails and, within seconds, entered the internal spaces down the stairwells.

The C/E managed to exit through the port forward wheelhouse door. Once clear, they helped DH1 out before heading aft to launch an Emergency Position Indicating Radio Beacons (EPIRB), one of two on board, from its position on the port aft quarter of the main deck. DH1 stayed by the port forward wheelhouse door and, reaching down through the open doorway, lifted both S1 and then S2 onto the upper deck. Looking down through the door, DH1 could not see anyone else so the three of them made their way aft and into the sea.

Separately, the C/O had found the owner and pushed them through the cascading water up to the skipper on the flying bridge. The C/O and skipper managed to evacuate G3 and G5 by the same route.

The bosun and DH2 climbed down into the wheelhouse and lifted G1 and G2 into the flying bridge where they were joined by G4, assisted by the C/O and skipper. With *Bayesian* rotating to starboard and sinking, the CS, bosun and DH2 found themselves in an air pocket by the closed port forward wheelhouse door. With the assistance of the injured G4 on the outside, they were able to open the door and escape. The C/O, who had been swept to the back of the saloon and into another air pocket, dived down to open the sliding doors at the aft end of the saloon and managed to swim clear of the vessel. The skipper organised the abandonment from the flying bridge and instructed the guests and crew present there to swim clear of the mast and boom as the vessel was sinking.

By 0422, the C/E had launched the EPIRB and was sitting on the hull, near the rudder. They noted that the wind had eased and that *Bayesian* was only a short distance from shore. The C/E heard shouts from the skipper and jumped into the sea and swam towards the gathering survivors. The CS counted those present and checked for injuries. DH2 improvised a tourniquet for G4's gashed arm and G2 made sure that G5 had a cushion as a flotation device. Some of the survivors were treading water and others held on to some cushions that had floated free from *Bayesian*. G1 was using the torch from their phone to search the water for other survivors.

The skipper and DH1 swam to *Bayesian* and attempted, without success, to release the port aft liferaft from its stowage. The C/O swam to the port forward liferaft and released it from the sinking wreck. They towed the liferaft to the gathered survivors. At approximately 0424, the liferaft was inflated and DH1 boarded it and assisted the survivors in the water to board. From the liferaft, the CS saw the bows of *Bayesian* rise up and then sink below the surface. The C/O and CS began organising the liferaft and delivering first aid to the injured people on board. The C/E searched for flares and DH1 and the skipper tried to raise the alarm by shouting at and then paddling towards *Sir Robert Baden Powell. Bayesian* had sunk in approximately 50m of water.

The skipper on board *Sir Robert Baden Powell* noted that, despite the application of engine power, their vessel had dragged anchor around 400m in 11 minutes. The yacht's crew initially thought that *Bayesian* had put to sea to avoid the sudden storm. Their skipper briefly saw a dark triangular shape descending into the water, later believing this to be *Bayesian*'s bow sinking.

At 0434, *Bayesian*'s C/E fired a red parachute flare from the liferaft. Despite the winds being calm at the surface, the flare was carried sideways as it rose up into an area of stronger wind. The C/E used the liferaft's torch to signal towards a hotel on the cliffs above them, passing cars, and *Sir Robert Baden Powell*. At 0443, the C/E fired a second parachute flare that was seen by the crew of *Sir Robert Baden Powell*. Responding to the flare, the skipper of *Sir Robert Baden Powell* dispatched its tender towards the visible lights of the EPIRB and liferaft. On arrival, the tender's crew transferred the liferaft's occupants on board. At 0453, the tender returned to *Sir Robert Baden Powell*. A brief search was made of the accident site to check for other survivors.

At 0456, the tender from *Sir Robert Baden Powell* returned to the scene with *Bayesian*'s C/E on board to search for other survivors. After approximately 20 minutes, the tender returned to *Sir Robert Baden Powell* and *Bayesian*'s skipper joined the crew on the tender to continue the search. *Sir Robert Baden Powell*'s skipper called the local coastguard to arrange to transfer the survivors to shore.

The accident on *Bayesian* resulted in the deaths of six guests and one crew member. All of the bodies were subsequently recovered by the local authorities.

Environment

The investigation examined the published weather forecasts for the period, some actual weather observations from the night of 18/19 August 2024, evidence from local closed-circuit television (CCTV) footage and witness testimony. This was combined with the output of an Italian weather report for the area.

