MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 1/2020 | JANUARY 2020

Fatal accident on board fishing vessel *Artemis* (FR 809) Kilkeel, Northern Ireland 29 April 2019

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SUMMARY

At about 1630 on 29 April 2019, Andrew Hay, the skipper of the UK registered fishing vessel *Artemis* **(Figure 1)** suffered severe head injuries and died after he fell head-first through an access hatch between the vessel's wheelhouse and its mess deck 2.1m below. The vessel was berthed alongside in Kilkeel, Northern Ireland and the skipper had just returned from an afternoon ashore with one of his deckhands. They had both spent about three hours in a local public house drinking beer and whiskey.

It was not possible to determine whether the skipper slipped, tripped or stumbled before he fell through the hatch because there was no one in the wheelhouse to witness it. However, it was apparent that the access route layout, which had been modified after build, and the effects of alcohol consumption had both contributed to the fall and the severity of the injuries suffered.

MAIB accident statistics indicate that, since 1992, alcohol was a contributing factor in 62% of the 42 fishing vessel fatalities that have occurred while in port.

The vessel's owners have been recommended to review the design of the means of access between the wheelhouse and the mess deck; update their drug and alcohol policy; and, ensure that all crew are issued with fishermen's work agreements. Further recommendations have been made to the Sea Fish Industry Authority (Seafish) and Rockall Ltd to amend the generic drug and alcohol policies contained in their online safety management folders.

Figure 1: *Artemis* alongside Kilkeel, Northern Ireland

FACTUAL INFORMATION

Narrative

On the afternoon of 25 April 2019, the fishing vessel *Artemis* sailed from Fraserburgh, Scotland for Newlyn, Cornwall. Two days later, the vessel called briefly at Uig, Skye and loaded a new set of nets. During the passage through the Irish Sea, one of the vessel's diesel generators failed and, after discussion with the owner, the skipper decided to stop at Kilkeel to conduct a repair.

On the evening of 28 April, *Artemis* entered Kilkeel inner harbour and berthed alongside. Shortly after 0800 the following day (29 April), engineering contractors boarded the vessel to repair the generator. The generator repair was completed at about 1100 and contractors left the vessel. The skipper then moved *Artemis* off its overnight berth to load fuel and lube oil, before mooring port side to at the harbour's ice berth.

Once secure alongside, *Artemis*'s skipper and engineer went ashore to consult the harbourmaster about the best time to sail. The harbourmaster advised the skipper to wait until at least 2½ hours before high water before getting underway. This was to ensure that he had sufficient height of tide to allow the vessel to safely clear the sand bar in the harbour entrance. Following this advice, the skipper returned to *Artemis* and informed the crew that the vessel would sail at 1900 that evening.

At 1247, the skipper and one of his deckhands went ashore for a drink in a local public house. At 1623, having spent about 3 hours drinking whiskey and beer, they left the public house and returned to harbour. When they arrived at the ice berth they climbed down the quayside ladder to the fishing vessel's foredeck. They then proceeded aft, to the wheelhouse **(Figure 2)**.

The deckhand entered the wheelhouse, climbed down the access ladder to the mess deck and went to the galley to make a cup of tea. The skipper remained on the upper deck and smoked a cigarette.

At about 1630, the deckhand heard a loud clatter from behind and looked over his shoulder. As he did so he saw the skipper fall head-first through the wheelhouse hatch and hit the deck below. He immediately went to his aid but could not find any sign of life. He then rushed to the wheelhouse and attempted to raise the alarm, calling Kilkeel harbour via VHF radio channel 12. Having repeated his call for assistance twice without reply, the deckhand went back to the mess deck to check on the skipper. Still unable to find any sign of life, he returned to the wheelhouse for a second time and raised the alarm on VHF radio again. This time, his call was answered by another vessel and was relayed to the harbourmaster and emergency services.

The Kilkeel harbourmaster rushed straight to *Artemis* and went on board to examine the casualty. He noted the skipper had suffered a severe head injury and could find no sign of life. Shortly afterwards, the coastguard arrived.

At 1703, an ambulance arrived on the quay and two paramedics boarded *Artemis*. The skipper was declared deceased at 1705.

Crew

Artemis had a crew of six: the skipper, mate, engineer and three deckhands. The skipper, mate and one of the deckhands were UK nationals and were employed as share fishermen. The engineer and two other deckhands were Filipino and were employed on 8-month contracts.

