

**Report of the
Marine Accident Investigation Branch
Investigation into the capsizing of the Yacht**

OCEAN MADAM

**with the loss of one life
in the Bay of Biscay
8 October 1997**

Extract from
The Merchant Shipping
(Accident Reporting and Investigation)
Regulations 1994

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the causes with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

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Figure 1



Bay of Biscay showing location of incident

Synopsis

The accident occurred in the Bay of Biscay on 8 October 1997. A Marine Accident Investigation Branch (MAIB) Incident Report Form was completed on 12 October and was received by the MAIB on 20 October. An investigation was carried out by Mr R Brydges.

An experienced skipper and two novice crew agreed to deliver a Beneteau Oceanis 390 yacht, *Ocean Madam*, from Malta to Plymouth, United Kingdom. Before sailing, the crew were informed the voyage would last four to six weeks. The yacht sailed from Malta on 22 September 1997 and headed towards Gibraltar where it arrived on 2 October. This leg included one refuelling stop in a Spanish port.

After 36 hours in Gibraltar *Ocean Madam* resumed her voyage with the intention of making a non-stop passage to Plymouth. In the event the plan was changed and a diversion was made to La Coruña to refuel on 7 October. During the short stopover the skipper became aware that force 7-8 winds were forecast for the Bay of Biscay. Confident in his ability to handle adverse weather conditions he chose to sail and once underway, began to pick up the BBC shipping forecasts which were predicting force 9 winds. Within 24 hours *Ocean Madam* was encountering high winds and correspondingly rough seas with breaking waves.

On the evening of 8 October, *Ocean Madam* was knocked down twice by breaking waves. She recovered after the first knock-down but inverted after the second. While in this position one of the crew became detached from the yacht despite being securely clipped on by his safety harness. Faced with a dismasted and partially flooded craft in a high sea state and in the dark, the two survivors were severely handicapped by the circumstances in what they could do. They were without power and were confronted with a flailing liferaft but could hear the cries of the man overboard. Controlling the inflated liferaft became their first priority and both men climbed into it to secure it. Before they were able to do so, another sea struck them and broke the painter. The liferaft was swept away and any chance of rescuing their colleague had gone.

Alerted by the transmissions of the EPIRB a French search and rescue operation was successful, and after spending eight hours in the damaged liferaft, the two survivors were rescued by a French naval helicopter.

The capsizing was caused by breaking waves. Prior to the second knock-down the crew member who lost his life was wearing a lifejacket and a safety harness which was properly clipped on. Although it will never be determined exactly what happened, it is probable he unclipped himself whilst underwater but was unable to return to the boat once it had righted. He was never found and is presumed drowned.

The report makes four recommendations.

Figure 2



Beneteau Oceanis 390

(photograph courtesy of Beneteau/G.Beauvais – Hippophot)

Vessel and Incident Details

Vessel Details:

Name:	<i>Ocean Madam</i>
Type:	Sailing Yacht - Bermudan Sloop
Model:	Beneteau Oceanis 390
RSS No.:	714859
Port of Registry:	Dartmouth
Year of Build:	1989
Material of Construction:	GRP
Length Overall:	11.27m
Beam:	3.84m
Draught:	1.98m
Gross Tonnage:	13.64
Builders:	Chantiers Beneteau
Place of Build:	Challans, Vendee, France
Engine:	Perkins - 37 kW
Owner:	Mr Paul Drew
Skipper:	Mr Robert Beggs
Crew:	Mr Andrew Nurse and Mr Ray Newton (deceased)

Accident Details:

Date of Accident:	8 October 1997
Time of Accident:	2150 UTC
Type of Accident:	Capsize
Place:	46°48'N 06°37'W - 115 miles SW from Île d'Ouessant, France
Weather Conditions:	Wind SW force 9, wave height 7-9m
Damage:	Vessel abandoned (later sunk as a danger to navigation)
Injuries:	One crew member lost
Pollution:	None reported

SECTION I - FACTUAL ACCOUNT

1.1 Narrative of Events (All times are UTC)

Towards the end of the 1997 sailing season, the owner of the yacht *Ocean Madam* arranged for her to be delivered from Malta where she had been used for chartering, to Plymouth, United Kingdom, where she was to be sold. He engaged a friend and experienced yacht skipper, Mr Robert Beggs, to deliver her.

Mr Beggs, a Territorial Army bombardier and qualified professional RYA Yachtmaster Instructor with previous experience sailing in *Ocean Madam*, agreed to undertake the delivery voyage and set about arranging a crew. Aware that TA soldiers welcomed opportunities to gain practical experience, he approached an army colleague in his Commando Battery and informed him that he could offer sailing experience to anyone interested. It would involve crewing a yacht on a delivery voyage from Malta to the United Kingdom.

Two TA soldiers, Mr Ray Newton and Mr Andrew Nurse volunteered and, having been contacted by the Battery Sergeant Major of their unit, assumed the voyage was officially sponsored. This report does not address the issue of how the activity was approved. Neither man had offshore sailing experience but were under the impression the voyage would last between four and six weeks and would involve making stops at several ports. They approached the forthcoming voyage with enthusiasm.

Pre-joining instructions were limited, but some guidance on clothing was provided. Both crew members had been informed it was to be an all expenses paid activity and they would be on official duty. They had previously met the skipper during their service with the Army having served with him on exercise a number of times, but he was not well known to either of them. They met at Gatwick on the evening of 20 September 1997 to catch a flight to Malta. The skipper was carrying some charts, an Emergency Position Indicator Radio Beacon (EPIRB) and foul-weather clothing. The clothing was issued to the two crew.

On arrival in Malta they made their own way to the Msida Marina where *Ocean Madam* was berthed. The owner was onboard.

The following morning the owner briefed the skipper while the two crew members settled in and became acquainted with their new surroundings. The skipper told the owner about the crew's lack of sailing experience although the surviving crew formed the impression that he was reluctant to reveal this. By all accounts the boat was in good condition and well equipped, although it was known that the main batteries needed to be changed. This was done prior to their departure. The owner left later in the day leaving the delivery crew to complete an inspection of the yacht and make preparations for the voyage. The skipper reports having given a full safety briefing including the use of safety equipment, lifesaving equipment and procedures for abandoning the vessel. The surviving crew has no recollection of this. Preparations for sea lasted a day and a half and included a full inventory, and serviceability check on all equipment. The mast and rigging were climbed and

checked by all three crew. The engine, machinery, safety gear (including the dan buoy) and navigational equipment were also checked. Prior to the crew's arrival the owner had carried out general checks, progressed maintenance and done some provisioning. The Zodiac dinghy was deflated and stowed on the transom bathing platform. This was the normal practice.

Ocean Madam sailed from Malta at about 1400 on 22 September with an easterly wind force 5-6 forecast. As soon as the yacht had slipped from her berth, sails were hoisted. During a briefing of manoverboard procedures shortly after leaving, the weight at the base of the dan buoy became detached and was lost overboard. This was the only known defect to be recorded in the early stages of the voyage.