The Météo-France weather bulletin for the western part of the Mediterranean Sea (METAREA III W) issued at 0900 UTC on Sunday 18 August 2024 mentioned a deepening low-pressure feature moving towards Italy from the Gulf of Genoa during the period. Specifically, this 24-hour forecast included the Lipari sea area (the north coast of Sicily and offshore areas) and predicted *westerly 3 or 4* [winds], temporarily north-west overnight, then increasing 4 or 5 in south at end. Seas *smooth or slight, becoming slight or moderate in the second part of the night*. There was forecast to be *poor visibility in showers or thunderstorms*.

Early Italian weather forecasts ahead of the accident predicted *intense and persistent rain, mainly in the form of showers or thunderstorms*…[with] *storms* [being] *accompanied by strong wind gusts*[3]. At 2100 UTC on 18 August, Italian forecasters issued a gale warning of *northwesterly gale force 8* winds for Sardinia and Corsica with associated *isolated thunderstorms with local gusts* for Sicily. This was updated and reiterated at 0000 UTC on 19 August 2024.

At 0352 on 19 August 2024, around 5nm to the north-west of the Porticello anchorage, winds were recorded to have suddenly increased from around 5kts to 41kts from the north-west. These strong winds were associated with a storm front that passed quickly towards the rugged coastline near Bagheria and Porticello. This was observed on a nearby vessel's navigational radar **(Figure 3)**. Several CCTV cameras in Porticello showed an intense squall of wind and heavy rain arriving, throwing debris around violently before moving on. This intense squall was associated with lightning strikes, thunder and very poor visibility. Land weather readings (recorded at 5-minute or hourly intervals) captured a peaking of wind strength as the intense squall passed.

The investigation commissioned the Met Office, the UK's national meteorological service, to analyse the weather conditions over the seas north of Sicily on 19 August 2024.

The Met Office study concluded that a trough of low pressure transited the area overnight on 18/19 August 2024. It noted that local data suggested there was a large amount of convective available potential energy (CAPE)[4] in the atmosphere. Sufficient wind shear[5] was evident in the atmosphere, and the conditions were borderline for the development of supercells[6]. High inshore sea-surface temperatures may also have contributed energy to the development of weather systems.

The Met Office study of satellite imagery indicated that the mesocyclonic storm front was demonstrating the properties of a significant supercell with associated downdrafts and possible near-surface winds in excess of 100 miles per hour (87kts). The study concluded that a mesocyclonic storm was *highly likely* with

[3] Centro Nazionale di Meteorologia e Climatologia Aerospaziale (CNMCA): the Italian National Centre for Aerospace Meteorology and Climatology forecast of intense phenomena, issued at 1200 UTC on 18 August 2024.

[4] CAPE, measured in joules per kg, describes the instability of the atmosphere and provides an approximation of updraft strength within a thunderstorm. Higher CAPE values generally indicate a greater potential for strong thunderstorms.

[5] Wind shear is the change of wind speed or direction with increasing altitude or around local geographic features.

[6] A supercell is an isolated mesocyclonic storm that contains updrafts of wind that rotate about a vertical axis. Supercells produce damaging winds and hail and can produce tornados, or tornadic waterspouts. The thunderstorms have associated updrafts and downdrafts. Updraft associated winds can be tornadic in character and can be associated with winds from 56kts to over 175kts. A downdraft is where precipitation and wind "falls" from the storm. Downdraft associated winds can be intense and cause damage when they reach the ground.

an associated supercell being *probable*. It also concluded that tornadic waterspouts and downdrafts were *possible* where local winds could reach extreme hurricane force well in excess of 64kts. Such tornadic waterspout features could be of very limited horizontal extent (50m to 100m wide).