The skipper, Andrew Hay, was 56 years old and had been involved in fishing since he was a teenager. He held a Fishing Vessel Class 2 skipper's certificate of competency and had completed the mandatory commercial fishing vessel safety training courses.

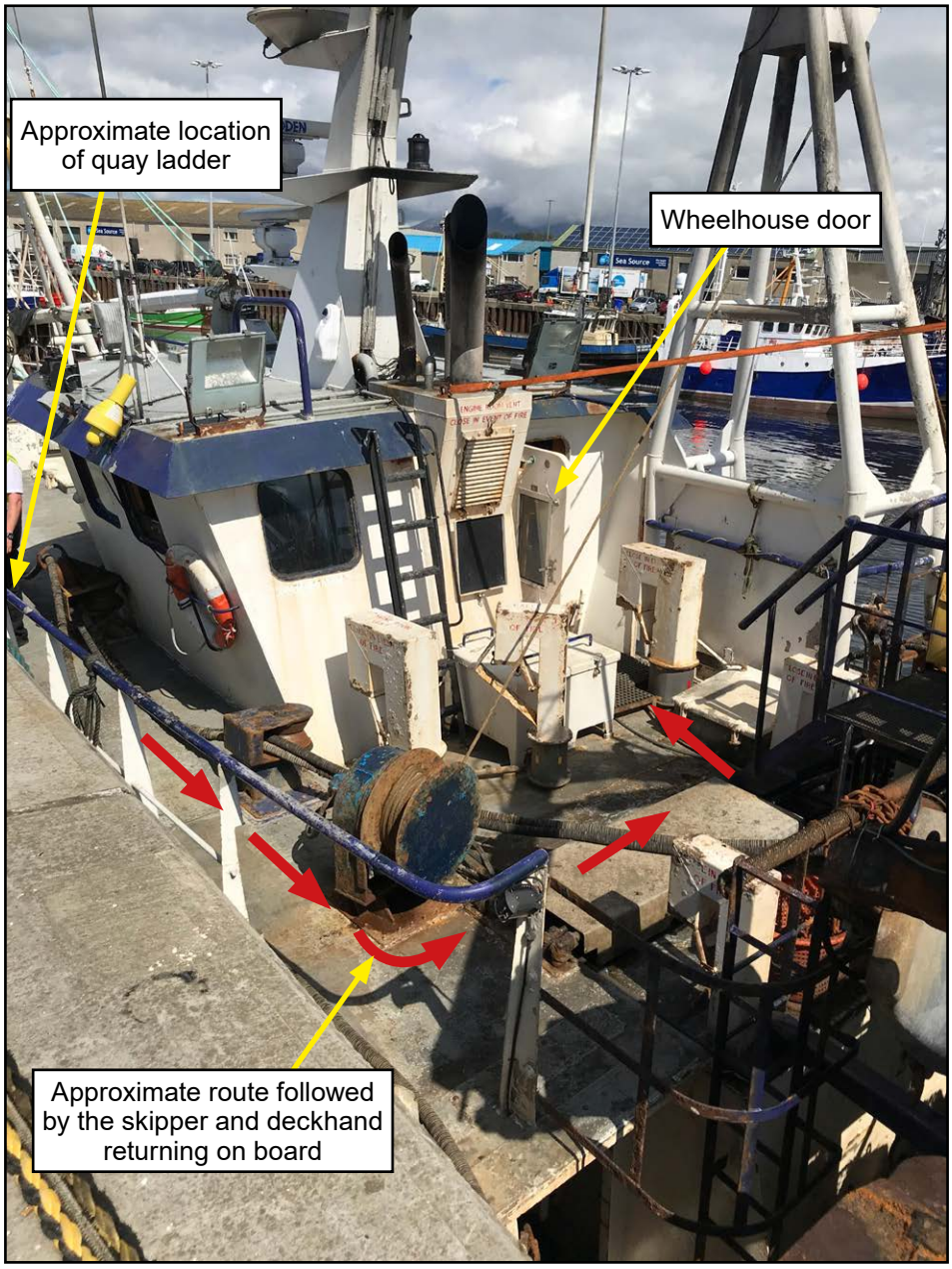

Figure 2: Access from the upper deck to the wheelhouse door

The skipper had been on board *Artemis* for less than a month and had been working long hours to prepare the vessel to fish for prawns. He had previously part-owned and skippered the vessel (between 2010 and 2012) and was very familiar with it. He was not known to be a heavy drinker but had consumed both beer and whiskey prior to re-boarding *Artemis*. Harbour closed-circuit television (CCTV) footage showed that the skipper was walking unaided as he approached the vessel but appeared to be unsteady on his feet.