The voyage plan was to sail to Gibraltar direct without stopping. The watchkeeping routine established on sailing was for the two crew members to keep watch and watch about, four hours on, four hours off. The skipper chose not to keep watches but made himself available at all times. In the event he fell ill shortly after leaving Malta. Despite being ill, the skipper continued to provide advice and guidance as necessary. He recovered after a couple of days. During the passage, the skipper reports that the radio was switched off except when required as a safety aid in the close proximity of other shipping and when within range of the coast. Contradictory evidence was provided by the surviving crew who stated it was used far less than this.

After experiencing fair weather initially, strong headwinds were encountered and the yacht beat to windward for several days. Although the crew settled in well, learned much and did not suffer from sea sickness, the surviving crew reported having been "terrified" during periods of heavy weather. As the auto pilot was found to be ineffective in rough weather, steering was generally by hand. By the time *Ocean Madam* reached the Tunisian coast, fair conditions had returned and the cruising chute was set. Speeds of up to 14 knots were achieved but when she became too hard pressed the chute blew out. At no time, however, did the skipper judge the vessel to be over-pressed.

While coasting along the North African shore the wind died prompting the skipper to motor with the consequent demand on diesel fuel. Realising that he needed to refuel he decided to divert to the Spanish coast. He replenished at Puerto Deportivo Almerimar before continuing the voyage to Gibraltar where they arrived early on 2 October.

Ocean Madam spent about 36 hours in Gibraltar during which time they refuelled, topped up with water and revictualled. During their stay, the Rock was hit by a squall which created very turbulent conditions in the harbour and led to the yacht chafing badly against the marina pontoon. Neither the skipper nor the crew were on board at the time but the two crew members returned during the blow to provide what assistance they could. Attempts to keep her off the pontoon were partially successful but not before the hull had sustained some damage. Some aluminium deposits from the pontoon were found on the white gelcoat. The skipper judged there was no damage to the gelcoat or substrate and felt he could attend to this cosmetic damage on completion of the voyage. The surviving crew member

recalled the damage as being more substantial. Nobody other than the skipper and crew inspected the damage.

While in Gibraltar weather forecasts for the planned passage were obtained. *Ocean Madam* sailed from Gibraltar during the afternoon of 3 October and transited the Strait of Gibraltar shortly afterwards.

Sailing conditions for the passage north off the Iberian coast were good but light winds meant the engine had to be used on several occasions. Although the skipper is reported by the other survivor to have been unusually quiet during this leg the crew enjoyed the fair weather sailing. The chance of a more relaxed routine was made possible by extensive periods spent under power and, consequently, an increased demand on fuel.

As *Ocean Madam* approached the north-west tip of Spain the decision was taken to divert to La Coruña and refuel.

The yacht remained in harbour sufficiently long to take fuel, make a couple of telephone calls and obtain a weather forecast. This predicted south-west winds force 7-8.

Taking the competence of the crew after everything they had already achieved into account, the skipper decided to sail. In his opinion they were well settled into a watchkeeping routine and were well up to 'competent crew' standards. He also judged that any further delay to the voyage would mean they would be at sea with the onset of autumn and a steady deterioration in the weather. Both crew members voiced concern and apprehension about the expected conditions but were persuaded it would be safe. They were assured it would be a "good sail" and that they would be home in "a couple of days". Once clear of the land the plan was to make direct for Plymouth.

Ocean Madam left La Coruña under full sail in a south-westerly breeze force 4-5 at 1350 on 7 October. That evening they picked up the first BBC Radio 4 shipping forecast which predicted winds for sea area Finisterre as "south-westerly 6 to gale 8, perhaps severe gale 9 later in north". This was confirmed by the report received at 2348. Once again the two crew members kept watch and watch about, although the skipper made himself available for all duties including helming and sail changing.

During the evening, sail was shortened. By the following morning the wind strength had increased and large waves were breaking on the port quarter. The man on watch wore a lifejacket and was always clipped onto either one of the jackstays or a standing part of the boat. Although he was clipped on via a safety harness the skipper elected not to wear a lifejacket even when working on deck.

By nightfall on 8 October, conditions were not good and the two crew told the skipper they were very frightened. The skipper remained confident of the boat's ability to survive the high seas and his own ability to handle it. This confidence was conveyed to the two crew who were encouraged by his attitude. By this time

they were sailing under substantially reduced sail with only part of the foresail set. The engine was running at low speed to provide additional steerage way as the yacht ran down sea. At about 2030 a particularly large breaking sea knocked *Ocean Madam* down to starboard. She righted herself almost immediately but not before some water had entered the cabin through the deck vents. Everything below decks broke loose and the deflated Zodiac dinghy, which was still stowed on the transom, was washed away. Both the skipper, Mr Beggs, who was helming, and Mr Newton, were securely clipped on and the washboards were in place. In the circumstances the skipper insisted that they should wear a second safety harness. Both skipper and crew then had two harnesses; one secured to port and the other to starboard. For the first time, the skipper became very concerned about the conditions. Below deck, Mr Nurse attempted to clean up the cabin and brew something hot to drink. Some time afterwards, at about 2130, a second large breaking wave hit the yacht and inverted her. The capsize was so fast that neither survivor could remember which way she went. Mr Nurse found himself thrown about to end up standing on the deckhead. He recalls seeing water flooding into the cabin.

At this point there is conflicting evidence about what happened regarding the hatch and washboards. The skipper's recollection was that the washboards were held in place by the sliding hatch. The flooding, in the skipper's view, would have taken place when surviving crew below opened the hatch and allowed the washboards to fall out. The surviving crew recalls that the flooding started as soon as the yacht inverted. This suggests that the hatch was at least partly open already and the inversion allowed the washboards to fall out. Whichever version of events is correct, the washboards were not secured to the yacht and once they had fallen out and disappeared, there was no way of preventing additional water entering the main cabin.

The skipper was trapped under the inverted cockpit and managed to hold his breath for several seconds in the expectation that the boat would right itself. When it failed to do so, he unclipped his harness and managed to escape aft. Once clear, and with his head above water, he grabbed the transom-mounted boarding ladder. He saw the propeller running out of control for a few moments before it stopped.

After an undetermined number of seconds upside down, the yacht righted herself allowing the skipper to climb back on board. The surviving crew, Mr Nurse, came on deck having witnessed substantial flooding below. Surveying the scene around them it became obvious that the yacht had been dismasted and that Mr Newton was no longer to be seen.

The timing and sequence of events thereafter are not entirely clear, but certain factors have been established. Mr Newton's shouts from the sea could be heard and concentrated their minds on rescuing him. The liferaft had inflated while the yacht was inverted and was in danger of being swept away. It was pitch dark, very noisy, the engine had stopped and there was a heavy sea running. The skipper was trying to hold onto the liferaft at the after end of the cockpit while Mr Nurse, on his own initiative but in accordance with the safety briefing the skipper states took place, grabbed the EPIRB from the cabin and activated it.

