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“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 such 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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Fatal man overboard from the single-handed creel boat *Sea Mist* (BF918) Macduff, Scotland 27 March 2019

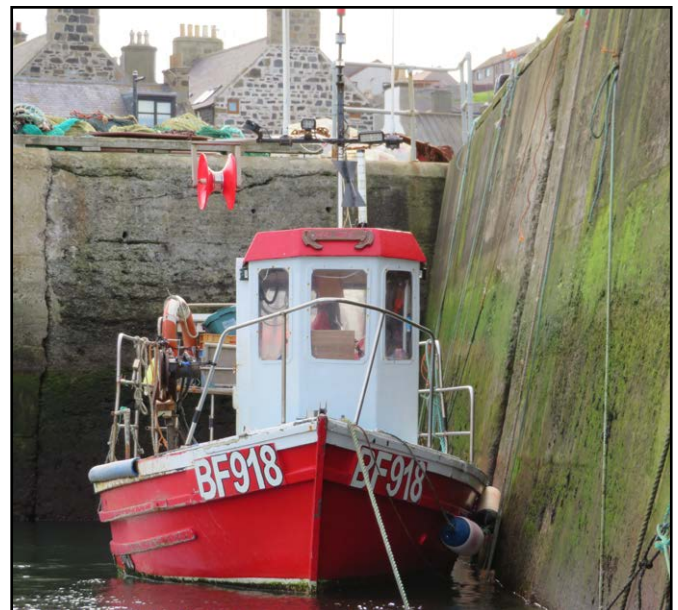
SUMMARY

At about 1225 UTC+1 on 27 March 2019, Tony Masson, the skipper/owner of the single-handed creel boat *Sea Mist*, became entangled in a back rope¹ while shooting creels² and was hauled overboard.

No-one witnessed the accident. However, the skipper's son, who was nearby on his own fishing vessel, *Ocean Lee*, saw *Sea Mist* circling shortly afterwards and raised the alarm. At 1321, *Sea Mist*'s skipper was recovered from the water by the crew from a Royal National Lifeboat Institution (RNLI) lifeboat. He was declared deceased on arrival at hospital.

Sea Mist's skipper was working alone on deck without a personal flotation device (PFD) and there were no barriers in place to separate him from his fishing gear. The investigation concluded that he drowned either because he was dragged underwater by the weight of the creels and was unable to free himself in time to reach the surface, or because he was unable to keep himself afloat after releasing his foot from his wellington boot.

A recommendation has been made to the Fishing Industry Safety Group Co-ordination Group aimed at improving awareness of the safety guidance that is widely available to fishing vessel owners and crew, and the importance of following it.



Sea Mist

¹ Back rope – a line that creels or pots are attached to.

² Creel – An enclosed device where shellfish actively enter and are captured, also known as a pot.

FACTUAL INFORMATION

Narrative

On 27 March 2019 at about 0930, *Sea Mist's* skipper and his son, the skipper of the creel boat *Ocean Lee*, arrived at Macduff harbour to start a day's fishing. Once on board their respective vessels, both men put on their PFDs and set out towards the harbour entrance. At 0940, *Ocean Lee's* skipper called the harbourmaster on VHF³ radio to report that both vessels were leaving harbour.

Once clear of the harbour, *Sea Mist's* skipper headed for his fishing grounds just to the north of Macduff (**Figure 1**) while *Ocean Lee's* skipper headed towards Banff Bay to start fishing. At 1215, *Ocean Lee's* skipper called his father using his mobile phone and told him that he had finished fishing for the day. *Sea Mist's* skipper said that he was recovering his last leader⁴ and would have it shot away in about 10 minutes. While he waited, *Ocean Lee's* skipper took the opportunity to check a few of his single creels that were about a mile away from where *Sea Mist* was working.

At about 1233, *Ocean Lee's* skipper noticed that *Sea Mist* was circling, with no sign of his father either on the fishing boat or on the sea's surface. At 1235, he called the Macduff harbourmaster on VHF radio and asked him to alert the coastguard of a possible missing fisherman. Leaving his own creels, *Ocean Lee's* skipper headed towards the circling *Sea Mist*. As he approached, he saw that one of *Sea Mist's* back ropes had become caught around the bow, causing the vessel to turn in circles. To stop the fishing vessel, *Ocean Lee's* skipper drove his vessel into *Sea Mist* on its starboard side and boarded the vessel. Once on board, he placed the engine throttle to neutral, stopped the engine and dropped the anchor. *Ocean Lee's* skipper then returned to his own vessel and confirmed to the harbourmaster that his father was missing. At about the same time, the Macduff RNLI lifeboat was tasked by the coastguard.