Skipper's autopsy report

The skipper's autopsy report gave the cause of death as head injury due to fall. The pathologist's examination revealed no underlying medical condition that might have caused him to lose consciousness or collapse, and his shoes were found to be in good condition.

The toxicology examination showed no evidence to suggest the skipper was under the influence of prescription or illicit drugs. His blood alcohol concentration (BAC) was 215 milligrams per 100 millilitres of blood, which was more than four times the legal alcohol limit for professional seafarers while on duty. The autopsy report stated that such a BAC would be expected to lead to considerable intoxication.

Artemis

Artemis was built in 1978 by John Lewis and Sons Limited, Aberdeen and was owned by BAG FR LLP Limited. It was registered in Fraserburgh and had a length overall of 23.13m. The vessel was originally designed to work as a pair trawler, but at the time of the accident was being operated as a twin-rigged stern trawler.

Access to the mess deck from the wheelhouse was via a weathertight hatch (0.65m wide by 0.8m in length) and a near vertical steel ladder. The hatch was located on the port aft side of the wheelhouse and was 2.1m above the mess deck. The hatch cover was secured in the open position to the aft bulkhead with a tie back. The ladder was fixed to the mess room's port bulkhead and a vertical steel handrail was fixed to the wheelhouse bulkhead directly above **(Figure 3)**. There were no handrails on the ladder itself.

