

Report on the investigation of
the grounding at high speed of the RIB

Sooty

Calve Island, Isle of Mull

18 May 2009

Resulting in one fatality

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Extract from
The United Kingdom Merchant Shipping
(Accident Reporting and Investigation)
Regulations 2005 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 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 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

Front Cover photograph - Note: The height of tide shown is 1.3m less than that at the time of the grounding

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GLOSSARY OF ABBREVIATIONS, ACRONYMS AND TERMS

cm	-	centimetre
CMAL	-	Caledonian Maritime Assets Limited
DETR	-	Department of the Environment, Transport and the Regions
DfT	-	Department for Transport
GPS	-	Global Positioning System
grp	-	glass reinforced plastic
hp	-	horse power
kg	-	kilogram
LCD	-	Liquid Crystal Display
m	-	metre
MCA	-	Maritime and Coastguard Agency
PADI	-	Professional Association of Diving Instructors
RIB	-	Rigid inflatable boat
RNLI	-	Royal National Lifeboat Institution
RYA	-	Royal Yachting Association
SOLAS	-	Safety of Life at Sea
THA	-	Tobermory Harbour Association
UTC	-	Universal co-ordinated time
VHF	-	Very high frequency
Cable	-	Maritime unit of distance equal to 200 yards

Times: All times used in this report are UTC +1 unless otherwise stated



Sooty

Note: The height of tide shown is 1.3m less than that at the time of the grounding

SYNOPSIS



On 18 May 2009 at 2330, the 6.3m RIB *Sooty* grounded on the rocky shores of Calve Island off Tobermory, Isle of Mull, at a speed of about 20 knots. On impact, one of the boat's four occupants was thrown out of the boat onto the rocks and suffered severe head injuries from which he died shortly afterwards.

The accident occurred on the last day of a 5 day diving and fishing excursion after the crew had spent the evening in a public house in Tobermory. It was a very dark night and the grounding occurred 1 to 2 minutes after the RIB's speed had been increased on clearing the harbour.

The investigation identified several factors contributing to this fatal accident, including:

- The lack of an effective lookout;
- The RIB's speed;
- The ineffective use of the GPS mapper to plan and monitor the passage; and importantly,
- The coxswain was navigating while under the influence of alcohol.

This is yet another tragic leisure craft accident in which a life has been lost due to the consumption of alcohol. A breath specimen voluntarily provided by the coxswain, and toxicology analysis of the deceased, indicated both to be more than three times over the road drink drive limit.

A recommendation has been made to the vessel's owners, which is intended to promote their safe use of leisure craft in the future. In view of the MAIB's previous recommendation regarding the introduction of national regulations establishing limits on the amount of alcohol which may be consumed by operators of leisure vessels, and the work currently being undertaken by the DfT in respect of the proposed implementation of section 80 of the Railways and Transport Safety Act 2003, no further recommendations are considered necessary.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF SOOTY AND ACCIDENT

Vessel details

Registered owners	:	Private ownership
Flag	:	United Kingdom
Type	:	Humber Ocean Pro 6.3m
Built	:	2006 – Humber Inflatable Boats
Construction	:	GRP rigid inflatable boat
Length overall	:	6.3m
Lightship	:	670kg including outboard engine
Engine power and/or type	:	Suzuki 150hp long shaft, 4 stroke petrol engine
Service speed	:	About 40 knots
Other relevant info	:	Certified to carry 17 people

Accident details

Time and date	:	2330 on 18 May 2009
Location of incident	:	Rubh' an Righ - Northern tip of Calve Island, Tobermory Bay
Persons on board	:	4
Injuries/fatalities	:	1 fatality, Gary Henaghan, and 2 injured
Damage	:	Impact damage to the forefoot, collapsed bow tube.

1.2 BACKGROUND

Sooty was purchased from Humber Inflatable Boats on 18 March 2006. The outboard engine and ancillary equipment were bought separately from another dealership. The RIB was kept at Amble marina on the north-east coast of England and its two owners, who were brothers, used the craft twice weekly during April to October to dive and fish in the local area.

Sooty was also used on biannual excursions to the west coast of Scotland, usually in May and September. The excursions lasted no longer than 1 week and were focussed on diving and fishing activities. Both of the owners were Professional Association of Diving Instructors (PADI) qualified.

For an excursion between 14 and 19 May 2009, *Sooty* was taken by road by her owners accompanied by two friends, to Loch Aline on the east side of the Sound of Mull, Scotland (**Figure 1**). The owners and one of the friends intended to dive during the excursion. The other friend, Gary Henaghan, intended to remain in the boat and act as a safety number. The owners had visited the area on previous occasions and were familiar with the local dive sites.

Following an overnight drive, the group arrived at Loch Aline, Scotland at 0800 on 15 May. The day was spent diving and fishing in the Sound of Mull, returning to a mooring at about 2000. The following morning, *Sooty* departed from Loch Aline at 1000 and headed for dive sites to the north of the Isle of Mull. On completion of two dives and some fishing, the crew visited Tobermory, where they arrived at about 1730. While waiting for their diving air bottles to be re-filled the four men went to the local public house. *Sooty* departed from the harbour at about 1830, and headed back out into the Sound of Mull. An evening dive was conducted before returning to Loch Aline at about 2100.

