

Fishing Vessel Safety Digest 2010

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH





The Marine Accident Investigation Branch is an independent part of the Department for Transport, (DfT) and is completely separate from the Maritime and Coastguard Agency (MCA). The Chief Inspector of Marine Accidents is responsible to the Secretary of State for Transport. The offices of the Branch are located at Mountbatten House, Grosvenor Square, Southampton SO15 2JU.

This *Safety Digest* draws the attention of the marine community to some of the lessons arising from investigations into recent accidents.

This information is published to inform the fishing industry and the public of the general circumstances of marine accidents and to draw out the lessons to be learned. The sole purpose of the *Safety Digest* is to prevent similar accidents happening again. The content must necessarily be regarded as tentative and subject to alteration if additional evidence becomes available. The articles do not assign fault or blame nor do they determine liability. The lessons often extend beyond the events of the incidents themselves to ensure the maximum value can be achieved.

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The role of the MAIB is to contribute to safety at sea by determining the causes and circumstances of accidents, and working with others to reduce the likelihood of such causes and circumstances recurring in the future.

Extract from

The Merchant Shipping (Accident Reporting and Investigation) Regulations 2005

The fundamental purpose of investigating an accident under these regulations is to determine its circumstances and the cause with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.





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Chief Inspector's

13 Fishermen died in accidents in 2009, the second worst total in the last 10 years



Foreword

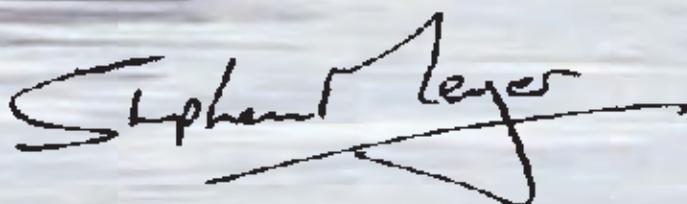
In 2009 13 UK fishing vessels were lost, and 13 fishermen died in accidents. While the number of fishing vessels lost represents a very pleasing reduction, the deaths were the second worst total in the last 10 years. 9 fishermen were lost overboard, and 4 died (in 2 separate accidents) when their vessels sank or capsized. Putting it another way, if this fatality rate continues, in the course of a normal working life more than 1 in 20 UK fishermen can expect to die in such an accident. This has to be addressed.

Being dragged overboard when shooting gear is one of the most likely causes of a fisherman being lost. Please reassess your onboard systems for shooting and recovering gear; keep equipment and personnel physically separated; discuss the risks with your crewmates; and do not take any chances.

Many fishermen who do go over the side could be rescued if their vessel was prepared and properly equipped. In every vessel, regardless of size, the crew needs to think about how they would recover a man from the water, and have equipment ready to hand. It is *never* as easy as you may think.

Finally, as I forewarned in last year's Fishing Safety Digest, we have seen the return of an old killer – crew returning to their vessels alongside, at night, after a few beers ashore. Three fishermen died this way in 3 separate accidents in 2009. While fishermen may be used to leaping from broken jetty ladders, and jumping over gaps between vessels, what might look straightforward in daylight, can become a deathtrap at night, particularly after an evening in the pub. If fishermen are going to live onboard, it is essential that a safe means of access is provided.

Please read through the articles in this publication, and take the time to think through what you need to do to ensure that you and your crewmates come home alive.



Fishermen's Tales



The boat I'm on is the *Ocean Spray*, a netter from Newlyn, Penzance. We were about 25 miles off the Lizard at about 8.00 PM and it was pitch black.

It was the last haul of the day and I'd come up to shoot the last end. I saw the net was curled up in a ball and I took my eye off what I was doing and stepped into the rope pound to sort it out.

Next thing I know, the rope anchor came up from behind and squashed me against the side of the boat. I shouted to the skipper who knocked her out of gear. As he did, the tension on the net attached to the anchor pinged me 10 feet in the air and over the side.

I remember the anchor on top of me pulling me down. I went deep enough that the lights from the boat faded so it must have been quite deep. I remember thinking about my family and about not seeing them again so I struggled to get my boots off. Luckily, I got the rope and anchor off and got to the surface.

I came up near the boat and caught hold of the line going over the side. I was very lucky because I came up near a four foot gap in the bulwark between the shelterdeck and the stern. As the boat rolled, my crewmates just hauled me on board. If I hadn't come up just there I don't know how they would have got me back on board. I was very lucky.

I wasn't wearing a lifejacket. When I surfaced, the cold caused my blood to go to my core, so my arms and legs started to weaken. I was only in the water for about 4 minutes but it was hard to stay afloat. If I hadn't been rescued quickly, I wouldn't have been able to keep up for much longer.

If I had worn a lifejacket, it would have kept me afloat even if my legs had weakened because of the cold. I'll always wear a lifejacket when I'm on deck in the future and I think all fishermen should do the same. It's easy to think you don't need one except if the boat goes down, but you never know if you're going to end up in the water some other way and a lifejacket definitely gives you a better chance of being recovered alive.

Wayne Evans, Man overboard survivor from *Ocean Spray*



I have spent the majority of my working life as a deckhand and skipper in the fishing industry.

Fishing remains the most dangerous occupation in the UK; Fishermen are 115 times more likely to suffer a fatal accident than those within the general workforce, and 24 times more likely than those in the construction industry. The rates of fishing fatalities have not shown any improvement in recent years.

Like most fishermen, I have encountered many "close calls" which act as a timely reminder as to how dangerous the fishing industry can be.

I recall an incident (and I am not ashamed to admit that it involved me) whereby a self-inflating lifejacket which had been worn for months but had not been regularly checked, had to be inflated by mouth as the less than balmy waters of The Little Minch lapped under my chin. The CO2 canister had not fired due to it becoming unscrewed. Thankfully the incident happened in sheltered waters and I was rescued almost immediately.

I've now left the industry. There are many aspects I do not miss: fishing is demanding, tortuous, frustrating and can be the most demoralising work. However it is also exhilarating, rewarding and incredibly exciting, and the camaraderie and brotherhood are unique. I wish all fishermen many safe and successful trips.

Gavin Morrison, (Ex Fisherman)



After 25 years fishing, I have never seen a person injured or fall overboard. All that changed on 11 February 2009 when I tragically lost one of my crew during a routine trawling operation.

While fishing my 23 metre scallop dredger in Cardigan Bay, 6 miles from shore in good weather conditions, one of my crew

lost his balance when a rope parted that was attached to one of the scallop bellies.

The crew raised the alarm and I sighted the man in the water from my port wheelhouse window, he was alive and trying to keep himself afloat. I immediately put the boat hard astern and got back to him pretty quickly. The crew threw a life-ring to him and screamed for him to grab it.

His face was blue and his eyes were large, haunting like. His paddling got weaker, and he didn't respond to the

crew shouting at him. He just looked at us, then turned round lay face down in the water, within 30 seconds his body had sunk beneath the surface.

This came as a huge shock for me because I always believed that someone would last maybe 5-10 minutes in the water, in good sea conditions.

He was in the water no longer than 2-4 minutes.

Unfortunately he wasn't wearing a lifejacket.

That has all changed now. My crew have to wear them on deck, and have signed the Risk Assessment book to say they will wear them.

I myself have worn them when I was a deckhand on one boat, and found them to be no burden at all while working. After a day or two you forget you're wearing them. In my view I think they should be made compulsory to wear on deck by fishermen.

You think that the worst things happen in the worst weather conditions, on this occasion it wasn't. The risks are there 24/7 regardless of the conditions.

Raymond Strachan, skipper of *Maggie Ann* (FR 110)

1

Watch Where You're Going

Narrative

At about 0300, an 18m wooden hulled prawn trawler left her port of landing for her fishing grounds. Once through the breakwaters, the two deckhands, who had helped letting go, turned in, leaving the skipper alone on watch in the wheelhouse. Although the skipper went home at weekends, during the working week he was receiving only about 4 hours sleep a night when the vessel was alongside. He was maximising the time spent fishing for prawns during the long summer daylight hours.

When the vessel cleared the approaches to the harbour, the

skipper set a course on the automatic helm to pass on his port side a small island, which lay about 2 miles to the south-west. The tidal stream was flowing north to south.

The skipper then went to the aft-facing chart table to process the previous evening's landing receipts. Shortly afterwards, the vessel grounded on an outlying shoal to the island, waking the deckhands who were all turned in. They quickly checked the vessel and ascertained that she was not taking water. The skipper was unable to drive the vessel off the shoal and he decided

to wait until high water before making further attempts to refloat. He did not alert the coastguard of his situation, but he did inform the harbour authority, which later alerted the emergency services. The coastguard dispatched an all-weather lifeboat and an inshore lifeboat to standby the grounded vessel.

The skipper was able to obtain the assistance of two passing fishing vessels to tow his vessel off the shoal at the next high water. The trawler then returned to harbour, where it was found that damage was limited to the forefoot and the steel keel band.



The Lessons

1 It is essential that watchkeepers maintain a proper navigational watch at all times and do not undertake any other duties that would interfere with the safe navigation of the vessel. Further advice on best navigational practice can be found in the MCA's MGN 313 (F).

2 Skippers should take full account of the quality and quantity of rest taken when determining fitness for duty, and use additional crew members as necessary to ensure that a proper lookout is maintained.

3 In this case, the skipper did not alert the coastguard because he believed that he was in a stable position, and that his vessel would refloat safely at high water. It is always wise to alert the coastguard as soon as possible following an accident or incident, even if assistance is not needed immediately. Do not adopt a false sense of security. Incidents can deteriorate rapidly. Forewarned emergency services can respond more effectively.

2

Lucky to Survive

Narrative

An 8m fishing vessel, trawling in an estuary on the west coast, was preparing to haul her gear when the net snagged on the sea bed. The crew of two attempted, unsuccessfully, to knock the winch out of gear in order to slacken the warp, and also attempted to turn the boat back to starboard as the vessel took a shear and a heel to port.

Before the vessel snagged her net she had been towing down-tide, and when she initially heeled over, waves started to come onto her deck, causing her to heel over even further. A short time later she started to capsize, and the crew were pushed back into the wheelhouse by the

power of the onrushing water, leaving them no time to send a 'Mayday'.

After the vessel had capsized, the crew found themselves inside the now inverted and flooded wheelhouse. One of them managed to swim clear quite quickly, while the other relied on a pocket of air to survive the initial capsize until he, too, was able to swim out of the upturned wheelhouse. Although his clothing snagged on the winch, he was able to get himself to the surface and clear of the vessel just before she began to settle by the stern, shortly after which she sank.

Once clear of the vessel, the crew joined together and clung onto a

lifebuoy, which fortunately had floated free as the vessel sank. However, they were now at the mercy of a strong tidal current, and a mile off a sparsely populated shoreline, which they were unable to reach owing to the strength of the tide.

After an hour in the water, the crew were seen from the shore by a member of the public, who alerted the coastguard, and they were soon rescued by the local inshore lifeboat.

Had they not been spotted at that time, they could potentially have been in the water for a very long time as there were no paths or roads close to the shore further up the estuary.



Vessel with illustration of trawler assembly

The Lessons

1 The crew were young and inexperienced; when they got into difficulties they were unable to react quickly enough to release the trawl warp. They also attempted to power the vessel back to starboard, when it would have been prudent to reduce the power and de-clutch the engine. Always ensure that, in accordance with the guidance given in MGN 20 (M&F) and MGN 265 (F), a risk assessment is undertaken of work activities, and personnel are suitably trained and practised in resolving foreseeable problems.

