MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

MARINE INCIDENT REPORT NO 3/2015 FEBRUARY 2015

Disappearance and rescue of the small fishing boat *Water-rail* in the North Sea 20 - 22 May 2014

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SUMMARY

At 0430[1] on 20 May 2014, the fishing boat *Water-rail* departed Gourdon Harbour, Aberdeenshire. On board were the 74 year old skipper and his 35 year old grandson. The skipper planned to tend his creels in Bervie Bay and then return home later that morning. However, shortly after departing the harbour, he became completely lost in fog. When the boat did not return as expected, the alarm was raised and an extensive search commenced. After 2 days nothing had been found, the search was called off and the men's family was informed that they had probably

[1] All times in this report are UTC+1

Water-rail

been lost at sea. The following morning (22 May 2014), *Water-rail* was found, 44 nautical miles offshore and its crew rescued by a passing trawler. The men were then transferred to an RNLI[2] lifeboat and taken ashore to be reunited with their family.

The investigation found that the skipper of *Water-rail* did not have the equipment or competence necessary to navigate his vessel safely in the prevailing conditions. He was also unable to broadcast a distress message as there was no electronic means of communication on board. The skipper's grandson had not received any maritime or fishing vessel safety training and was therefore of little help once they became lost. A recommendation has been made to the skipper which is designed to provide him with the knowledge and training needed to safely operate a fishing vessel in the future.

FACTUAL INFORMATION

Background

Water-rail was a small open fishing boat which had been rigged to operate as a side-hauling creeler. The boat had been owned and operated by its skipper for over 10 years. The skipper tended his creels most days and took his grandson with him to help. They usually departed Gourdon Harbour at first light and returned about 1030. The skipper laid his creels on single lines along the coastline between Gourdon Harbour and Todhead Point, typically within 0.25 nautical miles (nm) of the shore **(Figure 1)**.

Narrative

The disappearance and the search

Just before 0430 on 20 May 2014, the skipper of *Water-rail* and his grandson arrived at Gourdon Harbour. It was light but visibility was poor because of fog. Anticipating the fog would dissipate, they boarded *Water-rail* and motored out of the harbour.

Almost immediately, sight of land was lost. Unconcerned, the skipper continued out to sea with the intention of using his compass to cross Bervie Bay **(Figure 1)**. Initially, he attempted to head north-west where he expected to sight land again within an hour. After 3 hours underway, the skipper became concerned about the situation as sight of land had not been regained. He then attempted to head west in order to find the shoreline, but after a further 4 hours underway, he felt completely disorientated. He had then lost faith in his compass and started to head in different directions in the hope of finding land.

By then, *Water-rail* was overdue and the skipper's wife had become anxious that her husband had not returned home. At about 1130, she went to Gourdon Harbour to see if *Water-rail* had returned. At 1149, the alarm was raised with Aberdeen Coastguard and the procedure for an overdue vessel commenced. The RNLI all-weather lifeboats (ALB) from Montrose and Aberdeen, the Montrose inshore lifeboat (ILB) and the search and rescue (SAR) helicopter from RAF Lossiemouth were all deployed to the scene. The coastguard rescue teams (CRT) from Carnoustie and Montrose were tasked to search the shoreline, and several other fishing boats operating in the area joined the search offshore.

During the afternoon, the crew of the Montrose ILB located and inspected some of *Water-rail*'s creels and established that they had not been tended that morning. One of the CRTs went to Gourdon Harbour and spoke to some of the local fishermen: based on the information gathered, they reported that *Water-rail* usually carried enough fuel for an estimated range of 30 – 40nm.

The visibility remained poor throughout the day and on only one occasion did the missing fishermen sight another vessel; no action was taken to try and alert the passing ship's crew. At about 1830, having