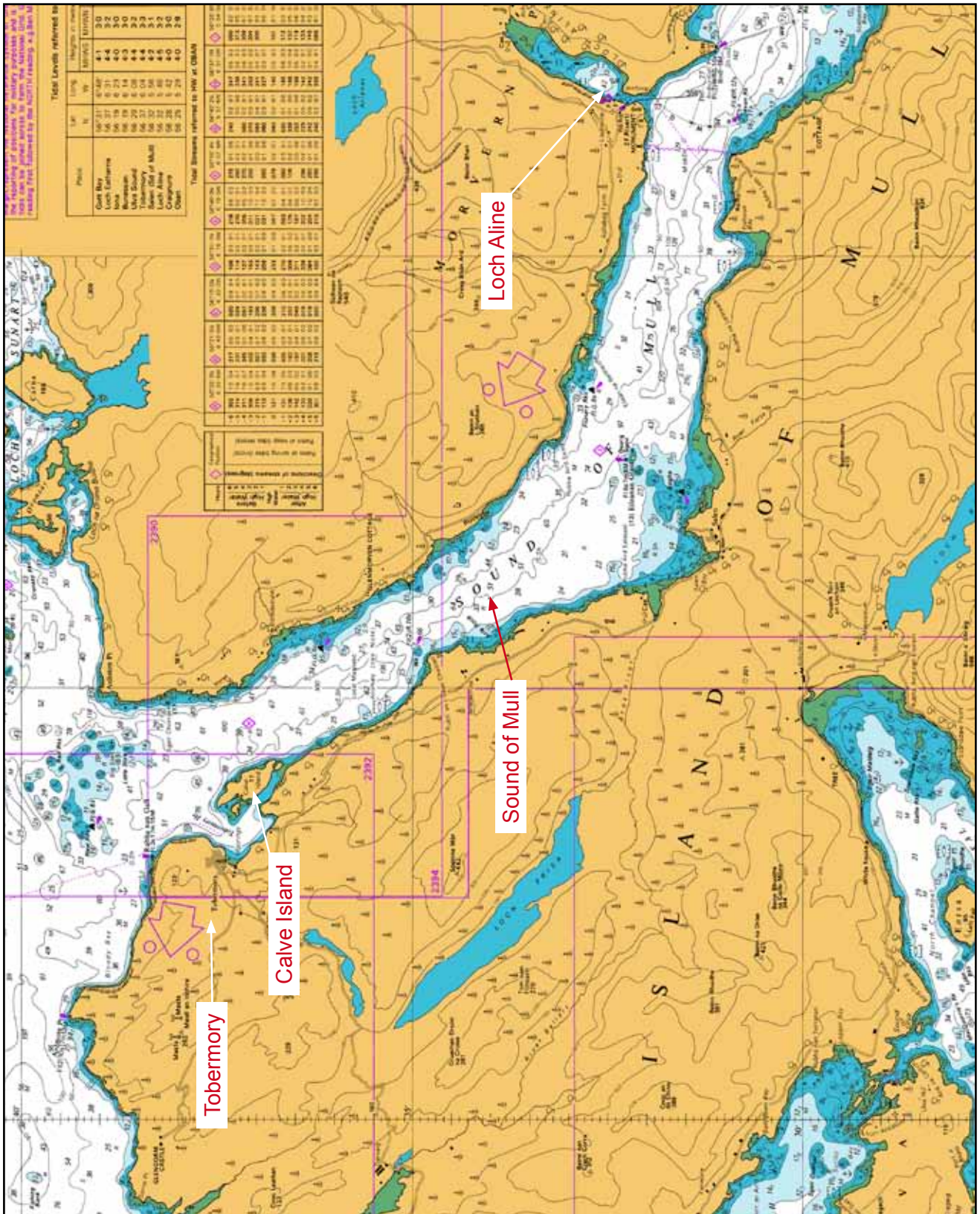
On 17 May, two dives were conducted during the day and a third dive early in the evening to the west of Oban. *Sooty* returned to Loch Aline at about 2130. All of the crew managed between 7 and 8 hours good quality sleep overnight.

1.3 NARRATIVE

1.3.1 The accident

At about 1045 on 18 May, *Sooty* departed from Loch Aline and headed to dive sites located north-west of the Isle of Mull. Dives were carried out at three separate locations in slowly deteriorating weather conditions, during which Gary Henaghan fished; he also consumed several cans of beer. On completion of the third dive, which was the final dive of the excursion, the crew again decided to call into Tobermory.

Figure 1



Operating area

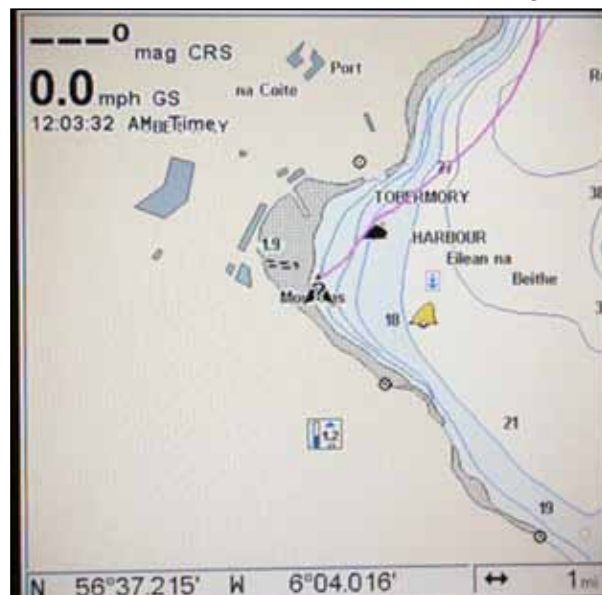
Passage was made from the north of Mull by following historic trails displayed on a mapping GPS¹ (**Figure 2**). In the vicinity of Tobermory Bay, course was adjusted to pass close to the north shore and the speed was reduced when passing the local RNLI station. By the time *Sooty* passed the buoys marking the designated fairway for local fishing vessels, speed had been reduced to about 10 knots. Half way along the fairway, course was altered to port and *Sooty* navigated through a number of craft secured to swinging moorings (**Figure 3**).

Figure 2



Historical track from GPS mapper 18 May 2009

Figure 3



Entry into Tobermory 18 May 2009

¹ A satellite navigation system that uses a small LCD screen to display the vessel's position on an appropriate electronic chart. The equipment is an aid to navigation which allows an operator to monitor the vessel's progress relative to navigational dangers, waypoints, and the intended passage plan.

At approximately 1730, *Sooty* berthed port side alongside, bow in, to the Tobermory Harbour Association (THA) pontoons. The crew, all dressed in dry suits, headed for the local public house located close to the pontoon access. In accordance with the harbour regulations, there was no requirement for the crew to pay mooring fees to the pier master for part day moorings.

After a light meal the crew socialised with other visitors and the bar staff. The coxswain was aware that he would be driving *Sooty* back to Loch Aline, and only consumed alcoholic drinks on alternate rounds. However, he was aware that his alcohol consumption had exceeded the limit for drivers of road vehicles in the UK. None of the crew wore a watch, but they recollected leaving the public house between 2100 and 2130. Other accounts indicate that it was between 2230 and 2330.

On their return to *Sooty*, the crew tidied loose diving equipment while the coxswain started the engine and switched on all six rocker switches (**Figure 4**) that supplied power to a deck socket, an all round white navigation light, sidelights, deck floodlight, mapping GPS and the VHF. It was reported that the coxswain then switched on the mapping GPS at the display unit and secured the engine kill-cord around his left leg.