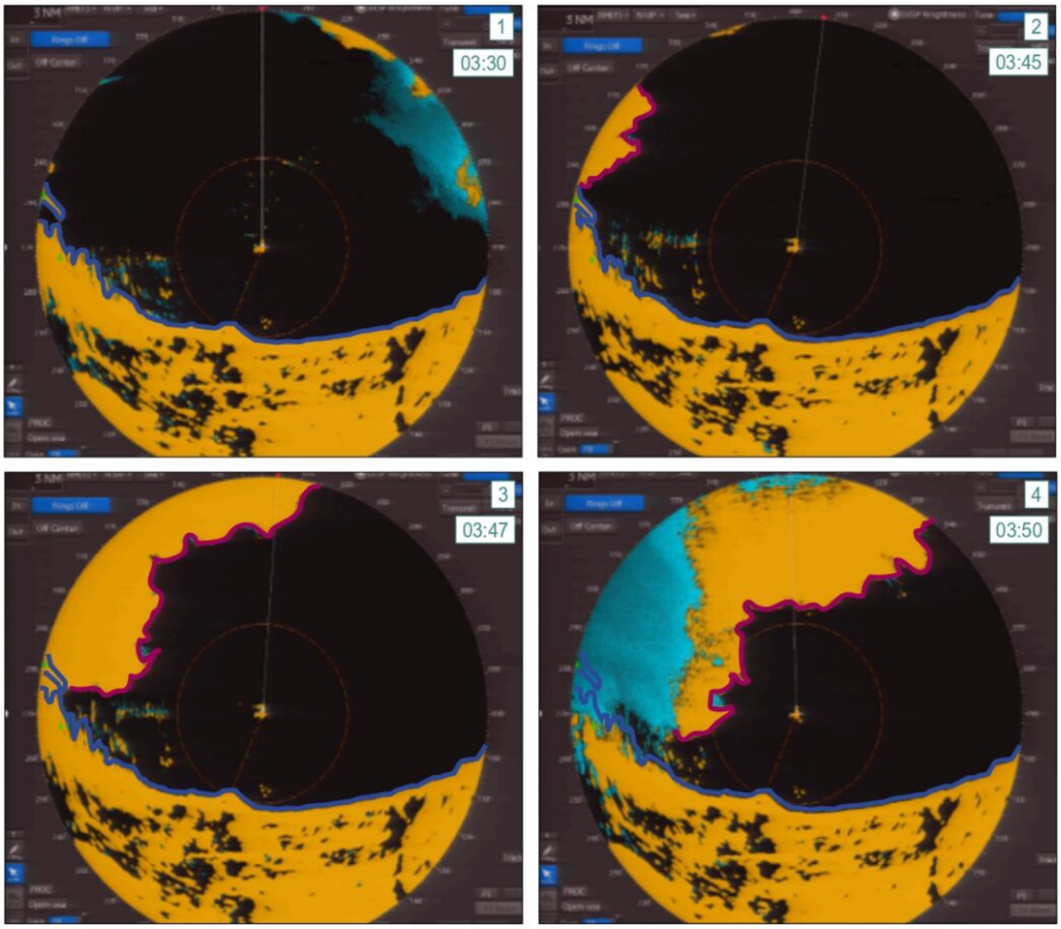

Image courtesy of Google Maps

Figure 3: Radar images, showing passage of rain across the Bay of Palermo on 19 August 2024

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Vessel stability

Bayesian was built in 2008 as sailing yacht *Salute*. A stability information booklet (SIB) was submitted for approval to Ensign, the then large yacht service of the UK Maritime and Coastguard Agency (MCA). On 3 July 2008, the SIB was approved against the requirements of Section 11 of Merchant Shipping Notice (MSN) 1792 (M) – The Large Commercial Yacht Code (LY2)[7].

The approved SIB was required to include *Curves of statical stability (GZ curves)*[8] for specific loaded conditions, including at least the loaded departure and arrival conditions with 100% and 10% consumables respectively. GZ curves were required to have a positive range of not less than 90°; however, LY2 allowed for vessels of more than 45m in length to have a GZ range of less than 90° subject to agreed operational criteria. Derived wind heeling levers were also to be calculated for sailing vessels. *Bayesian*'s SIB contained curves for the sailing conditions when at maximum load, contractual full load and in the light load condition. In all three of these conditions the centreboard had to be lowered. The respective angles of vanishing stability[9] for the three conditions, recorded in the SIB, were 91.4°, 92.3° and 84.3°.

The SIB contained *Curves of Maximum Steady Heel Angle to Prevent Downflooding in Squalls*. These curves provided a safe operating range for a sailing vessel, indicating the maximum heel angle it could withstand before there was a risk of downflooding occurring in a sudden gust or squall. The SIB did not contain such curves for when *Bayesian* was operating in the motoring condition where the centreboard was raised and no sails were up.

