MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

ACCIDENT REPORT

VERY SERIOUS MARINE CASUALTY | REPORT NO 23/2014 | SEPTEMBER 2014

Fatal man overboard while climbing on board the fishing vessel ***New Dawn*** to access the fishing vessel ***Horizon II*** at Royal Quays marina, North Shields on 9 November 2013

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SUMMARY

At about 0044 UTC on 9 November 2013, the skipper of the fishing vessel *Horizon II* fell into the water at Royal Quays marina, North Shields, while boarding the fishing vessel *New Dawn.* The skipper had spent the evening ashore and was returning to his vessel, which was berthed outboard of *New Dawn*. He had stepped onto *New Dawn* and was attempting to climb over the vessel's weather deck guardrail when he slipped and fell. The accident was witnessed by the marina's night duty berthing master, who raised the alarm. The skipper was recovered from the water by the crew of an RNLI inshore lifeboat. He was attended to by paramedics before being taken to hospital, where he was later pronounced dead.

The investigation found that although the boarding arrangements for *New Dawn* and *Horizon II* were in line with common industry practice for many small fishing vessels, they were inherently hazardous. The safety measures prescribed in *Horizon II*'s risk assessment folder relating to vessel access and alcohol consumption were not being implemented. It is likely that the environmental conditions, an old ankle injury and the effects of alcohol had all contributed to the skipper's fall.

The skipper's recovery from the water was delayed because he could not be initially located, or rescued, due to a lack of

Horizon II

lighting, manpower and access to emergency rescue equipment. Although not directly contributory to the accident, the investigation identified that the means of access to the fishing vessel berths within Royal Quays marina were unnecessarily hazardous as it required fishermen to climb over fixed safety rails.

Royal Quays marina has implemented an action plan to improve the levels of emergency equipment provided on its fishing vessel berths, and introduced procedures to improve communications with fishermen and to deal with emergency situations such as people falling into the water. A recommendation has been made to the owners of Royal Quays marina designed to improve the access arrangements for the middle pier berths at the marina, and ensure that skippers using the berths are reminded of the need to apply the guidance within MGN 337(M+F).

FACTUAL INFORMATION

Vessels

The Fraserburgh registered 16.75m fishing vessel *Horizon II* had been owned by the skipper's family since it was built in 1987. For most of the year, *Horizon II* was operated from Fraserburgh and Mallaig, in Scotland, but during the winter months it fished for prawns out of North Shields, England. Occasionally, the vessel had undertaken guard ship contracts with the Scottish Fishermen's Federation (SFF). *New Dawn* was a Kilkeel registered 14.95m fishing vessel that was also operating out of North Shields for the winter prawn season.

Crew

Horizon II was working with a crew of six, three of whom were foreign nationals who lived on board during their 8-month contracts. The skipper, James Reid (James), was 37 years old and had worked on board *Horizon II* since 1995. He and his father alternated as the vessel's skipper. James held a Deck Class II Fishing Certificate of Competency and had completed the mandatory fishing vessel safety awareness, sea survival, fire-fighting, and first-aid courses. Six months before the accident, James had sprained an ankle and it is understood that he was still suffering from that injury. At the time of the accident, he was wearing casual clothing and walking shoes with good grip on the soles.

Environmental conditions

It was a dry clear night, with light winds and an air temperature of about 3°C. The environmental conditions had caused condensation to form on the external steelwork of the fishing vessels. The water temperature within the marina was approximately 10°C.

Narrative

On 7 November 2013, James drove from his home in Fraserburgh to Royal Quays marina to re-join *Horizon II* after a week on holiday. He arrived at about 2100, and went to bed. Around 0300 the following morning, James collected two crew members from their homes nearby and drove them to the marina. At 0316, James manoeuvred *Horizon II* out of the marina, onto the River Tyne and headed out to sea.

By 0700, the vessel had reached the fishing grounds and, once the fishing gear had been deployed, James went to bed. About 3 hours later he returned to the wheelhouse and took the helm. The crew continued to fish throughout the afternoon until about 1700, when *Horizon II* commenced passage back to North Shields. At about 1900, *Horizon II* was manoeuvred through the Royal Quays marina lock and berthed outboard of the fishing vessel *New Dawn*, on the marina's middle pier **(Figure 1)**. The two local crew members left the vessel and drove home with the intention of returning at 0430 the following day to recommence fishing.