[2] Royal National Lifeboat Institution

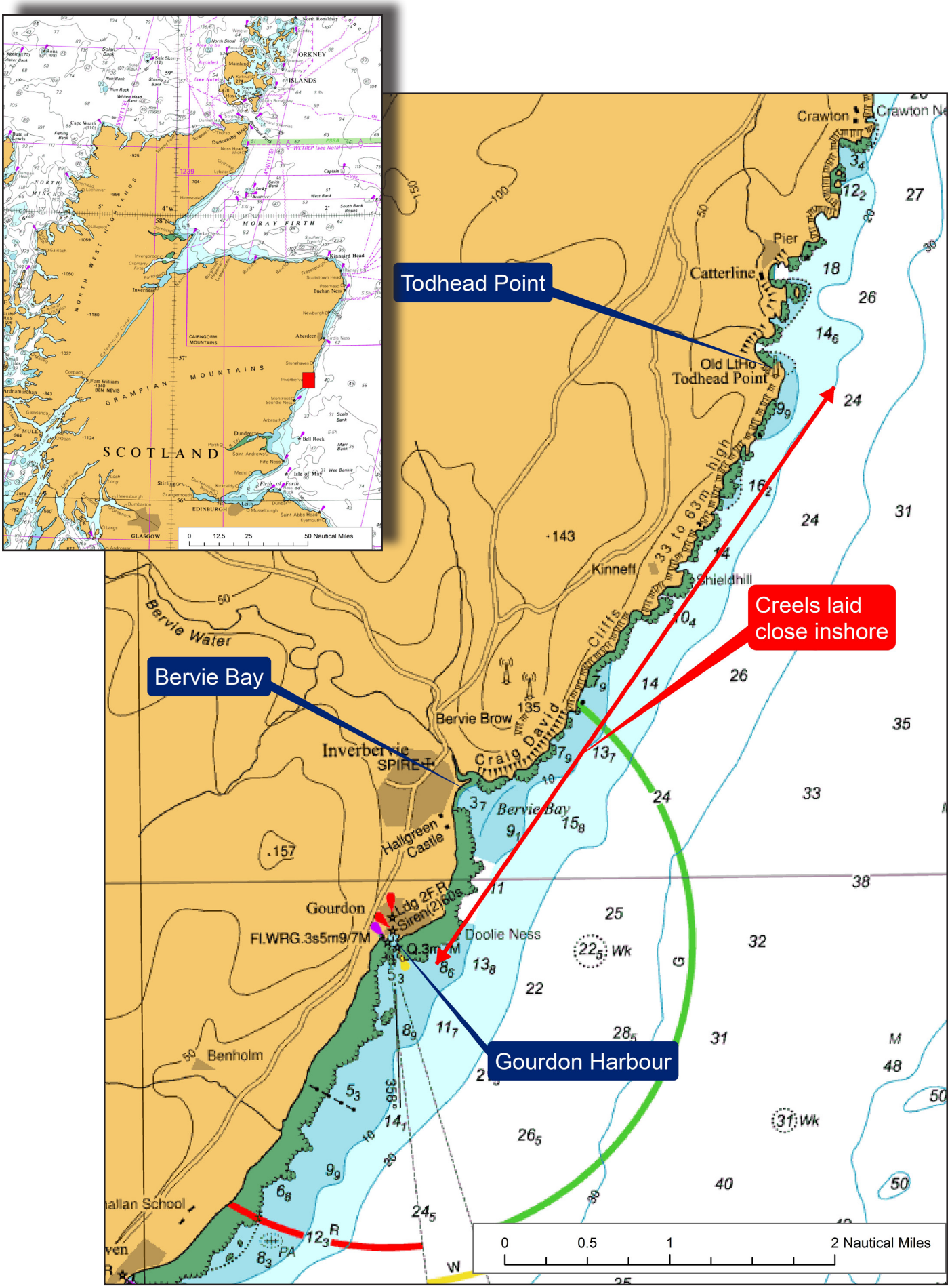

Figure 1: Gourdon Harbour to Todhead Point

motored for almost 14 hours in the fog, *Water-rail*'s skipper stopped the boat and tried to measure the depth of water. Using a weighted line, he assessed it to be approximately 60 fathoms[3]. Realising that they had strayed offshore into deep water, the skipper decided to anchor for the night.

At about 2100, the skipper fired one of his two parachute flares. By then, the skipper and his grandson were extremely confused and a little cold, but they remained calm. Having eaten the biscuits and drank the water that they had taken to sea with them, and running the boat's small electric generator to provide warmth, they took turns to get some sleep.

By 2120, the aircraft, lifeboats, other fishing vessels and CRTs had searched the coastline from Montrose to Todhead Point and approximately 5nm out to sea **(Figure 2)** and, with light fading, the search was suspended overnight. At about midnight, *Water-rail*'s skipper fired his second parachute flare.