The investigation commissioned a stability and windage study for *Bayesian*. The University of Southampton's Wolfson Unit for Marine Technology and Industrial Aerodynamics (Wolfson Unit) undertook the study and first built a stability model for *Bayesian* that replicated the information contained in the approved SIB. The stability model was subsequently adjusted to replicate the assumed loss condition; assessed as being similar to the motoring condition, with the centreboard raised and in the loaded arrival state (with 10% consumables on board).

The study determined that the angle of vanishing stability in this condition was 70.6°.

Environmental impact on vessel stability

The Wolfson Unit's study of *Bayesian* determined that the 72m tall mast accounted for 50% of the total wind heeling moment of the vessel when the wind was exactly on the beam. The remainder was predominantly made up of the rigging and furled sails. The profile of the mast also produced a degree of effective lift, delivering an increase in the heeling moment applied by the wind, peaking in winds about 20° off the bow.

Examination of a possible loss condition determined that the limiting heel angle[10] for a steady wind was 14.2° and that the limiting heel angle for the associated gust was 36.3° **(Figure 4)**. The study predicted the wind speeds that would produce those limiting heel angles for a range of apparent wind angles (AWA) relative to the bows, shown at **Table 1**. The table shows a high limit of wind speed, which included the impact of interactions and blanketing effects between different elements of the mast and rigging. The low limit describes the wind speed required to achieve the limiting heel angle with no blanketing or interaction effects included. Less wind is required to achieve the limiting heel angles if all the different elements of the mast and rigging are treated individually. More wind is required to reach that limiting heel angle when considering the blanketing effect that some of the rigging might have on the mast, for example.

The study indicated that if the wind was blowing directly onto *Bayesian*'s beam and the yacht was in the 'motoring' condition, a gusting wind speed in excess of 63.4kts would likely result in the vessel capsizing, irrespective of any interactions and blanketing effects.

[7] MSN 1792 (M) Edition 2, published in September 2007.

[8] A GZ curve is a depiction of how the transverse distance between the centre of gravity (G) and the centre of buoyancy (B) varies across a range of heel angles. GZ is indicative of the strength of the righting lever induced by the angle of heel.

[9] The angle of vanishing stability is the angle of heel where the righting moment has reached zero. Beyond this angle the vessel could not recover to an upright position.

[10] Derived from the wind heeling moment that would cause the vessel to capsize, representing the 'gust' condition. To determine a steady state wind speed condition, this limiting wind speed is divided by the gust factor (1.4142, or the square root of 2). The position where the steady state wind heeling moment curve intersects the GZ curve indicates the limiting heel angle for a steady wind. The limiting heel angle in the gust condition is determined by the position where the gust heeling moment coincides with the GZ curve at its greatest extent **(Figure 4)**.