2 The crew were fortunate in that they were able to cling to a lifebuoy which had floated free of the sinking vessel. MSN 1813(F) lists the minimum safety equipment requirements for small fishing vessels, and recommends the carriage of a liferaft and EPIRB. In this case neither was carried; had they been, the crew would not have had to place such reliance on good luck and the vigilance of a member of the public to ensure their survival.

Foundering – Always Check Why Bilge Alarms Sound

Narrative

A successful, wooden gill netter sailed for her routine 7 day trip with a skipper and three crew on board. The team were well trained, they had completed all the mandatory safety training courses and were serving in a vessel that had a reputation for being well maintained and run.

For the first couple of days the fishing was variable, so it was decided to move to new grounds. Luck was not with them. The weather deteriorated and the vessel was hove to for a day. A day later things looked up, at least for a while; the weather improved and, with it, the fishing. At about 1400 on the sixth day, the nets were being hauled on board when the engine room bilge alarm sounded in the wheelhouse. The skipper was not overly concerned because this frequently happened during trips. As usual, he cancelled the alarm, switched on the electric bilge pump and continued hauling. Significantly, he did not investigate the cause of the alarm.

At about 1410, the haul was completed. The skipper then went to the engine room to de-clutch the hydraulic pump from the main engine while the rest of the crew made lunch. As he entered the engine room he found that the bilge water level was

up to the floor plates, but he could not see where it had originated from, and there were no obvious signs of leakage. He re-configured the on-engine pump from deck wash supply to bilge pump suction but was unable to shut the seacocks as they were under water. The skipper immediately returned to the wheelhouse. He informed the crew about the flooding and, as a precaution, instructed them to don their lifejackets, which were stowed in the wheelhouse.

Immediately afterwards, the skipper started the second electric bilge pump, but the two emergency hand-operated bilge pumps could

not be used as these were stripped down for maintenance. The skipper then contacted a nearby fishing vessel and told them of the problem. Afterwards he returned to the engine room and found that the water level had not reduced but had increased by a further 20cm; it was now well above the floor plates and half way up the main engine. To determine the extent of flooding, the skipper checked the fish room and found water at the same level as that in the engine room. He also checked the forepeak and found that to be dry.

The situation was clearly deteriorating. The skipper was unable



Figure 1

to determine the cause of the flooding so he made a “Pan Pan” call by VHF radio, to which the coastguard responded. The skipper advised the coastguard that he expected to remain afloat for about 1½-2 hours. Despite this, the coastguard recommended that the skipper remove the EPIRB to ensure that it floated free, and to launch his liferaft. The skipper did this, but it inverted as it inflated. A “Mayday Relay” was also broadcast by the coastguard, and a number of vessels responded. The coastguard then tasked a rescue helicopter and a lifeboat to assist.

The skipper checked the accommodation area and found that the cabin deck was just under water. Sensibly, he did not enter the compartment because at about the same time the vessel made a sudden lurch and began to roll to starboard.



Figure 2

The skipper immediately instructed the crew to jump into the water. They had insufficient time to right the still inverted liferaft, so opted to swim approximately 100 metres to the fishing vessel which had responded

to the “Mayday Relay”.

At 1509, the vessel sank. Fortunately, the rescue helicopter was overhead at about 1510 and winched the crew members to safety (Figures 1 and 2).

The Lessons

Without the vessel being available to inspect, the cause of the flooding is a matter of speculation. However, the rate of flooding calculations suggested that a 60mm diameter hole or comparable split would have caused the conditions which led to the foundering. The skipper was unable to see the source of water ingress, which suggested that it was under the engine room floor plates, below the water level. It is noteworthy that the main engine sea water cooling system used 60mm diameter pipes.

The flooding of the fish room confirmed that the forward watertight bulkhead had been breached. The fish room bilge suction flexible hose had been passed into the fish room through an oversize hole which would have allowed water to enter the fish room from the engine room and vice versa.

Had the cause of the bilge alarm been promptly investigated, there would have been a good chance that the cause of the flooding would have been found and effective measures could have been taken to deal with the problem. The following lessons can be drawn from this accident:

- 1 Investigate bilge level alarms on every occasion. It is all too easy to become complacent and switch on the bilge pump without identifying the cause of the alarm.
- 2 Use suitable components when penetrating watertight bulkheads so as to maintain, so far as is practicable, the watertight integrity.
- 3 Consider fitting extended spindles to sea valves that are not already required by regulation to be fitted, and regularly check the condition of related pipework.
- 4 Ensure that all bilge pumps, including hand-operated emergency pumps, are maintained ready for immediate use.
- 5 Conduct regular emergency drills.
- 6 Consult MGN 165 (F) – Fishing Vessels: The Risk of Flooding. This publication, which is available on the MCA’s website, provides comprehensive advice on flooding prevention measures, and makes essential reading.

The Blind Leading the Blind

Narrative

During the first week of a planned 2 week pair-trawling trip, one of the vessels suffered a failure of its satellite gyro compass. The skipper changed over to another compass but was unsure exactly what equipment it now supplied. A check of the magnetic compass revealed that the card was 180° displaced. The skipper borrowed a large magnet from the engine room, placed it close to the binnacle and managed to turn the card 180°, but thereafter the compass's reliability was found to be somewhat suspect.

After some good fishing, the vessel returned early to port and landed its half catch. Visibility was good for entering harbour, the catch was soon discharged, and the crew stood down until the vessel's planned sailing time of 2000 that evening.

When the skipper and mate returned to the vessel, the visibility had reduced to between 20 and 50 metres. The reduced visibility did not change the skipper's plan to sail at 2000.

The bridge equipment was switched on, and at 2010 the vessel left the quayside. With the wheelhouse windows open, the mate stood looking out of the port window and the skipper looked out of the forward facing starboard window. Each had an electric tiller at his side, and they shared the responsibility for the manoeuvring.

Feeling their way out of harbour and only just able to see their own forecastle, alterations of course were made whenever a vessel or structure was identified. The skipper continued outbound, but although becoming more and more concerned as the visibility continued to decrease, at no time did either he or the mate make use of the electronic navigational aids – despite the two radars and electronic chart plotter being switched on, and on suitable range scales.

By chance, the mate glanced at the rudder indicator and saw that the rudder was set hard to starboard. He immediately alerted the skipper, who started to bring the helm back to port. As the rudder returned to amidships, the noise of the vessel grounding

could be heard. The mate de-clutched the main engine and then reduced the pitch and revolutions to zero.

Port control contacted the vessel when it was no longer held on radar, and the skipper advised them that he had grounded. The crew checked for water ingress; none was found. The skipper decided to wait for a rise in tide before attempting to refloat, and 12 minutes later the vessel was afloat. The skipper and mate carefully made their way back into the harbour, this time making use of the chart plotter. On their arrival, the coastguard noticed a considerable amount of pollution in the vicinity of the propeller, and the decision was taken to remove the vessel to a nearby slipway.



Some of the damage caused by the grounding



Vessel's track – recorded from electronic chart plotter

The Lessons

1 It had been some considerable time since the skipper had attended a radar simulator course. Although he was familiar with the electronic navigation equipment on board, he had not grasped the navigational techniques necessary to navigate in fog. The need for continuation training in blind pilotage techniques and electronic navigational aids should not be underestimated.

2 There was no heading readout available because of the defective satellite compass. This was the main factor behind the disorientation suffered by the skipper. The absence of essential navigational equipment, in this case a heading display, changes the risks involved in sailing. A further assessment of the risks should be made and, if necessary, sailing deferred until the equipment is repaired.

3 A probable reason for the rudder being applied hard to starboard was the location of the tiller next to the skipper. With his attention focused on looking for visual navigation marks, he had failed to realise that he had nudged the tiller over to starboard. Given the prevailing conditions, it would have been better to have a dedicated helmsman on the wheel, which would have allowed the skipper and mate to concentrate on navigating and looking out.

4 The echo sounder was switched off while leaving and entering harbour, a scenario often identified by the MAIB. In such waters, the echo sounder is an essential piece of navigational equipment, particularly if it is fitted with a depth alarm facility. However, remember to check whether the datum is set to show depth below the keel, or depth below the waterline.

No Safety Training, Faulty Fire Detectors and Emergency Equipment – A Sorry Tale of Woe

Narrative

A 33 metre, UK registered long-liner left her home port for the 4 day passage to her fishing grounds. The skipper had been with the boat for about a year, but for the majority of the 15 mixed nationality crew, none of whom had completed any of the mandatory safety training courses, this was their first time on board.

Familiarisation training was never carried out and emergency drills were not considered important enough to waste time on. Most of the emergency equipment, including ventilation shut-off valves and the emergency fire pump, were not properly maintained and no-one could remember when they were last tested. To make matters worse, the skipper knew that the fire detector heads in the crew's cabins were routinely covered to prevent the alarms sounding as the crew smoked, but he turned a blind eye to this dangerous practice.

What the skipper did not know was that the cabin dividing bulkheads stopped short of the deckhead, and that cabin power supply cables were draped over the sharp edges, and consequently the insulation had been badly chafed (Figure 1). The crew also connected numerous electrical devices to untested electrical extension leads.

So, all in all, the boat was poorly prepared to deal with the emergency which was just over the horizon.

At 0100 the skipper called the crew to recover the long-line. They left their cabin doors latched open and went on deck. At 0630, a fisherman looked up the accommodation alleyway and saw thick black smoke coming out of one of the cabin doors – notably, the fire detection system had not alarmed. At the same time, a fisherman on the port side heard the shout of “fire” and headed towards its source. But he was beaten back. The second engineer had more success, and tackled the fire with a water extinguisher until he, too was beaten back; no one closed the watertight doors to contain the fire within as small an area as possible.

The skipper sensed something was wrong when the crew mustered in front of the wheelhouse. He opened the rear wheelhouse door to the alleyway below and was confronted by the heat from the fire, and the wheelhouse filled with smoke. It became clear to him that he had a major incident on his hands.

The crew stayed in front of the wheelhouse, unsure of what to do next. Fortunately, the bosun had

the presence of mind to confirm the crew were all accounted for. The skipper then decided to establish a fire/smoke boundary, and arranged for the watertight doors to be closed. Because the doors had not been closed early during the incident evacuation, the boundary encompassed over three quarters of the accommodation and fish processing areas. At the same time, the skipper alerted a nearby long-liner of his problems.

At about 0640 the skipper asked the chief engineer to start the fire pump. He could not do so because the electrical control supplies had been burnt through. No attempt was made to cross-connect the general service sea water pump to the fire main, nor was any attempt made to try the emergency fire pump, so there was no pressurised water supply to deal with the fire. It is noteworthy that most of the crew were unaware of the existence of the emergency pump which, in any case, was later proven to be defective.

The situation worsened as the paint on the starboard side of the main deck started to blister (Figure 2). The skipper decided to starve the fire of oxygen. However, the ventilation closing flaps were seized and could not be closed. He then set about

stuffing rags around the ventilation outlets to stop oxygen reaching the fire. At about 0700 one of the cabin scuttles fractured from the heat of the fire. The skipper and bosun donned safety harnesses, went over the side, and managed to throw buckets of sea water through the scuttle. However, this had virtually no effect. No thought was given to using the submersible salvage pump to provide boundary cooling, which was later proven during the investigation to have been a viable option.