At sunrise[4] the following day (21 May 2014), *Water-rail* was still at anchor and the visibility remained poor. The skipper, unable to get a bearing of the sun, remained disorientated and did not know which way to head. Despite this, he lifted the anchor and got *Water-rail* underway and went in search of land.

At 0458, the coastguard search resumed. In addition to the assets already allocated, the Stonehaven CRT, two further helicopters and a fixed wing aircraft joined the search. Based on the information gathered, the early morning effort remained focused inshore; however, at 0830, and as nothing had been found, a planning assessment was made that *Water-rail* may have proceeded offshore. As a result, the search area progressively increased during the day and, by 1348, air assets were searching as far out as 30nm from the coast **(Figure 2)**.

By evening, visibility had significantly improved and the bearing of the sun at sunset was observed by *Water-rail'*s skipper. Having motored for an estimated 17 hours in various directions during the day, *Water-rail* was very low on fuel and the fishermen had become hungry and were increasingly anxious. The skipper tried to maintain his grandson's morale and decided to anchor again overnight.

The multiple asset search on land and sea continued until 2055 when it was called off. No plans were made for any further searching and the family of the missing men was informed that they had probably been lost at sea.

The rescue

As the weather began to deteriorate during the early hours of the third morning (22 May 2014), the skipper decided to get underway. He lifted the anchor and headed slowly into sea in an attempt to minimise the risk of his boat becoming swamped.

At about 0730 and almost resigned to their fate, the skipper and his grandson sighted the deep-sea trawler*, Sylvia Bowers,* which was on passage 44nm offshore **(Figure 2)** and was heading directly towards them. By waving and shouting, they gained the attention of the trawler's watchkeeper and soon after they were safely transferred on board. *Sylvia Bowers'* skipper reported the rescue to the coastguard and began to head inshore with *Water-rail* in tow.

The Montrose ALB set out to meet *Sylvia Bowers* and, by 1130, the crew of *Water-rail* had transferred from the trawler to the lifeboat. *Sylvia Bowers* resumed its passage and the ALB attempted to take *Water-rail* in tow. However, with the sea on the beam, *Water-rail* soon became swamped and the lifeboat coxswain assessed that continuing the tow was untenable. As a result, the towline was cut, *Water-rail* was abandoned and the lifeboat headed back to Montrose to reunite the missing fishermen with their family.

[3] Sixty fathoms equates to 109.73 metres

[4] Sunrise at Gourdon on 21 May 2014 was at 0439. The exact time of sunrise in the vicinity of *Water-rail* cannot be determined as the position of the boat was unknown.

Reproduced from Admiralty Chart BA 0002-0 by permission of the Controller of HMSO and the UK Hydrographic Office.

