ACCIDENT REPORT

Report on the investigation of

the fatal man overboard from the

ocean rowing boat

# *Toby Wallace*

North Atlantic Ocean

14 February 2016


MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

VERY SERIOUS MARINE CASUALTY REPORT NO 2/2017 FEBRUARY 2017

**Extract from**

**The United Kingdom Merchant Shipping**

**(Accident Reporting and Investigation)**

**Regulations 2012 – Regulation 5:**

*"The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."*

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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**FIGURES**

## GLOSSARY OF ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| AIS | - | Automatic Identification System |
| EPIRB | - | Emergency Position-Indicating Radio Beacon |
| GPS | - | Global Positioning System |
| kt | - | knot |
| m | - | metre |
| MGN | - | Marine Guidance Note |
| MHz | - | megahertz |
| mm | - | millimetre |
| MRCC | - | Maritime Rescue Co-ordination Centre |
| nm | - | nautical mile |
| PLB | - | Personal Locator Beacon |
| RYA | - | Royal Yachting Association |
| SAR | - | Search and Rescue |
| UTC | - | Universal Time Co-ordinated |
| VHF | - | Very High Frequency |

**TIMES:** all times used in this report are UTC (-1) unless otherwise stated

# SYNOPSIS

On 14 February 2016, the 10.8m ocean rowing boat *Toby Wallace* was on passage in the North Atlantic Ocean, between the Canary Islands and Barbados. Shortly after 2300, a rower was swept overboard by a large wave and he soon became separated from the boat. The seven rowers remaining on board were unable to stop the boat, and they eventually lost sight of him.

The following day, French and Portuguese fixed wing aircraft and the Bahamas registered cargo ship *Sea Pearl* searched the area, but the missing rower was not found. *Toby Wallace*'s crew were recovered on board *Sea Pearl*, leaving the abandoned rowing boat to drift. *Sea Pearl* arrived in Macapa, Brazil, 6 days later.

The investigation identified that:

- The rower had not been adequately tethered to the boat.
- The boat's low gunnels[1] afforded little protection against a person falling overboard.
- The rower became separated from the boat because the leash he was wearing detached from his ankle and the boat could not be stopped in the prevailing conditions.
- The rower's likelihood of being found was reduced because he was not wearing a lifejacket or a personal locator beacon.
- The boat was operating on a commercial basis but it was not certified as a commercial vessel.

This was the second occasion in 2 days in which rowers in an ocean rowing boat operated by Oceanus Rowing Ltd had been rescued in the North Atlantic Ocean by a passing merchant vessel. Earlier on 14 February 2016, the four crew of the ocean rowing boat *Fire Ant* were rescued by the Liberia registered bulk carrier *Rio Grita* after the boat was damaged in rough seas.

Ocean rowing is a niche sport that has grown in popularity, but the boats used and their operation, is largely unregulated. They are also vulnerable when on ocean passage, where assistance is rarely immediately at hand. Although elements of best practice for the sport have been established over the years, these have not yet been formalised or applied consistently.

Recommendations have been made to British Rowing, the governing body for ocean rowing in England, and to the Maritime and Coastguard Agency that are intended to improve the governance of UK registered ocean rowing boats and ensure minimum safety standards on board those that are commercially operated. A recommendation made to Oceanus Rowing Ltd is aimed at improving the safety of its boats on ocean crossings in the future.

[1] Gunnel/gunwale; upper edge of the boat's sides.

# SECTION 1 - FACTUAL INFORMATION

## 1.1 PARTICULARS OF *TOBY WALLACE* AND ACCIDENT

| | |
|---|---|
| **SHIP PARTICULARS** | |
| Vessel's name | *Toby Wallace* |
| Flag | United Kingdom |
| Classification society | Not applicable |
| IMO number/fishing numbers | Not applicable |
| Type | Ocean Rowing Boat |
| Registered owner | Privately owned |
| Manager(s) | Oceanus Rowing Ltd |
| Construction | Carbon fibre – epoxy resin |
| Year of build | 2011 |
| Length overall | 10.8m |
| Registered length | Not applicable |
| Gross tonnage | Not applicable |
| Minimum safe manning | Not applicable |
| Authorised cargo | Not applicable |
| **VOYAGE PARTICULARS** | |
| Port of departure | Puerto De Mogan, Gran Canaria |
| Port of arrival | Barbados |
| Type of voyage | International |
| Cargo information | Not applicable |
| Manning | 8 |
| **MARINE CASUALTY INFORMATION** | |
| Date and time | 14 February 2016 at 2301 UTC (-1) |
| Type of marine casualty or incident | Very Serious Marine Casualty |
| Location of incident | 18° 28.89N 38° 59.19W |
| Place on board | Open rowing deck |
| Injuries/fatalities | 1 fatality |
| Damage/environmental impact | None |
| Ship operation | On passage |
| Voyage segment | Mid water |
| External & internal environment | Wind east-north-east at Beaufort Force 6; sea state 5 (3m significant wave height); sea temperature 22°C; weather rain |
| Persons on board | 8 |

## 1.2 NARRATIVE

### 1.2.1 Events leading to the man overboard

On 28 January 2016, the 10.8m ocean rowing boat *Toby Wallace* departed from Puerto De Mogan, Gran Canaria for passage to Barbados, West Indies **(Figure 1)**. On board were eight rowers who aimed to complete the voyage in less than 31 days.

*Toby Wallace*'s crew were divided equally into two watches. The skipper was in charge of one watch and the first mate was in charge of the other. The rowers in each watch were allocated one of four rowing positions **(Figure 2)**. The stroke[2] sat furthest aft (position 1). When on watch, the skipper sat immediately behind the stroke (position 2) and the mate sat in the bow seat (position 4).

By 14 February, *Toby Wallace* had made good progress in steady force 4-5 east-north-east trade winds. The boat was making good between 3kts and 4.5kts and was approximately half-way across the North Atlantic Ocean, 1500nm from land.

At 2300, *Toby Wallace* was heading downwind and down sea and was making good a course of 253° at 3.9kts[3].The 'on-watch' crew were seated with their feet secured to footplates with straps. Each of the rowers had a leash attached around their right ankle **(Figure 3)**, the other end of which was secured to a jackstay[4] that ran along the port side of the deck.

As the bow oarsman (position 4) took a planned 3 minute break from rowing, the skipper saw a large wave approaching off the port quarter and shouted "*big wave*"[5] to warn the crew. The wave broke over *Toby Wallace* and swept all of the rowers, apart from the skipper, off their seats. The 'stroke', Mike Johnson, landed on the starboard side of the deck from where he then rolled over the boat's starboard gunnel into the sea. Mike's ankle leash detached and he was quickly separated from *Toby Wallace* as the rowing boat continued to move ahead through the water. The ankle leash was recovered inboard. Mike was wearing oilskins, training shoes and a head torch fitted with a red lamp.

### 1.2.2 Crew actions

The skipper immediately shouted "*man overboard*" and attempted to steer *Toby Wallace* to port in order to position the boat across the wind and sea. He also told the rowers to '*hold water*'[6]. Meanwhile, the off-watch crew in the aft cabin input a man overboard mark in the global positioning system (GPS) plotter and broadcast a "Mayday"[7] via very high frequency (VHF) radio.

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2 The stroke rower sets the stroke rate and rhythm for the rest of the crew to follow.