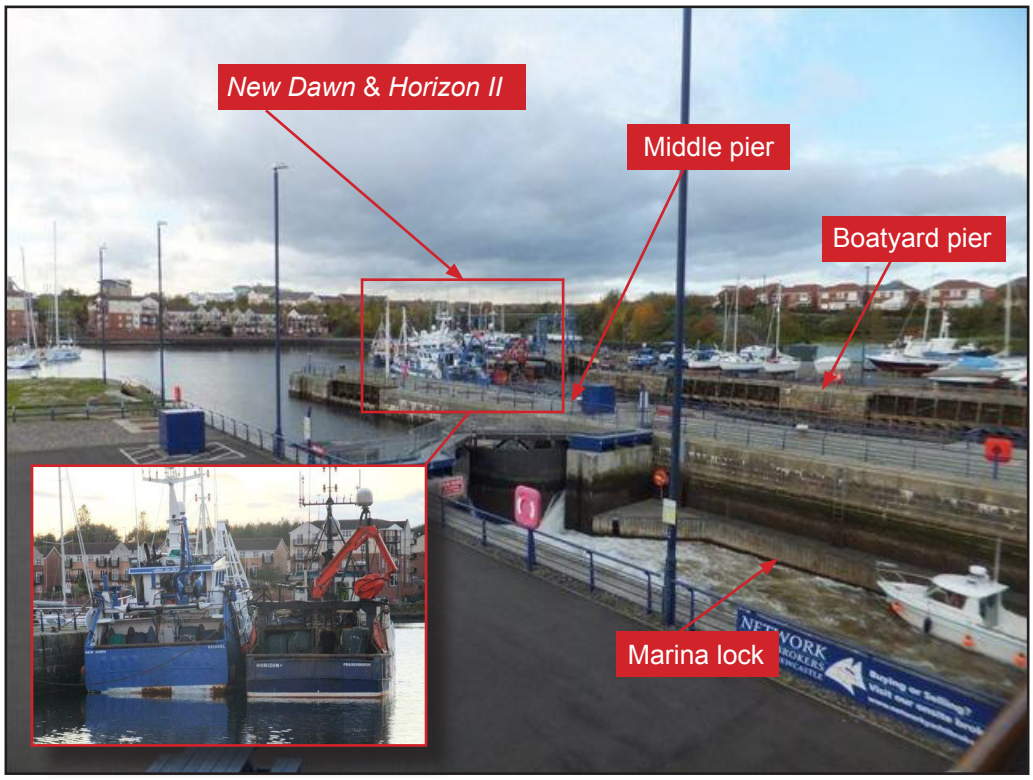

Figure 1: Royal Quays Marina lock and pier

At about 2100, James left *Horizon II* and walked across the marina to the *Earl of Zetland* floating bar and restaurant **(Figure 2)**. During the evening, he drank beer and spirits and chatted with the bar staff and other customers.

At 0034 (9 November), the marina's night duty berthing master received a telephone call from the *Earl of Zetland*'s owner informing him that he had closed his bar. This was normal practice for the owner, as he lived on a boat in the marina's boatyard and required the berthing master to open the boatyard's security gate.

James left the *Earl of Zetland* with the bar owner, the bar owner's partner and three other people who lived in the houses next to the boatyard **(Figure 2)**. The berthing master met the group at the marina office and escorted them across the lock to the boatyard security gate. When the berthing master opened the boatyard gate to allow the *Earl of Zetland*'s owner into the boatyard, James started to make his way back to the middle pier.

The berthing master, having re-locked the security gate, decided to walk to the middle pier with James to check that he returned on board his vessel safely. Once on the middle pier, James climbed over the safety railings to reach the pier's edge **(Figure 3)**. The berthing master remained behind the railings and watched James as he made his way across the pier coping stones to *New Dawn*.

James grabbed hold of *New Dawn*'s weather deck guardrails and stepped across the 700mm gap from the pier's edge to the rungs of the boarding ladder inset into *New Dawn*'s hull **(Figure 4)**. He then climbed up the ladder (a distance of about 1.4m) to the vessel's weather deck. At 0044, with his right foot on the lower horizontal guardrail, and holding onto the top rail, James attempted to swing his left leg over *New Dawn*'s 1m high guardrails **(Figure 5)**. As he did so, he appeared to lose his balance and pivoted backwards about his right foot. James lost his grip on the wet bulwark guardrail and fell between *New Dawn* and the pier and into the water. As he fell, he struck his head on one of the pier's coping stones **(Figure 6)**.

The berthing master witnessed the fall and immediately climbed over the pier's safety rail and began to look for James in the water. He could hear the sound of bubbles rising from the water, but the gap between *New Dawn* and the pier was pitch black and he could not see James. The berthing master then