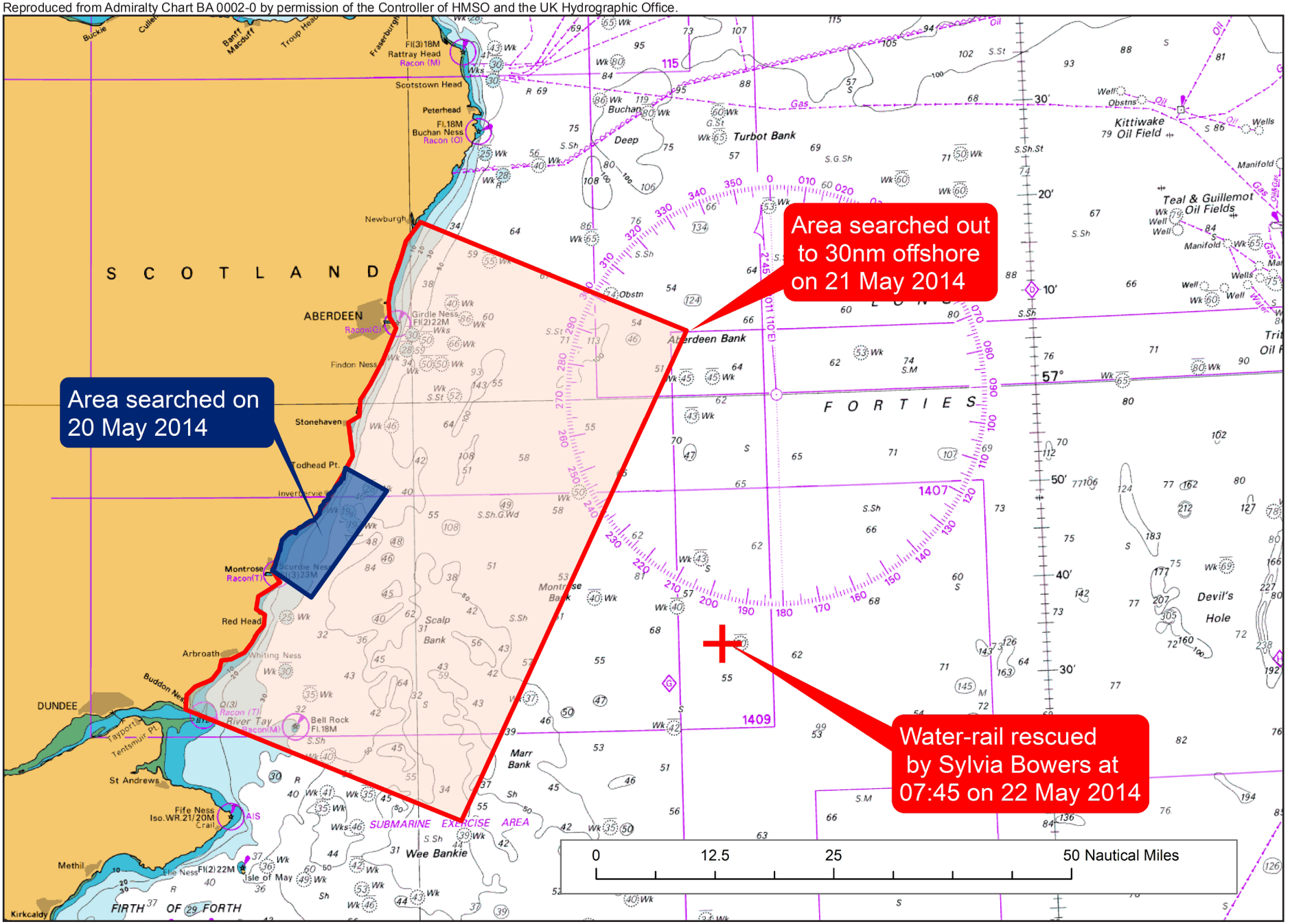

Figure 2: Area searched and rescue position

Environmental conditions

When *Water-rail* departed Gourdon Harbour on 20 May 2014, the wind was south-easterly at 15 knots (kts), the sea-state was slight and visibility was poor in fog; these conditions persisted throughout the day. By the following morning, the wind had reduced to 10kts and veered to a southerly direction; visibility remained poor during the early hours but by 1100 it was reported to have increased to 5nm in the area being searched. On the morning of the third day, 22 May 2014, conditions in the North Sea had significantly deteriorated with strong southerly winds and moderate to rough seas.

Weather forecasting

Water-rail's skipper did not obtain dedicated maritime weather forecasts and typically relied on local television broadcasts to predict the weather. The inshore maritime forecast issued by the Meteorological Office for Rattray Head to Berwick upon Tweed, covering the 24 hours from 1900 on 19 May 2014, included:

- Weather*: 'fog patches developing'*
- Visibility*: 'Moderate or poor, occasionally very poor'*

The outlook for the following 24 hours included:

- Weather*: 'fog patches, rain or thundery showers'*
- Visibility*: 'Moderate or poor, occasionally very poor'.*

Crew

The owner and skipper of *Water-rail* was 74 years old and his lifelong hobby of fishing had become his retirement job. He had attended the mandatory fishing vessel fire-fighting, safety awareness, sea survival and first aid training courses. He also held a licence for the use of a very high frequency (VHF) radio. He had no navigation training and no interest, experience or knowledge of electronic navigation aids. The skipper's grandson was 35 years old and had been fishing regularly on board *Water-rail* for 3 years. He had not attended any of the mandatory fishing vessel safety training and had no other maritime qualifications. However, he did not consider himself to be a professional fisherman; his main employment was at the local supermarket and he went fishing because he enjoyed it and also felt duty bound to assist his grandfather.

Water-rail

Water-rail was an Arran 16: 4.8 metre, open-decked, general-purpose fibreglass boat. Although no records of its construction have been found, it is assessed to have been approximately 30 years old. It was propelled by a Beta 10 horse power[5] inboard diesel engine that was installed in 2012 giving a cruising speed of approximately 6kts; fuel was supplied from a fixed, 50 litre tank in the bow area. During the incident, *Water-rail* was underway for an estimated 31 hours and so was likely to have travelled approximately 186nm[6]. An electric-driven creel hauler, powered by a portable petrol-driven generator, had been fitted on the starboard side **(Figure 3)**.