Thinking that his father must have become entangled with his fishing gear and dragged overboard while shooting his last leader, *Ocean Lee's* skipper began to recover his father's creels in an attempt to find him. As he did not know which of the leaders had been laid that day, he started with the closest one searching for newly baited creels. A short while later he saw his father's baseball cap floating in the water.

At 1257, the Macduff RNLI lifeboat arrived on scene and approached *Ocean Lee*; a rescue helicopter was launched at the same time. *Ocean Lee's* skipper informed the RNLI lifeboat crew that his father was wearing a red PFD in addition to his usual fishing clothing. After confirming that *Ocean Lee's* skipper did not require help to lift the leaders, the RNLI lifeboat began an expanding square pattern search of the sea, using *Sea Mist's* anchored position as the datum point.

At 1307, the Macduff harbour launch, with the harbourmaster, port engineer and two additional RNLI crewmen on board, joined the search. At 1309, *Ocean Lee's* skipper recovered a leader that had one of his father's wellington boots caught in it. He immediately informed the RNLI lifeboat crew, who re-started their expanding square search using the position of this leader as the datum point.

By 1314, the rescue helicopter was on scene, and at 1321 the helicopter's crew spotted *Sea Mist's* skipper floating face-down just under the sea surface. He was not wearing a PFD. The RNLI lifeboat crew recovered the skipper and transferred him to the helicopter, which proceeded directly to the Royal Aberdeen hospital.

Sea Mist was recovered by the two RNLI crewmen on the harbour launch. When they boarded the fishing vessel, they noticed a red PFD hanging up in the wheelhouse.

Sea Mist's skipper was declared deceased at 1503.

³ Very High Frequency.

⁴ Leader – a string of creels.