Figure 4



Position of rocker switches

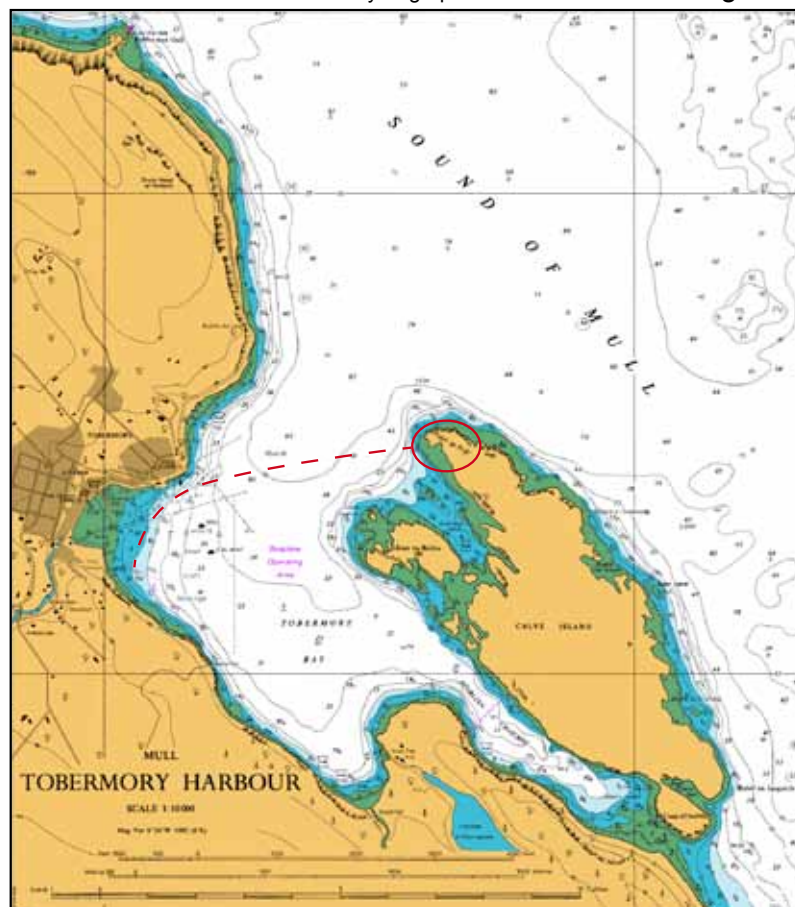
When leaving the pontoon, the coxswain stood by the helm, astride the right hand seat, with his brother sitting in the left hand seat. The two remaining crew slipped the forward and aft mooring lines from the shore and stepped on board. Gary Henaghan stood on the starboard side next to the inflatable tube, possibly holding onto the cockpit canopy framework. The other crewman stood directly behind the two seats, gripping the hand rail secured to the rear of the backrests while leaning back onto the dive bottle stowage. As the coxswain reversed *Sooty* out of the mooring, all of the crew were in high spirits and engaged in conversation and banter.

It was a dark night, but illumination from nearby street lighting assisted the coxswain to navigate *Sooty* back into the fairway channel by eye. Once in the fairway the coxswain glanced at the mapping GPS. His intention was to follow the trail shown on the display screen which was recorded when *Sooty* entered the harbour earlier that evening.

When clear of the fairway the coxswain increased power to get *Sooty* onto the plane². About 1 to 2 minutes later there was a very loud bang, and the craft hit the rocks and stopped on the shore at Rubh' an Righ on the northern tip of Calve Island (Figures 5 and 6).

Reproduced from Admiralty Chart BA 2474 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 5



The probable route taken by *Sooty*

² A displacement craft planes when power is applied, enabling it to climb onto its own bow wave. As the friction is reduced, the same speed can be maintained with less power.



Resting place after the grounding

Note: The height of tide shown is 1.3m less than that at the time of the grounding

The coxswain and his brother were thrown forward into the instrumentation panel and visor. The person standing directly behind was thrown forward, and landed on top of the coxswain and his brother. Gary Henaghan was thrown from the boat and landed on the rocky shoreline above sea level. The engine also stopped.

Two distinct bangs were heard in the vicinity of Calve Island at about 2331 by a teenager on the shore who had seen a RIB proceeding across the Bay at speed about 1 minute earlier. He immediately informed the coastguard.

Although shocked, the crew soon realised that Gary Henaghan was missing, and stepped from the boat with a torch to look for him. He was found lying on his left side near the starboard bow, with his back towards the boat. Gary had a severe head injury and was immediately given cardio-pulmonary resuscitation. The coxswain re-boarded *Sooty* and attempted to call the coastguard on the VHF radio, but there was no power. At 2333, he called the emergency services on his mobile telephone and reported the seriousness of the injury sustained by Gary Henaghan. He also requested that immediate assistance be provided, and described the circumstances surrounding the accident to the coastguard, including that:

- The location of the accident was Calve Island, opposite Tobermory
- The boat was a blue RIB with four persons on board
- The crew were not wearing lifejackets, but were dressed in dry suits
- The boat was on rocks and no longer in the water
- All electrics had been lost
- Flares were carried on board.

1.3.2 The rescue

At 2337, Clyde coastguard paged the local Tobermory coastguard rescue team and the Tobermory lifeboat. It then requested helicopter assistance, which was allocated from Prestwick airport.

Sooty's crew saw the lifeboat as it approached and waved a torch to attract attention. The lifeboat coxswain was concerned about grounding on the rocks and ordered the lifeboat's 'Y'³ boat be launched to recover the casualty. As the crew of the 'Y' boat landed onto Calve Island they saw that Sooty's crew were in a state of shock. They could smell alcohol and at least one of Sooty's crew was slurring his words.

Gary Henaghan was placed in a basket stretcher and taken to the THA pontoons, where he was transferred to a waiting ambulance. He was pronounced dead by a doctor at 0040.

1.3.3 Post-rescue

The three remaining crew were then transferred from Calve Island to the THA pontoon, where two were treated for minor injuries before being transferred by ambulance to Dunaros Hospital at Salen on the Isle of Mull.

After further treatment they were discharged from hospital and interviewed by the local police. The police were initially uncertain of the powers available to breathalyse a person involved in a leisure boat accident, and requested that the coxswain provide a breath specimen voluntarily. The coxswain agreed and breath samples were taken at 0500 and 0503, each registering a concentration of 74 microgrammes of alcohol in 100 millilitres of breath.

1.4 POSTMORTEM

The cause of Gary Henaghan's death was recorded as '*head injury due to boat collision*'. The forensic examination identified extensive fracturing of the skull and extensive injuries on the surface of the right side of his head and face. The injuries were considered indicative of a major impact to the right side of his head.

³ Small inflatable tender carried by 'Severn' class lifeboat.

The toxicology results revealed a high level of alcohol in the blood and urine:

- Blood / alcohol - 264 mg/dL
- Urine / alcohol - 339 mg/dL

The toxicology report noted that:

'Blood alcohol concentrations in excess of 200mg/dL have been associated with muscular incoordination, confusion, slurred speech and lethargy. Individual tolerance with alcohol must be considered when interpreting the significance of these findings'.

1.5 ENVIRONMENTAL CONDITIONS

1.5.1 Tidal prediction

The predicted low water at Tobermory on 18 May was at 2001 at a height of 1.8m; high water was predicted at 0229 the following morning at a height of 3.5m. At the time of the accident, the predicted height of the neap tide was 2.8m.

The tidal stream in the Sound of Mull was running south easterly at 0.3 knots, but within Tobermory Bay it was negligible.

1.5.2 Weather and sea

The wind was light airs, the sea was calm, and the visibility was good in occasional very fine drizzle. It was a very dark night, nautical twilight had occurred at 2305 and there was no moon. The overcast sky prevented illumination of the horizon by the stars and there was insufficient light to assist navigation in the vicinity of the accident.