3 *Toby Wallace*'s position and course, and speed over the ground were periodically transmitted via satellite.

4 In this context 'Jackstay' means a strong line, usually of flat webbing or a wire stay running fore and aft along the sides or a deck of a boat to which a safety harness can be attached.

5 'Big wave' was the recognised verbal warning on board to alert the crew that the boat was about to be swamped.

6 'Hold water' – a command to stop a rowing boat by squaring the oar blades in the water.

7 "Mayday" – the international distress message (spoken).

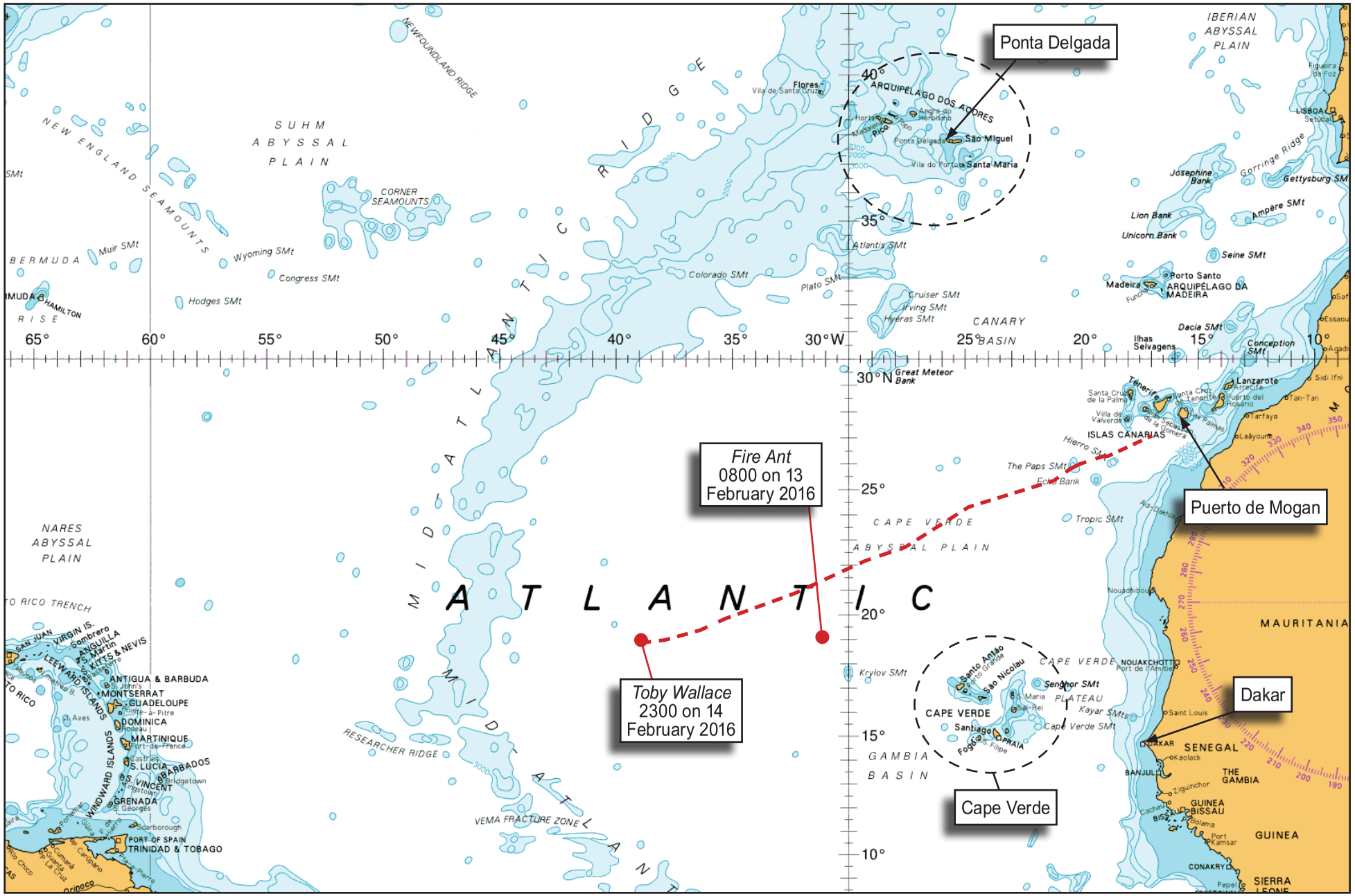


**Figure 1:** *Toby Wallace* – position on 14 February

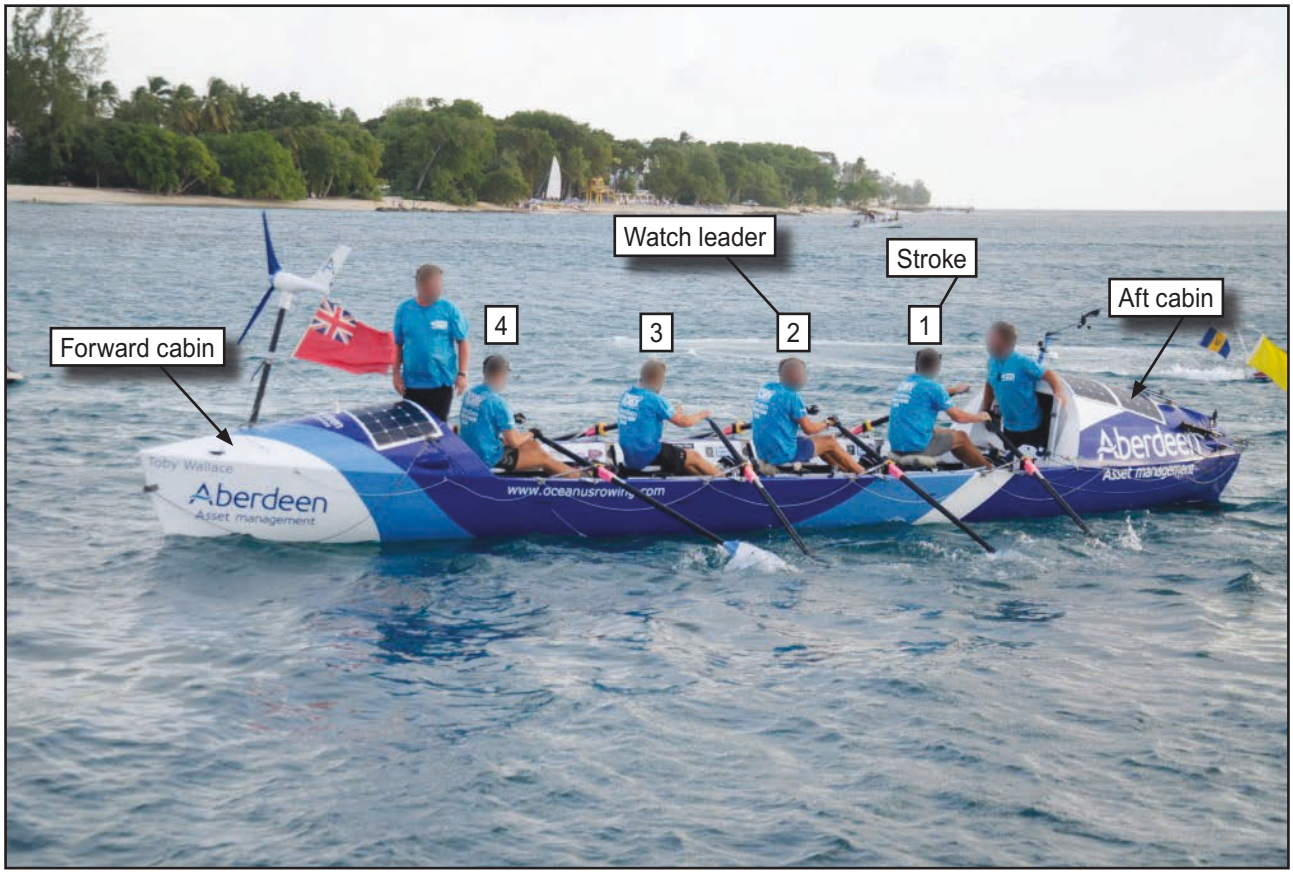


**Figure 2:** Rowing positions

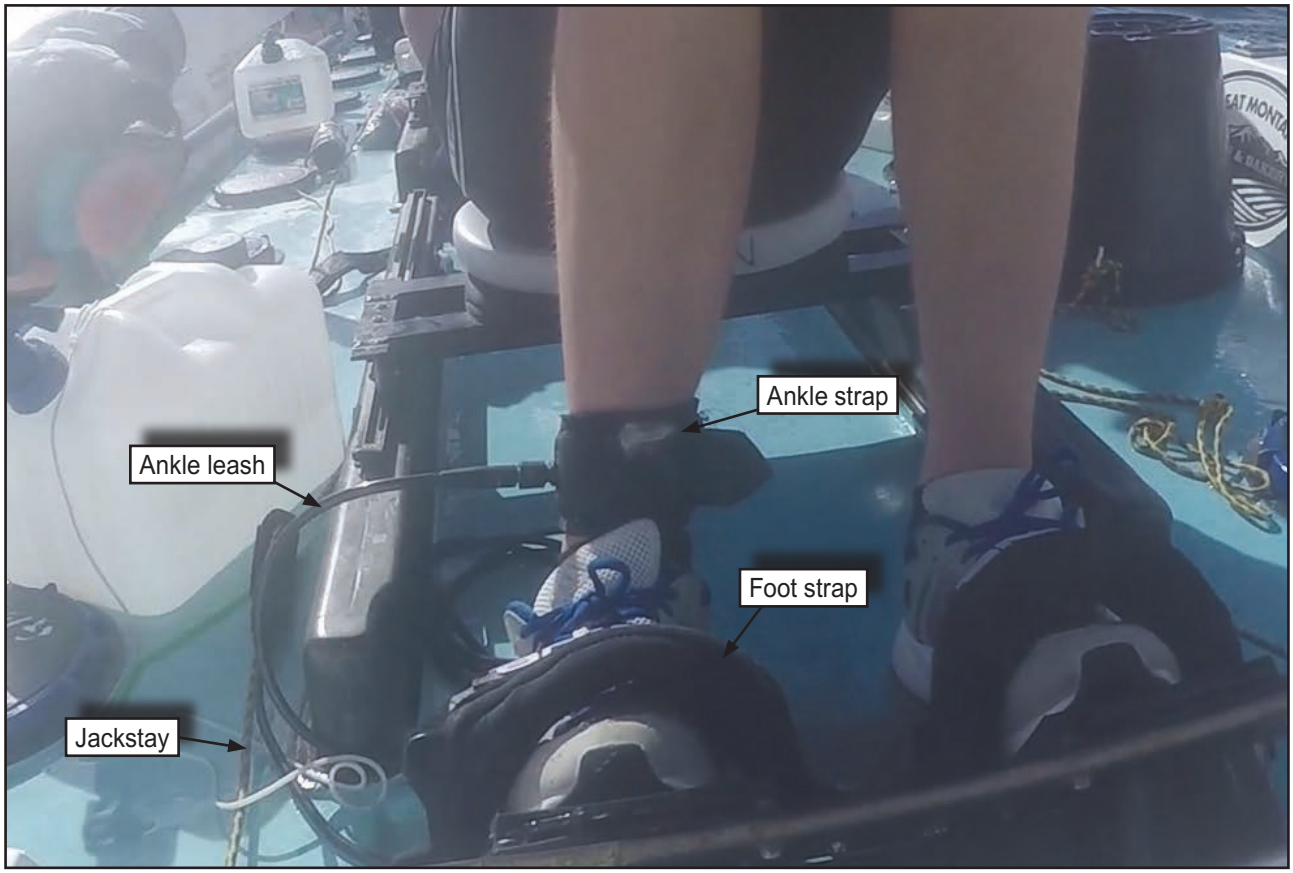


**Figure 3:** Ankle leash and foot straps

*Toby Wallace* was turned across the sea but the crew were unable to row the boat into the wind and they could see that the distance to the red light from Mike's head torch was increasing. To try and stop the boat, a drogue[8] and a parachute anchor[9] were deployed over the port and starboard sides respectively. The parachute anchor soon became detached, so the crew attached various items including the liferaft valise and lifejackets to a line and threw them over the side. Water ballast was also added to some compartments to make the boat heavier.

At approximately 2322, the skipper activated the emergency position-indicating radio beacon (EPIRB)[10]. The EPIRB's distress signal was received by the Maritime Rescue Co-ordination Centre (MRCC) Falmouth, UK, which confirmed the boat's location with the duty officer at Oceanus Rowing Ltd, *Toby Wallace*'s operator. The duty officer also provided MRCC Falmouth with the boat skipper's satellite telephone contact details.