Figure 2: Royal Quays Marina

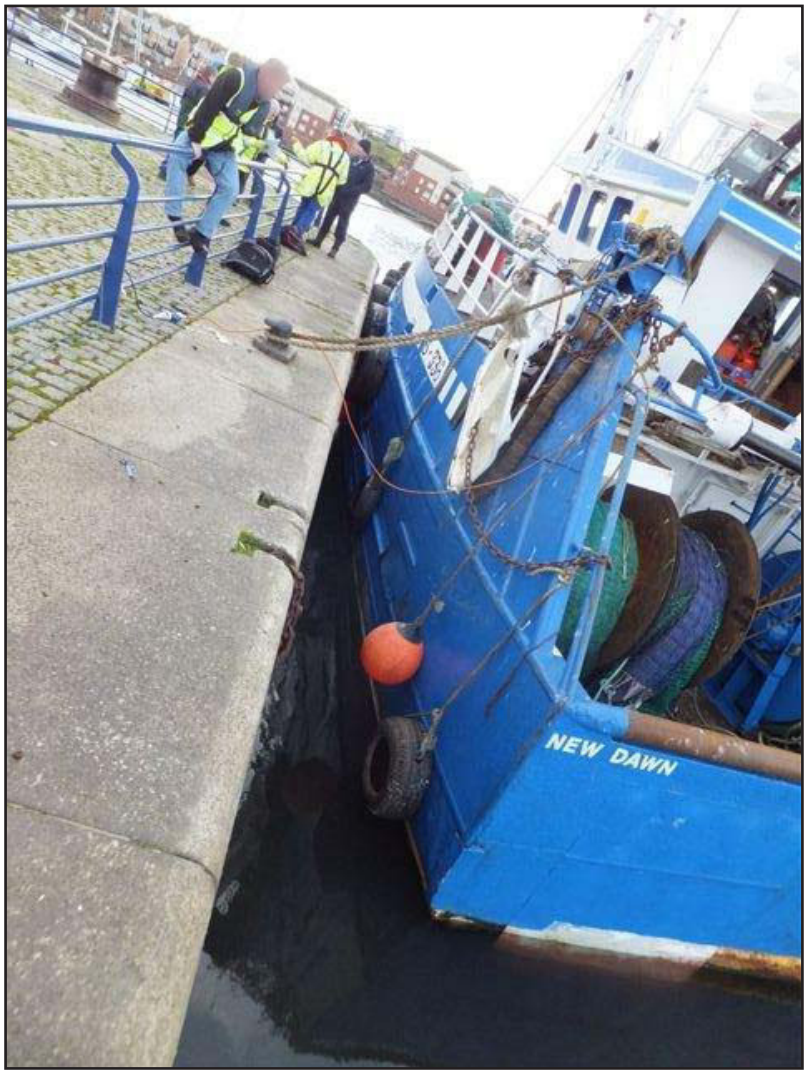

Figure 3: Middle pier and safety railings

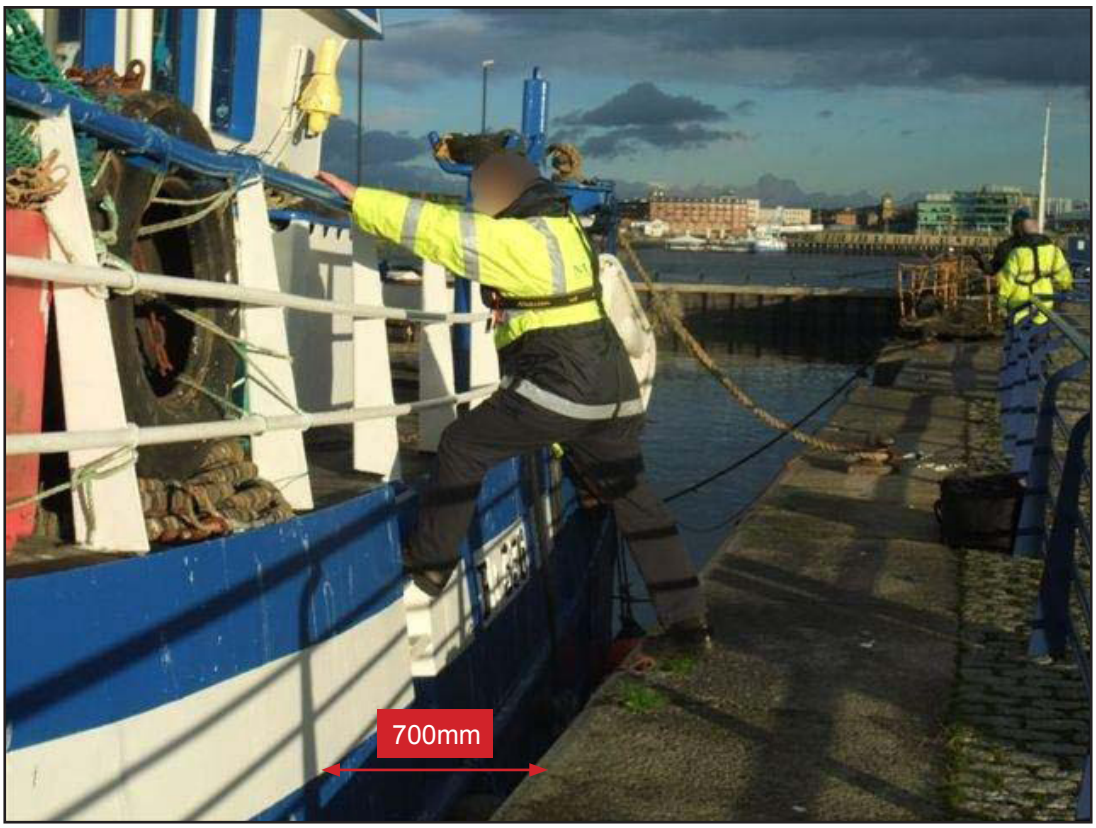

Figure 4: Gap between *New Dawn* and Middle pier

Figure 5: Climbing over *New Dawn*'s guardrail

Figure 6: Gap between *New Dawn* and Middle pier

climbed on board *New Dawn* and, while banging on the side of the wheelhouse door, shouted “man overboard”. There was no response from the crew within either fishing vessel, but the *Earl of Zetland*’s owner heard the man overboard call and stood by his boat in the boatyard ready to help.

The berthing master considered dropping one of *New Dawn*’s lifebuoys into the water but, concerned that he might cause further injury to James as there was a smoke and light float attached, he decided not to and climbed back ashore. As he stepped off *New Dawn*, his office keys fell from his pocket into the water. Without a mobile phone and having lost the keys to his office, the berthing master shouted to the *Earl of Zetland*’s owner to contact the coastguard.

At 0045, Humber Coastguard received the call for assistance and, at 0047, paged the Tynemouth RNLI[1] inshore lifeboat (ILB) crew. This was followed by requests to the police and ambulance services to attend the marina.

The berthing master retrieved a spare set of keys and went to his office to collect a torch. At about 0100, the berthing master, who by then had been joined by police, located James in the water. James was mostly submerged and was wedged between *New Dawn*’s hull and the pier wall **(Figure 6)**.

At 0101, the ILB arrived at the marina outer lock gates. While the gates were opening, two of the three crew members climbed ashore and ran along the middle pier to the casualty. Due to the restricted space between *New Dawn*’s hull and the pier wall, the ILB crew were initially unable to effect a rescue. A few minutes later, as the inner lock gates opened, the movement of water within the marina caused *New Dawn* and *Horizon II* to be drawn away from the pier. The additional space this created allowed one of the ILB crew to climb down a pier wall ladder into the water 2m below, and swim to James. The crewman pulled him clear of the gap and, at about 0113, James was parbuckled[2] on board the ILB.