1.6 SOOTY

1.6.1 Description

Sooty was built in 2006 by Humber Inflatable Boats in Hull, East Yorkshire. It was a Humber Ocean Pro 6.3m model (**Figure 7**).

The design incorporated a deep vee multi chine hull, to provide quick responsive handling in rough weather conditions, and a high sheer bow to reduce the volume of water taken on board. The deep vee hull requires more power than a shallow vee to achieve planing speed. An airtight hull compartment was reported to make the craft unsinkable.

The buoyancy tube comprised five separate chambers manufactured from 1100 DTX hypalon. Lifelines were fitted externally on the straight collar, and four grab handles assisted launch and recovery.

Designed to accept an outboard motor with a maximum power of 200hp, the owners had chosen to fit a Suzuki 150hp long shaft outboard motor.



Sooty pre-modifications

A Lowrance LMS 332 fish finding sonar and mapping GPS was purchased and fitted independently by the owners and had always appeared to have functioned correctly.

In accordance with the recreational craft directive, *Sooty* was a category B craft – Offshore, capable of withstanding a wind force up to and including Beaufort force 8 and significant wave heights up to and including 4m.

1.6.2 Modifications

During the winter of 2007 / 2008, *Sooty* was modified to give greater protection from adverse weather and sea conditions. The modifications were copied from the design of another RIB, the Redway Boats Stormforce 6.5 (**Figure 8**) and included:

- A full breadth 'wrap around' console, moulded into the side tubes.
- A deeper visor following the lines of the modified console, with a bronze tint.
- A stainless steel frame over the console, complete with canvas awning and clear plastic inserts.
- The repositioning of an air bottle stowage from an athwartships line, to the fore and aft line.



Craft similar to Sooty post modifications

1.7 INSPECTION OF ACCIDENT SCENE AND BOAT

1.7.1 Damage assessment

External:

- The port and starboard bow section showed signs of impact damage. Sections of gel coating had been removed, and loose strands of grp matting were visible (**Figure 9**). Superficial damage to the gel coating was observed along the lines of the hull from forward to aft.
- The forward buoyancy tube, incorporating port and starboard bow sections, was deflated.
- All three propeller blades had been damaged (**Figure 10**).

Internal:

- A 20cm crack was identified inside the anchor chain locker.
- The tinted visor was cracked, the line of the crack continued into the main grp console (**Figure 11**).
- The magnetic compass on the top right hand side of the instrument panel had been dislodged.

- The battery, housed in an unsecured plastic container, had both positive and negative leads attached. The positive lead had been pulled from the battery isolation switch which was secured to the transom. The crimped connection was corroded (**Figure 12**).

Figure 9



Damage to hull and forward buoyancy tube

Figure 10



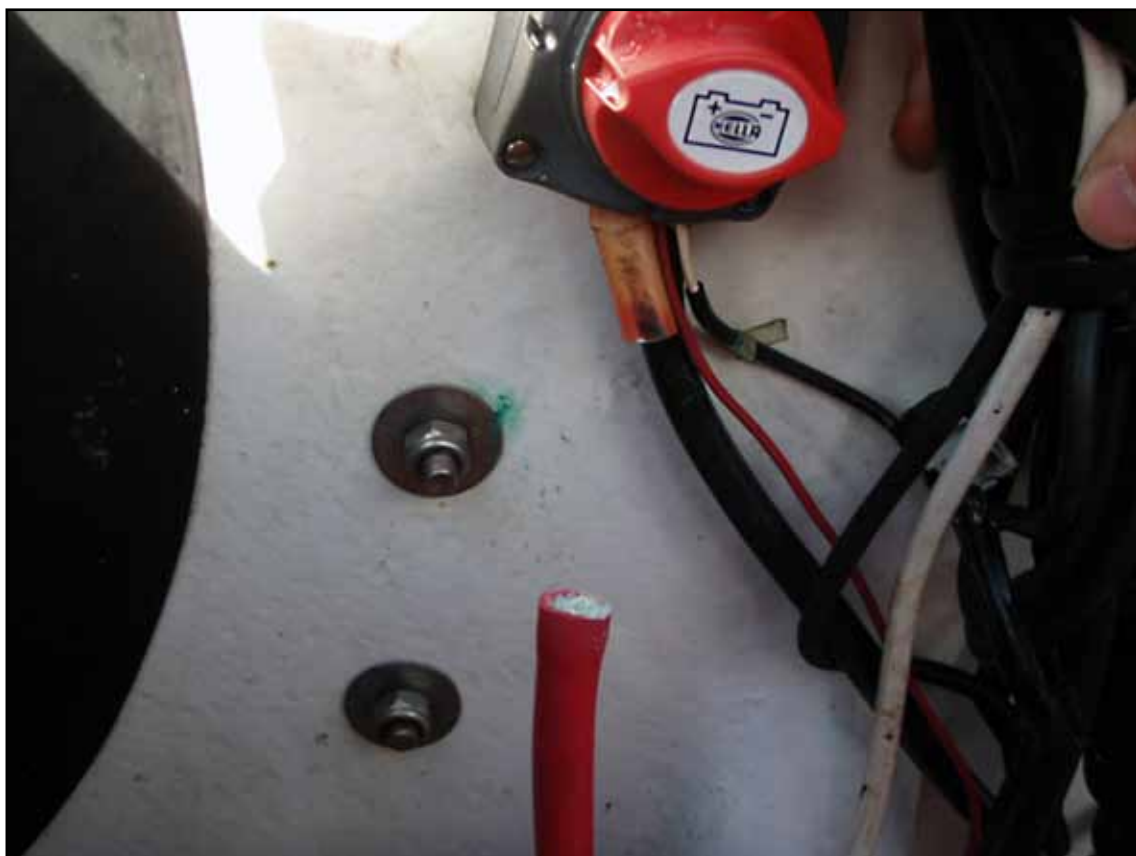
Damage to propeller blades

Figure 11



Damage to tinted visor and the console

Figure 12



Positive battery lead pulled from the isolation switch

1.7.2 Equipment

- The engine start key was in the 'on' position.
- The engine control lever was centred, in the neutral position. When power was reapplied, the trim control⁴, which was positioned on the left hand side of the lever, was found to be in the 'trimmed in' position. This was confirmed by the position of the outboard motor leg.
- Two 70 litre petrol fuel tanks were approximately 60 percent full.
- The kill cord was attached to the engine cut out mechanism; it had not been activated.
- A bank of six rocker switches showed that the anchor light, navigation lights, deck socket, deck floodlight and mapping GPS had power applied. The VHF was switched off.
- A hand-held 30 watt floodlight was lying by the coxswain's seat, but was not plugged in.

1.7.3 Line of approach

Examination of the line of approach taken by the craft between impact and its final resting position provided evidence of key contact points:

- White gel coat was observed on a rock face to starboard (**Figure 13**).
- Blue anti-foul paint from the underwater section of the hull was observed on several rock faces; directly on the line of approach.
- An underwater scar on a flat rock face, directly on the line of approach (**Figure 14**).