There is conflicting evidence concerning the priorities each survivor attached to the recovery of Mr Newton, but the problems they were facing on board dictated events. The unsecured liferaft demanded their immediate attention and Mr Nurse boarded it in order to make it fast. Shortly afterwards the skipper joined him just seconds before another wave overwhelmed them and parted the liferaft's painter. The dinghy which was carried on board floated clear of the dismasted yacht.

Soon after drifting clear, another wave capsized the liferaft. After attempts to right it failed, the skipper decided to cut through the bottom so they could remain out of the water. This they did, climbed out of the water and remained sitting on the inflated 'hull'. By this time they had lost all contact with the man overboard and their own survival became the overriding priority. They found accessing the contents of the liferaft emergency pack particularly difficult in the prevailing weather conditions.

Several hours were spent trying to keep warm. Flares were set off when they saw what they thought were lights from nearby ships. Some flares did not work.

Meanwhile the EPIRB had functioned correctly and alerted the French Search and Rescue authorities. An air search was launched by the French air sea rescue service at Lanveoc Poulmic, NW Brittany, and focused on the position of the EPIRB.

The two survivors were recovered from the liferaft at 0530 on 9 October. A further search for the missing crewman was made but there was no sign of him. Ray Newton was never found and must be presumed to have drowned but his lifejacket was recovered. The yacht, still afloat and upright, was also located. She was sunk later by the French Navy as a potential hazard to navigation.

1.2 The Yacht

Ocean Madam was a 39ft (11.88m) Beneteau Oceanis 390 sloop fitted out for charter work. She had spent some time in the Mediterranean where she had been based in Malta and was being delivered to the United Kingdom to be sold.

By all accounts she was in good order, well maintained and equipped in all respects for an ocean passage. No conclusions have been drawn from the disintegration of the dan buoy at the start of the passage. There is no indication to suggest this was representative of the state of equipment on board.

The only other known defects were the cruising chute that blew out while running in the western Mediterranean, minor problems with the auto-helm, (although it was working within its designed parameters), and some unquantified but reportedly minor hull damage sustained while berthed alongside in Gibraltar.

The Oceanis 390 is a typical example of a modern high internal volume, beamy, relatively light displacement recreational sailing yacht, very popular with charter

fleets and private owners. It offers plenty of accommodation within a relatively short overall length.

The builders have supplied some stability information for the Oceanis 390 that indicates a point of vanishing stability of 109.37°. This means that beyond that angle of heel the vessel will possess negative stability and continue capsizing until completely inverted. In conditions likely to be encountered by most owners or charterers, this level of stability is quite adequate. If knocked flat the boat will recover, but in steep breaking seas there is a danger that the point of vanishing stability will be passed and the boat will invert. It will only right if further waves affect the boat in such a way that it regains positive stability. If the mast breaks while the yacht is inverted, the negative stability will be reduced and, together with resistance to rolling provided by the mast and any sails which might be rigged, could increase the likelihood of the yacht being righted. The stability data is reproduced at Annex B.

Since the introduction of the European Recreational Craft Directive on 16 June 1998, any new boat has to be provided with a product manual which gives certain stability information. This new directive was introduced after this accident took place and did not apply to a 1989-built craft.

1.3 The Skipper

The skipper, Robert Beggs, was a self employed yachtsman with extensive sailing experience. He held an RYA Yachtmaster Certificate of Competency (Ocean), a commercial endorsement, and was a certificated instructor. He had sailed in many yachts as skipper and had many long distance voyages to his credit including transatlantic crossings. He had crossed the Bay of Biscay previously on five separate occasions. He had also been a reserve skipper in the *BT Global Challenge*.

Mr Beggs satisfied the Inquiry that he was both experienced and competent to skipper *Ocean Madam* on her final voyage.

1.4 The Crew

Both Andrew Nurse and Ray Newton were fit, adventurous young men. Their sailing experience was very limited but, by all accounts, they adapted well to the demands of a passage under sail and were quick to learn. They saw the voyage through the eyes of people who had never been to sea before. Many of the events on the voyage were totally outside their experience, especially sailing in bad weather. They enjoyed the fair weather passage but were less enthusiastic about the rougher conditions. Neither of them suffered from sea sickness. Mr Nurse was not a strong swimmer.

There was a certain amount of normal service banter between the skipper and his crew which in the skipper's view did not create any tensions but this is at odds with Mr Nurse's recollections.

1.5 The Weather

Before sailing from Gibraltar, the skipper obtained several long range forecasts for the passage to the United Kingdom. These indicated fair weather for the early stages of the voyage and deteriorating weather towards the end of the voyage. There was nothing unusual or untoward about these forecasts.

The intended way of obtaining weather information was to listen to the BBC Radio 4 shipping forecasts on long wave once they were in a position to receive them. The skipper thought this would be in the vicinity of Cape Finistere. In the event he put into La Coruña before receiving any broadcast forecasts and was able to sight additional long range forecasts before setting sail again. There is no evidence to indicate he received the most up to date one before leaving La Coruña but the skipper was aware that strong winds had been forecast. The crew expressed their fears about the skipper's plans to leave despite the forecast and the situation was discussed between them.

The first BBC forecasts were picked up on the first night at sea after leaving La Coruña. Annex A is a transcript of all the Radio 4 broadcasts made between 1350 on 7 October when *Ocean Madam* sailed from La Coruña and the morning following her capsizing.

The highest forecast winds were force 9 which is classified as a strong or severe gale, with wind speeds of between 41 and 47 knots. The deep sea criteria states this to be "High waves, dense streaks of foam, crests roll over". These are testing conditions for a small craft and potentially dangerous.

The *Admiralty Sailing Directions* for the Bay of Biscay state that "Sea waves generated by the wind are much more variable in direction but the heaviest seas are from between SW and NW." The *Directions* also say that "..... depressions commonly develop into large scale features spanning several hundred miles with gale and even storm force winds in their circulation."

Accumulated experience, which is very well documented, indicates that the greatest danger to small vessels in high sea states is the breaking wave. Most experienced yachtsmen are also aware of the conditions likely to be encountered in bad weather when sailing in the vicinity of the continental shelf rise. The bad sea conditions tend to be accentuated.

1.6 Life Saving Apparatus

- Crewsaver Crewfit 150N lifejackets (no crotch straps)
- Conventional safety harnesses
- Self-inflating liferaft. (The liferaft's manufacturer has not been established)
- Line throwing apparatus
- Horseshoe lifebuoys with automatic flashing floating lights attached

Dan buoy (damaged and non-functional)
Emergency Position Indicator Radio Beacon (EPIRB)

The defective dan buoy was not replaced in Gibraltar.

The safety harnesses functioned as designed. The skipper unclipped himself when inverted. It is not known how Mr Newton became detached but it is probable he, too, unclipped himself while underwater.