At 0002 the following day, MRCC Falmouth contacted *Toby Wallace*'s skipper via satellite telephone. He advised that the wind was 35kts and that he could not manoeuvre *Toby Wallace* towards the man overboard. He also advised that the boat's AIS receiver was showing no other vessels in the area.

*Toby Wallace*'s crew last saw the red light from Mike's head torch at about 0022. The boat's crew released rocket flares at regular intervals and tied a light on the end of an upright oar to act as a beacon. By 0130, the crew were in a state of shock. Waves continued to break over *Toby Wallace*'s deck and two of the rowers started to suffer from hypothermia. At 0300, *Toby Wallace* was still drifting at a speed of 1.6kts to the west. Eventually, all seven remaining crew took shelter in the forward and aft cabins.

As *Toby Wallace* was in the Portuguese search and rescue (SAR) region, MRCC Falmouth passed responsibility for co-ordination of the incident response to MRCC Ponta Delgada, Azores **(Figure 1)**. MRCC Ponta Delgada arranged for a French Falcon aircraft from Dakar, Senegal, and a Portuguese P3C Orion aircraft from Portugal to search for the missing rower. The Bahamas registered cargo ship *Sea Pearl*, which was about 113nm to the east of *Toby Wallace*, was also diverted.

The Falcon aircraft departed from Dakar at 0550 and, having refuelled in Cape Verde, it was on scene between 1100 and 1230. *Sea Pearl* arrived at about 1230 and the P3C Orion joined the search from about 1430 until 1530, but Mike Johnson was not found.