The distance between the initial point of impact and final resting position was approximately 11m.

Preliminary findings of police crash investigators indicated that *Sooty* hit the rocks at a speed of approximately 20 knots.

1.7.4 Lowrance GPS

The Lowrance LMS 332 fish finding sonar and mapping GPS (**Figure 15**) was removed from the craft for detailed examination. Initial inspection revealed that the unit had a facility for creating and saving an historic trail. A trail is a record of the path that the unit has taken, and can be useful for repeating a journey along the same track. It was set to the factory default, allowing 2000 trail points to be saved automatically whenever the unit was switched on and data available. When the 2000th trail point was reached, the unit recorded back

⁴ The trim control allows the drive angle of the propeller to be trimmed in or out. It is used for getting the craft onto the plane, and to adjust the fore and aft trim of the craft thereafter.

Figure 13



Evidence of gel coat to starboard

Figure 14



Impact point of outboard motor leg



Lowrance GPS unit removed from Sooty

over the first trail point. The default automatic setting creates a trail by placing a trail point every time the unit changes direction. It was not possible to recover speed, course and time data from individual track points.

Examination of the historic trails recorded confirmed the route taken when entering Tobermory on the evening of the accident, but there was no trail data between the RIB's departure and its grounding.

It was not possible to determine the range scale in use at the time of the accident because the power to the unit was disconnected on impact; it was not turned off using its on/off switch.

The unit takes an average of 1 minute or less to acquire a position when the receiving aerial is unobstructed by terrain or structures.

1.8 THE CREW

1.8.1 Experience

Sooty's owners had started scuba diving in about 2001. Once PADI qualified, they purchased a small speedboat to act primarily as a diving platform and for general leisure activities. They had approximately 6 years experience operating their own powerboat. The mapping GPS was used for position monitoring. Although familiar with both day and night time navigation near Amble, night time navigation had only occasionally been required during the excursions on the west coast of Scotland.

1.8.2 Qualifications and training

Both owners held the RYA National Powerboat Level 2 Certificate for a planing craft. Their certificates were endorsed for coastal navigation and were issued on 16 May 2004. Neither the deceased nor the other crewman held any marine qualifications.

1.9 RYA NATIONAL POWERBOAT COURSES

The syllabus for the RYA Level 2 National Powerboat Course is at **Annex A**. The aim of the course is *'to teach boat handling and seamanship in powerboats'*. The course duration is 2 days, and is the recognised minimum standard for powerboat skippers. Once in possession of a level 2 certificate the holder is eligible, on application, for an International Certificate of Competence for power craft up to 10m in length. The level 2 syllabus does not include night time elements.

The RYA Intermediate Powerboat Day Cruising Course aims to teach power boating up to a standard to enable the completion of a short coastal passage. The course is undertaken on a planing craft and the syllabus includes a practical exercise in passage planning with the intention that a student understands *'the need for pre-planning, including advice in the event of having to return at night'*.

The RYA Advanced Powerboat Day and Night course aims to teach boat handling, seamanship, pilotage and navigation in a planing craft by day and night in tidal coastal waters. The syllabus includes a night cruising exercise in which students *'take charge of a powerboat at night, including leaving and entering harbour'* and *'demonstrate ability at keeping a proper lookout and identifying lit and unlit marks at night'*.

1.10 PASSAGE PLANNING

The requirement for recreational boat users to carry out voyage planning is laid down in SOLAS Chapter V regulation 34, which entered force in 2002 and is explained on the MCA's website (**Annex B**), and those of several other organisations, including the RYA and the Combined Diving Associations. The syllabus for the RYA Level 2 National Powerboat Certificate also covers the requirement for passage planning.

1.11 TOBERMORY HARBOUR

1.11.1 Tobermory Harbour Association (THA)

The THA was established in 1983 to '*promote improvements to our harbour for the benefit of the local community and our visitors alike*'. It is community owned and all revenues are reinvested in facilities around Tobermory Bay. The authority comprises a board of 17 directors and 6 employees, including a moorings officer and a deputy moorings officer.

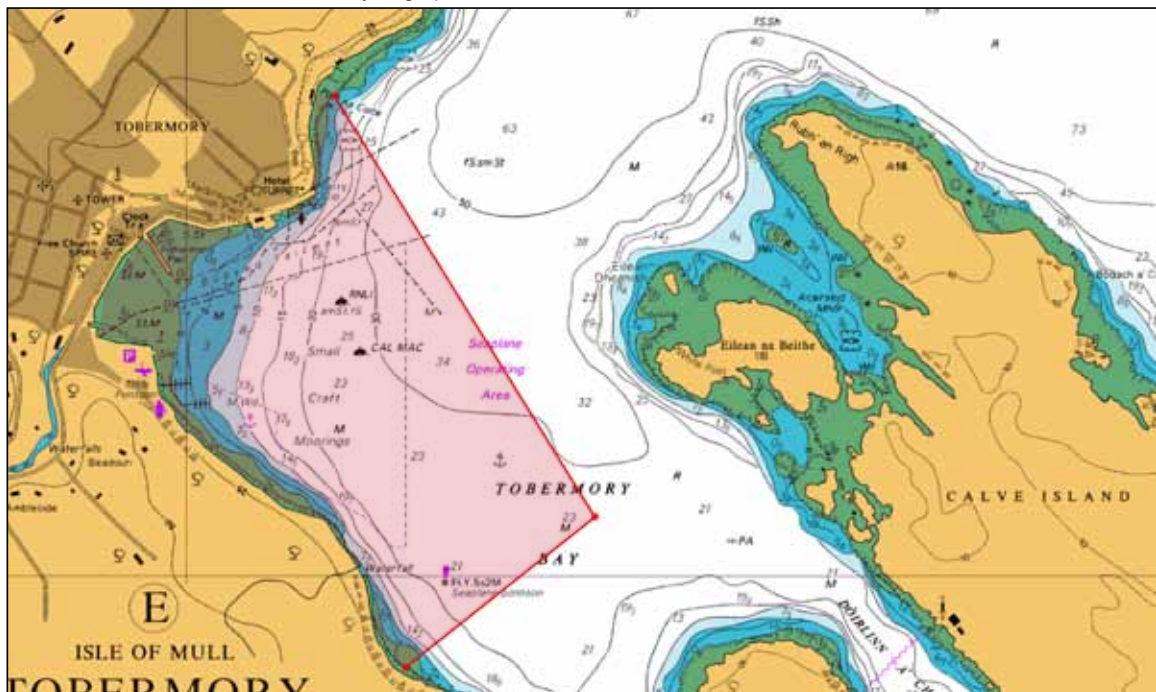
An agreement with the Crown Estate, and consent from the Scottish government after an application under Section 34 of the Coast Protection Act 1949, allowed the authority to lay and maintain 110 moorings, provide alongside short stay pontoon berths, and establish an anchoring area in Tobermory Bay. The authority had approval from the Crown Estate and DETR to maintain the buoyed fairway leading to the Fishing Pier.