At about 0815, the skipper contacted the vessel's owners. They advised him to "sit it out" and see if the fire would burn itself out. As the morning wore on, the crew became impatient and persuaded the skipper to try to make a re-entry to the fire despite there being no breathing apparatus on board and no fire suits (none were required by the regulations). At 1215 the rags were removed from the ventilators and large volumes of smoke were seen to issue from the broken scuttle as the fire re-ignited. This finally persuaded the skipper to notify the coastguard of the emergency, some 6 hours after the fire was discovered.

A lifeboat, rescue helicopter, patrol aircraft and a warship were all involved in the rescue. The warship put a fire-fighting team on board and extinguished the fire. The boat, under escort, made her own way into port.

The fire was caused either by a short circuit where the electrical cables were draped over the non-continuous bulkheads, or by an overheating electrical device belonging to one of the crew. It caused widespread damage throughout the accommodation area, alleyways, galley and mess room. The 220 volt electrical distribution panel outside the engine room access was totally destroyed (Figures 3, 4 and 5).



Figure 1: Cable chafing



Figure 2: Blistering of the paint on the main deck



Figure 3: Cabin damage



Figure 4

The Lessons

Fortunately there were no serious injuries as a result of the fire. However, the skipper and vessel's owners paid scant attention to the importance of safety training and contracting qualified crew who had attended the mandatory safety training courses. Attending the fire-fighting course would not necessarily have prevented the fire, but it would have enabled the crew to act more instinctively, and they might have dealt with the fire more effectively had the emergency equipment been properly maintained and available.

What perhaps is particularly disappointing is that the fire detection system had been intentionally disabled by the removal of the control panel fuses. The importance of a correct detection system cannot be over-emphasised. It provides the first line of defence and the chance to deal with the fire before it gets a real hold.

The following lessons can be drawn from this accident:

- 1** Make sure that properly trained crews are employed. Once on board, carry out regular emergency and familiarisation drills – your own survival may depend on it.
- 2** Maintain and check the correct operation of the emergency equipment – in this case, the emergency fire pump was in an enclosure on the upper deck and suffered from the crew's attitude of "out of sight, out of mind".

- 3** Make sure that fire detection systems are always fully functional. Test them regularly – especially before sailing – and repair any defects without delay.

- 4** Adopt a closed door policy. In this case the cabin doors were of B Class standard but were left open, allowing the fire to quickly spread into the accommodation alleyway. In the event of a fire being discovered, establish a boundary as close as possible to the seat of the fire.

- 5** Skippers should not hesitate to alert the emergency services to a major incident, which this clearly was. Fires can escalate unexpectedly and rapidly, and delays can so easily compromise the chances of a safe rescue.

- 6** In March 2008 the MCA published the "Fisherman's Safety Guide – A Guide to Safe Working Practices and Emergency Procedures for Fishermen". The guide provides useful information on fire prevention, training, drills, and maintaining emergency equipment, and is available in foreign languages on application to the MCA headquarters. Owners and skippers are encouraged to request copies, which are free of charge.



Figure 5: Damage to the 220v distribution panel

Fishing Boat Sunk by Mound of Clay!

Narrative

An over 24m trawler was trawling in the vicinity of seabed pipelines, in around Force 7 and moderate seas, when she came fast. The vessel had an enclosed aft net drum space, with two hydraulically operated transom doors. She immediately began to flood through the port transom door, which had been inadvertently left open from the previous voyage.

A port list quickly developed, and this worsened as water continued to pour in. The crew's attempts to close the door using the hydraulic ram were thwarted when the ram became damaged by a green sea, and the door could no longer be closed.

An electric submersible pump, located at the forward end of the net drum space, had begun to successfully drain the water, until it stopped with a flash from the area of its junction box. The net drum space

had also contained six non-return freeing ports, known as tonnage valves, but the owners had welded these up several years before the sinking due to practical concerns about back-flooding. With the pump gone there was no other means of clearing the rapidly rising flood water.

Water was soon seen pouring into the galley through open windows in the watertight bulkhead at the forward end of the net drum space, and further openings would have allowed progressive flooding to continue.

As the port list increased, hydraulic power was lost, resulting in band brakes on the automatic trawl winch system activating. With no safe and easy means of releasing these brakes, the vessel was effectively anchored to the seabed, and by the time the warps were cut with an

electric grinder, the vessel's condition failed to improve.

Despite some difficulties, the crew managed to deploy the starboard liferaft, and as the list critically increased, they abandoned into it around 15 minutes after first coming fast. Shortly afterwards, the vessel capsized and sank by the stern. A nearby fishing vessel responded to the earlier "Mayday" and safely recovered the crew.

Given the proximity of the wreck to pipelines, the oil company undertook a video and side scan sonar survey of the seabed. These concluded that the bridle and tickler chains on the trawl gear had snagged on large mounds of boulder clay, probably created when the plough being used to back-fill the trench and cover the pipeline, had either stalled or jumped.

The Lessons

1 The risks of trawling near pipelines, or other seabed obstructions, with the potential for the gear becoming fast, cannot be underestimated.

2 It is evident that this loss would not have occurred if the transom door had been closed, as it was normally. Simple human error meant that it was left open; a more effective pre-departure routine would have recognised this.

3 The lack of a means of clearing the water from the transom space once the pump failed, led to the vessel's ultimate sinking. Had the tonnage valves and pumps worked as intended, and the flooding been contained, it is likely that the vessel would have survived.

4 Electrical connections on weather decks should be of watertight construction, or located safely away from vulnerable areas.

5 The decision to weld the tonnage valves shut would not have been taken lightly, however the modifications were unauthorised, and were also not spotted during subsequent surveys. Unauthorised modifications relating to a vessel's safety critical equipment can never be condoned; alterations should never be conducted without first seeking expert advice and regulatory approval.



Figure 1: Port transom door open on wreck



Figure 2: Trawl gear embedded into mounds of boulder clay

6 The forward bulkhead of the net drum space formed part of the vessel's watertight boundary. However, the windows in this bulkhead were regularly left open at sea for ventilation purposes and, on this occasion, allowed water ingress into the vessel. This case highlights the importance of being aware of which openings are safety critical, and of keeping all watertight openings closed at all times.

7 Although the trawl warps were cut, this required the crew to fetch and operate a grinder. It would have been better to have had a quick and reliable means of releasing the brakes available, preferably integrated into the winch system or, failing that, a simple manual method. Such considerations should be included in the vessel's risk assessment, and a practical method of releasing the gear made known to all crew members.

7 Tragedy Resulting From Crewman Standing in Bight

Narrative

A 19 metre twin rig trawler was hauling in the first trawl of the trip when the centre warp parted close to the clump. The crew successfully recovered the nets and clump using the outboard warps, and the decision was made to head for the nearest convenient port to collect new wires for all three warps.

As the vessel approached the port, the skipper decided that it would be expeditious to prepare for taking on the new wires by end for ending the inner lengths of wire on all three warps. These would then be connected to the new lengths on arrival in port, allowing the vessel to return to the fishing grounds without undue delay.

The skipper was on deck to assist the crew with end for ending the outboard wires. The operation was completed successfully, leaving only the centre wire to prepare. At this stage the skipper returned to the wheelhouse, keeping the vessel head to sea at about 3 knots and leaving a very experienced senior hand and the

rest of the crew to work on the centre wire.

Assisting the senior hand on the aft deck were two crewmen, who had both recently joined the vessel.

End for ending the wire was carried out by putting a stopper on the outboard end of the wire and then paying out the wire over the stern as it came off the winch to form a bight. In this case, about 90 metres were trailing astern of the vessel. As the joining shackle, connecting the inboard end of the wire to the backing wire on the winch, passed onto the deck, the crew put a rope stopper onto the wire at the stern rail. This allowed the joining shackle to be pulled down onto the deck, where the senior hand was ready to punch out the pin and thus break the shackle, allowing it to be connected to the original outboard end of the wire. This would then have been pulled onto the winch, completing the task.

However, the crewman who pulled the wire and joining shackle down onto the deck, had positioned

himself inside the bight of wire as the senior hand began work. The pin had just been punched out, the punch tool itself still being in the shackle when, without warning, weight suddenly came onto the bight of wire trailing astern of the vessel.

As the weight came on the wire, both stoppers parted and the crewman in the bight of wire was lifted off his feet and thrown overboard. He was not wearing a lifejacket or buoyancy aid.

Tragically, the man disappeared quickly astern. The skipper initially considered diving over the side to attempt a rescue. However, he sensibly decided against that course of action and, instead, turned the vessel around. But there was no sign of their missing colleague by the time the vessel returned to the position, which the skipper had marked on the chart plotter. Despite an extensive search of the area, co-ordinated by the coastguard and involving a helicopter, five lifeboats and local fishing vessels, no trace was found of the man.



Figure 1: Vessel's net drum and aft working area

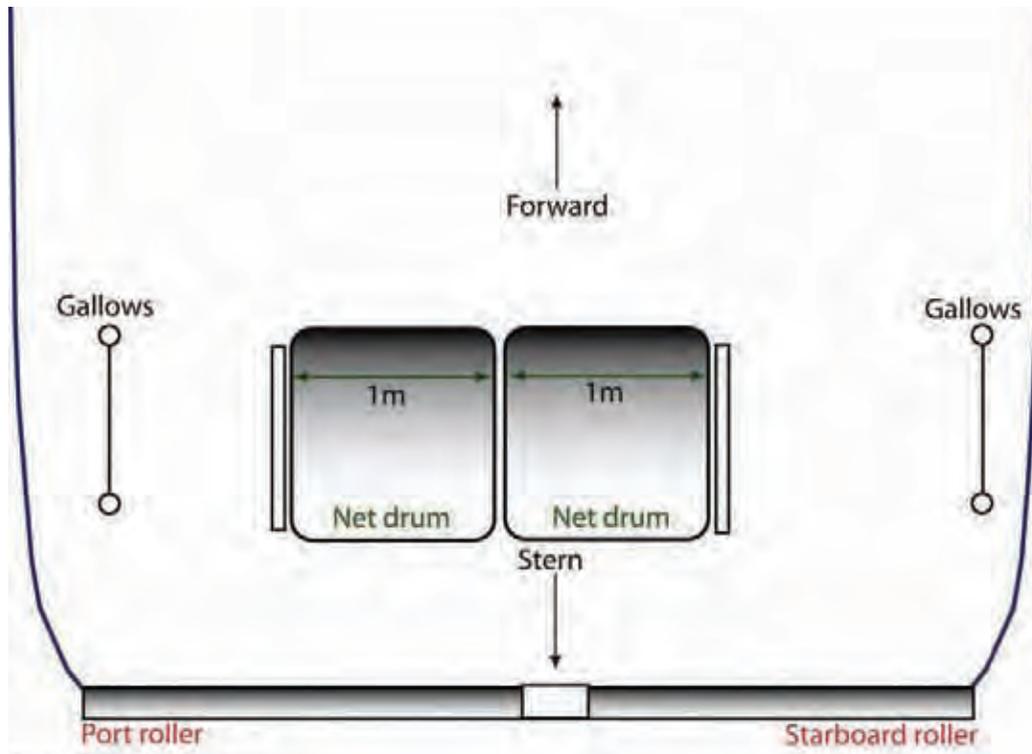


Figure 2: Plan of the stern

The Lessons

1 The skipper had conducted a risk assessment of the routine tasks carried out on the vessel, but he had not assessed the risks associated with foreseeable non-routine tasks such as end for ending wires. A risk assessment of all tasks carried out on board should be conducted to ensure appropriate control measures are in place to safeguard your crew.