Water-rail was registered as a commercial fishing vessel on 2 April 2007 and was first presented for survey by the Maritime and Coastguard Agency (MCA) on 8 February 2010. Post survey, *Water-rail* was

[5] 10 horse power is equivalent to 7.35 kilowatts

[6] Assuming consumption of 1.5 litres of fuel per hour at 2,400 revs per minute generating output of 6.8 kilowatts. Data sourced from Beta Marine 10hp engine data sheet at: http://www.betamarine.co.uk/downloads/technical_data_sheets/seagoing_engine_data/B10_Tech_Photo_Sheets/B10-SDS-0311.pdf

Image courtesy of Mr James Spencer

Figure 3: *Water-rail* under tow from *Sylvia Bowers*

issued with a safety certificate, confirming compliance with Merchant Shipping Notice (MSN) 1813 (F), The Code of Practice for the Safety of Small Fishing Vessels (Small Fishing Vessels Code of Practice), which was valid until 7 February 2015.

Safety equipment

As *Water-rail* was lost during the rescue, the MAIB did not have the opportunity to inspect the vessel or the equipment on board. It was understood that, in addition to the two parachute flares used during the incident, two personal flotation devices (PFD) and a handheld gas-powered fog horn were carried on board. The skipper also had an unused Ocean Safety Compact PFD **(Figure 4)** at his home that had

been issued to him by the Scottish Fishermen's Federation. However, the skipper and his grandson never wore PFDs when they went sea and only donned them at the instruction of the trawler crew once they had been rescued.

Figure 4: Ocean Safety personal flotation device (unused)

The skipper of *Water-rail* owned a waterproof, handheld VHF radio **(Figure 5)**. This radio was kept at his home in its original packaging and was never carried on board. When inspected by MAIB the day after the rescue, it was established that the radio's battery was fully discharged. Neither the skipper nor his grandson took their mobile phones to sea on this occasion.

Navigation lights were fitted and switched on when at sea. During daylight hours, the skipper placed a metal bucket over the boat's mast to act as a radar reflector **(Figure 3)**. However, this meant that the single all round white light mounted on top of the mast was obscured, which should not have been the case in restricted visibility.

The compass

Water-rail's compass was a Plastimo Mini-B, which the skipper had secured in a home-made lead-lined wooden box. The compass was intended for fixed installation and according to the manufacturer's instruction manual:

- Its lubber line[7] '*must be strictly parallel with the boat bow and aft centreline'.*

[7] A lubber line is a fixed line marked on compass that should be in alignment with the longitudinal centre line of a ship and used by the helmsman to steer a course.

Figure 5: Marine VHF radio (unused)

- It was a '*back reading'* compass. This means that the lubber line should be at the rear of the compass (pointing towards the bow of the vessel), as viewed by the observer **(Figure 6)**.
- Having installed the compass, a deviation[8] check was required to assess any magnetic interference.

The skipper did not fix the compass box to *Water-rail*, instead, he placed it loosely on the seating at the stern of the boat **(Figure 3)**. When reading the compass, he aligned the lubber line with the after end of the boat. The compass had never been checked for deviation errors and was kept in the lead-lined box because the skipper thought this would provide shielding from magnetic interference.

Search planning

Key factors taken into account by Aberdeen Coastguard in planning the search for *Water-rail* included:

- Known operating areas of the boat; its equipment and characteristics.
- The boat's susceptibility to wind, tidal streams and currents if drifting.
- The capability of the assets allocated to the search in the prevailing conditions.

The coastguard's Search and Rescue Information System (SARIS[9]) was utilised to predict the most likely area that *Water-rail* or its crew might be found. Calculations based on a drifting vessel, a person in the water and liferaft sized targets all indicated a high likelihood of the missing boat and/or its crew being swept ashore.

[8] Deviation is the error on a magnetic compass resulting from local magnetic interference. The Plastimo Mini-B manufacturer's instructions explain how to measure and account for deviation.