The ILB was manoeuvred back into the lock, where a paramedic boarded and started to perform CPR[3] on James. Once outside of the marina lock, the ILB was brought alongside the fuel jetty **(Figure 2)** and James was carried to a waiting ambulance. He was rushed to hospital, but could not be resuscitated and, at 0305, was pronounced dead.

Post mortem report

The post mortem report gave the probable cause of death as reflex cardiac arrest due to ‘*sudden immersion in cold water*’[4]. It also identified that James had suffered a 3cm gash to his upper left temple, and scrapes to the skin around the rib area on the left hand side of his torso. The toxicology report found that James’s blood/alcohol level was 182mg of alcohol per 100ml of blood.

Royal Quays marina

Royal Quays marina is located along the north side of Shields Harbour Reach, on the River Tyne **(Figure 7)**, and is one of seven UK marinas owned by Quay Marinas Ltd. The marina has 350 pontoon berths for its leisure customers, a boatyard, a lock, a fuel pontoon and a range of other facilities. Vessels too large to berth on a pontoon but small enough to enter the marina are accommodated on the quay walls and on the middle pier. Vessels that are too large to transit the lock can be accommodated at the marina’s tidal berths adjacent to the lock entrance. Fishing vessel owners consider the marina a safe place to berth, where vessels can be left unmanned for long periods of time within a secure area.

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[1] Royal National Lifeboat Institution

[2] Parbuckling is a recovery method involving straps, fixed to the boat or structure at one end, which are placed underneath the person and the free ends are pulled to lift the person on board.

[3] Cardiopulmonary resuscitation

[4] When a person is suddenly immersed in water temperatures of about 15ºC or below, the cold can paralyze muscles, cause muscle spasms, and trigger a rise in heart rate and blood pressure resulting in a heart attack. The spasms and a gasp reflex can cause water to be ingested or for the breath to be held involuntarily. This phenomenon is often referred to as *cold water shock*.

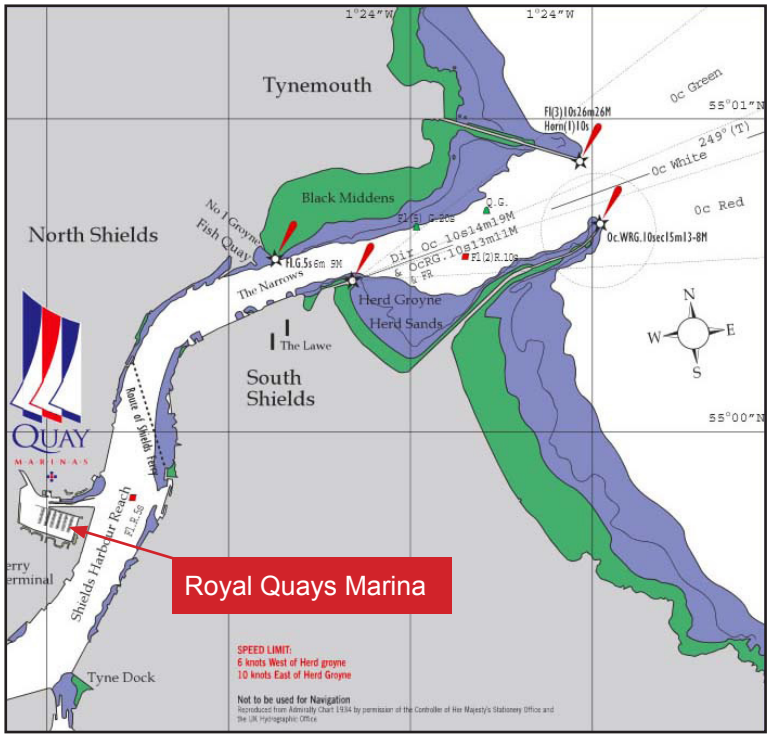

Figure 7: Location of Royal Quay's Marina on River Tyne

Boarding arrangements

Horizon II's owner was required to comply with the Fishing Vessels (Safety of 15-24 Metre Vessels) Regulations 2002 and the Code of Safe Working Practice for the construction and use of 15-24 metre fishing vessels as set out in Merchant Shipping Notice (MSN) 1770 (F)[5]. In accordance with MSN 1770 (F), fishing vessel owners were required to take precautions to prevent crews from falling into the water by providing a gangway or other appropriate and safe means of boarding the vessel. On the day of the accident, access to *Horizon II* was achieved by boarding *New Dawn,* crossing the deck, climbing over *New Dawn*'s outboard guardrails, stepping across the gap between the vessels and then climbing over *Horizon II*'s guardrails **(Figure 8)**.

New Dawn's owner was required to comply with the Fishing Vessels (Code of Practice for the Safety of Small Fishing Vessels) Regulations 2001 as set out in MSN 1813 (F)[6]. MSN 1813 (F) does not specifically mention access or egress to and from a fishing vessel, nor specify equipment that should be carried for that purpose.