2 Never stand in a bight! In this case the crewman positioned himself with thoughts only of getting the job done, and did not consider the potential consequences of the wire becoming snagged on the seabed.

3 Skippers need to ensure that inexperienced crew members are properly briefed and supervised, particularly when non routine tasks are to be carried out. In this case, the supervising senior hand involved himself in the task, so limiting his ability to supervise the safety of his less experienced colleagues.

4 No one on deck was wearing a lifejacket or buoyancy aid. The wearing of lifejackets or buoyancy aids will make the difference between life and death for many man overboard casualties; it is very strongly recommended that crew working on the deck of a fishing vessel routinely wear them.

5 Further advice on these lessons can be found in the MCA publication entitled "Fishermen and Safety – A guide to Safe Working Practices for Fishermen".

Scallop Dredger Capsize and Sinking – “Be Prepared”

Narrative

An under 12 metre stern trawler/ scallop dredger (see Figure 1) had been in a family for well over 20 years. The vessel had a good reputation and was well maintained. The owner was very safety conscious; he insisted that the inflatable lifejackets were readily available in the wheelhouse and that the crew had completed the mandatory safety training courses. He had also invested in the safety of the crew by fitting a 4-man liferaft

with hydrostatic release and an auto-locator system which sent out an hourly signal giving the vessel's position, course and speed over the ground. The system was also fitted with four personal alarms designed to be worn by the crew. These could be either automatically or manually operated, and would transmit an alert should a crew member have fallen overboard.

To maximise fishing opportunities, the vessel was

variously used as a stern trawler and scallop dredger. During the last rig change to the dredger configuration, two of the main warp blocks were changed to smaller throated blocks. A schematic of the rig configuration is at Figure 2.

After taking on fuel and water, the vessel sailed to her fishing grounds, arriving some 9 hours later. The weather was particularly good. The wind was Force 2, the sea glassy calm, visibility was excellent



Figure 1

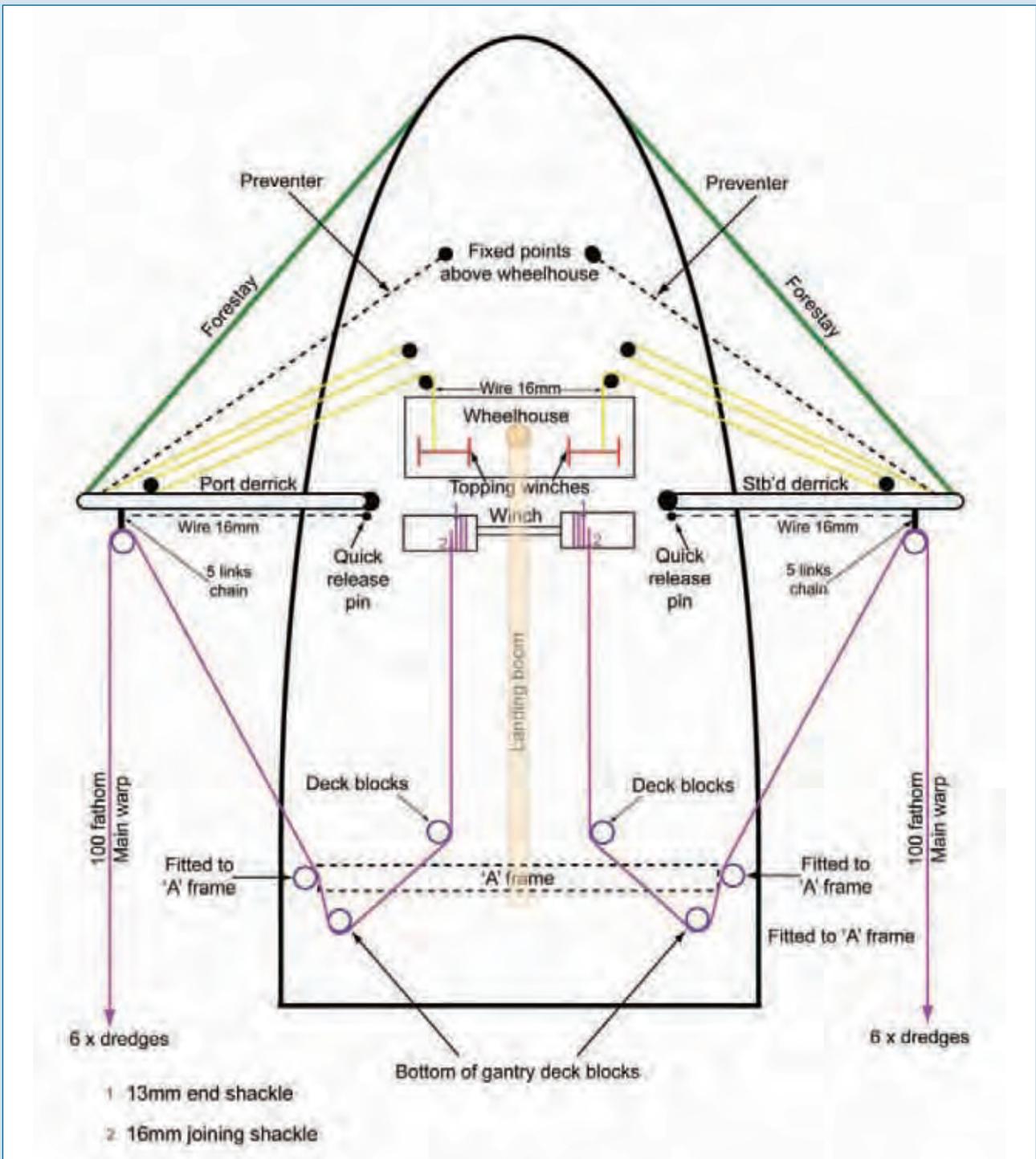


Figure 2: Beam trawler arrangement

and the swell was negligible. The sea temperature was 15°C; the tide was running at about 2.5 knots although known to reach 4 knots. However, this did not overly concern the skipper; after all, he had fished the grounds before. The omens were good. The crew expected good fishing – and they were not disappointed. By 1625 the following

day 52 bags of scallops had been dredged: 45 bags were in the fish hold and 7 were on the fish hold hatch waiting to be stowed.

At approximately 1630 the dredges hit rough ground and the vessel's speed slowed. The skipper increased the main engine revolutions, but soon afterwards the dredges started to snag. On each

occasion, the skipper manoeuvred the vessel and the snag was released. However, at about 1635 the port dredge came fast, the head turned to port and the vessel adopted about a 20° port heel. As the skipper selected neutral, the heel increased under the influence of the strong tide and the head continued to turn to port. By now the port derrick

was under water and the starboard derrick was steadily rising as the heel increased. In the rapidly changing situation the skipper did not consider using the quick release mechanism to drop the derrick blocks which would have helped improve stability.

By about 1638 the starboard main warp became entangled around the landing boom crutch located on the "A" frame. This flipped the boom to port at the same time as the seven bags of scallops slid from the fish room hatch to the port side. The starboard warp settled forward of the port quarter, which caused the vessel to be pulled further over to port. At about 1640, and having recognised the seriousness of the situation, the skipper attempted to release both warps from the winch drums. However, the warp joining shackles could not pass through the recently

changed blocks. The skipper decided to cut the wires using the gas cutting equipment stowed in the net store. As the gas torch was lit, the heel exceeded 45°, causing rapid down-flooding into the net store through the open hatch.

The crew jumped into the water as the skipper fought his way to the wheelhouse to transmit a "Mayday". Unfortunately the VHF radio handset fell away before he could do so, and he could not reach the DSC button. He did manage to get hold of a handheld VHF radio but it, too, fell from his grasp before he could complete the "Mayday" transmission. With no further options available to him the skipper jumped into the water. Neither he nor his crew were wearing lifejackets because there was insufficient time to collect them from the wheelhouse stowage before the

boat capsized. Additionally, the crew were not wearing their personal man overboard alarms.

After about 5 minutes in the water the inflated liferaft floated free. The skipper calmed his crew down as they fought to reach the liferaft. After 20-25 minutes they managed to haul themselves on board the liferaft and set about checking the equipment and its integrity as instructed during the Sea Survival Course. With the vessel now submerged, the onboard auto-locator beacon failed to transmit its hourly transmission. This information was passed to the Coastguard, who activated the local lifeboat, which was already at sea conducting exercises in the area of the vessel's last known position. A search was made of the area and fortunately the crew were recovered, unharmed, at 1757.

The Lessons

This accident clearly demonstrates just how quickly a snagging situation can lead to capsize and sinking even in the most benign conditions. The skipper was faced with what initially appeared to be a normal snagging problem – one he had dealt with many times before. He was confident that he could deal with it using a combination of engine power and his winches. As the situation deteriorated, the skipper could have dropped the rig using the quick release system. This might not have saved the vessel from capsizing, but it would have bought him time to consider his next move, and would have given the crew the opportunity to don lifejackets.

1 Always carefully consider the full implications of changes to a fishing rig, and test the rig to its full extent to ensure it is free of snags and can be released in an emergency.

2 It is important to carry out risk assessments of fishing operations and make changes to procedures to improve safety, where appropriate. It is also important to ensure that crews are aware of the changes, and of the reasons for making them.

3 Consider the early use of "quick release" systems to lower the pivot points on the derricks and so lower the centre of gravity to improve stability in snagging situations.

4 Where personal overboard alarms are carried, the crew should be encouraged to continually wear them with their lifejackets while on deck and so improve the chances of survival.

5 Conduct regular drills to ensure that actions are instinctive in emergency situations.

6 This accident clearly demonstrates the importance of carrying a liferaft and an auto-locating beacon system. MSN 1813 (F) – The Fishing Vessel Code of Practice for the Safety of Small Fishing Vessels reinforces this and recommends that an EPIRB is carried.

7 Further advice on scalloping operations can be found at MGN 165 (F) – Fishing Vessels: The Hazards Associated with Trawling, Including Beam Trawling and Scallop Dredging – Notice to all Owners, Operators, Skippers, Crews, Managers, Gear Fitters, Shipbuilders and Designers.

Burning the Candle at Both Ends?

Narrative

It was a very busy time for the skipper of a 10m “Rule Beater” inshore prawn trawler; he was literally trying to be in two places at once!

The main prawn fishing season had started, which meant the skipper and his crew could look forward to earning good money. He needed to be at sea, and was working long days in order to maximise his catch. The skipper and one crewman (his son-in-law) were share fishermen, but they did not own the boat and were employees of a company that operated a small fleet of similar boats. The other two crewmen were foreign nationals on fixed wages, meaning that they had to be paid whether the vessel fished or not.

However, as a witness in an ongoing case, the skipper was required to attend court daily. Because the two demands on his time conflicted, the skipper either had to stop fishing or reverse his ideal work pattern. He felt a huge personal responsibility to his crew and owners, and he was very worried

and stressed by this. Therefore, to keep fishing, he attended court by day and fished by night. The skipper was achieving about 2 hours sleep each day, but despite knowing this the managers of the boat did nothing to ease his workload.