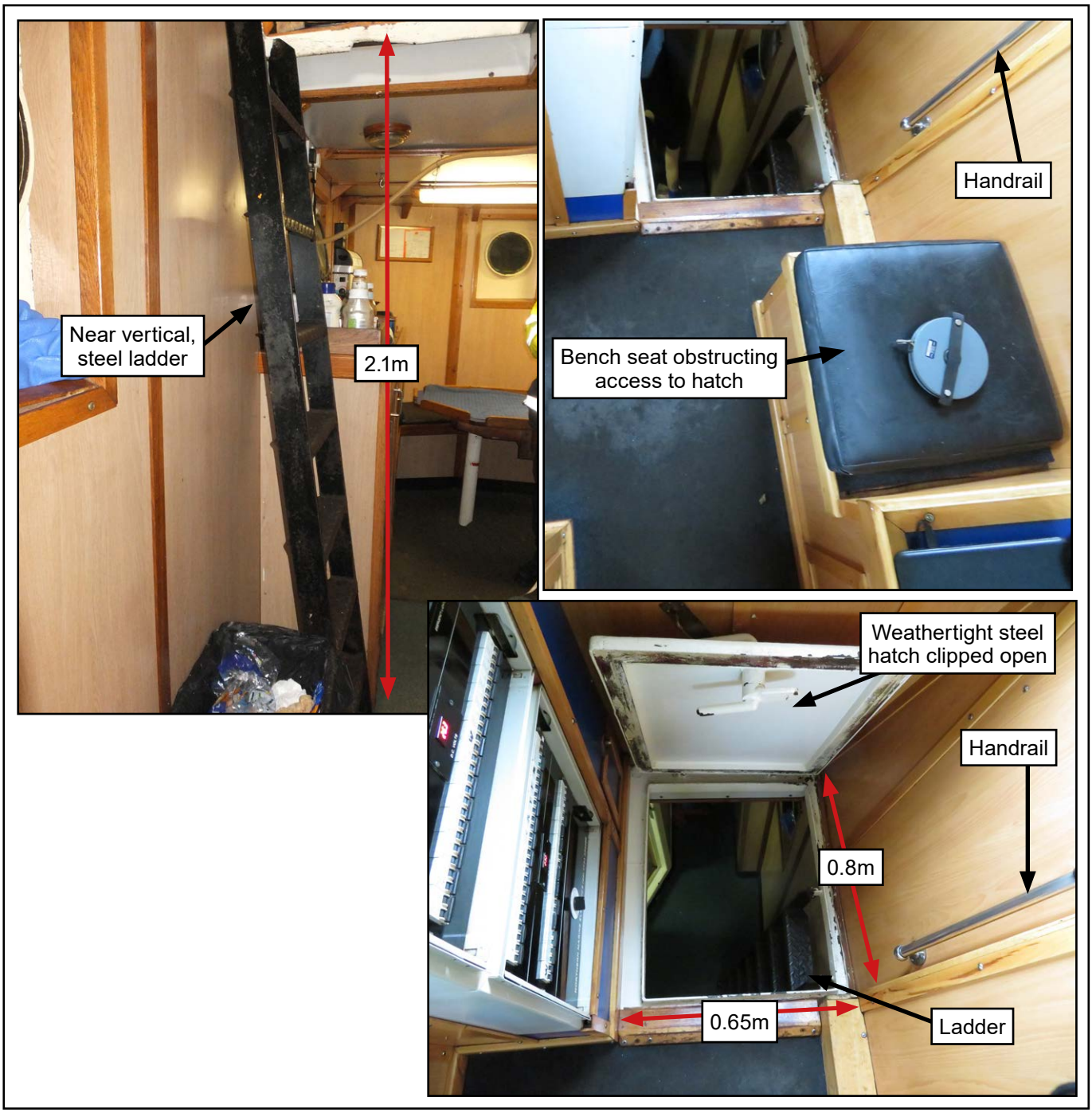

Figure 3: Access from wheelhouse door to hatch and ladder to crew accommodation

To step onto the ladder from the wheelhouse, the crew had to grab hold of the bulkhead handrail with their right hand, and probably would reach across the open hatch and grab hold of the hatch cover for support with their left hand. Access to the hatch was constrained by a small bench seat. The wheelhouse deck was carpeted throughout. The carpet tiles were dirty but dry; two additional loose tiles had been used to protect the carpet on the starboard side close to the working deck access door.

Modifications to the access route between the wheelhouse and mess deck

Over its 40-year life, *Artemis* had been refitted many times and modified on several occasions. One of the modifications included changes to the access route between the wheelhouse and the mess deck. According to the vessel's drawings **(Figure 4)** the hatch was originally separated from the wheelhouse by a bulkhead door and the ladder was fixed to the forward edge of the hatch and slopped aft. The original drawings did not include a bench seat on the port side of the wheelhouse.

Artemis was independently surveyed in 2015 prior to it being purchased by BAG FR LLP Limited. The survey report did not describe the wheelhouse access hatch and ladder arrangements but did state that:

> *The accommodation areas were fully refitted in 2010 and have been maintained in excellent condition.*

It is likely that the modifications to the access route were made during the 2010 refit referred to in the survey, during the skipper's part ownership of the vessel.