At 2000, *Toby Wallace*'s crew were recovered on board *Sea Pearl* **(Figures 4** and **5)**, leaving *Toby Wallace* to drift **(Figure 6)**. *Sea Pearl* arrived in Macapa, Brazil, 6 days later. The last transmission received from *Toby Wallace*'s AIS was on 9 May, when the boat was approximately 500 miles north-east of the British Virgin Islands.

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[8] A drogue is a conical shaped bag that is towed astern in order to reduce the speed of advance.

[9] A parachute anchor is typically made of woven material that is shaped like a round parachute and is intended to be deployed over the bow on a bridle arrangement in order to stop a boat head into wind.

[10] EPIRBs alert search and rescue services by transmitting a coded message on the 406MHz distress frequency. Some EPIRBs also have built-in GPS that provide positional information. The EPIRB carried on board *Toby Wallace* was not fitted with a GPS.


**Figure 4:** *Toby Wallace* before abandonment

**Figure 5:** *Toby Wallace*'s crew climbing on board *Sea Pearl*


**Figure 6:** *Toby Wallace* – abandoned and drifting

## 1.3 HINDCAST

A Met Office hindcast report for *Toby Wallace*'s position at the time of the man overboard concluded:

> *All available evidence suggests that Toby Wallace was impacted by a steady east or east-northeast trade wind of force 5 or 6 during the 14th and 15th February 2016. Significant wave height was of approximately 3 metres with a zero upcrossing period of 6 or 7 seconds*[11]*. An 11 second swell of 1.0-1.5 metres was aligned with the direction of wind wave, but crossed by a southeast going swell of approximately 1.0 metres with a peak period of 15 seconds. In addition, this swell train was opposed by a weak northwest going current modelled 0.3 to 0.4 knots. These 'crossing seas' would have made for steeper than normal wave scenario. Maximum individual wave heights, crest to trough would have been double significant wave height within a 6-hour period; 6.6 metres on the 14th and 6.2 metres on the 15th.* [sic]

## 1.4 CREW

### 1.4.1 Skipper

*Toby Wallace*'s skipper was the boat's registered owner. He was 43 years old and a UK national who had completed nine ocean crossings, four of which had been on board *Toby Wallace*. The skipper held a Royal Yachting Association (RYA)

[11] MAIB note. Zero upcrossing period is a method of measuring wave periodicity.

powerboat qualification, and had completed RYA training courses in sea survival, VHF radio and Ocean Yachtmaster theory. He received a payment/salary for skippering *Toby Wallace* on its Atlantic crossing.

*Toby Wallace*'s skipper had been very actively involved in ocean rowing since 1997 and *Toby Wallace* was the last of 64 ocean rowing boats that he had designed and built. In 2003, he established 'Woodvale Events Ltd' and purchased the commercial rights to operate the 'Atlantic Rowing Race'. Between 2004 and 2011, through Woodvale Events Ltd and then Woodvale Challenge Ltd, the skipper operated six ocean rowing races, developed safety rules for ocean racing and negotiated and agreed minimum boat equipment and crew qualification requirements with the Tenerife Port Authority[12]. In 2007, the skipper organised the first 'pay per place' ocean rowing expedition.

### 1.4.2 First mate

The first mate was an experienced ocean rower, having completed four previous Atlantic rowing events. He was 68 years old and had completed RYA training courses in sea survival, first-aid, VHF radio and Ocean Yachtmaster theory. The first mate was a late addition to the crew due to the withdrawal of the intended person for this role. He met *Toby Wallace*'s paying crew in Puerto De Mogan prior to the start of the row.

### 1.4.3 Pay per place crew

The remainder of *Toby Wallace*'s crew comprised UK, French and Zimbabwean nationals aged between 20 and 68. One of the crew was female. None held any maritime qualifications or had completed any recognised maritime training courses but all had sporting and/adventure activity backgrounds. Each was charged £15000 towards the expenses incurred in preparing, equipping and transporting *Toby Wallace* from the UK to Gran Canaria and from Barbados back to the UK. One of the crew had previously had surgery for a percutaneous transluminal coronary angioplasty[13] as well as having a full knee arthroplasty[14]. He was initially incapacitated through seasickness but was then unable to row due to problems with his knees.

The deceased, Mike Johnson, was a 21 year-old Zimbabwean and UK national who had been involved in rowing since 2007 and had competed in a number of junior world rowing championships. His other sporting interests included cross-country running and cycling.

### 1.4.4 Preparation

Between 22 and 23 August 2015, *Toby Wallace*'s skipper and four of the paying crew had rowed together on board the ocean rowing boat *Britannia*, which was similar to *Toby Wallace*, in Colwyn Bay, Wales. All eight members of the crew rowed together on several occasions and practised a man overboard recovery, using a bucket to represent a person in the water, in calm conditions in Puerto De Mogan before setting off for Barbados.

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[12] The Port Authority of Santa Cruz de Tenerife also manages the ports of Santa Cruz La Palma, Los Cristianos, San Sebastian de La Gomera and La Estaca. See also paragraph 1.10.

[13] Surgical treatment to open a narrowed or blocked artery using a wire mesh tube called a "stent".

[14] Replacement of knee joint with an artificial joint.

### 1.4.5 Watch routine

After departing from Gran Canaria on 28 January 2016, *Toby Wallace*'s crew worked a rotating watch routine with each day divided in to 11 periods of between 1 and 4 hours. Watch changes were achieved by the on-going rowers relieving the off-going rowers one at a time. The crew were only able to move about the boat by crawling on their hands and knees. When not on-watch, the stroke and the watch leader rested in the aft cabin and the rowers allocated the forward positions (positions 3 and 4) rested in the forward cabin.

Prior to the accident, Mike Johnson had assisted the skipper in the repair of the boat's water maker when off-watch during 14 February and had not rested for about 8 hours at the time he was lost overboard.

### 1.4.6 Previous man overboard

During the first 2 weeks of the crossing, two of *Toby Wallace*'s paying crew fell overboard on separate occasions while moving on the open deck in daylight. Both crewmen managed to hold onto the boat after falling into the water and were recovered back on board without injury.

## 1.5 BOAT DESIGN AND CONSTRUCTION

*Toby Wallace* was built in 2011 by its skipper. The boat was initially named *Titan*, and was entered on the UK small ships register in 2012 as a pleasure vessel. It was renamed *Toby Wallace* in February 2014 and had successfully completed four Atlantic crossings.

*Toby Wallace* was made from carbon fibre/epoxy resin and was 10.8m in length with a breadth of 1.8m and a draught of 0.45m. The boat was based on an ocean rowing boat design that made it self-righting in the event of capsize. It was also manoeuvrable when steering downwind and it could be steered across the sea without difficulty. However, it is reported that *Toby Wallace* could not be turned or steered into wind in wind speeds above 18kts. Factors influencing the boat's design included the presumed prevalence of capsize as the cause of previous rowing fatalities and the skipper's personal experience of capsize both as a rower and as an ocean race organiser.

*Toby Wallace*'s open deck was self-draining and had four rowing positions, each fitted with an aft-facing sliding seat and a fixed footplate with foot straps **(Figure 3)**. Oars were mounted into rowlocks on the gunnels. In common with the other 63 ocean rowing boats built by Woodvale Events Ltd and Woodvale Challenge Ltd, the height of the gunnels above the deck was approximately 300mm in order to keep the oars relatively level when rowing.