The self-inflating liferaft performed as designed and inflated while the yacht was inverted. In the event this caused nearly all the post-capsize problems, as both skipper and surviving crew attempted to secure it before they could realistically attend to anything else. Once it became detached from the yacht with the two survivors on board, it was found to be vulnerable to the effects of the breaking seas. Despite ballast pouches the liferaft seemed to capsize easily.

The EPIRB carried onboard was not registered for *Ocean Madam* but to a previous boat sailed by Mr Beggs in 1994, the 26' (7.9m) catamaran *Clarke's Active Air*.

1.7 Watchkeeping Routines

Malta to Gibraltar:

Two hours on - two hours off for the crew, with the skipper available at all times.

Gibraltar to La Coruña and to the time of the accident

The skipper said that he changed the watchkeeping routine at La Coruña to two hours on, four hours off, with himself standing watches, but also making himself available at all times to help the other two. However, the surviving crew member recalls changing at Gibraltar to four hours on, four hours off, four hours on, six hours off, six hours on.

1.8 The Search and Rescue

The EPIRB transmission was detected at 2149 and identified as coming from the UK yacht *Clarke's Active Air* in position 46° 48'N 06° 37W. Details were passed to the French Authorities for them to co-ordinate the search and rescue. MRCC Etel co-ordinated the search and rescue operation.

HM Coastguard's EPIRB register held no record of a EPIRB registered to *Ocean Madam*. Mr Beggs was unsure when his wife had sent the new details to the Coastguard but it has been established that there is no record of the details having been received by them prior to the accident.

This discrepancy did not delay the search and rescue operation. The liferaft was detected by a fixed wing aircraft in the vicinity of the position given by the EPIRB

and the two survivors were subsequently, and successfully, winched to safety by a French SAR helicopter. Although a search was made for the missing crewman, only a lifejacket was found and recovered.

During the time the survivors were in the liferaft waiting to be rescued, attempts were made to set off flares to attract attention. Several failed to function.

SECTION II - ANALYSIS

The Inquiry set out to establish why a well-found yacht, in charge of an experienced skipper, capsized in rough seas.

A feature of this investigation was the extent of conflicting evidence given by the two survivors. Where this conflict has a possible bearing on the final conclusions of the investigation, the different versions of events are recorded. At other times the MAIB has formed a view about what probably occurred.

2.1 The Yacht

Ocean Madam was a production Beneteau Oceanis 390 yacht. The class is typical of its type with a high volume, low ballast ratio, light displacement and shallow hull form. It is highly suitable for most activities including charter work and has a good safety record. It is not a suitable craft for crossing oceans in bad weather.

Such craft are more susceptible to the effects of oceanic weather conditions and especially to heavy seas. No stability information about the yacht was held in board. Indeed at the time of purchase such information was only made available by the builders to owners on request. There is no evidence to suggest the craft was unsuitable for moderately rough weather conditions nor is it suggested there should be any restrictions imposed. The lack of this information about the yacht's stability, including a GZ curve, denied the skipper any opportunity to scrutinise the possible implications of handling such a yacht in a very high sea state. The limitations of this type of light displacement craft are, however, well known to experienced blue water sailors.

Following a request from MAIB, the builders, Beneteau provided a GZ curve which is reproduced in Annex B together with the table of values from which it is derived. It is a partial curve because it ends at 120°. It is not possible, therefore, to judge the yacht's predicted characteristics when fully inverted. A static capsizing angle of 109.37° is given by the yacht's designers (although they explained that this is a theoretical calculation for the hull only - an improvement of about 5° is thought likely when the deck and coach roof are calculated in, although they had not done this for the Oceanis 390). This means that once the angle of the yacht has gone beyond that value, it will continue capsizing until fully inverted. The yacht will only be righted by the actions of the crew and/or the sea.

Mr Beggs was not only familiar with *Ocean Madam*, having sailed in her before, but he had extensive experience sailing a variety of craft in high sea states. He was totally confident of his ability, and that of the yacht, to survive the anticipated sea conditions. Before sailing from La Coruña he had calculated there was at least a possibility they might be knocked down and had briefed his crew on the actions they should take should this unlikely event occur. They were told to remain clipped on in the confident expectation that the yacht would right itself almost immediately. Such confidence was misplaced.

The Inquiry concludes that any yacht is vulnerable in high sea states but such vulnerability is more pronounced in a high volume, light displacement craft such as a Beneteau Oceanis 390. The lack of any stability data to those responsible for planning the passage, contributed to a failure to assess the risks of the final voyage.

2.2 The Voyage

The purpose of the voyage was to deliver *Ocean Madam* to Plymouth, UK, so she could be sold at the end of a season's charter work in the Mediterranean. There were no time constraints on the voyage. The skipper had one future commitment to meet but, although his crew felt that this was dictating his desire to get back as quickly as possible, there is no direct evidence to support this view. Yacht delivery voyages are normally made with as few port calls as possible. They are also often made with a small crew.

2.3 The Skipper

Mr Beggs was an experienced skipper. Although there was conflicting evidence, the Inquiry assessed he discharged his professional responsibilities satisfactorily. Many of the actions he took, especially during the final 24 hours of the voyage, reflected an in-depth knowledge of handling small vessels in rough seas. In many ways the yacht was reasonably well prepared for rough weather. Minimal sail was set, the engine was running and he insisted that everyone on deck was properly clipped on. In the view of this investigation, his failure to wear a lifejacket himself, in what had become survival conditions, did not set a good example.

He approached the voyage as a routine passage and saw any challenges as part of a way of life to which he had become accustomed. He promoted an open learning environment for the benefit of his two novice crew but there is conflicting evidence as to how effectively this worked in practice.

The different watchkeeping routines set by the skipper did not have a bearing on the final events but his decision not to participate in watchkeeping was, in the opinion of Mr Nurse, a source of crew irritation. Watchkeeping arrangements must always be a matter for the skipper but, on this voyage, a greater sharing of the responsibility might have produced a more harmonious relationship and ensured that everyone had sufficient rest.

He believed his relationship with his crew was satisfactory.

The most crucial decision he made on the entire voyage was to sail from La Coruña with bad weather forecast. This is addressed separately.

2.4 The Crew

Neither crew members were experienced sailors. They were, however, fit, adventurous, willing to learn and able. By all accounts they settled in quickly to life onboard *Ocean Madam* and between them they soon acquired the basic skills of sailing and living on board a yacht.

There is evidence to indicate that relations between skipper and crew were less than harmonious due in part to the crew's resentment that the skipper did not share in the watchkeeping although, as already mentioned, there is conflicting evidence for this. However, both crew members were encouraged in the early stages of the voyage by the skipper's attitude to handling the yacht in rough weather.

The difference in approach by an experienced skipper and novice crew were factors in the lead up to the accident. Any breakdown in relations between a skipper and crew can reduce the effectiveness of a yacht's performance. Although in the opinion of Mr Nurse, this was an underlying feature in the conduct of the voyage, it did not materially contribute to the eventual disaster. Many aspects of the voyage that appeared totally normal to the skipper, were seen very differently by the crew.