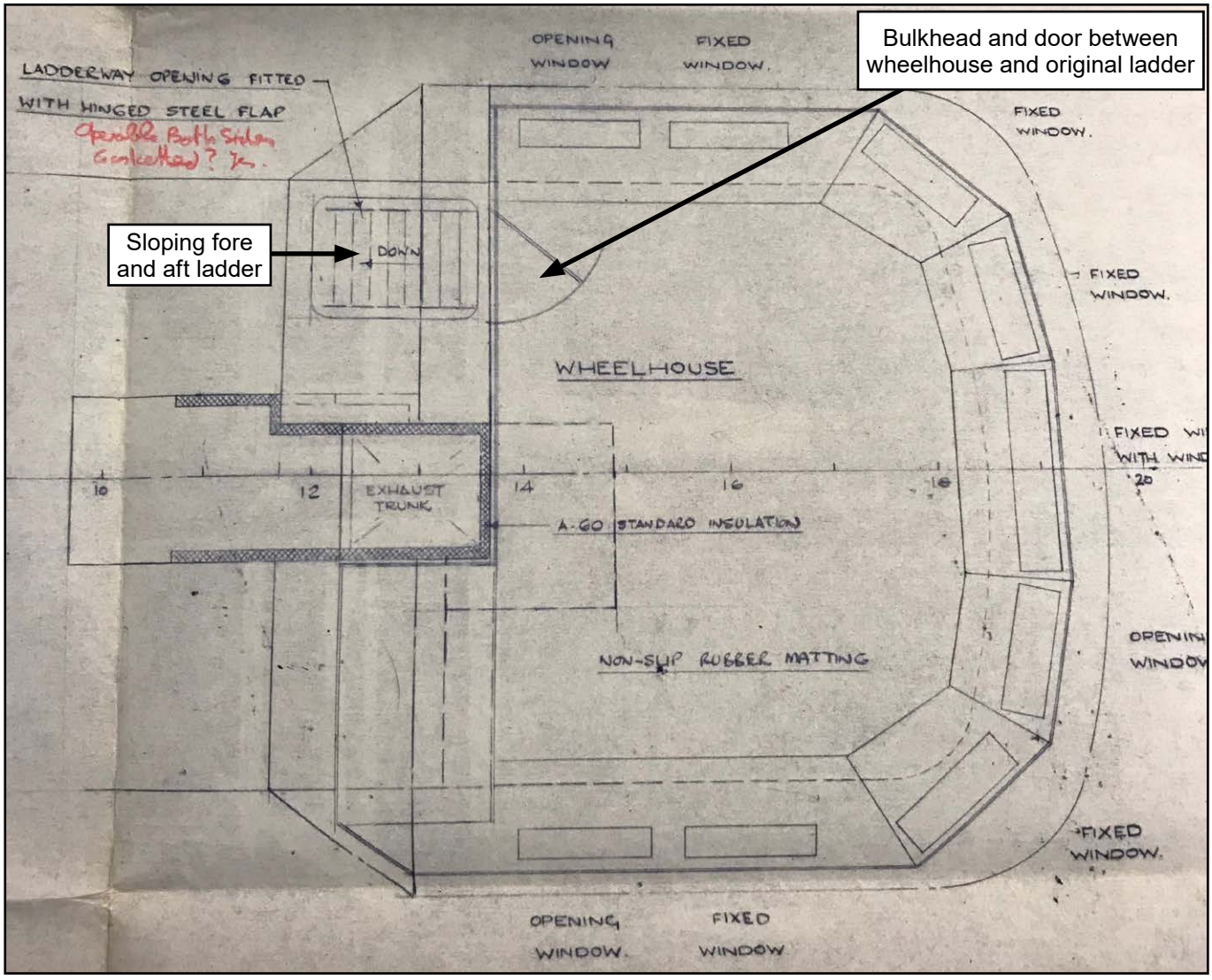

Figure 4: Original vessel drawing showing bulkhead and door separating wheelhouse and hatch and sloping ladder to crew accommodation

Owner's drug and alcohol policy

Artemis's owners used two similar safety folders to help manage safety. Both were available on the internet and provided free of charge; one by Seafish and the other by Rockall Marine Ltd. The safety folders contained generic risk assessments, checklists, templates and forms to help document vessel-specific health and safety, and drug and alcohol policy statements. Paper copies of the online folders were held on board.

One of *Artemis*'s safety folders contained a generic drug and alcohol policy that stated:

> *Individuals reporting for work whose behaviour reflects the consumption of alcoholic beverage and/or drugs shall not be permitted to conduct their normal duties until such time as their condition is deemed acceptable by the skipper...*

In addition, as part of their contract of employment, the three Filipino crew members had signed a separate owner's drug and alcohol policy. This policy prohibited them from consuming alcohol, on or off duty, during their 8-month contract.

Regulations

The following four areas of regulation are particularly relevant to this investigation:

1. **Alcohol limits for professional seafarers:** The alcohol limit for professional staff on board UK registered vessels is defined in Part 4 (Shipping: Alcohol and Drugs) of the Railways and Transport Safety Act 2003, chapter 20. The BAC limit for professional staff on duty is 50mg of alcohol in 100ml of blood, the same as the drink-drive limit in Scotland.

   The Act also sets requirements for seafarers who are off duty but are required to take action to protect the safety of passengers in an emergency. In such circumstances, it is an offence if their actions are impaired by drink or drugs. There are no requirements for other off duty seafarers.