Control of the town's three piers is exercised independently by the RNLI, Caledonian Maritime Assets Limited (CMAL) and the Fisherman's Association. The THA limits were defined by the Crown Estate and are shown in **Figure 16**. This accident occurred 4 cables outside the THA area of jurisdiction.

The authority maintains a comprehensive website allowing those using their facilities full access to the THA rules and navigational information.

Reproduced from Admiralty Chart BA 2474 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 16



THA limits of jurisdiction

1.11.2 Bylaws

Since the construction of the Mishnish Pier, now owned by CMAL, was approved in 1862, the formation of the THA was the first time that collective responsibility had been taken for the port and the bay, for which the association retains a duty of care. However, Tobermory is not empowered by a harbour enabling act and is unable to make bylaws, or have the right to make general directions. Consequently, instructions issued to mariners by the THA are effectively local rules, and have no legal standing.

1.12 SAILING DIRECTIONS

1.12.1 Admiralty Sailing Direction NP 66

The West Coast of Scotland pilot book gives direction for vessels entering Tobermory from the north, and small craft from the south.

Marks identified as assisting vessels to make a safe entry into Tobermory are described as '*prominent day marks*'. Other than small fairway marker buoys, and two beacons on the more difficult southern entrance, there are no other aids to navigation available to mariners.

The sailing direction does not provide advice for craft entering or departing Tobermory at night. There are no recommended visual aids to navigation available in Tobermory or Tobermory Bay for vessels navigating in darkness.

The sailing direction refers to two local rules:

- Anchoring prohibited in the fairway, and
- Speed to be restricted to 4 knots

1.12.2 Local advice

The THA provided the following advice for vessels entering Tobermory Bay:

'The only hazard when approaching the entrance to Tobermory Bay is New Rocks, 1 mile east of Rubha nan Gall lighthouse. New Rocks are marked and buoyed. The main entrance to the bay is between Rubha na Leip and Rubh' an Righ on the north of Calve Island.'

And in respect of the harbour:

'The fairway provides a clear passage between the Fishermans pier and the Macbraynes pier. The fairway extends out into the bay from the lifeboat pier and the car ferry slip.'

Do not anchor in the fairway

Please keep your speed and wash to a minimum within the harbour.'

1.13 EFFECT OF ALCOHOL

The following, in the DfT 'Think' strategy, while targeted at road users is equally applicable to water-borne craft (www.dft.gov.uk/think/focusareas/driving/drinkdriving):

'If you drive at twice the legal alcohol limit you are at least 30 times more likely to cause a road crash, than a driver who hasn't been drinking.'

Any amount of alcohol affects your ability to drive. There is no foolproof way of drinking and staying under the limit, or of knowing how much an individual person can drink and still drive safely.

Each person's tolerance to alcohol depends on a range of factors including: weight, gender, age, metabolism, current stress levels, whether they have eaten recently, amount of alcohol.

So the only safe option is not to drink alcohol if you plan to drive, and never offer an alcoholic drink to someone else who is intending to drive.'

1.14 SIMILAR ACCIDENTS

Between 2005 and 2007, the MAIB made a concerted effort to collect accident fatality data from a wide number of organizations within the pleasure and commercial leisure sector. **Table 1** shows the number of fatalities involving alcohol reported to the MAIB over that period.

Leisure craft fatalities involving alcohol reported to MAIB 2005 to 2007 (by year reported)

	Where	2005	2006	2007	Total
Pleasure craft (non-commercial)	Alongside or moored	0	1	6	7
	At anchor	0	0	1	1
	Entering or leaving port	4	0	0	4
	Mooring operations	1	0	0	1
	Not under command	0	1	0	1
	On passage	3	2	2	7
	Other offshore operations	0	0	2	2
	Pleasure trip	0	4	2	6
	Total	8	8	13	29
Small commercial leisure craft	Unknown	1	0	0	1
	Total	1	0	0	1
Total commercial & non commercial leisure fatalities involving alcohol		9	8	13	30

Table 1 - Leisure craft fatalities reported to MAIB 2005 - 2007

In July 2005, as a result of the fatality in the *Carrie Kate* and *Kets* collision, the MAIB recommended that the DfT:

'work closely with the RYA, MCA and other relevant stakeholders to realise the urgent introduction of national regulations to establish limits on the amount of alcohol which may be consumed by operators of leisure vessels'.

Since 2007, there have been further fatalities in the leisure sector in which the consumption of alcohol was a contributory factor.

Only 6 weeks after this accident a RIB, travelling at speed during darkness, collided with a moored sailing vessel in a southern English port. Fortunately both of the crew, who were not wearing lifejackets, bailed out before impact. There were no crew on the sailing vessel, which subsequently sank at its mooring. The RIB impaled itself into the bow of the sailing vessel, suggesting that it was travelling well in excess of the 8 knot speed limit for the area. Alcohol was identified as a significant contributory factor to this accident.

1.15 LEGISLATION

1.15.1 The Railways and Transport Safety Act 2003

There is currently no requirement for non-professional mariners to comply with the Railways and Transport Act 2003, but professional mariners are required to comply with Part 4 of the Act (*Alcohol and Drugs*).

Section 78 stipulates that professional masters, pilots and seamen commit an offence if their ability to carry out their duties is impaired because of drink or drugs, and if the proportion of alcohol in their breath, blood and urine exceeds the prescribed limit.

The prescribed limits (Section 81) are:

In the case of breath, 35 microgrammes of alcohol in 100 millilitres

In the case of blood, 80 milligrammes of alcohol in 100 millilitres

In the case of urine, 107 milligrammes of alcohol in 100 millilitres.

For the purposes of this section, a master, pilot or seaman is professional if (and only if) he acts as master, pilot or seaman in the course of a business or employment.

Section 79, *Professional staff off duty* states that an offence is committed when a seaman's ability is impaired and, in the event of an emergency, he would or might be required by the nature or terms of his engagement or employment, to take action to protect the safety of passengers.

Section 80, *Non-professionals*, states:

- (1) *This section applies to a person who-*
 - (a) *is on board a ship which is underway,*
 - (b) *is exercising, or purporting or attempting to exercise, a function in connection with the navigation of the ship, and*
 - (c) *is not a person to whom section 78 or 79 applies.*
- (2) *A person to whom this section applies commits an offence if his ability to exercise the function mentioned in subsection (1)(b) is impaired because of drink or drugs.*
- (3) *A person to whom this section applies commits an offence if the proportion of alcohol in his breath, blood or urine exceeds the prescribed limit.*
- (4) *The Secretary of State may make regulations providing for subsection (3) not to apply in specified circumstances.*
- (5) *Regulations under subsection (4) may make provision by reference, in particular-*
 - (a) *to the power of a motor;*
 - (b) *to the size of the ship;*
 - (c) *to the location.*

However, only subsections (4) and (5) of section 80 have been commenced.