2.5 The Decision to Sail from La Coruña

The decision to sail from La Coruña lay entirely with the skipper. He considered the time available for completing the voyage, the forecast weather, the state of his boat and the competence of his crew.

Weather forecasts were obtained prior to sailing which indicated an expected deterioration in the conditions, and eventual gale force winds in the Bay of Biscay. His scrutiny of the forecasts was adequate but did not appear to involve an inspection of the latest forecast available or any in-depth analysis of the synopsis. With the onset of autumn, the skipper felt that any delay in sailing would lead to an encounter with even worse weather. He saw the forthcoming passage as likely to provide "a good sail" and well within his capability to handle. He planned to monitor the BBC Radio 4 shipping forecasts once at sea. He expected rough weather.

There is no evidence to indicate the skipper considered the alternative voyage plan which was to disregard the rhumb line track to the English Channel but to head seaward with shortened sail on a reach and keep well clear of the potential dangers of sailing close to the continental shelf rise and associated rough seas.

The skipper was confident his boat would complete the voyage safely although he did recognise that knock-down was a possibility; he briefed the crew on the actions they should take should it occur. His briefing indicated his acceptance that risks were present but his confidence was based on the assumption that in the event of a knock-down the yacht would return to an even keel. He equally assumed that if she rolled over the same criteria would apply. Without detailed stability information available to him, he made assumptions that were over optimistic.

The skipper took account of the crew. He felt they were coping well and had already acquired sufficient skills to handle any situation they were likely to encounter. He had not considered that very bad weather would be totally outside their experience, or that strained relations and fear might affect their performance. He felt they were well rested although it is difficult to see how he arrived at this judgement with the watchkeeping arrangements in force and the expected weather conditions.

Rough seas were expected but the skipper thought the worst of the bad weather would have passed by the time he was in the Bay. He did not anticipate a force 9 severe gale. The decision to sail was marginal.

2.6 The Bay of Biscay

Having decided to sail, the skipper found himself in a position familiar to all yacht skippers planning a long passage in heavy weather. He was expecting rough weather and had to make sure his boat, crew and himself were in the best possible shape to confront it.

The skipper's general preparations for heavy weather were adequate and *Ocean Madam* was already well tested. She had been refuelled, had sails and rig that were capable of meeting the demands likely to be placed on them. She carried sufficient life saving equipment (other than a dan buoy) to meet most eventualities. Despite anticipating a knock-down he took no emergency precautions to ensure the washboards would be held in place, other than to recognise that the sliding hatch needed to be kept shut in order to maintain the integrity of the companionway opening. The washboard/hatch arrangement was 'as delivered' by the yacht's builders.

It is worth noting that the Offshore Racing Council Special Regulations that would cover this type of yacht if it were involved in any form of offshore racing, including that conducted in more sheltered waters than the Bay of Biscay, specifies that the washboards must be able to be secured in place independently, and not therefore rely on being held in place by the sliding hatch. Under these regulations the washboards must also be secured to the yacht by a lanyard. These arrangements would normally have to be made by a yacht's owner following delivery.

The fall back positions available to a skipper if conditions become too bad are to hove to, lie a-hull, run downwind with warps streamed, or to deploy a drogue or sea anchor to slow her down and provide directional stability. Heaving to in breaking seas is not easy and involves coming head to wind and asking much of the sails. Lying a-hull carries an element of risk; breaking seas are still capable of rolling a yacht over. *Ocean Madam* was not carrying any form of drogue but warps were available. The skipper's decisions were influenced by what appeared to him to be the lack of consistency in the direction of breaking waves.

The BBC shipping forecasts became the main source of weather information but the skipper did not listen to them personally and relied on the relevant details being passed to him by one of the crew. It seems that in the relaying of the details, some information may have been omitted or distorted and this may have given him a false impression of the forecast weather during the day preceding the final knock-down. The skipper was surprised to find the seas were much shorter than the long swell he had anticipated. A short breaking sea is among the most dangerous.

On the evening of the two knock-downs the sea height was in excess of 8 metres and the wind was blowing a steady force 9. The skipper said the south-westerly sea was confused, with the occasional wave approaching from the east. The proximity of the edge of the continental shelf (some 40 miles to the east of where the accident occurred) and its effect on the sea state, is not fully understood, but the Bay of Biscay is known for producing seas which can destroy small vessels.

A yacht's safety in such conditions will be affected by the skill of the helmsman in anticipating the motion of the sea. Mr Beggs was sufficiently experienced to feel its effect and therefore able to take correcting action in good time. He had also taken the precaution of running his engine in gear to provide greater directional stability. The two knock-downs were nearly an hour apart and were very rapid. The second occurring so quickly that neither survivor had any recollection as to which way she went. She almost certainly capsized to starboard.

Because the washboards became dislodged at the time of, or shortly after the capsize, there was substantial flooding of the accommodation.

The stability characteristics of yachts of *Ocean Madam's* type mean that once inverted in very rough conditions they are likely to remain so for some time until another sea forces them upright again. *Ocean Madam's* skipper believed his yacht would right itself quickly. He was wrong.

The liferaft was not fitted with a hydrostatic release unit and was probably torn from its deck mountings by the force of the seas. Liferafts secured in exposed positions are liable to be washed off in very high seas unless very well lashed down. Problems can, however, arise when trying to break free a well lashed down liferaft when required for use in a hurry.

Once the yacht had righted itself, the inflated liferaft became a major distraction and nuisance. It interfered with any hopes the survivors had of recovering the man in the water. The skipper's intention was to recover the man overboard just as soon as the liferaft had been secured, but a further delay materialised; the skipper had to don his lifejacket. There was no prospect of using the dinghy secured aft; it had been swept away in the first knockdown.

The two survivors gave very different accounts of what actually occurred in the minutes following the knock-down and no attempt is made to arbitrate between the two, but the very basic details have been established.

As a general rule it is unwise to board a liferaft unless the yacht is in the process of sinking or is on fire. However, in the extreme prevailing conditions on this occasion neither skipper nor surviving crew member were able to predict what was going to happen next but felt that securing the liferaft was an essential pre-requisite to doing anything else.

Although the skipper realised that remaining on board was the safest option, it was felt that the most effective way of securing the flailing liferaft was to board it. Both men climbed in but, before it was possible to secure it properly, a breaking sea broke the painter and carried them clear of the damaged yacht. Within seconds they were 20 to 30 feet from the dismasted hull and drifting away rapidly. Any realistic prospect of rescuing the man in the water vanished from that moment onwards.

2.7 The Deceased

Immediately before the accident occurred the missing member of the crew was properly clothed and equipped. He was wearing a lifejacket and a safety harness and was clipped on. He had been briefed to hold his breath and wait for the yacht to come upright in the event of a knockdown.