2. **Fishing vessel construction standards:** The construction standards for fishing vessels between 15m and less than 24m in length were detailed in MSN 1872 (F)[1], the code of safe working practice for fishing vessels. This required:

   - *Access stairways, ladderways and passageways shall be provided with handrails as necessary…*

   - *Stairways and ladders shall be provided of size and strength adequate for the safe working of the vessel at sea and in port. Stairways and ladders shall be provided with non-slip treads and handrails.*

3. **Employment legislation:** The UK's adoption of ILO 188 has resulted in the Merchant Shipping (Work in Fishing Convention) Regulations 2018. These regulations have been implemented progressively, but one regulation that came into force on 31 December 2018 was the requirement for vessel owners to provide fishermen's work agreements (FWA) to both share and contract fishermen. The aim of these agreements was to clearly set out terms and conditions of employment. *Artemis*'s owners had not provided FWAs to the three share fishermen on board, but had done so for the other three crew members.

[1] MSN 1872 (F) Amendment 1

4. **Health and safety regulations:** The introduction of ILO 188 was also used to clarify, in MGN 587 (F), the role of fishing vessel owners under the Merchant Shipping and Fishing Vessel (Health and Safety at Work) Regulations 1997 as amended in 2018. This included:

   - *The owner's responsibility to provide a safe working environment, suitable accommodation and sufficient resources on board the fishing vessel to ensure that everyone can work and stay on board safely and without risk to their health.*

   - *The fishing vessel owner must ensure the health and safety of all fishermen (both employed and share fishermen).*

   - *A documented risk assessment is required, and safety measures put in place.*

Previous accidents

Previous similar fishing vessel accidents investigated by the MAIB, which resulted in the death of fishermen under the influence of alcohol, include:

- ***Fram of Shieldaig* (MAIB Report No. 8/2019)**: At 0800 on 7 August 2018, a deckhand fell overboard from a tender while attempting to board the fishing vessel *Fram of Shieldaig* and drowned. The reason for the fall was unclear, but the deckhand's BAC was found to be 5½ times over the legal limit. A recommendation was made to the vessel's owners to add a drug and alcohol policy to the vessel's safety management folder and ensure it was adhered to.

- ***Illustris* (MAIB Report No. 15/2018)**: At about 2246 on 12 November 2017, a crew member who was under the influence of alcohol was returning to board the fishing vessel Illustris when he fell into the water and drowned. Recommendations to the vessel's owners included establishing a formal drug and alcohol policy that would apply to the crew at all times when living or working on board.

- ***Constant Friend* (MAIB Report No. 4/2018)**: At about 2342, on 23 September 2017, a crew member returned to board the fishing vessel *Constant Friend* while under the influence of alcohol. He fell into the water and drowned. A recommendation was made to the Maritime and Coastguard Agency to provide further guidance on safe means of access to fishing vessels alongside and, to the vessel's owners, to review their risk assessments relating to boarding and leaving the boat.

Since 1992, alcohol has been a contributing factor in 30 (9%) of the 344 crew fatalities, from UK registered fishing vessels, reported to the MAIB. Of the 42 fishing vessel fatalities that occurred in port or harbour, alcohol was a contributory factor in 26 (62%) of them. In addition, alcohol was a contributory factor in at least seven further non-fatal fishing vessel accidents that led to the loss of the vessel. Note, MAIB's figures do not include fishermen who fall from quaysides and drown before they reach their vessel.

ANALYSIS

Mechanism of the skipper's fall

As no one witnessed the skipper's accident from the wheelhouse, it was not possible to determine what happened immediately before he fell head-first through the mess deck access hatch. However, it is likely that he either slipped, tripped or stumbled on his approach to the open hatch or he simply lost his balance while leaning across it to grab hold of the open hatch cover for support.

It is unlikely that a slip caused the fall because the carpet in the vicinity of the hatch was dry, the skipper's footwear was in good condition and the loose floor tiles were on the starboard side of the wheelhouse. It is more likely that he either stumbled on his approach to the open hatch or he tripped over the bench seat next to it. However, given that he fell head-first through the hatch without striking its coaming or sides, the most likely scenario is that he lost his grip on the vertical handrail or open hatch cover as he leaned across to steady himself **(Figure 3)**.

Access route between the wheelhouse and mess deck

Artemis's skipper was very familiar with the vessel's layout and would have routinely negotiated the access route between the wheelhouse and the mess deck many times without incident. Despite this, the modifications made to the access route after build increased the likelihood of someone falling through the hatch to the mess deck below. This was because:

- The removal of the wheelhouse door created an unguarded edge whenever the hatch cover was open.
- The reorientation of the access ladder/steps meant that the crew had to step across the open hatch to get onto the vertical ladder.
- The ladder was not fitted with handrails; and,
- The installation of the bench seat introduced a trip hazard.