Image courtesy of Wolfson Unit

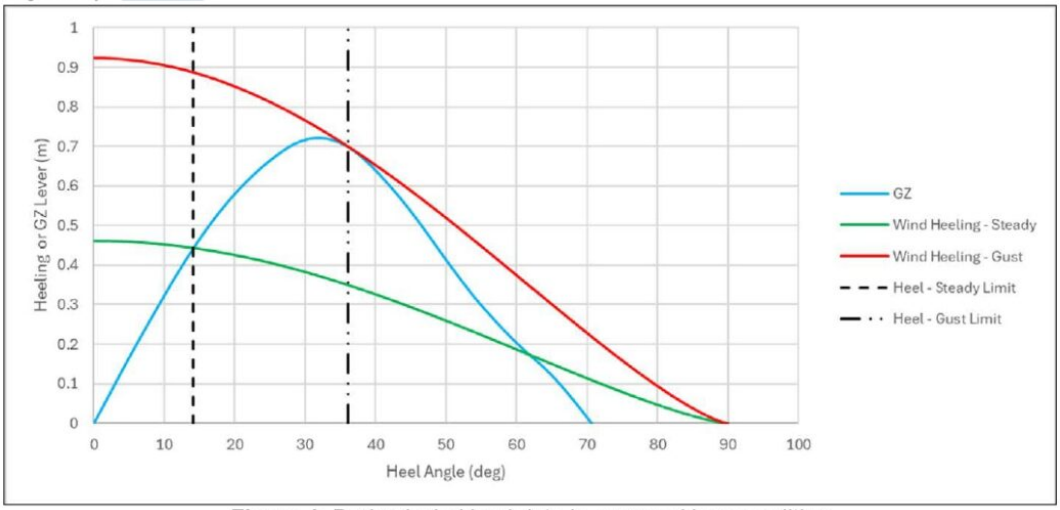

Figure 4: Derived wind heel data in assumed loss condition

	Predicted limiting wind speed (kts)			
AWA	**Steady wind speed**		**Gusting wind speed**	
Degrees (°)	**Low limit**	**High limit**	**Low limit**	**High limit**
0	Not applicable	Not applicable	Not applicable	Not applicable
10	55.9	66.7	79.1	94.4
20	46.1	55.0	65.3	77.8
30	50.6	60.2	71.6	85.2
40	43.0	51.2	60.8	72.4
50	39.3	46.9	55.6	66.3
60	38.4	45.8	54.4	64.8
70	37.9	45.2	53.7	64.0
80	37.7	44.9	53.3	63.5
90 (on the beam)	37.6	44.8	53.2	63.4
100	40.4	48.1	57.2	68.1
110	41.3	49.2	58.4	69.6
120	43.0	51.3	60.9	72.5
130	46.0	54.7	65.0	77.4
140	50.9	60.5	71.9	85.6
150	59.3	70.5	83.9	99.7
160	75.3	89.4	106.4	126.4
170	114.2	135.7	161.5	191.8
180	Not applicable	Not applicable	Not applicable	Not applicable

Table 1: Limiting wind speeds at a range of apparent wind angles

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SUMMARY OF FINDINGS

The investigation has established the timeline of events on board *Bayesian* and documented these to the extent possible with the information gathered.

The stability information presented is based on documents recovered and information gathered, and the assumption that the yacht's condition when lost (the loss condition) was similar to the 'loaded arrival' condition (i.e. 10% consumables on board).

The effects of wind on the mast, boom, rigging and upperworks of *Bayesian* have been assessed using the available information on the yacht's construction and equipment.

Through 'desktop' assessment, the safety investigation has established that, in the assumed loss condition, once *Bayesian* heeled over to an angle greater than 70.6° (the angle of vanishing stability) there was no chance of a return to an even keel.

The investigation has also established that, in the assumed loss condition, wind speeds in excess of 63.4kts on the beam were sufficient to knock *Bayesian* over. It is possible that *Bayesian* was similarly vulnerable to winds of less than 63.4kts.

These vulnerabilities (when in the motoring condition with sails lowered, the centreboard raised and 10% consumables on board) were not identified in the stability information book carried on board. Consequently, these vulnerabilities were also unknown to either the owner or the crew of *Bayesian*.

The Met Office study and local observations indicated the probable transient presence of hurricane force winds well in excess of 64kts at the time of the accident. These winds were sufficient to knock *Bayesian* beyond its angle of vanishing stability.

ONGOING ACTION

The safety investigation into the foundering of *Bayesian* is ongoing. Examination of the wreck of the yacht, when salvaged, should improve the investigators' understanding of the yacht's actual loss condition, including its loading, deadweight carried, downflooding points and the position of the centreboard, in order to validate or improve the theoretical assessment already conducted. A fuller understanding of the access and egress routes, internal layout and liferaft status will enable the investigation to reach safety conclusions related to survivability.

Until the investigative work is complete, and the final report published, the contents of this interim report should be taken as indicative of the circumstances of the accident.

VESSEL PARTICULARS	
Vessel's name	*Bayesian*
Flag	UK
Classification society	American Bureau of Shipping
IMO number/fishing numbers	9503392
Type	Private sailing yacht
Registered owner	Revtom Limited
Manager(s)	Camper and Nicholsons International
Construction	Aluminium alloy
Year of build	2008
Length overall	55.9m
Registered length	49.7m
Gross tonnage	473
Minimum safe manning	Not applicable
Authorised cargo	Not applicable

VOYAGE PARTICULARS	
Port of departure	Naples, Italy
Port of arrival	Naples, Italy (intended)
Type of voyage	International
Cargo information	Not applicable
Manning	10

MARINE CASUALTY INFORMATION	
Date and time	19 August 2024 at 0406
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	0.5nm south-east of Porticello, Italy
Place on board	Ship
Injuries/fatalities	7 fatalities
Damage/environmental impact	Vessel loss, negligible pollution
Vessel operation	At anchor
Voyage segment	Anchored
External & internal environment	Sudden, violent winds associated with a mesocyclonic thunderstorm within a general background of force 4 to 5 north-westerly winds and gusts up to force 6; sea smooth to slight; sea temperature 32°C
Persons on board	22

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