[9] SARIS is a computer model which calculates the likely area an object may be found using a range of factors including the size of the object and environmental conditions

Figure 6: Plastimo Mini-B compass as seen by observer

The Code of Practice for the Safety of Small Fishing Vessels

MSN 1813 (F) required small fishing vessel owners to:

- Carry appropriate safety equipment[10].
- Certify annually that their vessels comply with the Code of Practice.
- Ensure crew have undertaken the appropriate training.
- Conduct risk assessments[11] in order to satisfy the requirements of the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997.

No risk assessment had been carried out and the record of annual self-certification by the owner showed no entry for 2011, 2013 or 2014.

In February 2014, the MCA issued Marine Guidance Notice (MGN) 502 (F)[12], a revised Code of Practice that, although voluntary when issued, was expected to replace MSN 1813 (F) as the mandatory standard by early 2016. Nevertheless, owners of small fishing vessels were encouraged to use MGN 502 (F) to prepare for MCA inspections, annual self-certifications and use of their vessels. Had MGN 502 (F) been

[10] For open fishing vessels less than 7m in length, this list includes a VHF radio

[11] It is not a requirement that risk assessments are written down, however, the MCA strongly recommends that they are.

[12] MGN 502 (F) – The Code of Practice for the Safety of Small Fishing Vessels – Standards which can be used to prepare for your MCA inspection.

applied to *Water-rail*, the carriage of an emergency position indicating radio beacon (EPIRB) and a digital selective calling (DSC) VHF radio would have been mandatory. MGN 502 (F) also recommends carriage of a personal locator beacon (PLB) and wearing of a PFD on deck.

ANALYSIS

The decision to proceed to sea

Irrespective of the size or operational function of a vessel, it is imperative that proceeding to sea is properly planned with factors such as weather conditions, equipment limitations and crew competence being taken into account. Shipping forecasts issued by the Meteorological Office the evening before *Water-rail* departed clearly identified a high risk of fog prevailing in the area for at least 48 hours but the skipper was unaware of this information. *Water-rail*'s only navigational aid was a magnetic compass.

Had the skipper given due consideration to the expected visibility and the limitations of his equipment it would have become apparent that proceeding to sea was unsafe. The subsequent decision to press ahead and attempt to cross Bervie Bay, based on a flawed assumption that the fog would dissipate, was ill-judged and almost cost the skipper and his grandson their lives.

Disappearance and route

Given that *Water-rail* always operated close inshore, visual references were vital to the skipper; in effect they provided his only method of navigation. It was apparent that the skipper became disorientated almost immediately after he left the harbour and lost sight of land.

Over the 2 days at sea, *Water-rail* travelled over four times the distance from Gourdon to the rescue position. It was not possible to conclusively determine the route the skipper took during the first day of the incident, however, he could not have headed north-west into Bervie Bay as intended. Given the skipper's unsuccessful attempts to head north-west and west, then misreading the compass is the most likely explanation for the boat ending up south and east of Gourdon.

Water-rail's movements on the second day at sea are impossible to determine but it is likely that the boat was always outside the search area. This analysis is reinforced by the fact that *Water-rail* was not found during the initial inshore search effort, and it was anchored in deep water on the first evening.

Use of the compass

The Plastimo Mini-B compass is a basic but nevertheless robust and precise navigation aid and it is considered highly unlikely that it failed. It was intended to be permanently fixed to the boat and, critically, it should have been aligned parallel to the boat's fore and aft centerline. Once fitted, it should be read by the observer looking ahead with the lubber line at the far side of the compass (toward the bow) **(Figure 6)**.

When aligned towards the after end of the boat, as illustrated in **Figure 7**, the lubber line shows the reciprocal of the boat's actual heading. In a disorientating situation, particularly without visual references, this incorrect set up of the compass induced a significant risk of reading (and potentially steering) a reciprocal course.

Water-rail's compass was not permanently fixed to the boat; instead, it was loose in its home-made, lead-lined, wooden box. Lead is a non-ferrous metal: as such, it would not have provided any magnetic shielding and therefore the compass would have been subject to deviation errors. However, given the skipper's misconception over the shielding properties of lead lining, he would not have been concerned about the risk of deviation errors and, therefore, not taken these into account.