If the original, sloping, fore and aft ladder, which effectively would have filled the hatch opening, had been in place, it would have been impossible for the skipper to directly fall 2.1m onto the deck below. Therefore, the resultant injuries would likely have been less severe and might not have been fatal.

MSN 1872 (F) provided limited regulations on the construction of internal hatches and ladders on 15-24m fishing vessels. *Artemis*'s ladder from the wheelhouse to the mess deck below, was steel, nonslip and had a single handrail above the ladder that was attached to the port side of the wheelhouse. Apart from the ladder itself not having handrails, the arrangement would appear to have met the requirements of MSN 1872 (F). There had been no reported accidents or injuries of crew while using the ladder, and the arrangement would have been sighted by surveyors on several occasions without attracting comment.

However, the fishing vessel health and safety regulations state that owners must provide a safe working environment and adequately risk assess operations on board to ensure sufficient safety measures are in place. The modifications made to *Artemis* had resulted in an ergonomically difficult to use and potentially dangerous access route, that placed those working in the wheelhouse at significant risk of falling through an unguarded opening.

Alcohol consumption

Artemis's skipper had been drinking alcohol ashore for several hours prior to the accident, and the harbour's CCTV recordings showed that he was unsteady on his feet immediately prior to re-boarding the vessel. His BAC postmortem was over four times the legal limit for seafarers and commercial fishermen on duty.

The skipper was an experienced fisherman and it is highly likely that he was aware of the alcohol and drug policy contained in one of *Artemis*'s safety folders. He should also have been aware of the legal alcohol limit for fishermen as specified in the Rail and Transport Safety Act 2003. It is therefore difficult to understand why he consumed the level of alcohol that he did during the afternoon of 29 April. This is particularly so, given he was not known to be a heavy drinker and it was his intention to proceed to sea within 3 hours of leaving the public house.

It is possible that the skipper was enjoying the opportunity to relax after a busy period preparing *Artemis* for fishing and perhaps failed to appreciate the amount of alcohol he was consuming. Of note, he was drinking 35ml measures of whiskey, which was the standard measure in Northern Ireland; in Scotland the standard measure was 25ml.

It is estimated that individuals metabolise alcohol at a rate of between 0.015ml and 0.02ml per hour. Using the higher figure, *Artemis'*s skipper would have required 11½ hours for his BAC level to fall from 215mg to 50mg per 100ml of blood, required by law. While it could be argued that he was not on duty at the time of his fall, the skipper would nonetheless have been unfit to sail from Kilkeel at 1900. He would have had to delay *Artemis*'s departure until at least 0330 the following morning to ensure that he was legally permitted and safe to be on duty.

The skipper's high BAC at the time of the accident would have impaired his reaction time, physical balance, coordination, judgment and perception of risk. So, despite the access route issues discussed in the previous section of this report, it is clearly apparent that the most significant contributory factor in this accident was alcohol consumption.

Awareness of the hazards of alcohol

The dangers of operating at sea while under the influence of alcohol have been recognised for many years. Like many fishing vessels, *Artemis*'s skipper and owner did not allow alcohol to be consumed while at sea. This was a decision sensibly based on the conditions on board, the long hours of work and the risks involved in handling the trawl or processing the catch.

However, there appears to be little awareness of the risk alcohol poses or any guidance on its consumption when crew are off duty and living on board a vessel while in port. This is reflected in the MAIB statistics, which show that alcohol has been a contributory factor in 62% of fatal accidents relating to fishing vessels in port.

Boarding a fishing vessel from a quayside while under the influence of alcohol, and then negotiating the ladders and hatches on board, poses considerable risk. Regrettably, all too often the dangers of consuming alcohol are overlooked. This has led to a significant number of fatal accident investigations by the MAIB involving fishermen who have consumed too much alcohol ashore before returning to their vessels.