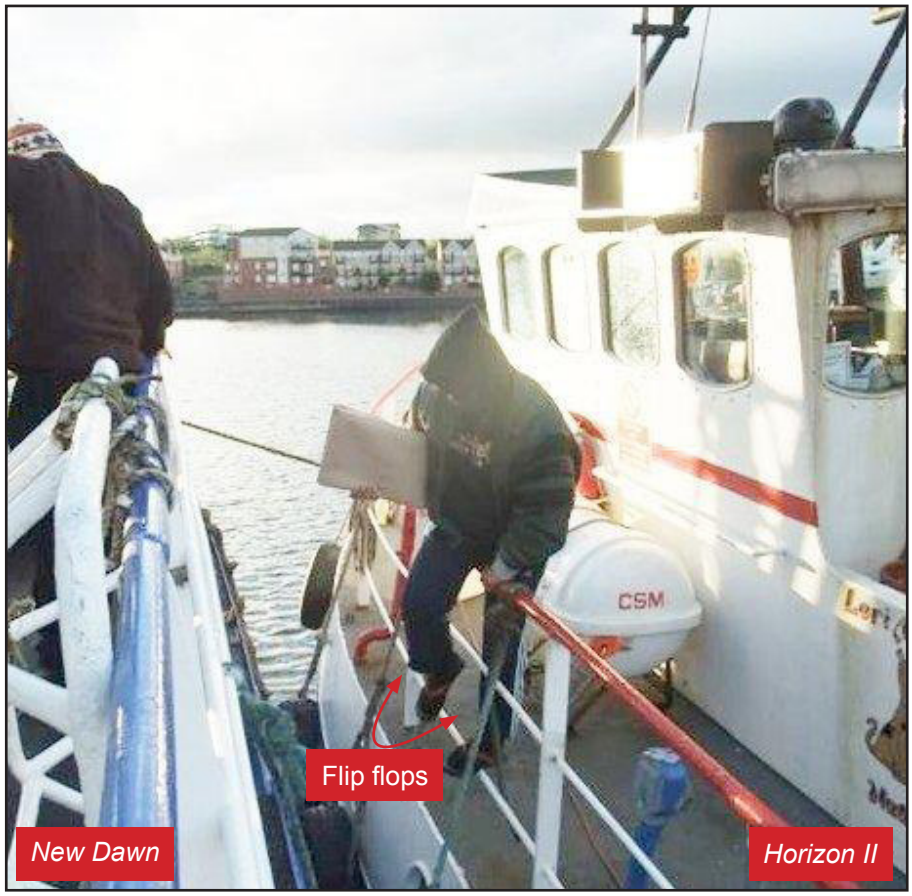

Figure 8: Crewman climbing between *Horizon II* and *New Dawn*

As a result of the high incidence rate of serious and fatal accidents involving crew members and other persons while boarding or disembarking small vessels, the UK's Maritime and Coastguard Agency (MCA) issued its Marine Guidance Note (MGN) 337 (M+F) *Provision of Safe Means of Access to Fishing and Other Small Vessels.* The MGN specified various means of providing safe access while alongside and emphasised that the primary responsibility for ensuring safe access rested with the person providing the means of access. This would be the vessel owner and/or skipper if the means of access formed part of the vessel's equipment.

[5] MSN 1770 (F) - *The Fishing Vessels Code of Safe Working Practice for the Construction and Use of 15 metre length overall (LOA) to less than 24 metre registered length (L) Fishing Vessels.*

[6] MSN 1813 (F) - *The Fishing Vessels Code of Practice for the Safety of Small Fishing Vessels* is applicable to fishing vessels of less than 15m length overall.

MGN 337 (M+F) explained that stepping from a pier onto a vessel can be an acceptable means of access and egress, providing the boarding area is well illuminated, the vessel is securely moored and that any gap is minimal. The MGN made no reference to climbing over a vessel's bulwark or guardrails, but it did explain that:

> *Seafarers, and others requiring access to vessels, also have their part to play in minimising the risks to themselves. This includes avoiding alcohol, taking a torch and, especially, not taking a leap in the dark.*

Access to the fishing vessels' berth

In order to gain access to and egress from the fishing vessel berths on the middle pier, the fishermen had to climb over a 1m high safety rail. The safety rail was permanently fitted 1.5m away from the pier's edge, and was there to reduce the risk of members of the public falling into the water. There were no gaps in the railings or gates to allow access to the pier's edge or vessel berths. It was an accepted practice for the fishermen to climb the middle pier safety railings to gain access to the vessel berths.

The marina was illuminated at night by high-mounted[7] 250 watt high pressure sodium lamps that were positioned along the marina car park, the lock entrance and along the boatyard pier **(Figure 1)**. The middle pier was not fitted with high level lighting but did receive some illumination from the boatyard and lock entrance lamps. The pontoons for leisure vessels were fitted with low-level lamps at regular intervals.

Risk assessments - *Horizon II*

Both MSN 1770 (F) and MSN1813 (F) highlight the need[8] for owners to carry out a suitable and sufficient assessment of the risks relating to the operation of their fishing vessels. *Horizon II*'s owner had joined SFF's *Onboard Support Scheme*[9] and, on 23 April 2013, a representative from SFF visited *Horizon II* to assist James to carry out his risk assessments. The assessment process considered all the workplace activities associated with the normal operation of the vessel.

The risk of *'falling into the harbour'* was assessed for the activity of *'getting ashore'* and the outcome of such a fall was considered to be *'drowning or serious injury'*. In order to reduce the likelihood and consequences of falling into the water while boarding the vessel, the risk assessment listed a number of safety measures. These included:

- Crew must when possible embark and disembark in pairs
- The vessel has a no alcohol policy and crew must adhere to this while onshore
- The vessel will moor up beside a ladder when at all possible and the deck must be well lit and oil free
- Crew must wear appropriate footwear

No additional lighting had been provided at the boarding points for either *Horizon II* or *New Dawn.* Furthermore, during the MAIB investigation, some crew members were observed climbing on and off the vessel while wearing flip-flops **(Figure 8)**.