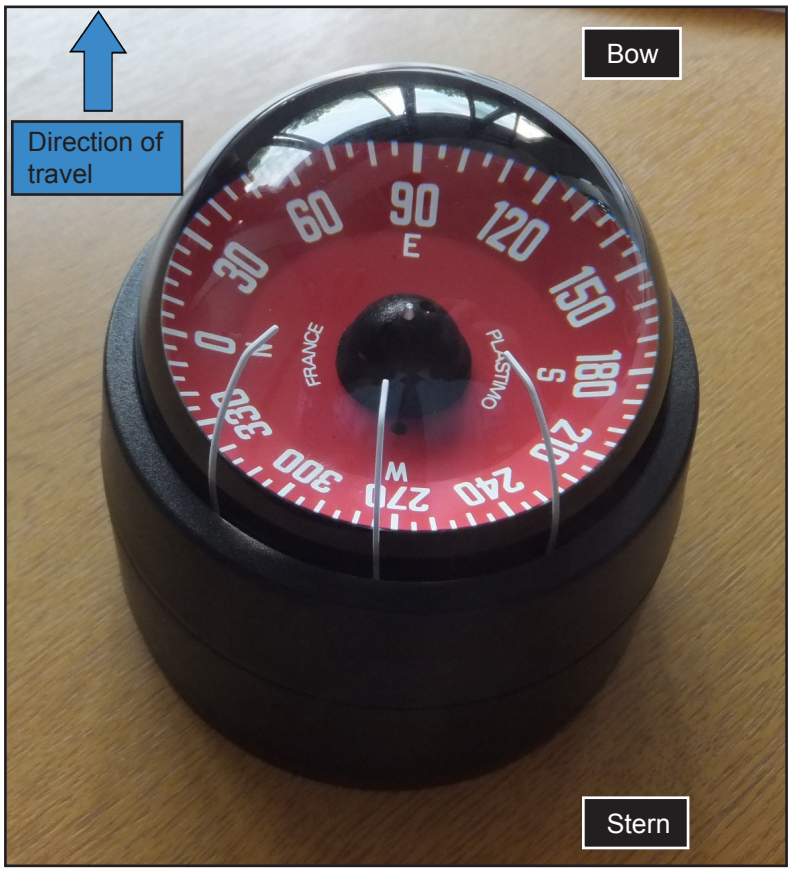

Figure 7: Assessment of skipper's view of compass when heading east with the lubber line aligned with west

Raising the alarm

Water-rail was not equipped with a VHF radio and, although no substitute for a marine radio, neither of the crew had brought their mobile phones on board. As a result, when things started to go wrong, they had no electronic method of alerting the coastguard or calling for help. The skipper did own a suitable VHF radio, however, it was never used, its battery was flat, and it had been purchased solely for the purpose of passing an inspection by an MCA surveyor. Had the skipper taken his VHF radio to sea with him, the alarm could have been raised soon after he became lost.

Neither of the crew were aware of the capability offered by a PLB or EPIRB; either of these devices would have been a reliable and accurate method of raising the alarm and, critically, would have provided the boat's position to the coastguard. This would have led to a rapid rescue and minimised the impact on the SAR assets.

The flares and the gas-powered fog horn provided additional methods for summoning help. Two parachute flares were fired by the skipper during the first night at sea. However, no other ships were in sight when the flares were fired and no reports of flare sightings were received by the coastguard. Continuous sounding with any fog signalling apparatus is a recognised distress signal but it was never used, even when the fishermen sighted another ship on the first day.

Had the skipper been better prepared and able to raise the alarm once he became lost, this would have avoided the need for the extensive search and spared the family the traumatic experience of believing their loved ones had been lost at sea.

The search

At the outset, the coastguard's search planning was focused close inshore where *Water-rail*'s creels were known to be laid. This was based on a reasonable assumption that the boat would almost certainly have got into difficulty somewhere in Bervie Bay. This assessment was underpinned by the report that *Water-rail*'s creels had not been tended on the morning of the disappearance. However, despite multiple assets searching in a coordinated arrangement, the absence of the boat inevitably led the coastguard to extend the search further out to sea.

One of the factors that determined the extent of the search offshore was the assessment of the boat's range under power. Based on the information received by one of the CRTs, which indicated this to be in the order of 30 - 40nm, the area being searched on the second day was extended out to 30nm offshore. However, *Water-rail* carried significantly more fuel than estimated and was capable of motoring much further than the vessel's range used in the search planning. Regardless of the amount of fuel carried, the suggestion that a skipper would proceed so far out to sea in such a small boat was almost inconceivable. Hence, the decision to extend the search area to 30nm offshore was entirely reasonable given the size of the boat, its known operating patterns, the prevailing environmental conditions and the search assets available.