A rudder on the aft transom was controlled via an electronic pilot control system or by lanyards attached to the tiller. Two dagger boards were fitted towards the bow to aid directional stability and manoeuvrability. Electrical power for navigation aids, radios and a water maker was provided by solar panels and a wind generator.

## 1.6 ONBOARD EQUIPMENT

### 1.6.1 General

The equipment carried on board *Toby Wallace*, including lifesaving and safety equipment, was based on detailed lists developed by the boat's owner/skipper when employed by Woodvale Challenge Ltd (see paragraphs 1.7 and 1.8).

### 1.6.2 Lifejackets, tethers and personal locator beacons

Eight manual inflation lifejackets, each fitted with a gas bottle and a lifting becket, were carried on board *Toby Wallace*, four being located in each of the forward and aft cabins. Four tethers that could be attached to the lifejackets were also carried. Neither the lifejackets nor the tethers were routinely used by the crew. The vessel was equipped with an EPIRB, and one personal locator beacon (PLB)[15] was carried on board in an emergency grab bag.

### 1.6.3 Ankle leashes

The ankle leashes were provided on board *Toby Wallace* **(Figure 3)** to prevent the rowers from becoming separated from the boat in the event of capsize. The leashes were approximately 3m in length, which was sufficient to allow the wearer to keep clear of the boat as it self-righted.

The leashes were manufactured from plastic coated cord with straps fitted with Velcro[16]-type hook and loop fastenings at each end. The ankle strap was wider than the strap secured to the jackstay line on the port side of the deck. The jackstay line was made from 10mm Dynema rope (breaking strength 4650kg).

The rowers wore the leashes during the hours of darkness but they were not routinely worn in daylight hours. During the watch change at 2200 on 14 February 2016, the skipper carried out a leash check soon after his watch were seated. Each rower confirmed that their leash was attached to their ankle and to the line running along the deck.

## 1.7 OCEANUS ROWING LTD

Oceanus Rowing Ltd (formerly Woodvale Challenge Ltd) was established in 2015 to provide individuals with the opportunity to participate in ocean rowing. The company was owned by an experienced ocean rower who was the wife of *Toby Wallace*'s skipper. The boats operated by the company were registered as privately owned, but they were also listed among its financial assets. During ocean crossings, the company employed a duty officer who was responsible for monitoring the boats' progress, acting as a point of contact and managing social media and publicity.

The company's website included:

> *Oceanus Rowing provides individuals from a wide variety of ages, abilities and backgrounds with the chance to row an ocean.*

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[15] A PLB is a waterproof and buoyant personal safety device designed to enable SAR services to quickly locate an individual in an emergency. When activated, a PLB transmits a coded message, which includes positional information on the 406MHz distress frequency.

[16] Velcro is a registered trademark.

*We have a fleet of specifically designed ocean rowing boats to offer a unique experience for prospective ocean rowers on-board one of our incredible boats.*

*Rowers can apply for places and pay a single fee on a Pay-Per-Place basis, which covers all your costs to do an ocean row (excludes flights & port accommodations, which we can help with discounted rates).*

*It is an ideal solution for adventurous people who may be unable to devote the time or be able to run their own ocean rowing campaign – it is a cost effective, fun and exciting way to do an ocean row with an outstanding, knowledgeable and experienced professional skipper to give you a one off experience!*

*So join us today – be involved at the cutting edge of ocean rowing with the added incentive of having an adventure of a lifetime rowing an ocean!*

*Ocean rowing is a dangerous sport…and that he/she undertakes the challenge at his/her own risk.*

When assessing applicants' suitability to complete an ocean crossing, Oceanus Rowing Ltd took into account their sporting background, sense of adventure, previous rowing experience and their ability to work in a team in confined conditions over a prolonged period of time.

## 1.8 OCEAN ROWING

Ocean rowing is a growing endurance sport that combines physical and mental stamina with technical expertise. The sport has flourished since the first modern races in the 1990's, although it attracts fewer participants than other physical challenges such as polar expeditions. To date, fewer than 650 successful ocean crossings have been recorded[17].

Prospective ocean rowers are able to participate in the sport by purchasing a boat, assembling a crew and deciding when and where to travel from and to. Alternatively, they are able to pay for a place on board a boat operated by an ocean rowing company, or they can participate in an organised event or race.

The first trans-Atlantic rowing race was held in 1997. Since then, races have been held on a regular basis. Between 2003 and 2012, the rights to organise an annual sponsored race across the Atlantic Ocean were owned by Woodvale Challenge Ltd. Since then, the race has been organised by Atlantic Campaigns SL, based in Spain and has been named the 'Atlantic Challenge'.

## 1.9 ATLANTIC CHALLENGE RACE RULES

The Atlantic Challenge race starts from La Gomera, Tenerife, and finishes in Antigua, West Indies. The rules that have been adopted by Atlantic Campaigns SL include, *inter alia*, crew qualification and training requirements and requirements for boat survey, boat registration, boat stability data, and equipment. The current rules were based on those initially developed by Woodvale Challenge Ltd between 2003 and 2011.

[17] Data on ocean rowing events and records is kept by the Ocean Rowing Society, which was established in 1983.

With regard to qualifications and training, the rules require that each competitor:

- Shall have attended the Ocean Rowing Course.
- Shall hold a valid Short Range Radio Certificate (VHF).
- Shall hold a valid RYA Basic Sea Survival course completion certificate.
- Shall hold a valid First Aid at Sea certificate.

Each team must also have:

> *Rowed their boat for a minimum of 72 hours, with at least 12 hours of the 72-hour period conducted prior to arrival in La Gomera and at least 12 hours of the 72-hour period conducted during the hours of darkness. During this time all equipment shall be tested.*

With regard to life-saving equipment, when on deck each rower is required to wear a PLB and either a safety harness and line or a combination lifejacket with a harness and safety line.

A support yacht is provided during the Atlantic Challenge. The primary purpose of the support yacht, which carries limited supplies, is to reduce the need to call for third-party assistance.

## 1.10 LOCAL REQUIREMENTS

In light of the experience gained from the numerous rowers getting into difficulty shortly after starting to cross the Atlantic Ocean, the Port Authority of Santa Cruz do Tenerife introduced a number of conditions for departure. These requirements were negotiated with Woodvale Challenge Ltd and included that boats be registered with a national administration, skippers to have completed an RYA Ocean Yachtmaster (theory) course and sea survival training, and that boats be suitably equipped for ocean crossings. Similar requirements did not apply in other port areas in the Canary Islands such as Puerto De Mogan.