In order to compare the safety measures identified for *Horizon II* with common industry practice, the MAIB reviewed 157 *means of access* risk assessments from 90 randomly selected similar sized fishing

[7] Approximately 15m lamp posts

[8] See The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 for details

[9] The SFF *Onboard Support Scheme* provides SFF members the opportunity to seek the Federation's assistance to create a safety management system for their vessel. The support offered includes help and advice with the completing of onboard risk assessments with the vessel's crew.

vessels from the Seafish (www.safetyfolder.co.uk) website. As in this case, the majority of owners considered that it was foreseeable that a person could fall into the water when stepping over unprotected gaps. The most common safety measures identified in the risk assessments were:

- Moor securely and minimise gaps
- Crew vigilance
- Suitable footwear
- Maintain three points of contact
- Keep the boarding area clear and clean
- Provide adequate lighting
- Inspect ladders/gangways
- Carry a torch
- Wear a personal flotation device

From the risk assessments it was apparent that the most frequently used methods of boarding small fishing vessels, were stepping aboard from harbour wall/pier side ladders and stepping aboard from a quay or pier. It was also evident that it was standard practice to berth outboard of other vessels. Thirty-five (22%) of the risk assessments discussed the use of a gangway; of those, 12 identified the rigging of a safety net as a control measure. None of the other risk assessments reviewed referred to the use of safety nets or any other fall arrest or fall prevention devices. Twenty risk assessments (13%) included the wearing of personal flotation devices as a safety measure; five risk assessments recommended the rigging of handrails or stays to help when climbing over guardrails; three warned against climbing over guardrails; and one recommended the application of non-slip coatings. Only two risk assessments made reference to alcohol.

Risk assessments - *New Dawn*

There were no documented risk assessments covering *New Dawn*'s operations. Vessel berthing arrangements and procedures for safe access and egress were agreed verbally between the vessel's skipper and crew. *New Dawn*'s skipper considered Royal Quays marina to be a safe berth, where stepping from the pier onto his vessel provided an acceptable means of access and egress. It was usual for one fishing vessel to be berthed outboard of another on the middle pier, and James did not formally discuss his boarding arrangements with *New Dawn*'s skipper.

Risk assessments - Royal Quays marina

In accordance with UK land-based health and safety legislation and local authority requirements, Quay Marinas Ltd had produced safe systems of work based on 26 generic risk assessments. The marinas within the group were required to adapt each of the company's generic risk assessments to reflect local, site specific circumstances.

Royal Quays marina did not have a task specific risk assessment for boarding boats or fishing vessels, but the risk of falling into the water was considered in several of the marina's task specific assessments. These included *RA15 - customers working on their craft*. The risk assessment focused on customers working on boats moored on the pontoons and on the boatyard berths, and did not mention the middle pier or the other berths commonly used by fishing vessels. The marina's risk assessments were last reviewed on 11 March 2013.

Alcohol

The Railways and Transport Safety Act 2003, and MGN 448 (M)[10], define the maximum permissible alcohol limit for professional seafarers as 80mg of alcohol in 100ml of blood. This is the legal alcohol limit for driving a vehicle on the roads within the UK. The evidence collected during the investigation indicates that James had consumed 10 units of alcohol during the 3½ hours he spent in the *Earl of Zetland*.

Means of recovering personnel from the water

MSN 1813 (F) required decked vessels of between 12m and 15m in length to carry, among other safety equipment, two lifebuoys (1 with 18m of buoyant line attached) or one lifebuoy (fitted with 18m of buoyant line) and one buoyant rescue quoit. These had been provided, and were ready and available for use on *New Dawn*'s weather deck.

Royal Quays middle pier was equipped with lifebuoys at approximately 100m intervals and had fixed metal ladders set into the pier wall. One of the lifebuoys was positioned next to *New Dawn*'s berth, and pier wall ladders were located ahead and astern of the berthed vessels.

On the pontoons, Royal Quays marina had provided lifebuoys and rescue stations to help rescuers recover people who had fallen into the water from their boats or the pontoons. The rescue stations were supplied with an alarm, flashing light, a first-aid kit and a variety of other rescue equipment. A telescopic rescue stick and a Jason's Cradle[11] was available at the pontoon access bridge, and a small marina workboat that could be used as a rescue boat was berthed close by the pontoon entrance.

The inshore lifeboat that attended the scene was based at the RNLI station close to the North Shields Fish Quay. The distance between the station and the marina is approximately 1.8km.

Previous and similar accidents

On 2 April 2000, the fishing vessel *Astra II*[12] was sheltering from poor weather in Loch Harport, Isle of Skye. The crew went to a public house for the evening, and on their return they had to cross six other vessels to reach *Astra II.* It was dark and there was no artificial lighting. Two of the crew were heard to fall into the water. Despite attempts to rescue them, they were not recovered alive.

Since then, the MAIB's database identifies a further 17 similar fatal accidents that occurred during access to or egress from a UK fishing vessel that was alongside in port. Of these, at least ten indicate alcohol as being a contributory factor.

For the period 1992 to 2011, FISG[13] identified 22 fatalities of fishermen while their vessels were alongside; approximately 21% of the total number of fishing related fatalities during that period. Contributing factors included poor vessel access arrangements and alcohol.

On 26 February 2013, the skipper of an 18m fishing vessel that was berthed on the tidal side of the Royal Quays marina lock gates fell from a pier wall ladder between his boat and the pier wall while trying to climb back on board after returning from an evening in a local public house. Unable to climb out of the water, the skipper managed to hold onto the pier wall ladder until he was found about 45 minutes later by his crew and the marina staff. A further 45 minutes elapsed before the RNLI were able to recover him ashore. He suffered from hypothermia but was released from hospital the following day.

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[10] Standards of Training, Certification and Watchkeeping Convention, 1978 as Amended Manila Amendments: Medical Certification, Hours of Work and Alcohol Limits

[11] A Maritime rescue device similar to a scramble net and stretcher, it is suspended over the water to quickly recover a person in the water by rolling, or parbuckling, them up to the vessel

[12] Report of the investigation of the loss of two crewmen from FV *Astra II* while berthed at Carbost Pier, Loch Haport, Isle of Skye on 2 April 2000

[13] The Fishing Industry Safety Group (FISG) draws together representatives of the fishing industry, regulators and industry safety bodies.