How he became detached from the yacht will never be known, but it is probable he found himself trapped beneath the inverted hull and unable to breathe. Like the skipper he probably unclipped his safety harness and made his way to the surface. Unlike the skipper he was unable to hold onto anything and started to call for help. These were heard by his colleagues once they had regained the cockpit of the now upright yacht. They realised he was probably close by but in the dark, noise and confusion, they were unable to locate him. He was never seen again. His lifejacket was retrieved by air-sea rescue helicopter the next day, still inflated and undamaged. It must be supposed that, without a crotch strap, it slid off Mr Newton's body when he succumbed to hypothermia or was drowned.

The sea temperature would not have been excessively low, probably around 15°C, but without a suitable garment to provide adequate insulation such as a survival suit, no-one in this situation could be expected to survive for longer than six hours and probably much less. In practice, breaking waves can have a devastating effect on people in the water and drowning is as much a likely cause of death as the cold. The precise cause of Mr Newton's death cannot be determined.

It is very unlikely that once Mr Newton became detached from the yacht, much could have been done for him in the dark and very high sea state. Although he could still be heard, locating him by sound alone would have been extraordinarily difficult. In this case both survivors were very heavily involved coping with other events in the immediate aftermath of the knock-down. These included a dismasting, breaking seas, total darkness and shock.

2.8 The EPIRB

The immediate activation of the EPIRB by Mr Nurse probably saved the lives of the two survivors. The events surrounding the boarding of the liferaft meant that had its activation been left any later it may never have been used at all. Its registration to another yacht was unfortunate but had no adverse effect on the outcome of the search and rescue.

2.9 Survival

Because few people ever have cause to take to a liferaft in high sea states, the Inquiry sought to establish what lessons might be learned. The survivors reported several unexpected difficulties and most especially the ease with which the liferaft capsized. The skipper had attended a survival course and had cause to be grateful for having done so. He knew how to right the liferaft but, because there was no lifeline on the underside, he had no means of pulling it upright against the weight of sea water. He also became frustrated by the seemingly ineffectiveness of the water ballast pouches which did not provide the necessary stability.

Although much of their time was spent in an inverted liferaft, several observations can be made about the problems they encountered. The two survivors experienced immense difficulties with the design and contents of the emergency pack. Finding the things they required was frustrated by its long thin shape. Everything they needed was at the far end of the bag and groping for them became extremely difficult. Attempts to insert batteries into the torch proved equally complicated. It became obvious that many very simple tasks become almost impossible in the confines of a small liferaft being tossed around in a severe gale.

The reasons why some flares failed to function has not been established.

2.10 Search and Rescue

The French search and rescue authorities responded well to the alert generated by the EPIRB. The fixed wing search aircraft located the survivors without undue delay, but the survivors were unable to determine whether they had been seen. Despite the aircraft's flight pattern in the vicinity of the liferaft, neither survivor was confident that they had been observed. This did little to improve morale.

The French Naval helicopter rescued the survivors without too much difficulty.

The search for the missing crew member was unsuccessful.

SECTION III - CONCLUSIONS

3.1 Findings

1. The loss of Mr Ray Newton's life was a direct result of the capsizing of *Ocean Madam* on 8 October 1997.
2. The yacht was suitably equipped for the voyage but the dan buoy became defective early in the voyage and was never repaired.
3. The Oceanis 390 is a safe, comfortable, yacht suitable for pleasure sailing and charter work. Her lightweight design, however, together with her stability characteristics, introduce a high risk factor in the type of extreme sea-state conditions encountered by *Ocean Madam*. The yacht is not designed for crossing oceans in bad weather.
4. No stability data for the Oceanis 390 class was available to the skipper as this was not included in the yacht's papers.
5. The skipper was sufficiently competent and had the necessary experience to handle *Ocean Madam* in heavy weather.
6. The two crew members were inexperienced and were making their first long ocean passage in a sailing vessel. Although they had settled in well much of what occurred was outside their previous experience.
7. The decision to sail from La Coruña was marginal.
8. The forecast weather condition for sea area Biscay on 8 October were known to the skipper and was south-west 6-8 perhaps severe gale 9. Breaking waves are associated with these wind strengths.
9. The measures taken prior to the capsizing were, in the circumstances, reasonable, except that little allowance was made for the inexperience of the crew or their admission of fear.
10. The washboards were not properly secured to the yacht.
11. The crew member who lost his life was wearing a lifejacket and was properly clipped on immediately before the second knockdown.
12. *Ocean Madam* was knocked down twice; the first to just beyond her beam ends, the second was a roll over. She recovered from the first but took an appreciable time to come upright from the second.
13. The liferaft broke loose from its stowage in the second knock-down and inflated.

14. Mr Newton became detached from his safety harness at some stage while the yacht was inverted.
15. Once Mr Newton had become detached from the yacht, the chances of recovering him were minimal.
16. The skipper was able to climb back on board by the transom ladder.
17. The EPIRB carried by *Ocean Madam* was registered to another yacht. This did not affect the outcome of the search and rescue operation.
18. The French search and rescue authorities were alerted by the EPIRB transmissions.
19. The liferaft capsized with apparent ease in the high seas.
20. The long thin design of the liferaft's emergency pack made it difficult to access.
21. Several flares failed to function.
22. The search and rescue operation was successful in recovering two survivors from the sea but the missing man was never seen again after the second knockdown.

3.2 Conclusions

3.2.1 Immediate Cause

1. The cause of the accident was very heavy weather and breaking seas that rolled *Ocean Madam* over.
2. The precise cause of Mr Newton's death cannot be determined but it is assumed he either drowned, or died from exposure and/or hypothermia.

3.2.2 Contributory Causes and Underlying Factors

1. The inexperience of two of the three people on board.
2. Possible tensions that had been allowed to build up on board between skipper and crew.
3. The lack of any stability information available to the skipper on the Oceanis 390.

4. The skipper's over-optimism about the ability of *Ocean Madam* to withstand heavy weather and breaking waves.
5. The decision to sail from La Coruña with bad weather forecast in a yacht that is not designed for such conditions.
6. The substantial flooding which occurred when the yacht was capsized.

SECTION IV - RECOMMENDATIONS

The Royal Yachting Association is recommended to:

1. remind offshore yachtsmen to ensure washboards are in place whenever bad weather is forecast or encountered, and that they are properly secured to prevent them being lost in the event of a knock-down;
2. inform all small craft owners and skippers to register their EPIRBs with the Maritime and Coastguard Agency and ensure that any changes are kept up to date;
3. remind all holders of commercially endorsed certificates of competence such as Yachtmaster Offshore and Ocean of their responsibility to ensure that vessels on long charter or delivery trips have sufficiently qualified and experienced people on board to undertake the proposed long voyage;
4. alert yachtsmen to the fundamentals of yacht stability so that owners and skippers are better informed to make judgements regarding the suitability of their craft for given weather and sea conditions.

BBC Shipping Forecasts issued by the Met Office. (Extracts)

6 October. Forecast issued at 2358. Broadcast at 0048 on 7 October.

There are warnings of gales in Biscay, Trafalgar and Finisterre

Biscay.