## 1.11 PLEASURE VESSEL REGULATIONS

### 1.11.1 Definition

The Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) 1998 (SI 1998/2771), as amended, defines a pleasure vessel as:

> *(a) any vessel which at the time it is being used is:*
>
> *(i)*
>
> *(aa) in the case of a vessel wholly owned by an individual or individuals, used only for the sport or pleasure of the owner or the immediate family or friends of the owner; or*

*(bb) in the case of a vessel owned by a body corporate, used only for sport or pleasure and on which the persons on board are employees or officers of the body corporate, or their immediate family or friends; and*

*(ii) on a voyage or excursion which is one for which the owner does not receive money for or in connection with operating the vessel or carrying any person, other than as a contribution to the direct expenses of the operation of the vessel incurred during the voyage or excursion; or*

*(b) any vessel wholly owned by or on behalf of a members' club formed for the purpose of sport or pleasure which, at the time it is being used, is used only for the sport or pleasure of members of that club or their immediate family, and for the use of which any charges levied are paid into club funds and applied for the general use of the club; and*

*(c) in the case of any vessel referred to in paragraphs (a) or (b) above no other payments are made by or on behalf of users of the vessel, other than by the owner.*

### 1.11.2 Applicable regulations

Marine Guidance Note (MGN) 538 (M) - Pleasure Vessels – Guidance and Applicable UK Regulations, provides an overview of the Merchant Shipping legislation that is applicable to pleasure vessels. Paragraph 3.2 of the MGN states:

*Pleasure vessels less than 13.7 metres in length are not covered by any statutory requirements for the carriage of Firefighting Equipment or Life-Saving Appliances, however, the owner has a duty of care under health and safety legislation where people are employed on-board (see Section 6.4). Owners and skippers should refer to the RYA and British Marine for guidance of any safety equipment for their vessels.*

## 1.12 GOVERNING BODY

With regard to the use of commercial vessels for sport or pleasure, MGN 280 (M) - Small Vessels in Commercial Use for Sport or Pleasure, Workboats and Pilot Boats – Alternative Construction Standards includes:

*3.4.1. The Code deals with the safety of the vessel and its occupants but not sport or pleasure activities involving special safety requirements.*

*3.4.2. The objectives for sport have been set out by Government. The principle of self-determination for sports bodies has been encouraged to the extent that when it has been necessary to impose some form of control on such bodies - such as safety or environmental matters - the policy has usually been to encourage the bodies to adopt voluntary codes or procedures which would have the same effect as regulation.*

*3.4.3. In 1990, the Minister for Sport commissioned a review into safety in water sports. The review concluded that the current system of self-regulation developed by the governing bodies of sport is sufficient to meet their responsibility for the safety of sports participants…*

Ocean rowing boats are not specifically covered by MGN 280 (M), or any of the extant codes of practice for small craft.

British Rowing is the national governing body (England) for rowing and has over 30 000 members. It promotes the safety of the sport and provides advice to rowing clubs on planning events and on risk management. To date, British Rowing has had little involvement with ocean rowing.

## 1.13 PREVIOUS ACCIDENTS

### 1.13.1 General

Since 1990, there have been 204 unsuccessful attempts to row across an ocean that necessitated crew rescue. Records indicated that up to 1999, five fatalities had occurred during ocean rowing crossing attempts. There has been one fatality between 1999 and 2015. There is insufficient evidence available to accurately determine the circumstances of these fatalities.

### 1.13.2 *Fire Ant*

During the morning of 13 February 2016, Oceanus Rowing Ltd's ocean rowing boat *Fire Ant* capsized several times when 400nm north-west of Cape Verde **(Figure 1)**. During the capsizes, the all-female crew of four rowers lost their oars and the boat's steering system and the GPS were damaged.

*Fire Ant*'s skipper, who was the owner of Oceanus Rowing Ltd, alerted the company's duty officer via satellite telephone. In turn, the duty officer contacted the coastguard operations centre, Falmouth, and requested assistance. After *Fire Ant*'s position had been determined by the manual release of the boat's EPIRB, the coastguard broadcast a "Mayday" to all ships in the area via Enhanced Group Call via Inmarsat C, an element of the Global Maritime Distress and Safety System.

The Liberia registered bulk carrier, *Rio Grita*, responded to the "Mayday" broadcast and diverted towards *Fire Ant*. Sixteen hours later, the ocean rowing boat's crew were recovered on board *Rio Grita*, which arrived in Port Alfred, Canada on 22 February 2016.

# SECTION 2 - ANALYSIS

## 2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

## 2.2 LOSS OVERBOARD

Mike Johnson was swept from his seat by a large wave that broke over and swamped *Toby Wallace*. He then rolled over the boat's low gunnel because he was not adequately tethered. The straps on the footplate by his seat were a rowing aid and the ankle leash was being worn to prevent him separating from the boat in the event of capsize. Neither the foot straps nor the leash, which was 3m in length, were intended to prevent him from falling overboard.

After falling overboard, Mike's ankle leash detached and he quickly became separated from *Toby Wallace*. The crew were unable to stop the boat from drifting away from him and, although their actions to raise the alarm were timely, it took 11 hours for SAR units to reach *Toby Wallace*'s remote position in the mid-Atlantic. The sea water temperature was 22°C and Mike was possibly conscious when the red light from his head torch was last seen. That Mike was not wearing a lifejacket or a PLB reduced considerably the likelihood of him surviving and being found.

## 2.3 BOAT DESIGN

Many experienced ocean rowers consider the greatest risk to ocean rowing boats and their crews is capsize. Consequently, like many other ocean rowing boats, *Toby Wallace* was designed to self-right following capsize. However, it is apparent from the circumstances of this accident, that the risk of a rower falling or being swept overboard from *Toby Wallace* was also significant.

*Toby Wallace*'s gunnels were only 300mm above the deck in order to keep the rowers, the rowlocks and the sea water surface on a similar plane. The gunnels offered virtually no protection to the crew from the risk of falling overboard. Although the risk of falling overboard was mitigated to some degree by the crew crawling when moving on the deck, it would have been an ever-present concern when operating in rough seas.

*Toby Wallace*'s design also increased the difficulty of recovering a man overboard. In the force 5 to force 6 winds experienced on 14 February, the boat could not be turned into the wind. Further, despite the use of the rudder, holding water, the deployment of a drogue, a parachute anchor and other items, and ballasting to make the boat heavier it could not be stopped in the water. As a result, over the near 1.5 hours that Mike Johnson's head torch remained visible, *Toby Wallace* drifted further away from him, and the boat's crew were unable to attempt a recovery.

## 2.4 CARRIAGE AND USE OF SAFETY EQUIPMENT

### 2.4.1 Requirements

*Toby Wallace* had been registered by its owner as a pleasure vessel as defined by The Merchant Shipping (Vessels in Commercial Use for Sport or Pleasure) Regulations 1998. As such, and as the boat was also less than 13.7m, it was not required to carry lifesaving equipment. The lifesaving and safety equipment carried on board *Toby Wallace* was based on the equipment lists developed by Woodvale Challenge Ltd and the skipper's previous experiences of ocean rowing, rather than on any regulatory requirements.

### 2.4.2 Ankle leash

The use of ankle leashes on board *Toby Wallace* was a practical measure that was primarily intended to keep a rower attached to the boat following capsize. Ankle leashes are frequently used as the ankle is a suitable location for a long tether and the likelihood of chaffing is reduced. Ankle leashes also do not interfere with body movement while rowing.

However, the type of ankle leashes used on board *Toby Wallace* were the type widely used by surfers and paddle boarders. They were not manufactured or tested to meet any national or international safety standards and the velcro-type fastenings would have been prone to degrade over time through use, immersion and ultra-violet light. In addition, although the breaking strength of the jackstay running along the deck to which they were attached was over 4.5t, the breaking strength of its fixing points was not known. Therefore, both the leash and the jackstay had potential weaknesses that impacted on their reliability.

At the start of the watch at 2200 on 14 February 2016, Mike Johnson had confirmed that his ankle leash was attached to his ankle and the jackstay. Therefore, unless he removed his ankle strap later in the watch, his rapid separation from *Toby Wallace* after falling overboard indicates that the Velcro-type ankle strap on his leash had come undone or slipped off his leg.