This routine continued for 4 days before the skipper fell asleep in the wheelhouse as the boat was returning to harbour at the end of an overnight trip; the remainder of the crew were inside the shelter deck, processing

prawns. The autopilot was on, and the boat steamed across the fairway to the port – one used by high speed ferries – to strike a well marked isolated rock, about half a mile off its home port. They were lucky; nobody was injured, and the boat lodged itself in place on the rock. The RNLI lifeboat was with them in minutes. However, the boat was seriously damaged, and repairs meant that she was out of service for weeks – so much for keeping fishing, and that bumper haul of prawns!



The vessel aground 0.5 mile from port

The Lessons

While the MAIB could never condone people working as hard as this skipper, we do understand the exceptional personal pressure which he felt, and the stress that resulted.

Fatigue is not something that can just be ignored, particularly cumulative fatigue that builds over a number of days. For the safety of everyone, fatigue is an issue that must be considered and addressed.

Ultimately, the power to do something really effective about this situation lay with the owners and managers ashore; they knew of the skipper's problems, yet let him continue to fish, potentially putting the lives of many people at risk. The company had a 'long-hours' culture, and did not identify the increased risk of the skipper becoming seriously fatigued due to his double commitments. They failed to support the skipper when they could have provided a relief skipper or an additional watchkeeper.

Beware the Bight

Narrative

Two crewmen of a fishing boat were on the deck and had just started to shoot a line of pots. Suddenly

the foot of one of the men became trapped in a bight of the rope joining the pots.

As the man was being pulled towards the boat's side he shouted out, and the skipper, who was in the wheelhouse supervising the operation, quickly put the engine astern to take some of the weight off the rope. This enabled the man, who was in real danger of being pulled over the side, to be grabbed by the other crewman.

The second crewman was able to free his colleague's foot from the bight as the skipper manoeuvred the boat to keep the weight off the pot rope. The man's foot was very badly bruised as a result of the accident, and he had to be airlifted off the boat to receive medical attention.

Neither of the men on deck was wearing a lifejacket at the time of the accident.



Figure 1: Position of casualty at time of accident

The Lessons

1 This fisherman was very lucky; it is rare that any crewman who gets caught in a bight while shooting, lives to tell the tale. In this case, the quick reactions of the skipper and the other crewman saved his life.

2 When planning an operation such as shooting nets, it is important to ensure that those involved are able to stand in a place of safety, well clear of the ropes. In this case, ideally, the work would have been planned such that it was not possible for the man to be in a position for his foot to become caught in a bight. As every fisherman knows: if it can happen – it will!

3 A fundamental objective of a risk assessment is to eliminate the risk whenever possible. If this is not possible, those involved must be provided with appropriate protective equipment commensurate with the residual risk.

4 In this case, the men were working on an open deck but were not wearing lifejackets. The MAIB continues to investigate accidents in which lives have been lost when fishermen, not wearing lifejackets, have fallen overboard. Modern lifejackets are not cumbersome to wear – so wear them!

Fast, and it all Happened so Fast

Narrative

A 9.9m fishing vessel was trawling off the south coast of England. Her owner had fitted a liferaft to the boat even though not required to do so, and he had also fitted an auto-locator beacon, which every hour sent the boat's position to a base station ashore.

At about 1300, just as the skipper was about to haul the nets, the nets came fast on an obstruction. Adjusting the engine control to give minimum ahead speed, the skipper put the winch into gear and hauled the gear until the trawl wires were "up and down".

He then attempted to work the fastener clear by alternately heaving and slackening the gear. This had no

effect and, realising that the fastener was moving, the skipper decided to tow the object into shallower water and to then try to free it again.

At about 1500, having made little progress, the skipper decided to make another attempt to remove the fastener. He hauled the gear until, once again, the trawl wires were "up and down". Keeping the engine in gear and running ahead, he applied the port trawl wire brake, disengaged the port dog clutch and heaved on the starboard trawl wire. The port wire suddenly slipped, transferring all of the weight to the starboard wire. Under the combined effect of this increased tension in the starboard trawl wire, the wind and tide also

acting on the starboard side, and the engine running ahead, the vessel started to capsize to starboard very rapidly.

The skipper, who had been standing at the winch controls, leapt over the starboard side while the crewman, who had been sitting on the step leading into the wheelhouse, leapt over the port side. Neither man was wearing a lifejacket.

The liferaft, still in its canister, floated to the surface close to the skipper. It had not inflated automatically because the painter had not been attached to the weak link of the hydrostatic release unit (HRU). With some difficulty, the skipper managed to pull the painter



Figure 1

out of the canister sufficiently to inflate the liferaft.

At 1526, with the vessel having sunk, the onboard auto-locator beacon failed to send its hourly position report. The “missed report” information was passed to the

RNLI headquarters at Poole, which subsequently informed MRCC Falmouth that the boat was overdue. As a result, the local lifeboat and a rescue helicopter were tasked to search the area of her last reported position.

Shortly after 1700, the skipper and crewman, who were now in the inflated liferaft, heard the helicopter approaching and fired off a flare. This was seen by the helicopter crew and by 1715 both men had been winched to safety.

WHEN RECOVERING FOULED OR FASTENED GEAR

Recovery of fouled gear can impose extra loads on wires and machinery, particularly in adverse weather conditions. Failure of either may result in excessive rolling or a dangerous list to the vessel.

The vessel’s stability reserves may be seriously reduced when hauling on fouled gear with the winches working hard. Additionally winches should not be braked and used in conjunction with a vessel’s motions to free fouled gear, a heavier than normal swell may be sufficient to bring about the vessel’s capsize in this condition. Dog-clutch winches are particularly hazardous in these circumstances.

Unusual or potentially dangerous operations should always be carried out under the supervision of the skipper.

There should be an emergency means for the fast release of snagged gear.

Figure 2: Extract from MGN 265 (F)

The Lessons

1 When the boat started to capsize, there was little warning, and she rolled over and sank within seconds. The speed of capsize was such that there was no opportunity to send a distress message, and there was no time to don lifejackets or prepare the liferaft. That the liferaft floated to the surface shortly after the sinking, and that the auto-locator system had been fitted, probably saved the crew members’ lives. MSN 1813 (F) – The Fishing Vessels Code of Practice for the Safety of Small Fishing Vessels, reinforces this and recommends that a liferaft and an EPIRB are carried.

2 Although the boat carried a liferaft, the painter had not been correctly rigged, and the liferaft did not automatically inflate. The painter should be attached to

the weak link of the HRU, which is designed to withstand the force required to initiate the inflation sequence, but will part when the buoyancy of the inflated liferaft acts on it. Information concerning the correct fitting of the painter was supplied with the HRU, but was not available to the skipper when the liferaft was replaced earlier in the year. Is your liferaft painter correctly attached so that the liferaft will inflate and float free if your boat sinks?

3 Advice concerning the recovery of fast gear can be found in Marine Guidance Note 265(F) (see Figure 2). This includes the need to provide an emergency means for the quick release of fastened gear, and to ensure that the crew are practised in emergency procedures and wear lifejackets on deck when carrying out such operations.

1 What Did We Hit?

Narrative

At approximately 0615 on a still autumn morning, a single-handed 5m dory left port and headed south towards her fishing grounds at a speed of between 18 and 26 knots. Soon afterwards, her skipper saw a cluster of lights ahead and adjusted course by several degrees to port to avoid them. Once steady on the new course, he sat down to rest in a position from where he could not see ahead (Figure 1). At about 0622, 1 hour before sunrise, the dory collided with a 9m open-decked gill-netter which was on an easterly course at 6 knots. The dory impacted almost head on with the port side of the gill netter (Figure 2).

The gill netter's skipper, who was on watch in the wheelhouse, and two deckhands, who were sleeping, were all thrown to the deck. The vessel was holed above and below the waterline and her wheelhouse was displaced to starboard (Figure 3). With the vessel taking on water, the skipper used a mobile phone to inform the coastguard while the deckhands launched a liferaft over the stern. However, the liferaft did not fully inflate due to there being insufficient gas in its cylinder; it had not been serviced in accordance with its manufacturer's instructions. Fortunately, a local pilot boat quickly arrived on the scene and recovered the skipper and his crew. Although the damaged fishing vessel was taken in tow, she sank at 0646.

When the vessels collided, the skipper of the dory, who was not wearing a lifejacket, hit his head on

a chart plotter (Figure 1) and fell to the deck. He then possibly lost consciousness for a short period as the boat's engine continued to run. The skipper managed to drive the dory back to port, and from there was taken to hospital for treatment.

Although the visibility was good and both skippers had a good working knowledge of the local area, neither saw the other vessel immediately before or after the collision, and both concluded they had struck semi-submerged objects.



Figure 1: View from the seated position on the dory

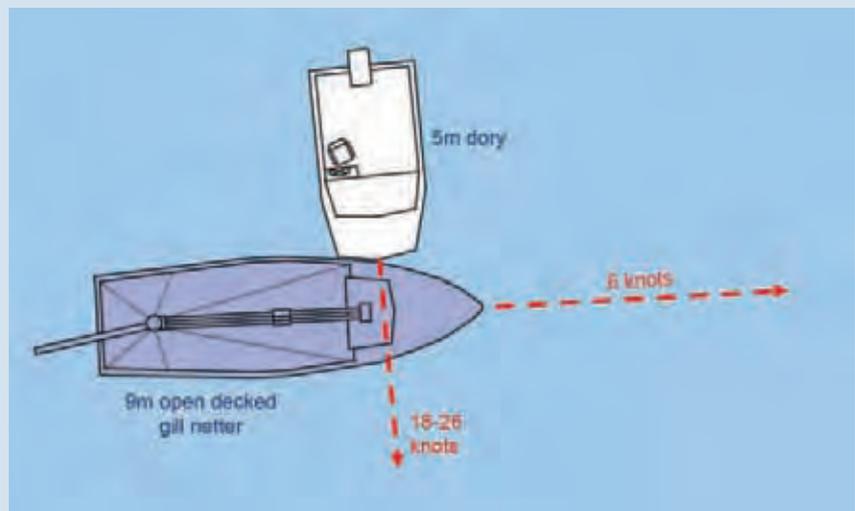


Figure 2: Relative positions on impact



Figure 3: Damage to bow of the dory

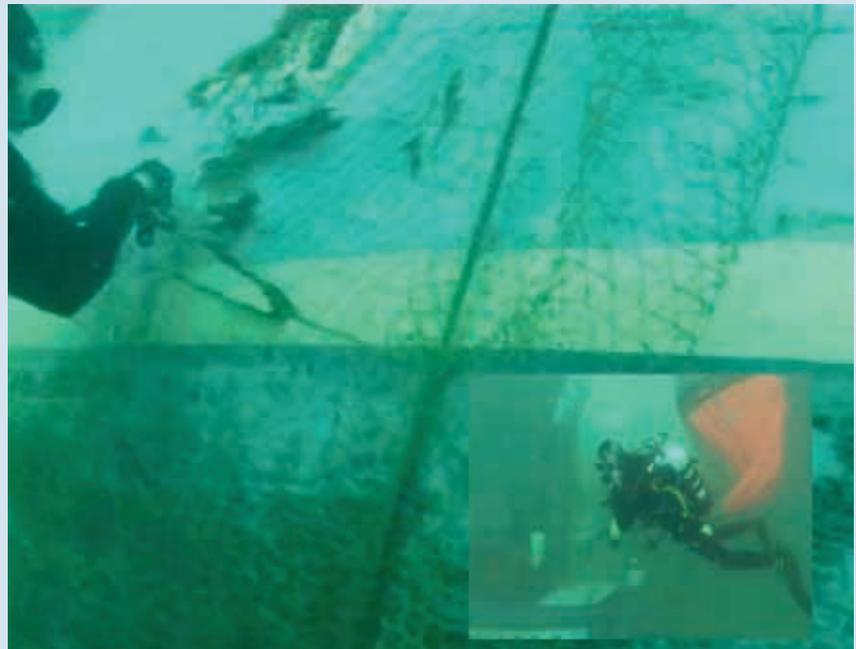


Figure 4: Gill netter diving survey

The Lessons

1 When in familiar waters, in good conditions, and when few other vessels are around, it can sometimes be easy to assign the keeping of a lookout a low priority. When this occurs, although more often than not no harm is done, there will always be a danger of being caught out. This is an unnecessary risk to lives and livelihoods; the effort required to keep an effective lookout is not onerous. It might take only a couple of minutes to make a cup of tea, but a boat moving at 25 knots will travel almost 1 mile in that time.