ANALYSIS

The accident

James drowned because he fell into the dock and succumbed to the effects of cold water shock before he could be recovered from the water. He fell because he over-balanced, slipped and lost his grip while attempting to climb over *New Dawn*'s weather deck guardrails. There was a delay in rescuing James because he could not be seen in the gap between *New Dawn* and the middle pier. The pier was not sufficiently equipped for single-handed rescue of personnel in the water, and it took time for the RNLI ILB to access the marina.

The fall

Even though James was wearing suitable footwear, it is likely that condensation on *New Dawn*'s smoothly painted steel guardrails caused the foot he was standing on to slip from under him and contributed to him losing his grip on the top rail. Although James was understood to be medically fit, it is possible that the effects of an ankle sprain he had sustained earlier in the year had an influence on him losing his balance.

James had probably used the same route and method to board *Horizon II* while she was berthed outboard of *New Dawn* several times prior to the accident. However, he had worked a long day[14] and was returning to his vessel after spending several hours drinking in a bar. It is therefore possible that James was fatigued when he fell, and the obvious effect of alcohol on his motor co-ordination skills and judgment cannot be ignored.

The access between *New Dawn* and *Horizon II* posed similar hazards and had James fallen between the two vessels, the accident might have gone unnoticed until the following morning.

The rescue

James's ability to rescue himself from the water was severely hampered by the blow he received when his head struck the pier coping. This was likely to have caused him to become unconscious and in need of rescue by others.

Even though the berthing master was on hand when James fell, he was unable to see James in the water because he did not carry a torch and it was dark between *New Dawn* and the middle pier wall. Furthermore, the berthing master did not have the equipment or support required to locate James and attempt an immediate recovery. Having suffered cardiac arrest, anything other than immediate recovery removed any chance James had of surviving the fall.

Although the call to the coastguard was immediately actioned, and the ILB crew's response was swift, it took time for the marina lock gates to open and allow access to the marina. Consequently, from the first call to the coastguard, it took approximately 28 minutes for James to be recovered from the water by the crew of the North Shields RNLI ILB. It is acknowledged that the rescue of a person in the water between a quay wall and the hull of a fishing boat would be extremely difficult, even if support from other persons had been immediately available; however, it is evident that there is a genuine need to improve the availability of emergency recovery equipment on the marina's middle pier.

Vessel boarding arrangements

To access *Horizon II* from ashore, James and his crew had to board and cross over *New Dawn*. Both skippers considered Royal Quays marina to be a safe place to berth in comparison to many other fishing vessel harbours and quays, and neither skipper considered it necessary to provide a gangway or any other type of boarding equipment.

[14] Between approximately 0300 to 0700, and from approximately 1000 on 8 November to 0044 on 9 November

Although it is widely acknowledged that the safest method of boarding a vessel is usually via a gangway or accommodation ladder, they are rarely used to board small vessels. MGN 337 (M+F) recognised that stepping across small, well-illuminated gaps over water can be considered an acceptable means of access and egress. However, no matter what the circumstances, the risks associated with stepping across unprotected gaps between berths and vessels, or between vessels, need to be carefully considered as the consequences of falling remain the same. As there were no boarding gates or removable sections of guardrails around *New Dawn*'s weather deck, the only way to get on and off the vessel was to climb over its guardrails, which significantly increased the likelihood of falling.

The methods adopted to board *Horizon II* and *New Dawn* were very much in line with practices commonly used and accepted by owners and skippers of many similar sized fishing vessels. The well maintained non-tidal berths on the marina's middle pier also allowed fishermen the opportunity to step across the gaps between their vessels and the pier's edge with relative ease. Nevertheless, the boarding arrangements could have been significantly improved had additional lighting been provided and the need to climb over guardrails been eliminated. Furthermore, the application of non-slip coatings on the rungs of *New Dawn*'s boarding ladder and the sections of guardrails and weather deck directly above them would have reduced the risk of slipping.

The middle pier berths

To access the fishing vessels' berths the fishermen had to climb over a 1m high steel safety rail. The safety railings around the edges of the Royal Quays marina middle pier had been put in place primarily to prevent members of the public accessing the pier's edge; there were no gaps or gates to allow access to berthed vessels indicating that the middle pier was not originally intended to be used for berthing vessels.

It was understandable that the marina's management had assessed the pontoons to be the area where the risk of persons falling into the water was at its highest, as that was where the majority of boats were moored and there were no safety railings along the pontoons. However, once the berthing of vessels on the middle pier became routine, it would have been appropriate to consider how crews and other personnel were to access the quayside in safety. Such a review could also have considered whether dedicated lighting was needed on the pier.

The marina's risk assessments were reviewed on 11 March 2013, less than a month after the previous occasion a fishing vessel skipper had to be rescued from the water. However, the review process resulted in no additional safety measures being introduced for the berths routinely used by fishing vessel skippers. Therefore an opportunity to provide additional rescue equipment on the middle pier was missed.

Effects of alcohol

The toxicology report indicated that James was about 2 ¼ times over the UK drink-drive alcohol limit. Knowing that James had been drinking in the *Earl of Zetland*, and aware of the previous incident in February 2013, the berthing master felt it was necessary to escort the skipper back to his vessel to check that he got back on board safely.

The effects of alcohol vary between individuals and depend on a range of factors, including: weight, gender, age, metabolism, stress levels and the amount of alcohol consumed. Nevertheless, the effects can generally be considered to impair motor co-ordination skills and judgment, 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.