Southwesterly 4 or 5, increasing 7 or gale 8 in north. Showers then rain. Moderate or good.

Finisterre.

West backing south-west 5 or 6, increasing 7 or gale 8 in north. Showers then rain. Good becoming moderate or poor.

7 October. Forecast issued at 0505. Broadcast at 0550.

There are warnings of gales in Biscay and Finisterre.

Biscay.

Southwesterly 4 or 5, increasing 7 or gale 8 in north-west. Showers then rain. Moderate or good.

Finisterre.

West backing 5 or 6, increasing 7 or gale 8 in north. Showers then rain. Good becoming moderate or poor.

7 October. Forecast issued at 1305. Broadcast at 1355.

There are warnings of gales inBiscay, Finisterre

Biscay

Southwesterly 4 or 5, increasing 7 or gale 8 in north-west. Showers, then rain in north. Good becoming moderate or poor in north.

Finisterre.

Southwesterly 5 or 6 increasing 7 or gale 8. Rain at times. Moderate or good becoming poor in north-west.

7 October. Forecast issued at 1700. Broadcast at 1750.

There are warnings of gales in Biscay Finisterre

Biscay.

Southwesterly 4 or 5, increasing 7 or gale 8 in north-west. Rain in north. Good, becoming moderate or poor in north.

Finisterre

Southwesterly 6 to gale 8, perhaps severe gale 9 later in north. Rain in north. Moderate with fog patches in north-west, good in south-east.

7 October. Forecast issued at 2358. Broadcast at 0048 on 8 October.

There are warnings of gales inBiscay Finisterre.....

Biscay.

Southwesterly 4 or 5 in south-east, 6 to gale 8 in north-west. Rain in north. Moderate or poor in north, good in south.

Finisterre

Southwesterly 6 to gale 8, increasing severe gale 9 in north for a time. Rain at times. Moderate with fog patches.

8 October. Forecast issued at 0505. Broadcast at 0550.

There are warnings of gales inBiscay Finisterre.....

Biscay.

Southwesterly 4 or 5 in south east, 6 to gale 8 in north-west. Rain in north-west. Moderate or poor in north-west, good in south-east.

Finisterre.

Southwesterly 6 to gale 8, occasionally severe gale 9 in north. Rain at times. Moderate with fog patches.

8 October. Forecast issued at 1305. Broadcast at 1355.

There are warnings of gales inBiscay Finisterre.....

Biscay Finisterre.

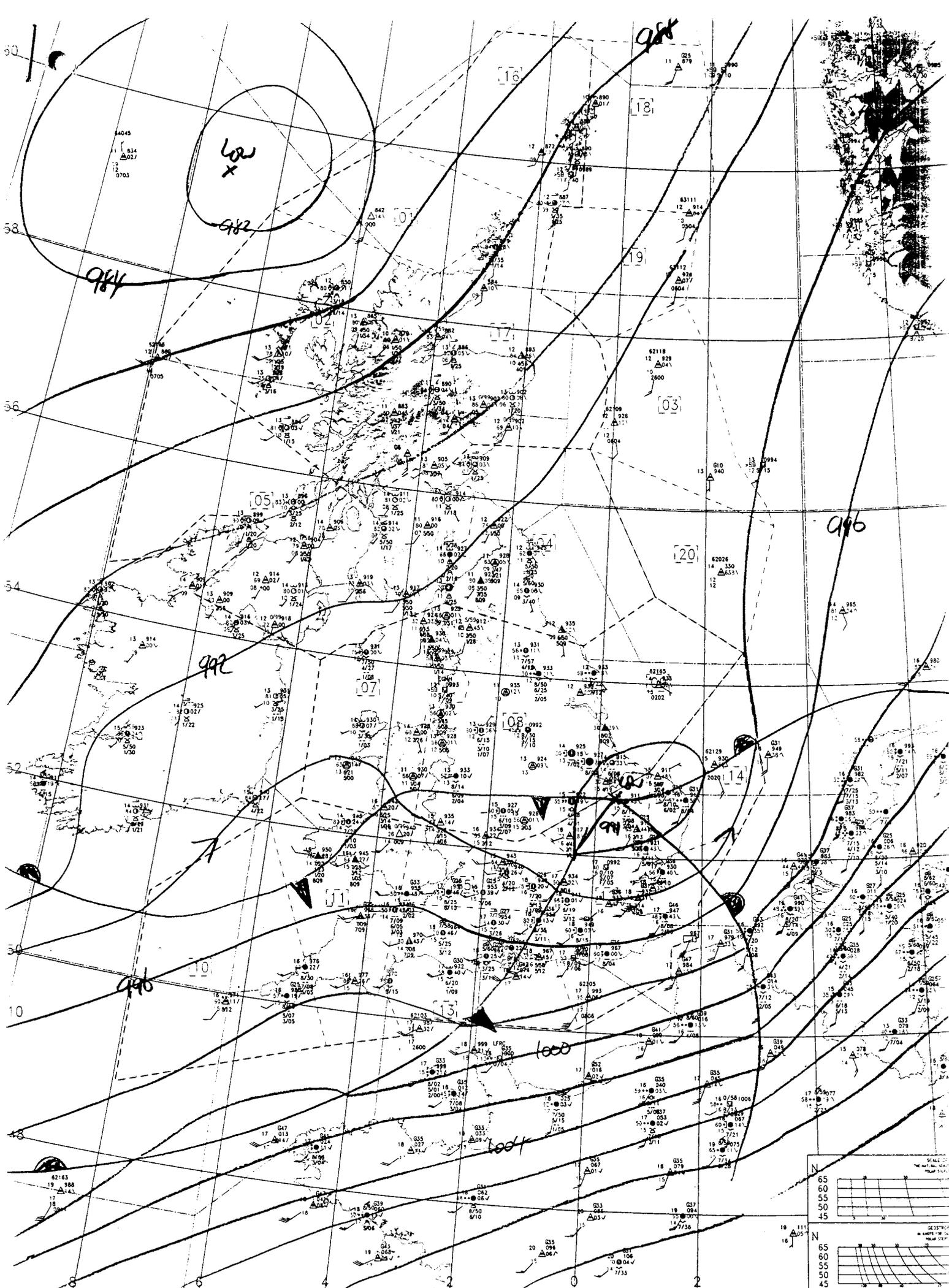
Southwesterly 6 to gale 8 occasionally severe gale 9 at first, locally variable 4 in south-east Biscay. Rain. Moderate or poor, but good in south-east Biscay.

8 October. Forecast issued at 1700. Broadcast at 1750.

There are warnings of gales inBiscay Finisterre.....

Biscay Finisterre.