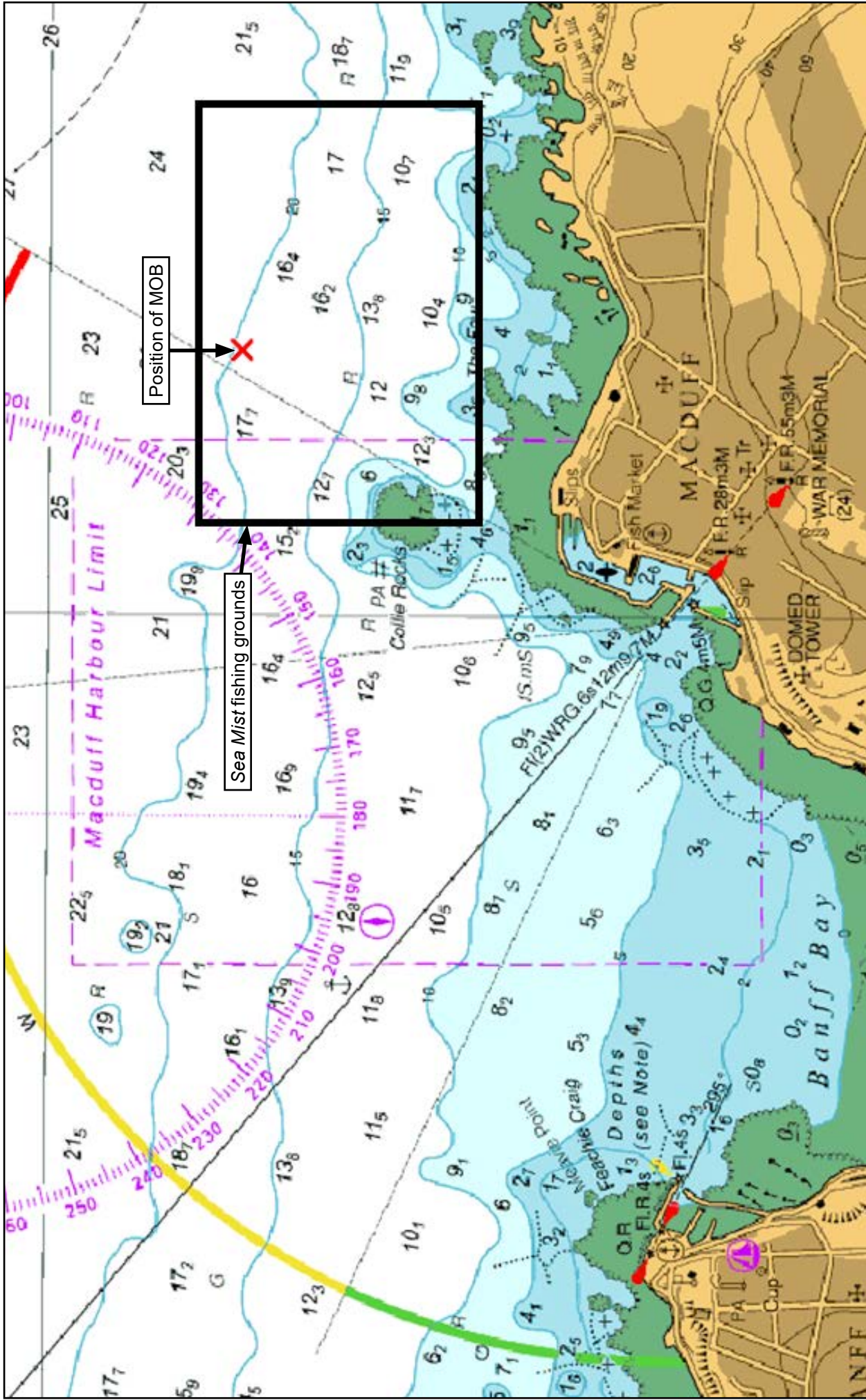


Figure 1: Position of fishing grounds and accident

Environmental conditions

It was a clear dry day; the winds were light and the sea was calm. The water temperature was approximately 9°C. The depth of water at the fishing ground was between 16m and 17m.

Sea Mist

Sea Mist was a UK registered 5.65m fishing boat with a hydraulic hauler on its starboard side. It had a shooting gate located on its stern, which measured 85cm wide at deck level and 78cm high (**Figure 2**).



Figure 2: Position of lifebuoys

Sea Mist could be helmed from within the wheelhouse or from the starboard side of the main deck by the hauler. When not in use, *Sea Mist* was left at its berth on the outer harbour wall in MacDuff.

The lifesaving equipment carried on board included two lifebuoys located inboard on the aft railing (**Figure 2**) and a solid-filled (inherently buoyant) PFD for emergency use. There were also two 150N auto-inflate PFDs on board for use when working on deck (**Figure 3a**), both of which were found on board after the accident. There were serrated knives in sheaths in two locations on the working deck (**Figure 3b**).

Skipper owner

Sea Mist's skipper was 67-years old and had served in the Royal Navy until 1972 when he started to work for his local council. He had always fished for pleasure, owning several different boats until his retirement from the council in 2014 when he purchased *Sea Mist*, which he operated commercially.



Figure 3: Skipper's personal flotation device and knife stowage on deck

The skipper had completed the mandatory fishing vessel safety awareness training in February 2015. He always carried a knife and was known to regularly wear his auto-inflation PFD when fishing.

Postmortem examination report

The postmortem examination report indicated the cause of the skipper's death was drowning. Toxicology reports confirmed that he was not under the influence of alcohol or drugs at the time of the accident.

Fishing gear

Sea Mist's skipper generally fished for crabs in shallow waters to the north of MacDuff, but this was weather dependent. He owned approximately 70 creels, of various sizes, which were arranged in leaders of between 7 and 10 creels.

Each leader had a flagged float that displayed *Sea Mist's* fishing number at one end and two buoys at the other. The back rope had weights at either end and the creels were attached along its length at various distances by leg lines (**Figure 4**). The creels were stowed on the deck end-on to the stern (**Figure 5**) to minimise the risk of the larger creels jamming in the shooting door.