The offences which apply to non-professional mariners have not yet been commenced pending consideration on what, if any, exceptions to the subsections (3) offence there should be for certain defined categories of non-professional mariners in accordance with subsections (4) and (5).

1.15.2 Current status

In 2004, the Government issued a consultation to determine whether any exceptions to the subsection (3) offence of being over the prescribed limit should be in place for non-professional mariners and, if so, how those exceptions should be framed. The consultation responses received were broadly in favour of an exception for non-professional mariners, using a combination of parameters, although views differed on how to frame the exception and who should be subject to the prescribed alcohol limits.

Following the results of the consultation, ministers announced in June 2007, the Government's intention to proceed with bringing into force Section 80 of the Railways and Transport Safety Act 2003 and to draft regulations for a limited exception from the prescribed alcohol limits for non-professional mariners on ships which are less than 7 metres and not capable of a maximum speed of more than 7 knots.

The Government issued a further public consultation in February 2009, inviting views on the draft regulations for such an exception for non-professional mariners on ships that have a length overall of less than 7 metres and a maximum design speed not exceeding 7 knots. The consultation ended on 6 May 2009. The Government is now considering the responses.

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 THE GROUNDING

The points of contact identified on various rock faces above and below sea level and the damage to *Sooty* indicate that the RIB was heading approximately east north east at a speed of about 20 knots when it struck the steep rock outcrop at Rubh' an Righ on Calve Island. On impact, the RIB was projected into the air and came to rest 11m further up the shallow rocky gradient, with its engine stopped. The boat's crew were thrown forward as it suddenly came to rest. Gary Henaghan was ejected from the boat onto the rocks with sufficient force to inflict fatal head injuries. The seated occupants were thrown into the RIB's visor and console, sustaining injuries consistent with the damage later identified.

The total loss of electrical power, which resulted in the crew being unable to use the VHF radio after the grounding, was attributable to the battery not being properly secured. This allowed it to be thrown forward on impact, causing the corroded positive terminal to be ripped from the main power supply switch. The position in which the rocker switches were later found must be treated with caution, given that three of the crew were thrown into the instrument panel, and that the coxswain might have disturbed the rocker switches when attempting to use the VHF radio to alert the coastguard.

To have grounded on the rocks without warning clearly indicates that the coxswain was not aware of the RIB's position or the proximity of Calve Island. This was probably due to several factors, including:

- An effective lookout was not maintained
- The RIB's speed was too fast
- The GPS mapper wasn't used effectively, and
- The coxswain was navigating while under the influence of alcohol.

2.3 LOOKOUT

After leaving the pontoon in Tobermory, the coxswain relied solely on navigation by eye. However, it is almost certain that his night vision would have been impaired by the glare and back scatter from the 55 watt, deck floodlight, and none of the other crew helped to maintain a proper lookout. Therefore, in view of the near total darkness and the absence of any night aids to navigation on the shore, it was not surprising that the RIB struck the rocks on Calve Island without

warning. The effectiveness of the lookout ahead of the vessel could have been easily and significantly improved by turning off the deck light and utilising the hand-held spotlight which might have enabled the danger ahead to be seen in sufficient time to allow successful avoiding action to be taken.

2.4 SPEED

Rule 6 of the Merchant Shipping (Distress Signals and Prevention of Collisions) Regulations 1996 states:

'every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid a collision and be stopped within a distance appropriate to the prevailing circumstances and conditions'

It also states that *'the proximity of navigational hazards'* shall be a determining factor when establishing a safe speed.

The decision to increase speed to get *Sooty* onto the plane, without properly monitoring the craft's position, was unsafe. It not only allowed less time to react to any danger, it also made the consequences of the vessel's grounding far more severe than would otherwise have been the case.

2.5 USE OF THE GPS MAPPER

2.5.1 Position monitoring

In darkness the only method of accurately monitoring the vessel's position was by using the GPS mapper, and the coxswain intended to navigate from Tobermory into the Sound of Mull by following the trail on the mapper recorded during the craft's earlier entry. However, he failed to do either. The lack of recorded data between Tobermory and Calve Island probably indicates that the GPS was either not switched on or had failed to acquire satellite data.

As the GPS mapper was routinely used and was prominently placed in the centre of the front visor, it is unlikely the coxswain would have forgotten to switch it on when leaving Tobermory in darkness. In addition, if the GPS had not been switched on, this would have been seen by the coxswain when he briefly glanced at its display shortly before increasing speed.

It is more likely that, given the time taken to cover the 7 cables from the pontoon to the scene of the accident was probably about 4 minutes, the equipment had insufficient time to acquire and receive satellite data and to display positional information, even though there are no known problems of satellite reception in the area. If this was the case, the status of the equipment was not recognised by any of the crew.

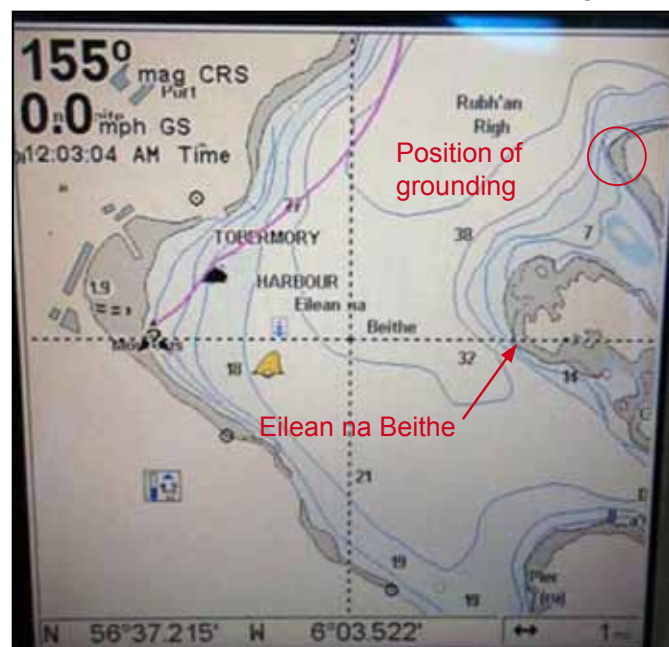
Assuming the GPS mapper was switched on, a map of the area would have been displayed. Positional awareness can be significantly influenced by the range scale of electronic chart displays. Depending on the range scale to which the unit defaulted, it is possible that when the coxswain glanced at the GPS display, he assumed the western tip of Eilean na Beithe, an island lying 2 cables south east of the accident site to be the western extremity of Calve Island (Figures 5, 17 and 18). This might have caused him to believe that Sooty was heading safely into the Sound of Mull when the RIB was actually heading directly towards the island.