Training and competence

The skipper had completed the minimum safety training required by the Small Fishing Vessels Code of Practice. However, he had not completed any navigation training, had minimal knowledge of navigation practices and no interest in electronic navigation aids. Despite routinely working at sea in a registered fishing boat for 3 years, his grandson had received no training whatsoever.

Safety training for commercial fishermen is readily available and offers the opportunity to gain important safety skills. Notwithstanding that the grandson did not consider himself to be a professional fisherman, he should have completed the four mandatory fishing vessel safety courses.

Competence is the ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. It is a combination of practical and thinking skills, knowledge and experience. Although *Water-rail*'s skipper had many years' experience, he demonstrated a poor level of judgement and a lack of basic navigational skills. As a result, the skipper lacked the competence necessary to operate his boat safely in the prevailing circumstances.

Safety awareness and risk assessment

The Small Fishing Vessels Code of Practice requires owners to conduct risk assessments. This process is intended to help them identify hazards associated with their vessel's operations and ensure controls are put in place to minimise risk. Although *Water-rail* was a registered fishing vessel and its catch was sold for profit, it was apparent that the skipper and his grandson did not operate the vessel with the mindset of professional fishermen. The skipper made little or no attempt to comply with the Small Fishing Vessels Code of Practice, and his grandson treated fishing as a hobby.

Other evidence that reinforces the conclusion that the skipper lacked safety awareness include: the crew not routinely wearing PFDs, proceeding to sea without communications equipment, insufficient crew training and not completing annual safety self-certification. It is of concern that similar failings are encountered all too often during MAIB investigations into other fishing vessel accidents.

CONCLUSIONS

- *Water-rail*'s skipper lacked the competence necessary to navigate safely in the prevailing conditions placing himself, his grandson, his boat and other vessels in significant danger.

- Once lost, the skipper was unable to raise the alarm because no means of electronic communication was carried on board. The absence of a VHF radio contravened the Code of Practice for the Safety of Small Fishing Vessels.

- The compass on board *Water-rail* was not installed, set up or operated correctly. While there is insufficient evidence to establish the route taken by *Water-rail,* it is most likely that the majority of the first day at sea was spent heading in the opposite directions to those intended by the skipper.

- The skipper's grandson had no formal training in fishing safety and should not have been regularly taken to sea as crew of a commercial fishing vessel.

- The search effort was well co-ordinated, employing multiple land, sea and air assets and covered an appropriate area based on reasonable planning assumptions. *Water-rail* was not located by coastguard search assets because it was almost certainly always outside the area being searched.

- The skipper of *Water-rail* and his grandson were extremely fortunate that they were spotted and then rescued by the crew of the trawler *Sylvia Bowers*.

- This incident has identified the skipper's poor safety practices, which resulted in his rapid loss of situational awareness, an unnecessary search and a difficult experience for his family.

RECOMMENDATION

The owner/skipper of *Water-rail* is recommended to:

2015/106 Improve the safe operation of any similar vessel he may own in the future by:

- Attending a navigation training course.
- Ensuring that safety equipment is carried and crew are trained in accordance with MSN 1813(F), the MCA Code of Practice for the Safety of Small Fishing Vessels.
- Applying additional safety measures recommended in MGN 502(F), the updated Code of Practice, specifically: carriage of an EPIRB/PLB and DSC VHF radio as well as wearing of PFDs on deck.

VESSEL PARTICULARS	
Vessel's name	*Water-rail*
Flag	United Kingdom
Classification society	Not applicable
IMO number/fishing numbers	ME 235
Type	Fishing vessel
Year of build	Unknown
Construction	Glass reinforced plastic
Length overall	4.8m
Gross tonnage	Hull only – 281kg
Minimum safe manning	Not applicable
Authorised cargo	Not applicable
VOYAGE PARTICULARS	
Port of departure	Gourdon Harbour, Aberdeenshire
Intended Port of arrival	Gourdon Harbour, Aberdeenshire
Type of voyage	Coastal
Cargo information	Not applicable
Manning	2
MARINE CASUALTY INFORMATION	
Date and time	20 – 22 May 2014
Type of marine casualty or incident	Marine Incident
Location of incident	North Sea, exact route unknown
Injuries/fatalities	None
Damage/environmental impact	None
Intended vessel operation	Creel fishing