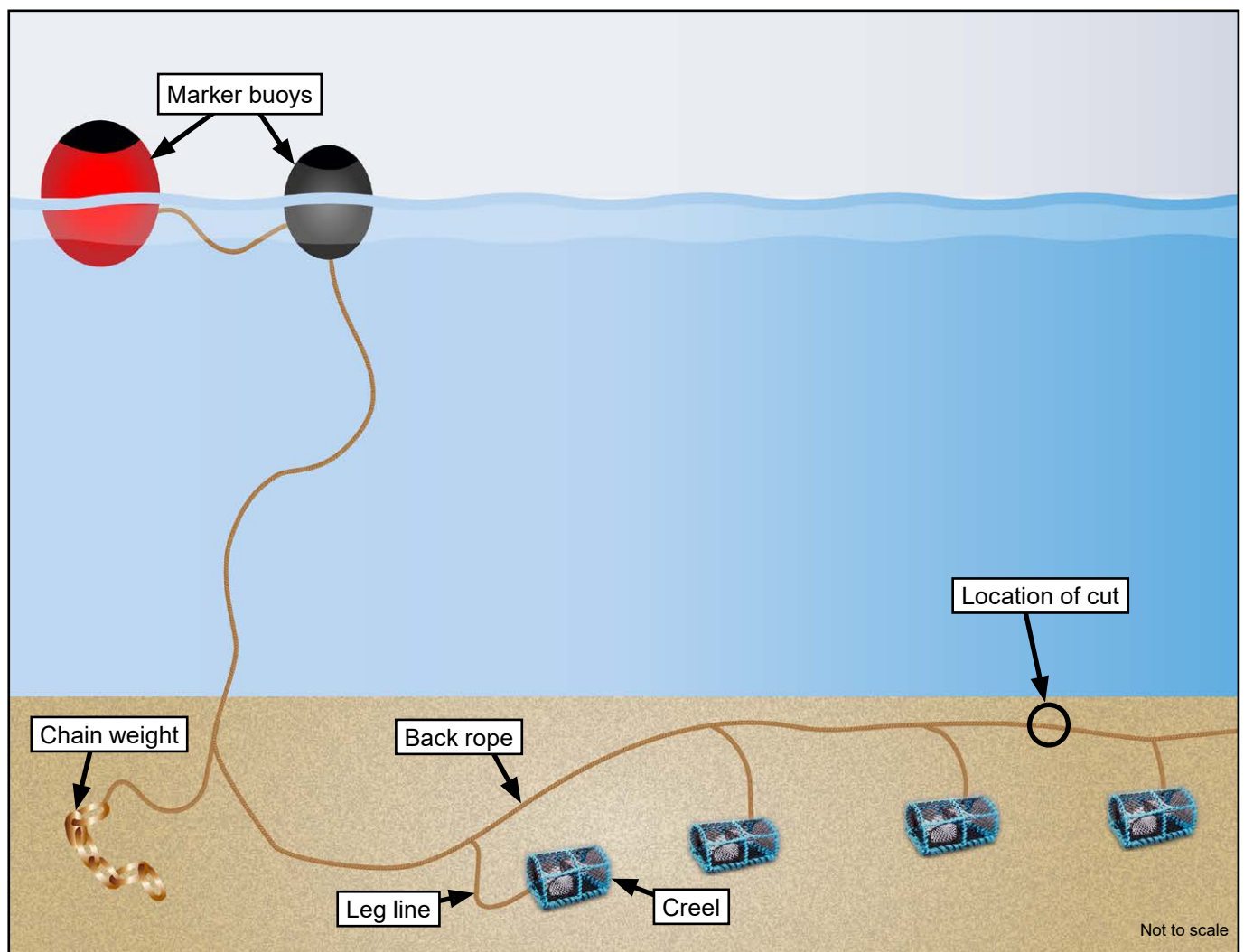


Figure 4: Leader

To shoot a leader, *Sea Mist's* skipper brought the fishing vessel to a stop, the flagged float was then thrown into the sea, followed by the weight. The skipper then returned to the wheelhouse and placed the engine ahead, causing the creels to be pulled off the stern of the vessel by the back rope. Typically, the skipper would recover, empty, rebait and then reshoot between three and five leaders a day.