2 Unfortunately, liferafts occasionally do not operate as intended or expected due to poor design or maintenance. This can be prevented by ensuring

that all liferafts carried meet a recognised standard and are serviced by approved technicians at intervals recommended by their manufacturers. Liferafts can and do save lives, so don't leave it to chance that yours will work when you need it.

3 The skipper of the dory was injured and was not wearing a lifejacket. Had he been thrown from his boat, he would have found it difficult to keep afloat and might have drowned. Wearing a lifejacket is always a **worthwhile** precaution when working on deck; it is **invaluable** when operating single-handed on a fast craft with low gunwales, where the risk of falling overboard is increased.

13

A Costly Snack

Narrative

Having departed port in the early hours of the morning, the skipper of a wooden prawn trawler altered course to parallel the coast and head towards his intended fishing grounds. It was dark and he was following an old track on his plotter which took the vessel within 0.5nm of the shore. The vessel was fitted with radar, but this was not used.

Shortly afterwards, the skipper engaged the vessel's autopilot before leaving the wheelhouse to make a cup of coffee and a sandwich. Minutes later, the vessel struck charted rocks close inshore, and rapidly started to take on water. The skipper quickly alerted the vessel's two deckhands who were asleep below, and told them to don

lifejackets. A "Mayday" was broadcast on VHF channel 16 before the skipper and deckhands abandoned into a liferaft.

The "Mayday" was received by the local coastguard station and a nearby fishing vessel, which recovered the men within 15 minutes. When the vessel sank shortly afterwards, her EPIRB released and activated.

The Lessons

1 No matter how familiar with the waters a crew might be, leaving a wheelhouse unattended is not advisable at any time, particularly when navigating close to the shore and in the dark. When dangers are close by, a 5 minute break from the wheelhouse is potentially 5 minutes too long.

2 There is no doubt that plotters and autopilots have eased the burden of wheelhouse watchkeepers in recent years. However, although their use might generally be problem free, equipment failure

or operator error will always be a possibility. Therefore, the cross-checking of a vessel's position and movement by all of the navigation aids available, which might seem unnecessary, is a really good habit to adopt.

3 The broadcast of a "Mayday", the donning of lifejackets, the use of a liferaft, and the carriage of an EPIRB all contributed to ensuring the safety of this vessel's crew, despite the vessel being lost in a remote area in the dark. Are you as well prepared for the unthinkable?

A Basic Mistake Costs a Deckhand His Life

Narrative

A long-liner fishing vessel was in the process of paying out her baited hooks onto the sea bed to a depth of 200m through a stern shooting hatch. At the end of the line there were three heavy weights to which was attached a 300m riser line. The other end of the line was to be attached to two dhan buoys, which were, in turn, connected by a 15m rope to a 3.3m tall marker buoy weighing 27kg. The buoys were stored on the aft deck, which was above the shelter deck shooting area.

An accident occurred at night in force 5 wind and 2 to 3 metre seas.

Two deckhands, who were wearing inflatable lifejackets and oilskins, went up onto the aft deck to prepare to launch the buoys. The

free end of the 300m riser line was passed through the shooting hatch and over the stern bulwark, and then attached to the dhan buoys. The marker buoy had been positioned outboard and was held in place with a slip rope. The vessel was stopped to lower the weights to the sea bed, after which the vessel began to move ahead. When the riser line was nearly all out, the first deckhand threw the dhan buoys over the side and, shortly afterwards, the second deckhand released the marker buoy. Suddenly, the second deckhand was lifted up and thrown over the metre-high bulwark. The first deckhand shouted to the shelter deck crew who saw the second deckhand land in the sea, face upwards, and threw

two lifebuoys towards him. He made no attempt to swim to the lit marker buoy or to the lifebuoys, and he was quickly lost from sight.

The skipper manoeuvred the vessel to pick up the marker buoy to see if the deckhand had become entangled in the line, and he broadcast a "Pan Pan" message, which was relayed to the local coastguard by another fishing vessel nearby. An extensive search by 11 vessels, a helicopter and a fixed-wing aircraft was unsuccessful in finding the deckhand.

It is likely that the deckhand had stood in a bight of the connecting rope and was thrown overboard when weight came onto the rope between the dhan buoys and the marker buoy.

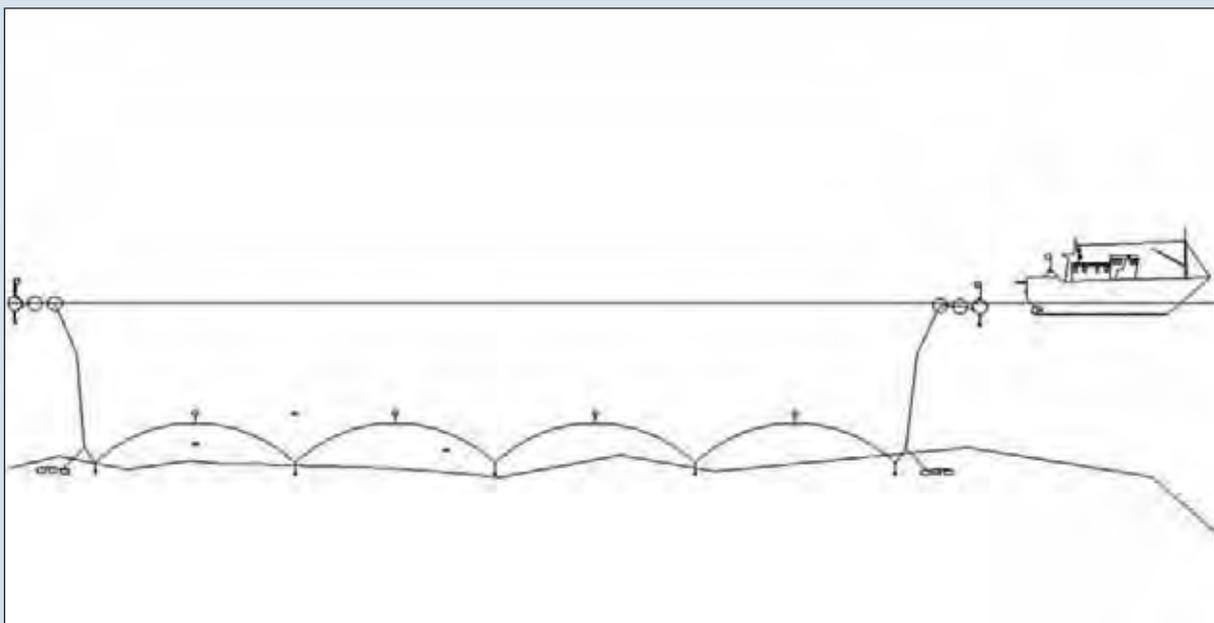


Figure 1: Diagram showing the long-line on the seabed



Figure 2: Two fishermen showing the point of letting go of the dhan buoy

The Lessons

1 The activity of letting go two dhan buoys and a heavy marker buoy, at night, and with weight on the connecting rope, rendered the two deckhands particularly vulnerable to accidents. The connecting rope was black and lying on the deck between the two deckhands. The deck lights were behind them and they would have cast a shadow over the line. Furthermore, the deckhands were visually concentrating on releasing the buoys rather than keeping their feet clear of the connecting rope. In this case, the connecting rope should not have been attached to the riser line until such a check had been made. The dangers of standing in a bight of rope are well publicised. It is, therefore, essential that a positive check is made to ensure that the rope is clear before allowing weight to be taken.

2 A documented risk assessment on board covered the activity of launching the buoys and listed a number of control measures, including the need to keep away from the lines. It is necessary for skippers to ensure that safety-critical control measures are emphasised to the crew, and that they are adhered to. It is also important that all the crew embrace the safety culture promoted by risk assessments and their resulting safe systems of work.

3 The deckhand's body was not found. It is possible that his lifejacket did not inflate automatically due to a malfunction, and that he was rendered unconscious and therefore unable to pull the manual inflation cord. Any inflatable lifejacket held on board should be regularly serviced according to manufacturer's instructions. Ideally, a light should also be fitted.

15

Over and Out

Narrative

Two fishermen were on the deck of their small fishing boat, attempting to recover an anchor, which they had laid earlier in the season on one of their regular fishing marks, several miles off the south coast.

The anchor, which was used to hold bait for rod and line fishing, was proving very difficult to heave in. The fishermen led the line around the pot hauler and pulled hard, causing the boat to list heavily. At this point the boat was suddenly and unexpectedly lifted on a larger than average wave, causing her to heel right over.

The fishermen were thrown off balance by this sudden heel and both fell overboard into the water. As they surfaced, they saw their boat on her side, capsizing. The anchor rope had remained tight around the pot hauler

and appeared to be preventing the boat from righting; the boat then sank rapidly.

The fishermen were now in a very serious situation. They had not been wearing lifejackets and, due to the rapid sinking, had not had any time to alert the authorities to their predicament. Although it was daylight and the weather was fair, they were a long way from land and, being in an area of strong tidal flows, realised they would not have the strength to swim to the shore.

Although the boat had carried a liferaft fitted with a hydrostatic release, it was not in date and had not been serviced or checked for some considerable time. Predictably, it failed to inflate, and the two lifebuoys which the boat also carried

failed to float free. They did not carry any float free device, such as an EPIRB, which would have alerted the authorities to their distress.

Fortunately for them, the helmsman of a yacht, which was on passage a few miles away, happened to be looking towards the boat when she suddenly disappeared from his view. He altered course to investigate and came across the two fishermen in the water, informed the coastguard, and stood by until the men were rescued.

The men recognised that they had been lucky to survive, and although they had been fishermen for many years they had never worn lifejackets. They both intend to return to sea, but will always wear a lifejacket on deck in the future.



The Lessons

1 Although the men had been fishing for many years they did not wear lifejackets, and when they were suddenly thrown into the water they were at serious risk of drowning. They were very lucky to have been seen by the crew of a passing yacht and subsequently rescued. Always wear a lifejacket when on deck.

2 Although there was no statutory requirement for the boat to carry a liferaft, the fishermen had fitted one, which they had transferred from their previous boat. However, neither the liferaft nor its hydrostatic release unit (HRU) had been serviced for several years and the system failed to operate. While the fishermen had shown good judgment when fitting the liferaft and HRU, they should have kept them regularly serviced by an approved agent.

3 The MAIB has investigated many accidents in which small fishing boats have capsized and sunk very rapidly, giving the crew no time to make a distress call; in many cases with tragic consequences. Although not a statutory requirement, the MCA strongly recommends the carriage of an EPIRB, which will inform the authorities of your location in the event of an accident.