Drug and alcohol policies

Although the three Filipino crew had individually signed contracts prohibiting them from consuming alcohol, *Artemis*'s generic drug and alcohol policy, which the skipper was responsible for enforcing, offered little objective guidance as to what level of consumption was acceptable. It made no reference to the legal limits and provided no guidance to the skipper or crew as to acceptable alcohol consumption when they were off duty but living on board in harbour. Furthermore, it did not provide a policy for testing crew members when it was suspected that they might have consumed drugs or alcohol in excess of the prescribed limits.

That said, it is unlikely that a more comprehensive drug and alcohol policy alone would have prevented this accident. However, following the principles of ILO 188, which state that a vessel's owner is responsible for clearly articulating the terms and conditions for all fishermen, a clear, comprehensive and objective drug and alcohol policy would set defined parameters for alcohol consumption on board. Furthermore, the vessel owner should ensure that all crew have FWAs that clearly lay down the terms of their employment. These agreements could also reiterate alcohol limits.

Given the widespread use of the vessel's safety folders, both online and printed, Seafish and Rockall Ltd should review and amend their drug and alcohol policies and the guidance they provide. In particular, the safety folders should include the legal limits for alcohol consumption and provide guidance for crew when they are off duty but living on board. Owners can then use this generic document to develop their own drug and alcohol policy adapted to suit their vessels' operating requirements.

CONCLUSIONS

- It is unknown how *Artemis*'s skipper came to fall head-first from the wheelhouse through the mess deck hatch. It is likely that he tripped, stumbled or lost his balance as he approached the unguarded open hatch.
- Post-build modifications to the access route between the wheelhouse and the mess deck increased the likelihood and consequences of someone falling through the mess deck hatch.
- The skipper was under the influence of alcohol and this was almost certainly the most significant factor in this accident.
- The skipper was off duty at the time of the accident but would have been over the mandated alcohol limit at the vessel's planned time of departure.
- It is possible that the skipper did not fully appreciate the amount of alcohol he was consuming or the effect it would have had as the standard measures for spirits in Northern Ireland were 1.4 times those in Scotland.
- The risks of consuming alcohol and then returning to a fishing vessel when moored in harbour appear to be overlooked by many in the industry given that alcohol is a contributory factor in 62% of fatal fishing vessel accidents in port.

ACTION TAKEN

The **Marine Accident Investigation Branch** has issued a safety flyer for the fishing industry highlighting the lessons to be learned from this accident.

RECOMMENDATIONS

2020/101 **BAG FR LLP** is recommended to:

- Review the design and layout of the wheelhouse to mess deck hatch and ladder, to reduce the risk of crew falling through to the deck below.
- Update its drug and alcohol policy to ensure its crew are: aware of the legal limits stipulated in the Railways and Transport Safety Act 2003; provided with clear definitions of when they are on or off duty; and ensure that they are aware of the circumstances under which they may be required to undergo drug and alcohol testing.
- Ensure that it complies with the requirements of the International Labour Organisation 188 and owner's responsibilities under the Fishing Vessel (Health and safety at work) Regulations and that all crew have fishermen's work agreements.

2020/102 **Seafish** and **Rockall Ltd** are recommended to:

- Review and update the generic drug and alcohol policy in their safety folders to reflect the issues identified by this investigation. These policies should include: the Railways and Transport Safety Act 2003 alcohol limits; a clear definition of when crew are on or off duty; and, parameters under which the skipper or other authorised person may direct a crew member to undergo drug and alcohol testing.

SHIP PARTICULARS	
Vessel's name	*Artemis*
Flag	United Kingdom
Classification society	Not applicable
IMO number/fishing numbers	FR 809
Type	Fishing vessel, stern trawler
Registered owner	BAG FR LLP, Fraserburgh
Manager(s)	Fraserburgh Inshore Fisheries Ltd
Year of build	1978
Construction	Steel
Length overall	23.13m
Registered length	21.16m
Gross tonnage	131t
Minimum safe manning	Not applicable
Authorised cargo	Not applicable

VOYAGE PARTICULARS	
Port of departure	Uig, Skye
Port of arrival	Kilkeel
Type of voyage	In harbour
Cargo information	Not applicable
Manning	6

MARINE CASUALTY INFORMATION	
Date and time	29 April 2019, at 1630
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	Kilkeel, Northern Ireland
Place on board	Wheelhouse
Injuries/fatalities	Fatality
Damage/environmental impact	Nil
Ship operation	Alongside
Voyage segment	In port
External & internal environment	Not applicable
Persons on board	6