MAIB has investigated a number of fatal accidents in recent years involving fishermen returning to their vessels after visiting a public house. Regardless of the method used to board *New Dawn*, the environmental conditions, and James's weakened ankle, James had consumed a significant amount of alcohol, the adverse effects of which almost certainly contributed to his fall.

Fishing vessel risk assessments

The operational activities frequently carried out by the crew of *Horizon II*, including the task of getting ashore, had been risk assessed by James with the help of an SFF representative. The safety measures identified to mitigate the hazards associated with getting ashore reflected the potentially severe consequences of falling into a harbour. They included: the need to wear suitable footwear; a ban on drinking alcohol; and, where possible, boarding and leaving the vessel in pairs.

With the exception of the owner's apparent firm stance on alcohol consumption, the safety measures identified in *Horizon II*'s risk assessment were broadly in line with those of other operators. However, they were not being implemented. In seeking the assistance and advice of SFF, and by using the risk assessment process to help develop safe systems of work, James's family had demonstrated a desire to improve safety on board their vessel. James's alcohol consumption and his crew's wearing of flip-flops while climbing ashore **(Figure 8)**, were both at odds with the owner's risk assessments. Furthermore, had James put to sea at 0430 as intended, it is likely that he would still have been over the legal alcohol limit at that time.

CONCLUSIONS

- *Horizon II*'s skipper fell into the water at Royal Quays marina because he was unable to maintain his grip on the weather deck guardrail when he lost his balance and footing while attempting to climb on board the fishing vessel *New Dawn*. He died because he succumbed to the effects of cold water shock before the emergency services were able to recover him from the water.

- Having suffered a blow to his head, and cardiac arrest, James's only chance of survival required his immediate recovery. Unfortunately the berthing master was unable to rescue James because he could not see him in the water, and he was alone and had no suitable recovery equipment to hand.

- The fact that the guardrails were wet, the berthing point was not well illuminated and the skipper might have been suffering from the effects of a long term ankle injury, all probably contributed to his fall.

- The skipper had been drinking for several hours in a local public house immediately before the accident, and it is likely that the adverse effects of alcohol on his motor co-ordination skills and judgment contributed significantly to the fall.

- To get back on board his vessel the skipper had to climb over three shipside guardrails and step across two unprotected gaps over water. This was a hazardous activity, but the safety measures prescribed in the vessel owner's generic risk assessment for boarding *Horizon II* were not implemented.

- Royal Quays marina experienced a very similar incident 9 months earlier, but did not take the opportunity to implement change and improve levels of safety on the berths frequently used by fishing vessel skippers.

- Although not contributory to this accident, the means of access to and egress from the berths on the marina's middle pier were unnecessarily hazardous, as fishermen were required to climb over fixed safety rails.

ACTION TAKEN

Actions taken by other organisations

Quay Marinas Ltd has:

- Implemented an action plan that will see the following tasks completed prior to the start of the 2014 prawn fishing season:
    - Provision of a 'rescue station' on the Royal Quays middle pier.
    - Installation of a digital key safe within the marina control building, containing emergency information and equipment.
    - Update safety signage alongside wall berths, relating to skipper/master responsibilities, safe access and egress, and safe alcohol limits.
    - Conduct a review of the berthing arrangements within the marina and has asked fishing vessel skippers to consider the provision of safety netting and other suitable access arrangements to their vessels.
    - Introduce measures to increase liaison between its marina staff and fishing vessel skippers.
    - Improve the design of the middle pier ladders by fitting grab hoops at the top to make it easier and safer for people to climb on and off the ladder rungs.
    - Develop an emergency plan and a programme of tool box talks and scenario based training exercises to deal with scenarios such as people falling into the water.
- Conducted a person recovery exercise with the RNLI and has developed a method of transferring RNLI crew to the marina's workboat in order to significantly reduce RNLI mobilisation times for responding to incidents within the marinas.

RECOMMENDATIONS

Quay Marina's Ltd is recommended to:

Take action to improve the safety of fishermen when moving between the middle pier and their boats by:

2014/137 Providing a method of access and egress for the berths to eliminate the need for people to climb over its safety railings.

2014/138 Reminding skippers of fishing vessels using Royal Quays marina piers of the need to apply the guidance within MGN 337(M+F).

SHIP PARTICULARS

Vessel's name	*Horizon II*	*New Dawn*
Flag	UK	UK
Classification society	Not applicable	
IMO number/fishing numbers	FR24	B336
Type	Stern trawler	Stern trawler
Registered owner	Horizon Fishing Co.Ltd	Not applicable
Manager(s)	Horizon Fishing Co.Ltd	Not applicable
Year of build	1987	2004
Construction	Steel	Wood
Length overall	16.75	14.95
Registered length	Not applicable	
Gross tonnage	125	52.36
Minimum safe manning	Not applicable	
Authorised cargo	Fish	Fish

VOYAGE PARTICULARS

Port of departure	North Shields	North Shields
Port of arrival	North Shields	North Shields
Type of voyage	Not applicable	Not applicable
Cargo information	Prawns	Prawns
Manning	6	Not applicable

MARINE CASUALTY INFORMATION

Date and time	9 November 2013, approximately 0044	
Type of marine casualty or incident	Very Serious Marine Casualty	
Location of incident	Royal Quays marina, North Shields	
Place on board	Not applicable	Port side bulwark rail
Injuries/fatalities	Fatal cardiac arrest, 3cm gash to left temple	
Damage/environmental impact	Not applicable	
Ship operation	Alongside	Alongside
Voyage segment	In port	In port
External & internal environment	Light airs; 3-4°C Water temperature approximately 10°C	
Persons on board	3	Not applicable