Southwesterly 7 to severe gale 9, decreasing 5 to 7, locally variable 3 in south-east Biscay. Rain at times. Moderate or poor, but good in south-east Biscay.



available SFLDs plotted

17Z Wednesday 08th Oct 97

Figure 3

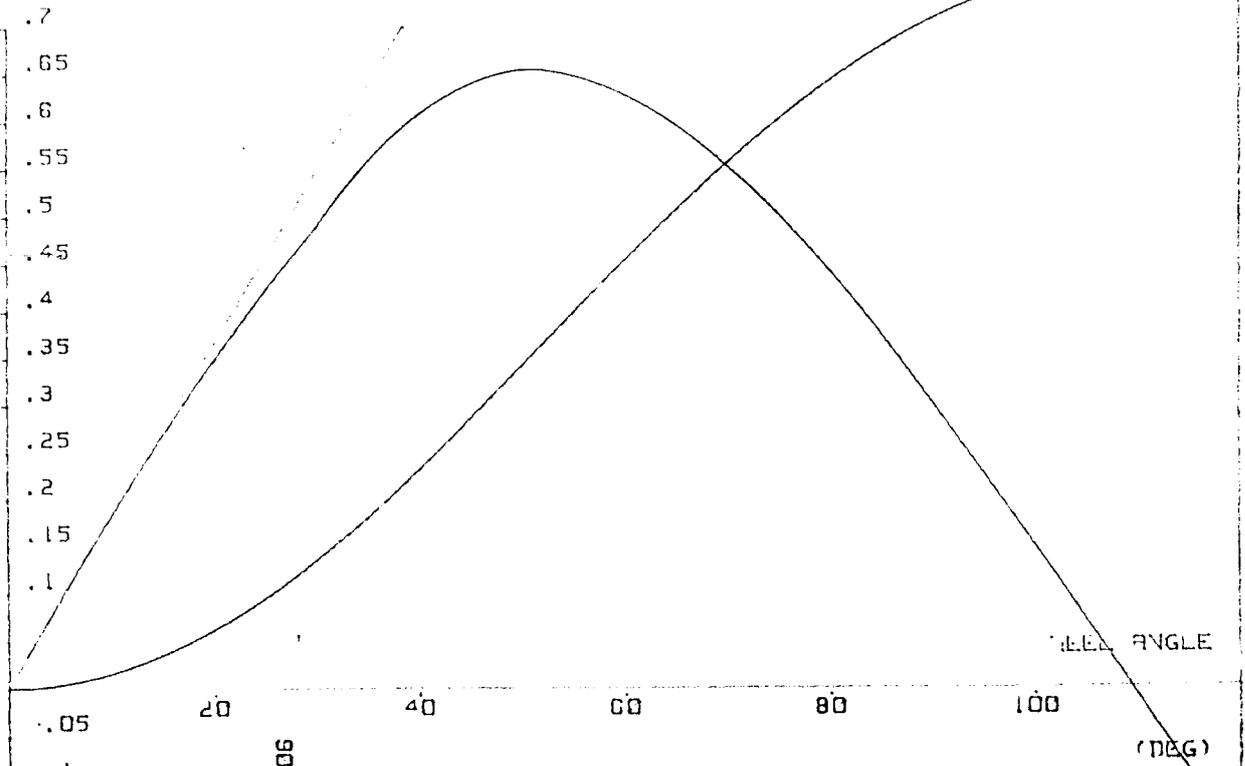


Map of UK shipping forecast areas

Stability Information provided by Beneteau (builders)

AREA (M. RAD.)

GZ (M)



28.06

UPRIGHT CONDITION GM = 1.057 (M)

GZ (30 DEG) = .488 (M)

MAX. GZ VALUE .655 (M) AT HEEL = 51.34 (DEG)

AREA (30 DEG) = .134 (M. RAD)

AREA (40 DEG) = .23 (M. RAD)

AREA (30--40 DEG) = .095 (M. RAD)

PHILIPPE BRIAND / CIRCE 3D 340 CBT
 JM SEINLARY 11 Jun 1991
 BEN 37.1 at 20:49:50

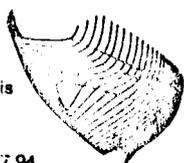
INTACT STABILITY

OCEANIS 390
 OCEANIS 390

PHILIPPE BRIAND YACHT DESIGN

41 Avenue Marillac - La Ville en Bois
 17000 LA ROCHELLE (FRANCE)

Tél. : (33) 48 50 57 44 - Fax : (33) 48 50 57 94



OCEANIS 390
 Courbe de stabilité estimée

 PHILIPPE BRIAND YACHT DESIGN
 dmy 11 Jun 1991 10:46:44
 STABILITY PROGRAMS FORMS GEN 37.1

 CALCULATION OF INERT STABILITY

SHIP OCEANIS 390
 FORMS GEN 37.1 CIRCE 30 340 CBTI

1. LENGTHS IN METERS. TONS OF 1000 KG. DENSITY OF WATER 1.025
2. DISTANCES INCREASE FROM APP TO FPP
3. BASELINE ON THE TOP OF KEEL LINE
4. CALCULATION WITH VARIABLE TRIM

CONDITION OCEANIS 390

ADR= 0 FDR=-1.004 **OPT= 7.24** **XG= 5.33** **YG= 0** **ZG= .25**

Enfoncement.

Metacenter.

Position centre de gravité

OCEANIS 390

GMO= 1.057

PHI	ADR	FDR	XB	YB	ZB	KN	BZ	AREA
	<i>E</i>		<i>origine flottaison.</i>				<i>bras de levier</i>	<i>Surface</i>
000.0	00.000	-00.003	005.330	-0.000	-0.223	00.000	-00.000	00.0000
010.0	-00.032	-00.007	005.331	00.264	-0.200	00.225	00.182	00.0158
020.0	-00.133	-00.021	005.336	00.508	-0.134	00.432	00.346	00.0619
030.0	-00.311	-00.054	005.344	00.727	-0.032	00.613	00.488	00.1348
040.0	-00.592	-00.123	005.354	00.918	00.101	00.768	00.608	00.2304
050.0	-01.005	-00.243	005.367	01.045	00.228	00.846	00.654	00.3405
060.0	-01.652	-00.449	005.382	01.116	00.330	00.844	00.627	00.4524
070.0	-02.901	-00.851	005.398	01.155	00.416	00.786	00.551	00.5552
080.0	-06.461	-02.132	005.409	01.175	00.490	00.687	00.441	00.6417
090.0	99.999	99.999	005.416	01.180	00.553	00.553	00.303	00.7066
100.0	07.354	03.035	005.416	01.175	00.610	00.396	00.150	00.7461
110.0	03.785	01.780	005.410	01.162	00.662	00.225	-00.010	00.7584
120.0	02.552	01.369	005.398	01.139	00.711	00.046	-00.170	00.7426

STATIC CAPSIZING ANGLE 109.37

MAX BZ VALUE .655 AT PHI= 51.34

LIMIT ANGLE OF DYNAMIC STABILITY 78.06

Oceanis 390

courbe de stabilité estimée.

PHILIPPE BRIAND YACHT DESIGN

41 Avenue Marillac - La Ville en Bois
 17000 LA ROCHELLE (FRANCE)
 Tél. : (33) 46 50 57 44 - Fax : (33) 46 50 57 01