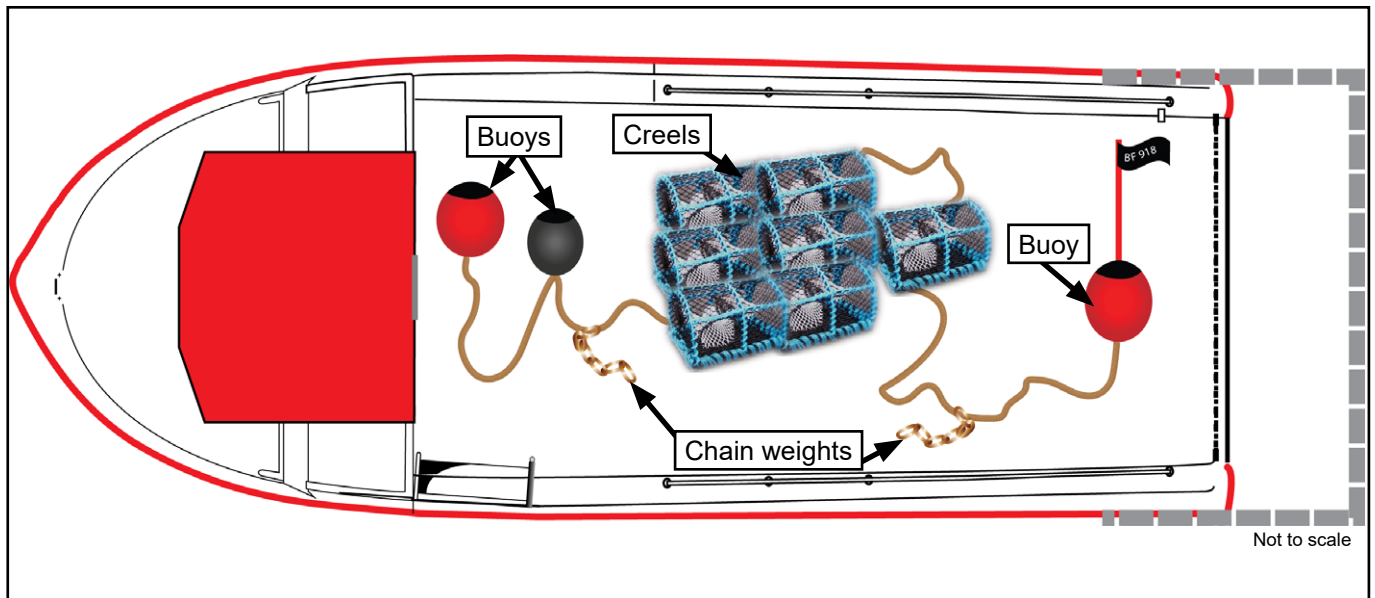


Figure 5: Typical stow on deck

The leader that the skipper's boot was entangled in had seven creels of varying sizes. Creels number two, three and five were the largest size used on *Sea Mist*, measuring 78cm long by 42cm diameter.

Following the accident, the leader was inspected and a cut in the back rope was discovered between the fourth and fifth creels (**Figure 6**). This section of the leader was sent to an independent specialist to examine the cut. The specialist's report stated that:

Visual and digital microscopy examination confirm that the rope has been mechanically damaged with a sharp edge indicative of a knife. There is no evidence of crushed or distorted strands or filaments adjacent to the damage that might indicate that the rope had been caught or snagged in a clamp or other mechanical type of hinge. There is also no evidence of heat or chemical damage to the rope.

Examination of the ends of the fiber filaments has shown a large proportion to have either a flat or angled shape with a lip. These are all known damage profiles for a sharp cut being made by a knife but there is also evidence of some tearing of the filaments which may be indicative of the knife being pulled across the fibers in an attempted slashing cut or possibly of a serrated edge of a blade being used. [sic]



Figure 6: The cut in the back rope

Guidance

The MCA's *Fishermen's Safety Guide* provides guidance on safe working practices and emergency procedures for fishermen that includes the following guidance on single-handed operations:

Dangerous by nature, clearly there is nobody to raise the alarm when things go wrong.

The single hander should consider the risks. A risk assessment here is essential because once all the risks are identified, solutions can be applied.

Carry out a risk assessment! Think about the following;

- *Are you wearing your Personal Floatation Device (PFD) whilst on deck...will you float for long enough to be rescued?*
- *Do you wear a PLB with GPS Satellite Capability?*
- *Can you free yourself from gear? (Rescue knife on belt?)*
- *Have you removed as much of the risk as possible before you leave port? Non slip decks. No bights of rope. Bulwark height. VHF Radio checked etc.*
- *Are you able to keep a good lookout?*
- *These are all ideas; every type of vessel and operation is different so consider each case as different.*

Under the heading *Potting and creeling*, the guide asks owners to consider:

Is it possible to improve safety by installing a barrier to separate the rope from the area where the crew handle the pots?