Downflooding and Stability Reminder

Narrative

A 2 year old, 11.7m mussel dredger left port during the early hours for her fishing grounds, in company with another fishing vessel. The weather conditions were good, and dredging took place until 0930 when there was insufficient water over the mussel beds to continue. The fishing vessel was beached and waited for the next tide. Approximately 11 bags of mussels had been gathered in the hold by this time, equating to approximately 14 tonnes of catch.

At about 1415, the fishing vessel

returned to the mussel beds and started dredging again. After a few tows, when the vessel was heading into shallower water and turning to starboard to haul the starboard dredge, the dredge became fast. The vessel quickly heeled to starboard, taking water onto the deck.

Despite the skipper's efforts, he was unable to free the dredge or correct the heel before downflooding occurred into the engine room via the vents sited under the bulwark.

As the vessel capsized to starboard,

the two crewmen on deck managed to scramble on to the port side of the wheelhouse. As a result, none of the crew entered the water. The skipper, who was in the wheelhouse, called the coastguard and the accompanying fishing vessel.

With the other fishing vessel's assistance, the capsized boat was pulled upright and the crew were rescued, before the boat slowly sank in the shallow water. The vessel was salvaged the following day and towed back to port.



Figure 1: Deck, showing engine room air intakes



Figure 2: View of stern showing limited freeboard

The Lessons

1 The fishing vessel had been built by the owners from a proven hull design. However, the four air intakes for the engine room had been positioned inside the bulwark only 0.3m off the deck. It has been estimated that these intakes would have been immersed at only 17 degrees of heel. Although your vessel may appear to have good initial stability, ensure that downflooding does not occur before 40 degrees of heel so as to maintain an adequate righting moment at greater angles of heel.

2 To improve a bow down trim when fully loaded, roughly 2 tonnes of concrete ballast was added in the engine room 6 months before the accident. Although this ballast would have improved initial stability, the effect of the decreased freeboard would have also reduced the vessel's righting lever. It would also have resulted in the air intakes being immersed earlier. Before modifying your vessel, make sure you get an expert to assess the possible effect on your vessel's stability.

3 The loading limit for this fishing vessel was based on approximate calculations, since vessels of 'under 12m' registered length require no formal stability assessment. The stability performance of your fishing vessel is fundamental to you and your crew staying safe. Act on Seafish's recommendation and ensure your 'under 12m' fishing vessel has a stability assessment. At least then you will be able to operate knowing your vessel's loading limits.

4 The crew of this fishing vessel were extremely fortunate not to have ended up in the water. Given the circumstances, it would have been prudent, if possible, to retrieve and don the lifejackets to prevent the incident escalating. However, the lifejackets were stowed down in the cabin and were not readily available.

17

What Price an Arm?

Narrative

A large scallop dredger was recovering its gear in the early hours of a summer's morning. The weather was fine and, as was standard practice, the 14 dredges on each side had been brought alongside and draped over the vessel's gunwales prior to "tipping" the contents of each dredge onto the deck.

Unlike some vessels, "tipping" was still quite a manual process. A whipping drum, fitted either side of a winch house was used to control a rope, attached to a hook, which was connected to each dredge in turn to "tip" the contents onto the deck.

Three crew were on deck to "tip": the skipper and a deckhand working together on the starboard side, while on the port side an experienced deckhand was working alone. The latter had successfully "tipped" a couple of dredges when a riding turn developed in the several turns of rope being used around the whipping drum.

The deckhand let go of the dredge and "tipping" rope, and quickly moved back aft towards the winch head. He was aware of the problems with riding turns and knew he needed to stop the winch using the recessed emergency stop button above the drum.

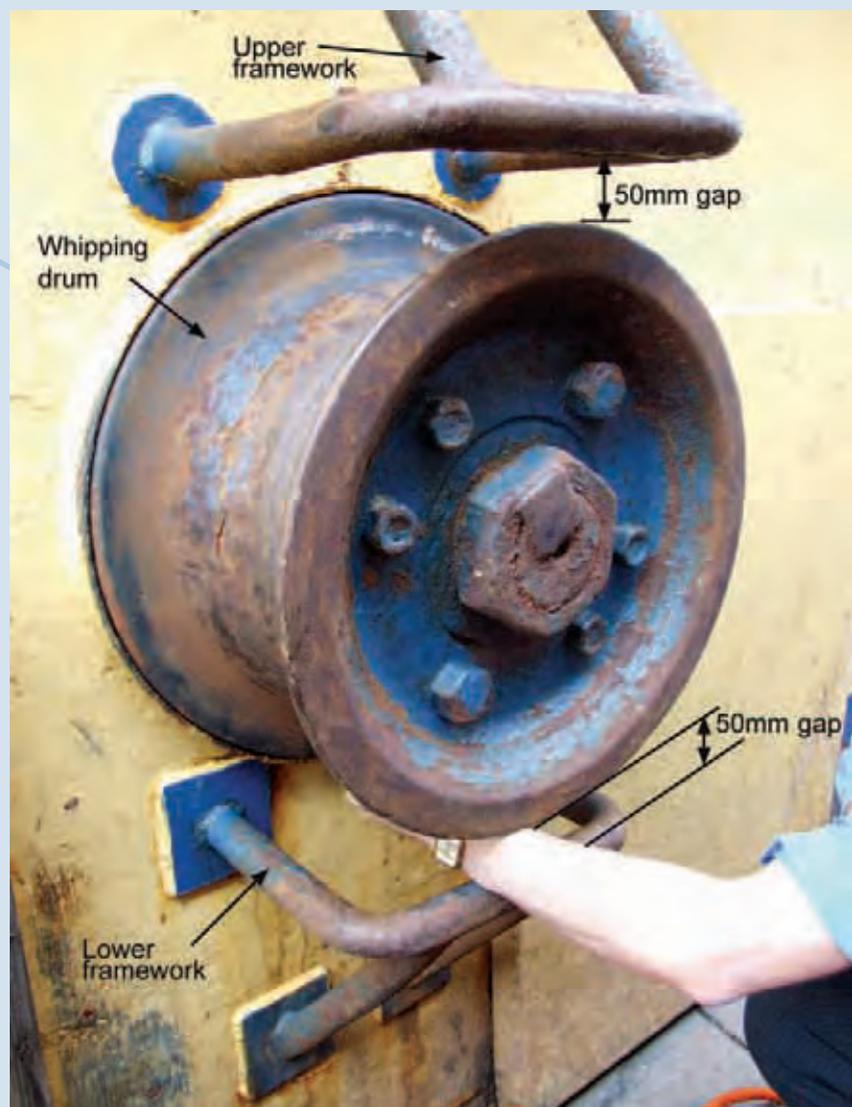


Figure 1: Port whipping drum with demonstration of an arm in the gap between winch head and lower framework



Figure 2: Demonstration of “as-found” position of deckhand, trapped in whipping drum

As he approached the winch, he slipped on the recovered dredging gear lying on the deck and, as he fell, his left hand became caught in the rope between the winch head and the lower framework. He was subsequently dragged twice round the whipping drum and framework, effectively performing two backwards somersaults, and on both occasions was unable to reach the stop

button due to the framework. It was only once his arm had broken and shoulder dislocated that the deckhand was able to stop the winch and avoid being dragged round a third time, probably to his death.

As soon as the winch stopped, the skipper and other deckhand hurried over to the port side to investigate. There they found the deckhand wrapped around the

whipping drum and framework. They freed their colleague and then helped him into the galley. He had lost several fingers, fractured and severed his upper left arm and fractured nine of his left ribs. He had also punctured his left lung. With his condition deteriorating, the deckhand was evacuated by lifeboat and ambulance to hospital, where he was stabilised, but his arm subsequently had to be amputated.

The Lessons

1 The nature of the injuries sustained by the deckhand during this accident was truly horrific, and he is indeed fortunate to have survived the ordeal. Yet given the working arrangement on board this vessel, it is a wonder that other serious accidents had not occurred before this one.

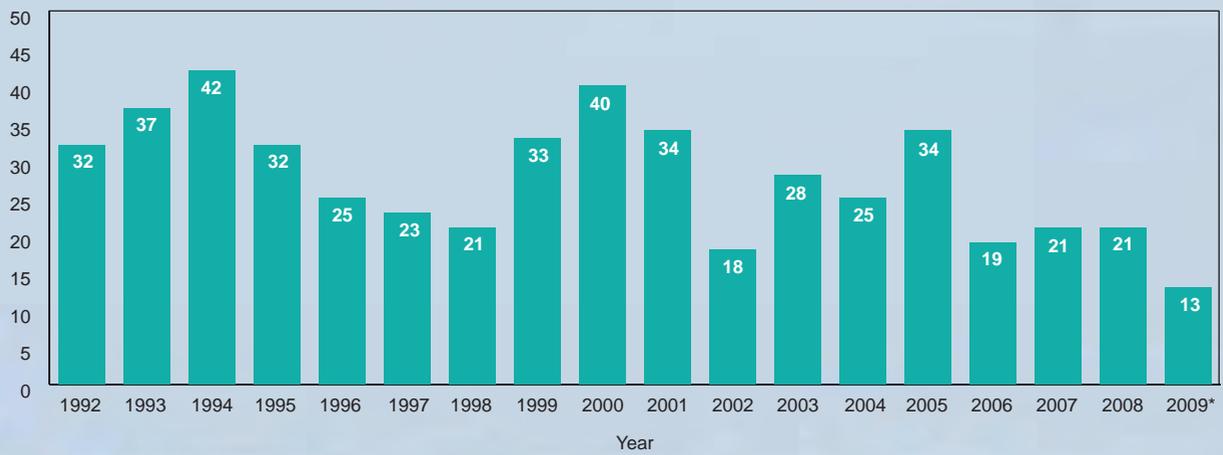
2 Had a risk assessment of the operation been conducted, it should have recognised the hazards posed and then measures to mitigate their effect could have been put in place, notably:

- The frameworks above and below the whipping drum had been fitted when the vessel changed from a beam trawler to a scalloper. They created an additional entrapment hazard and undoubtedly contributed to the very serious injuries sustained by the deckhand.
- The frameworks also meant the emergency stop button could no longer be easily reached, and clearly delayed the deckhand in stopping the winch once he was trapped around it.

- The normal practice was for experienced deckhands to “tip” alone on the port side. However, the working arrangement was unsuitable for single-handed operation, and required two crewmen: one to control the winch, the other to “tip” the dredges.
- The design of the vessel meant that the dredging gear had to sit on the side decks in way of the whipping drums, therefore creating a significant slip/trip hazard.
- Problems were noted with the adequacy of the “tipping block” leading onto the whipping drum, which could have increased the frequency of riding turns.