Figure 17



Simulated picture (off centre) showing nearest headland

Figure 18



Simulated picture showing Calve Island just behind

2.5.2 Passage planning

Although the use of historic trails is a recognised technique that is described in the equipment handbook as '*particularly handy when you are trying to retrace your trip and go back the way you came*', had the inward route been followed, *Sooty* would have stayed close to the north shore and headed out of Tobermory Bay in a northerly direction – the wrong direction. There was no course planned from the trail towards Loch Aline.

The available trails had also been recorded during daylight hours when the coxswain had visual references by which to assess the craft's position relative to the proximity of any navigational dangers. As these references were not visible on the night of the accident, had the trail been followed, *Sooty* might have been taken much closer to navigational dangers than necessary. Consequently, the intention to follow the historic trail on this occasion was not only unviable to get to Loch Aline, it was also potentially unsafe.

Although leisure craft are required by regulation (**Annex B**) to plan all passages, the degree to which this regulation is adhered to should be determined by a number of factors including familiarity with the area, the proximity of navigational dangers, the provision of navigational aids, the environmental conditions experienced and forecast, and the navigation equipment carried. For *Sooty* to safely exit Tobermory Harbour, the entrance of which was only 2 cables wide, and transit the Sound of Mull to Loch Aline at night without any visual navigational aids or marks, a basic level of passage planning was essential. Both owners were trained in this important aspect of navigation, and a rudimentary plan could have been produced and followed using the mapper's waypoint and cross track error and depth alarm functions. However, this would have still placed sole reliance on the GPS unit.

2.6 INFLUENCE OF ALCOHOL

With the exception of Gary Henaghan, the crew had undertaken three dives on the day of the accident, with rest periods taken in between. This was an acceptable diving routine and, as all of the crew obtained 7 or 8 hours of good quality rest the previous night, fatigue resulting from physical exertion or a lack of sleep is not considered to be a contributory factor to this accident.

When *Sooty* arrived in Tobermory, the crew intended to remain there for a short period in order to get food and drink before returning to Loch Aline; they did not intend to remain there until about 2300. Had the crew left Tobermory as planned, the return trip to Loch Aline would have been made in daylight, similar to previous evenings. However, the self imposed delay meant that the crew had to navigate *Sooty* in a relatively unfamiliar area, on a very dark night when under the influence of alcohol. The deceased was more than three times over the drink drive limit at the time of the accident, and the breath test taken by the coxswain, recalculated to the time of the accident, showed a similar level of

intoxication. This probably explains why the crew thought that they left the public house at about 2130, when their movements before the accident at about 2330 took no longer than 20 minutes.

As noted in the toxicology report of the deceased (paragraph 1.4) and in the DFT's 'Think' strategy (paragraph 1.13), the effects of alcohol vary between individuals. However, the effects can generally be considered to impair motor co-ordination, affect cognitive ability, slow down reaction times, and reduce peripheral and night vision. Alcohol can also affect a person's mood by reducing levels of anxiety, relaxing inhibitions, and increasing their confidence levels. This frequently results in a person being more likely to take risks.

In this case, the boat's owners were sufficiently safety conscious to ensure they had been trained to operate their RIB, which they had also equipped well. The coxswain had also reacted quickly, positively and coherently when alerting the coastguard, but there is little doubt that his willingness to navigate blindly at speed into near darkness and to not fully utilise his GPS mapper or assimilate the information it displayed, was significantly influenced by his consumption of alcohol. The amount consumed by the coxswain and the rest of the crew diminished their mental faculties and awareness of danger, which ultimately resulted in the loss of a life.

2.7 DETERRENCE

The coxswain was aware that when he left the public house he had consumed too much alcohol to be able to drive a car without breaking the law. Yet, although he recognised the dangers of drinking, and then driving a motor vehicle, on this occasion he considered that the consumption of alcohol and then driving a boat was acceptable. Such behaviour is not uncommon with many viewing boating and drinking as social activities which go hand in hand.

However, it is clear from this and other alcohol-related accidents and fatalities involving leisure craft in recent years (paragraph 1.14 and Table 1) that the consumption of alcohol while operating leisure craft is dangerous. The need to deter leisure craft users from consuming alcohol is compelling and, while education is an important tool in this respect, the imposition of limits on the amount of alcohol that is allowed to be consumed when in charge of a leisure craft has a major role to play in changing the attitude of drink/driving boats.

At the moment, local harbour authorities may impose and enforce limits on leisure craft users' consumption of alcohol through bylaws. However, this case not only illustrates that not all authorities have the power required, but it also shows that not all alcohol-related accidents occur within harbour limits. Until an alcohol limit is imposed on leisure craft users in all UK waters, which is included but not yet enacted in the Railways and Transport Safety Act 2003, the enforcement of alcohol limits by harbour authorities will be fragmented and is likely to be inconsistent. As such, its effectiveness as a deterrent is diminished.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT WHICH HAVE RESULTED IN RECOMMENDATIONS

1. The coxswain's night vision was impaired by the glare and back scatter from the deck floodlight, and none of the other crew helped to maintain a proper lookout. [2.3]
2. The decision to increase speed to get *Sooty* onto the plane, reduced the time available to react to any impending danger and made the consequences of the vessel's grounding far more severe. [2.4]
3. The GPS probably did not display the RIB's position because it had not received sufficient satellite data in the short period from being switched on until the RIB grounded. [2.5.1]
4. It is possible that the coxswain misidentified a headland on his GPS mapper. [2.5.1]
5. The passage was not properly planned and the intention to follow the inward trail recorded in the GPS when leaving Tobermory was potentially unsafe. [2.5.2]
6. The coxswain's decision making and his co-ordination and cognitive skills were adversely affected by his consumption of alcohol. [2.6]

3.2 SAFETY ISSUES IDENTIFIED DURING THE INVESTIGATION WHICH HAVE NOT RESULTED IN RECOMMENDATIONS BUT HAVE BEEN ADDRESSED

1. Many accidents involving leisure craft are alcohol-related, and until an alcohol limit is imposed on non-professional mariners in all UK waters, the enforcement of alcohol limits by harbour authorities will be fragmented, and it will have little value as a deterrent. [2.7]

SECTION 4 - RECOMMENDATIONS

The owners of *Sooty* are recommended to:

2009/170 Examine their departure procedures and methods of navigation when operating leisure craft, with a view to ensuring that:

- A proper passage plan is produced before departure
- A proper and effective lookout is maintained at all times
- Passage is conducted at a safe speed
- Position is monitored
- The person in charge has not consumed alcohol in excess of the limit currently prescribed for drivers of road vehicles.

In view of the MAIB's previous recommendation regarding the introduction of national regulations establishing limits on the amount of alcohol which may be consumed by operators of leisure vessels, and the work currently being undertaken by the DfT in respect of the proposed implementation of Section 80 of the Railways and Transport Safety Act 2003, no further recommendations are considered necessary.

**Marine Accident Investigation Branch
October 2009**