Seafish's Industry Advisory Note on Potting Safety, issued in January 2011⁵, warned that single-handed fishing may increase the risk of accidents and will reduce the chances of rescue should an accident occur. It also provided useful guidance on hazard reduction methods including:

Separating the crew from the back rope will resolve one of the most dangerous hazards; that of becoming snagged in the rope when shooting. The design of the barrier will depend on the layout of the vessel and the stacking of the pots but should endeavour to provide protection to all involved in the shooting operation.

On board *Sea Mist*, there was no barrier fitted to separate the gear from the skipper. Instead, it was the skipper's practice to remain in the wheelhouse as the gear was being shot away.

Regulation

In December 2018, the Maritime and Coastguard Agency introduced changes in its requirements for UK fishermen and fishing vessels following the implementation of the International Labour Organization Work in Fishing Convention (No188). Subsequent guidance on the requirements for PFDs can be found in MGN 588(F) *Compulsory Provision and Wearing of Personal Flotation Devices on Fishing Vessels*⁶. This stated that unless measures are in place to eliminate the risk of fishermen falling overboard, fishermen must be provided with, and must wear, either a PFD or a safety harness.

⁵ www.seafish.org/media/Publications/SeafishIndustryAdvisoryNoteFS45PottingSafety_201101.pdf

⁶ www.gov.uk/government/publications/mgn-588-ilo-work-in-fishing-convention-health-and-safety-pfds

Similar accidents

There have been 33 recorded fatalities on UK creel boats/potting vessels since the beginning of 2007, 20 of which were a result of either falling or being dragged overboard with the fishing gear. Of these 20 fatalities, 9 were single-handed fishing operations.

On 2 September 2016, the crewman on board the fishing vessel *Pauline Mary* was dragged overboard and drowned after becoming entangled in the gear while shooting creels east of Hartlepool. The crewman clung momentarily to the boat's gunnel before being pulled overboard. He was not carrying a knife or wearing a PFD. The investigation report concluded that had he been carrying a knife, or if one had been readily available on deck, he might have had an opportunity to cut himself free before going overboard.

On 20 January 2011, 5.5 miles east of Score Head, Bressay, the skipper of the fishing vessel *Breadwinner* was dragged overboard while shooting his creels, and drowned. The boat was being operated single-handedly, so no-one could assist the skipper when he became entangled in the back rope.

The accident happened during a normal shooting routine, which the skipper had carried out for many years. The leaders were self-shooting, which meant the skipper did not need to be on deck during the shooting process. However, there were no barriers in place to physically separate crew on deck from the fishing gear.

A recommendation was made to the Maritime and Coastguard Agency to extend the guidance published in the *Fishermen's Safety Guide* to cover the additional safety considerations for single-handed operations. The recommendation was implemented and the advice on single-handed operations can be found in Section 2 of the guide.

ANALYSIS

Entry into the water

The precise circumstances of the accident are unknown because *Sea Mist's* skipper was working alone and *Ocean Lee* was too far away for his son to witness the accident.

Sea Mist's skipper usually remained in the wheelhouse when shooting his creels. However, it was evident from the discovery of the boot entangled in the back rope of one of his leaders and the engine throttle position, that on this occasion the skipper was on the working deck during the shooting process.

It is probable that the skipper had returned to the wheelhouse after throwing the flagged float and weight of the leader into the sea as usual. Having put the engine control to ahead, he must have returned to the working deck.

The most likely reason for the skipper to return to the deck was to release a snagged or jammed creel or group of creels. At 78cm x 42cm, creels two, three and five were the largest creels on the leader and were therefore the most likely to snag in the shooting gate opening (**Figure 7**). Whatever his reason for returning to the deck, the evidence indicates that his boot became entangled in the back rope, and he was pulled overboard as the creels continued to shoot.



Figure 7: Creel jammed in shooting gate

Cause of drowning

Sudden immersion in cold water (water under 15°C) can be fatal in several ways, in particular:

a. Cold shock response

On immersion in cold water the sudden lowering of skin temperature causes a rapid rise in heart rate, and therefore blood pressure, accompanied by a gasp reflex followed by uncontrollable rapid breathing. The onset of cold shock occurs, peaking within 30 seconds and lasting for 2-3 minutes. If the head goes underwater during this stage, the inability to hold breath will often lead to water entering the lungs in quantities sufficient to cause death. Cold shock is considered to be the cause of the majority of drowning deaths.

b. Cold incapacitation

Cold incapacitation usually occurs within 2-15 minutes of entering cold water. The blood vessels are constricted as the body tries to preserve heat and protect the vital organs. This results in the blood flow to the extremities being restricted, causing cooling and consequent deterioration in the functioning of muscles and nerve ends. Useful movement is lost in hands and feet, progressively leading to the incapacitation of arms and legs. Unless a PFD is worn, death by drowning occurs as a result of impaired swimming.