When Mike fell into the water, *Toby Wallace* was still making approximately 3kts of headway. Consequently, it is possible that sufficient force was generated to separate the Velcro-type fastenings, which might have degraded over time in the marine environment or might not have been securely fastened from the outset.

### 2.4.3 Lifejackets and tethers

*Toby Wallace* was equipped with eight manual inflation lifejackets and four tethers. The vessel was not carrying any form of safety harnesses, and so the tethers could only be used in combination with the lifejackets. Mike was wearing oilskins at the time of the accident, but neither a lifejacket nor tether. Had he been doing so, the tether would have kept him beside *Toby Wallace* and he would have been able to inflate the lifejacket if he needed buoyancy before the crew helped him back on board.

The prolonged wearing of lifejackets while ocean rowing is commonly considered to be impractical. The wet and salty environment can lead to clothing and lifejackets chafing the rowers' skin as they row, resulting in open sores. Further, there is a view

that lifejackets can impede the action of rowing. As a consequence, when conditions allow, some rowers prefer to row naked. That *Toby Wallace*'s crew did not routinely wear lifejackets when rowing was not unusual among ocean rowers. As the tethers on board could be used effectively only if they were attached to the lifejackets, they too remained unused.

Conditions at the time of the accident were sufficiently poor that the crew on deck had elected to wear oilskins. That the circumstances had not also prompted them to wear their lifejackets and connect their tethers indicates they had not considered there was a risk of falling or being washed overboard.

### 2.4.4 Personal locator beacon

Unlike Atlantic Challenge rowing, where each rower is required to wear a PLB when on deck, *Toby Wallace*'s crew were not required to do so, nor were there sufficient PLB's on board for each member of the crew. In sea water at a temperature of 22ºC, Mike Johnson could have been expected to survive between 2 and 40 hours[18] following his immersion shortly after 2300 on 14 February. Given that the SAR aircraft were on scene the following day from 1100 and Sea Pearl from 1230, had Mike been wearing a PLB, it would potentially have enabled MRCC Ponta Delgada to locate and track him in the water and to direct the aircraft and *Sea Pearl* towards his position.

### 2.4.5 Man overboard

That two of *Toby Wallace*'s rowers had fallen overboard a few days after the boat had set off from Puerto De Mogan highlights that the risk of falling overboard from such a low-sided boat with a narrow beam was significant. On those occasions, the rowers managed to hold onto the boat and were recovered without injury. In the rough sea conditions experienced when Mike Johnson was swept overboard, he was unable to hold onto *Tob*y *Wallace*.

*Toby Wallace* would not steer into strong winds. For reasons of practicality, its crew also did not wear lifejackets which prevented the use of the tethers that were carried on board. Therefore, the successful recovery of Mike Johnson depended on him remaining connected to the boat and the boat being stopped in the water. It is of concern that neither were achieved due to the detachment of Mike's ankle leash and the parachute anchor.

Although *Toby Wallace* had conducted a manoverboard drill in Puerto De Mogan, the safety equipment carried on board and the lack of instructions and procedures for its use, indicate that the risk of a rower falling overboard had not been properly considered. The increased likelihood of a person falling over the side due to the boat's low gunnels, the difficulties likely to be encountered in recovering a person from the water due to its manoeuvring characteristics, and the foreseeable flaws in the reliability of the ankle leashes were all significant factors that warranted a far more robust assessment of the safety equipment required and how and when it was to be used.

[18] United States Search and Rescue Task Force – Cold water survival.

## 2.5 PREPARATION AND TRAINING

*Toby Wallace*'s skipper and first mate were experienced ocean rowers, but the remainder of the crew were not. Therefore, it was unlikely that the short time some of the crew rowed together over the weekend in August 2015, and all of the crew rowed together shortly before leaving Gran Canaria, was sufficient to adequately prepare them for a 31-day ocean crossing. The man overboard recovery in the relatively sheltered waters of Puerto De Mogan would not have prepared them to cope with a man overboard at night in seas with 6m waves. Furthermore, in view of the nature of the intended voyage, it is astonishing that sea survival training was not a requirement for all crew and that the crew did not have to meet a medical standard.

## 2.6 EMERGENCY RESPONSE

The capsize and abandonment of *Fire Ant* on 13 February 2016 and the loss of a rower overboard and abandonment of *Toby Wallace* 2 days later highlight the vulnerability of ocean rowing boats. In both cases, Oceanus Rowing Ltd's duty officer in the UK was pivotal to the safety of the boats' crews. By alerting the coastguard to the difficulties encountered by *Fire Ant* and then quickly confirming the position of *Toby Wallace*, and providing contact details for the boat's skipper, the duty officer ensured that SAR action was initiated promptly.

However, the accidents involving *Toby Wallace* and *Fire Ant* also demonstrate that small boats that cross the oceans independently rely heavily on passing merchant vessels and distant SAR services for assistance in the event of an emergency. Unlike participants in organised events, such as the Atlantic Challenge, which have a support vessel, independent boats frequently have little or no assistance at hand. It took *Sea Pearl* about 12 hours to reach *Toby Wallace*, and it took *Rio Grita* 16 hours to reach *Fire Ant*. As prompt assistance is unlikely to be available in mid ocean, the need to ensure that all ocean rowing boats and their crews are appropriately prepared and equipped is compelling.

## 2.7 GOVERNANCE

### 2.7.1 Commercial operation

It is clear from the fees paid by the 'pay for place' rowers, the skipper's remuneration, and that *Toby Wallace* was listed as one of Oceanus Rowing Ltd's company assets that the vessel was being commercially operated. However, *Toby Wallace* could not comply with the requirements of MGN 280, and there were no alternative standards set by the national governing body that could be applied instead. It is arguable that, without appropriate certification, *Toby Wallace* should not have operated commercially, but there were no avenues by which commercial certification could be achieved. Nonetheless, the registration of *Toby Wallace* as a pleasure vessel in the skipper's name was inappropriate as it gave a misleading impression of the vessel's status, and of the standards of practice that should have been applied to its activities.

Although ocean rowing is an extreme and potentially dangerous sport, commercial operators have a duty of care towards rowers who are paying to participate. Relevant considerations to be taken into account when discharging this duty of care could include: the suitability of the vessel; provision of individual and collective safety

equipment; and that the rowers themselves are trained, mentally prepared and medically fit to undertake the crossing. The significant variance in the approaches adopted by Atlantic Campaigns SL (see section 1.9) and by Oceanus Rowing Ltd indicate a need to develop a set of codes or procedures for ocean rowing to guide those with a duty of care towards fee paying customers.

### 2.7.2 Best practice

Only one ocean rower is recorded as having died during an ocean crossing between 1999 and 2015 (paragraph 1.13.1), despite the high number of failed attempts. This is likely to be due to improved vessel design, particularly with regard to the ability of the craft to self-right following capsize. There is also much evidence that some operators are attempting to improve safety by the fitting of safety features such as guardrails **(Figure 7)**, guard wires **(Figure 8)**, and by the use of safety harnesses and tethers **(Figure 9)**. However, other operators are concerned that measures taken to reduce the risk of a person being lost overboard could increase the risk of entrapment following capsize. These disparate approaches can result in a single type of hazard receiving prominence at the expense of measures to mitigate other risks. There is therefore a need for the ocean rowing community to coalesce for the purposes of sharing best practice and developing safety standards for their sport. If deemed appropriate, these safety standards could be taken forward by the national governing body (see section 1.12) and proposed to the marine regulators for use as the basis for commercial certification.