It was evident from the cut in the leader's back rope, that *Sea Mist's* skipper fought hard to free himself, though it is unknown whether he attempted to cut the rope before or after he entered the water.

Once he was in the water it is most likely that *Sea Mist's* skipper was pulled under the water by the weight of the creels and was unable to free himself and swim back to the surface before he drowned. However, had the skipper managed to free his foot from his entangled boot and made it to the surface alive, it is likely that in sea temperatures of 9°C he would have experienced the effects of cold water shock on entering the water and cold water incapacitation within minutes. In such circumstances, without the buoyant support of a PFD, the rapid onset of drowning would have been inevitable.

Single-handed fishing – perception of risk

Single-handed fishing is particularly hazardous as there is no-one else at hand to assist in the event of an incident. In such circumstances, even a simple trip or slip can result in tragic consequences.

Sea Mist's skipper appeared to be safety conscious and had taken many of the precautions recommended by the *Fishermen's Safety Guide* and Seafish's advisory note on *Potting Safety*. He carried a knife and regularly wore a PFD while fishing. He had been wearing a PFD earlier that day, and it cannot be known why he had removed it prior to the accident. It is possible that he took it off on returning to the wheelhouse having cast the flagged float and weight of the last leader overboard as he would not have expected to need to return to the working deck.

Despite the recent publication of improved safety guidance, the frequency of serious and fatal accidents involving single-handed fishermen shows no sign of reducing. In this case, had *Sea Mist's* layout included a physical barrier separating crew from the ropes, the skipper would have been able to place himself in a safe position when he returned to the deck during the shooting operation.

There is a continuing need for effective education programmes, targeting those contemplating single-handed fishing, and prompting them to review their operation and adopt all relevant hazard reduction methods.

CONCLUSIONS

- *Sea Mist's* skipper drowned because he was dragged overboard by the fishing gear and was unable to free himself or survive on the surface.
- *Sea Mist's* skipper was probably trying to free a snagged creel when he became entangled in the back rope.
- There was no method of separating the crew from the fishing gear on *Sea Mist's* working deck. Had there been, the likelihood of this accident occurring would have been significantly reduced.
- *Sea Mist's* skipper carried a knife and attempted to cut himself free by cutting the rope.
- *Sea Mist's* skipper was not wearing a PFD when he entered the water. Although the circumstances of his drowning are unknown, a PFD would have increased his chances of survival.

ACTION TAKEN

MAIB actions

The MAIB has issued a Safety Flyer to the fishing industry highlighting the lessons to be learned from this accident.

RECOMMENDATIONS

The **Fishing Industry Safety Group Co-ordination Group** is recommended to:

- 2019/119** Evaluate and, as appropriate, revise the safety guidance for single-handed fishermen provided by the MCA and Seafish to ensure that it remains fit for purpose and readily available to fishermen.
- 2019/120** Take action to improve the promulgation of the available safety guidance and safety lessons to single-handed fishermen.

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

SHIP PARTICULARS

Vessel's name	<i>Sea Mist</i>
Flag	United Kingdom
Classification society	Not applicable
IMO number/fishing numbers	BF918
Type	Fishing vessel - creel boat
Registered owner	Privately owned
Manager(s)	Not applicable
Year of build	1985
Construction	GRP
Length overall	5.65m
Registered length	5.65m
Gross tonnage	1.51
Minimum safe manning	Not applicable
Authorised cargo	Not applicable

VOYAGE PARTICULARS

Port of departure	Macduff
Port of arrival	Macduff
Type of voyage	Near coastal
Cargo information	None
Manning	1

MARINE CASUALTY INFORMATION

Date and time	27 March 2019, approximately 1227
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Macduff, Scotland
Place on board	Working deck
Injuries/fatalities	1 fatality
Damage/environmental impact	None
Ship operation	Fishing
Voyage segment	Mid-water
External & internal environment	Lt airs, calm seas, good visibility and sea water temperature approximately 9°C
Persons on board	1