Image courtesy of www.alanlau.co.uk

**Figure 7:** An ocean rowing boat fitted with guardrails


**Figure 8:** An ocean rowing boat fitted with guard wires

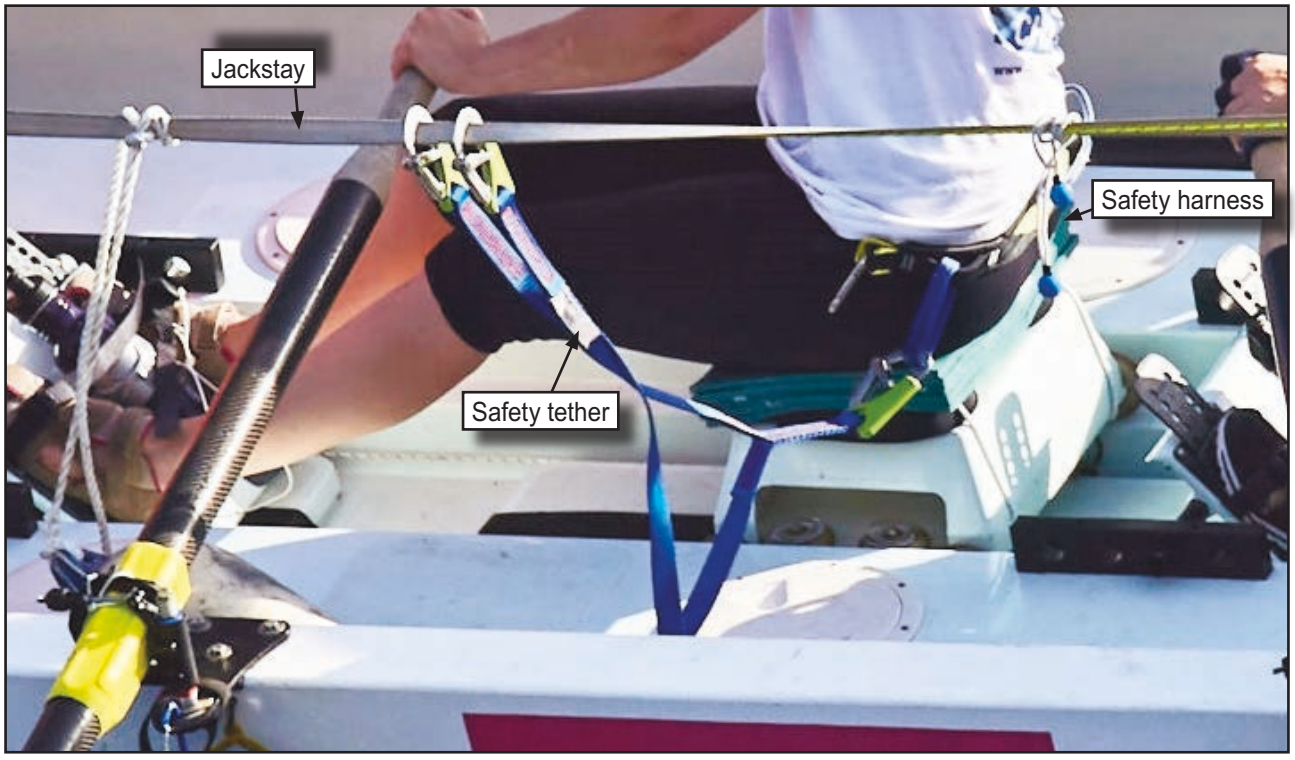


**Figure 9:** Use of a safety harness, tethers and jackstay

# SECTION 3 - CONCLUSIONS

## 3.1 SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT THAT HAVE BEEN ADDRESSED OR RESULTED IN RECOMMENDATIONS

1. The rowers on board *Toby Wallace* were not suitably tethered. The ankle leashes were intended to keep rowers close to the boat in the event of capsize and the foot straps were a rowing aid. [2.2]

2. *Toby Wallace*'s gunnels were only 300mm above the deck and provided virtually no protection to the crew from the risk of falling overboard. [2.3]

3. *Toby Wallace*'s design increased the difficulty of recovering a man overboard. The boat could not be turned into the strong wind or stopped and, as a result, its crew were unable to even attempt a recovery. [2.3]

4. The ankle leashes used on board *Toby Wallace* were not manufactured or tested to meet any national or international safety standards, and were therefore not sufficiently reliable for use as safety equipment. [2.4.2]

5. Although lifejackets carried on board *Toby Wallace* were not used by the crew, this was common practice among ocean rowers. [2.4.3]

6. Only one personal locator beacon was carried on board. [2.4.4]

7. The risk of a person falling overboard from *Toby Wallace* had not been properly assessed. Consequently, appropriate mitigation measures had not been put in place. [2.4.5]

8. The crew's preparation and training were insufficient to deal with a 31-day ocean passage and the recovery of a person overboard at night and in rough seas. [2.5]

9. *Toby Wallace* was operating as a commercial vessel but was not certified to do so. The need to address the governance of commercially operated ocean rowing boats is compelling. [2.7.1]

10. Ocean rowing has developed best practice that has improved safety, but inconsistencies in its application indicate that it could be better promulgated. [2.7.2]

## 3.2 OTHER SAFETY ISSUES NOT DIRECTLY CONTRIBUTING TO THE ACCIDENT[19]

1. The accidents involving *Toby Wallace* and *Fire Ant* demonstrate the dependency of independent ocean rowing boats on passing merchant vessels and distant SAR services for assistance. [2.6]

[19] These safety issues identify lessons to be learned. They do not merit a safety recommendation based on this investigation alone. However, they may be used for analysing trends in marine accidents or in support of a future safety recommendation

# SECTION 4 - ACTIONS TAKEN

## 4.1 ACTIONS TAKEN BY OTHER ORGANISATIONS

**Atlantic Campaigns SL** has:

- Forwarded a proposed ‘Ocean Rowing Code of Practice’ to British Rowing for review, adoption and promulgation.

## SECTION 5 - RECOMMENDATIONS

**British Rowing** and the **Maritime and Coastguard Agency** are recommended to:

**2017/101** Work together in order to assess the feasibility of developing means by which commercially operated ocean rowing boats can demonstrate equivalent safety standards to those required of other small vessels in commercial use for sport or pleasure.

**British Rowing** is recommended to:

**2017/102** Liaise with stakeholders to develop and promulgate a best practice guide or a code of practice for ocean rowing, taking into account, inter alia:

- Boat design, construction and stability
- Minimum training requirements
- Minimum equipment requirements
- Onboard procedures
- Shore-based and seaborne support.

**Oceanus Rowing Limited** is recommended to:

**2017/103** Review its risk assessments for the conduct of future ocean crossings and take measures as necessary to ensure its crews are appropriately fit, trained and competent, and the necessary equipment, training and procedures are in place to reduce the risk of rowers coming to harm to as low as reasonably practicable.

Safety recommendations shall in no case create a presumption of blame or liability

Marine Accident Report

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