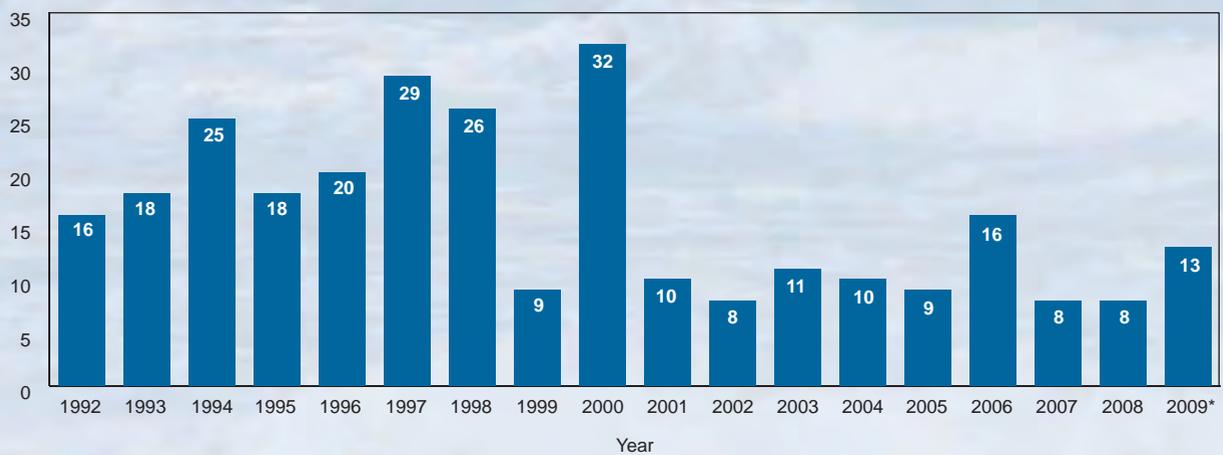
3 A new “tipping” arrangement has now been fitted to this vessel, which should remove the dangers evident from the initial working arrangement. Various alternative “tipping” configurations are available, such as automatic systems, or the use of a dedicated “tipping” winch, with a remote control. Not only will such systems offer safety benefits, but they will also lead to more efficient operations, thus saving time and money.

Fishing Vessel Losses 1992 – 2009



*Figures for 2009 are provisional at time of publication. (May 2010)

Deaths 1992 – 2009



Fishing Vessel Accident statistics 2000 – 2009

YEAR	LOSS OF LIFE					PERSONAL ACCIDENTS	VESSELS LOST
	Lost with vessel	Fell overboard	Involved Machinery	Onboard Accidents	Total		
2000	21	8	1	2	32	73	40
2001	1	6	0	3	10	77	34
2002	3	4	0	1	8	47	18
2003	4	5	0	2	11	59	28
2004	7	3	0	0	10	60	25
2005	1	7	0	1	9	53	34
2006	10	5	0	1	16	53	19
2007	3	5	0	0	8	56	21
2008	1	4	0	3	8	52	21
2009*	4	9	0	0	13	61	13
Total	55	56	1	13	125	591	253

*Figures for 2009 are provisional at time of publication. (May 2010)

MAIB published reports

List of fishing vessel accident reports published since 1999

Alma C – report on the death of Michael John Beedie, a fisherman from the fishing vessel *Alma C*, on Turbot Bank about 55 miles west-by-south of Thyboron in Denmark on 25 January 2001.

Amber – loss of a fishing vessel in the Firth of Forth on 6 January 2003.

Amber Rose – foundering of a fishing vessel with the loss of one life off the Isle of Man on 15 October 1998.

Angela – capsized and foundering of a fishing vessel in the North Sea on 6 February 2000.

Annandale – flooding and foundering of a fishing vessel 16 miles north-north-east of the Shetland Islands on 23 March 2000.

Arosa – grounding and total loss of UK fishing vessel on Doonguddle rock off the west coast of Ireland with the loss of 12 crew members on 3 October 2000.

Astra II – loss of two crewmen attempting to board the vessel while berthed at Carboist pier, Loch Harport, Isle of Skye on 2 April 2000.

Atlantic Princess – man overboard incident from vessel in the English Channel on 23 November 2000.

Aqua-boy – Report of the investigation of the grounding of *Aqua-boy*, Sound of Mull on 11 November 2006.

Aquila – capsized of the fishing vessel *Aquila* with the loss of three lives, Bo Faskadale Reef, Ardnamurchan on 20 July 2009.

Auriga – loss of fishing vessel off Portavogie, Northern Ireland on 30 June 2005.

Aurelia – flooding and loss of fishing vessel *Aurelia*, 78 miles west of St Kilda on 13 August 2001.

Be Ready – fire on board the fishing vessel while fishing 30 miles north-west of the Orkney Islands on 22 January 2000.

Betty James – grounding and subsequent loss of a fishing vessel off Isle of Rhum on 10 July 2000.

fv **Beverley Ann II/Cypress Pass** – collision between vessels on 9 March 1999.

Blue Hooker – loss of a fishing vessel with two lives off Blackchurch Rock, North Devon on 12 November 1998.

Blue Sinata – foundering of fishing vessel in Weymouth Bay on 8 September 2005 with loss of one life.

Bounty – loss of fishing vessel off Portavogie, Northern Ireland on 30 June 2005.

Bro Axel/fv Noordhinder – near miss between *Bro Axel* and fv *Noordhinder* and the subsequent grounding of *Bro Axel* at Milford Haven 5 December 2002.

Brothers – investigation of the grounding of vessel with the loss of two lives off Eilean Trodday on 1 June 2006.

Catrina – capsized of a UK registered fishing vessel south of Newhaven on 13 October 1998.

Celtic King/De Bounty – collision between UK registered feeder container ship *Celtic King* and Belgian registered fv *De Bounty* to the south of The Smalls traffic separation scheme off the south-west coast of Wales on 19 March 2000.

Charisma – capsized of the fishing vessel *Charisma* (OB588) with the loss of one crew member in Carlingford Lough on 30 January 2002.

Chelaris J – capsized and sinking of the fishing vessel *Chelaris J* (GU323) and loss of all crew members Banc de la Schôle (near Alderney) 1 October 2003.

Chelaris J – le chavirement et le naufrage du bateau de pêche *Chelaris J* (GU323) avec la perte de tous les membres de l'équipage, Banc de la Schôle (près d'Alderney), 1^{er} octobre 2003.

Christine Nielsen – flooding and foundering of a fishing vessel 120 miles north-east of the River Tyne on 18 March 2001.

Constancy – sinking of a fishing vessel on 30 July 1998 with the loss of one life.

Constant Faith – loss of a fishing vessel about 100 miles north-north-east of Peterhead on 30 June 2001.

Crimond II – loss of a fishing vessel 30 miles north-east of Scarborough on 24 April 2001.

Danielle – investigation of the major injuries sustained by a deckhand on board fv *Danielle* BM478 17 miles south-south-east of Falmouth on 6 June 2006.

De Kaper – fire on board a trawler off Hanstholm, Denmark on 12 February 1999.

Donna M – capsized of a fishing vessel off the Orkney Islands with the loss of two lives on 31 August 1999.

Dunan Star – fatal accident on board a fishing vessel 1.5 miles south-west of the Isle of Arran on 10 August 2000.

Elegance – investigation into 2 engine room fires, subsequent flooding and foundering of the fishing vessel *Elegance* 30 miles north-west of Shetland on 30 January 2004 and 8.5 miles west of Shapinsay on 5 March 2004.

Elhanan T – flooding and foundering of the fishing vessel *Elhanan T* on 14 August 2003.

mv *Elm*/mfv *Suzanne* – near miss incident on 11 February 1999.

Emerald Dawn (one of trilogy) – capsized and foundering of fishing vessel off Kilkeel with the loss of one life on 10 November 2004.

Emerald Star – investigation of *Emerald Star* making contact with Chevron Texaco Number 6 berth at Milford Haven on the evening of 18 January 2006.

European Tideway and Vrouw Grietje – collision between vessels in the North Sea on 16 October 2000.

Fishing Vessel Safety Study 1/2002 – report on the analysis of fishing vessel accident data 1992 to 2000.

Fishing Vessel Safety Study 1992 – 2006 – Analysis of UK Fishing Vessel safety

Flamingo – capsized of a fishing vessel east of Harwich on 7 July 2002.

Fleur de Lys – explosion on board vessel which then foundered 18 miles south-east of Portland Bill on 16 April 2000.

Frooch Ban – capsized of a fishing vessel off the coast of the Shetland Islands on 15 August 1999.

Geeske – death of one person while fishing off Beachy Head on 9 December 1998.

Gemma Fidelis – fatal accident on board *Gemma Fidelis* 9 miles east of the River Tees on 23 October 2001.

Girl Alice – loss of skipper from vessel 1.5 miles south-east of Burnmouth on 19 November 2000.

Gradeley – manoverboard fatality off the west coast of the Island of Mull on 28 October 1999.

Greenhill – grounding and subsequent foundering of fv *Greenhill* off Ardglass, Northern Ireland 19 January 2006.

Gudermes and Saint Jacques II – collision between vessels in the Dover Strait on 23 April 2001.

Harbour Lights – loss of a fishing vessel off Polperro, Cornwall on 8 January 2000 with the loss of one life.

Harvest Hope – capsized and foundering of the fv *Harvest Hope* 40 miles north-east of Peterhead on 28 August 2005.

Harvester/Strilmoy – collision between fv *Harvester* and mv *Strilmoy* in the North Sea on 4 November 2005.

Horizonte Claro – grounding of a fishing vessel on Soyea Island, Loch Inver, on 21 October 2000.

Jann Denise II (one of trilogy) – foundering of fishing vessel 5 miles SSE of the River Tyne 17 November 2004 with the loss of her two crew.

Jasper III – foundering of vessel 90 miles north-east of Fraserburgh on 10 September 1999.

Kathryn Jane (one of trilogy) – foundering of fishing vessel 4.6nm west of Skye on or about 28 July 2004 with the loss of the skipper and one possible crew member.

Kingfisher II – investigation of the fire on board the fishing vessel *Kingfisher II* whilst on passage to recover creels, 5 miles east of North Uist on 26 April 2004.

Kirsteen Anne – loss of a fishing vessel in the Firth of Lorn on 31 December 2002 with the loss of her two crew.

Lady Hamilton/Blithe Spirit – Report on the investigation of the collision between fishing vessels *Lady Hamilton of Helford* and *Blithe Spirit* in Falmouth Bay, Cornwall on 3 October 2007.

Lomur – grounding of a fishing vessel in the approaches to Scalloway, Shetland Islands on 14 June 2001.

Luc and Toisa Puffin – collision between two vessels 8.5 miles due east of the river Tyne on 13 June 1999.

Lysfoss – grounding of a fishing vessel in the Sound of Mull, Scotland on 7 May 2001

Maggie Ann – Report on the investigation of a manoverboard accident from *fv Maggie Ann* in Cardigan Bay on 12 February 2009, resulting in one fatality.

Marbella/Bravo Delta offshore platform – collision between UK registered fishing vessel and offshore platform in the Rough Gas Field about 25 miles south-east of Flamborough Head on 8 May 2002.

Mariama K – carbon monoxide poisoning on board a fishing vessel in Douarnenez, France on 10 June 2000 – one fatality.

Mathilda and *fv Lady Hamilton of Helford* – near miss incident between *Mathilda* and *fv Lady Hamilton of Helford*, 7 miles east-south-east of Lizard Point, Cornwall on 28 June 2001.

Meridian – Report on the investigation of the loss of the fishing vessel *Meridian KY 147* with the loss of four crew 160 nm due east of Aberdeen on 26 October 2006.

Noordster – investigation of the capsizing of the fishing vessel *Noordster Z122* with the loss of three crew 11.5nm south of Beachy Head on 13 December 2005.

Ocean Star – failure of a warp block on board a UK registered fishing vessel north of the Shetland Islands resulting in one fatality on 26 November 2001.

Opportune – man overboard fatality from a fishing vessel 35 miles east of Wick on 23 February 2000.

Osprey – fatal accident to a man overboard from a fishing vessel in Lochinver Harbour on 20 April 2002.

Our Nicholas – grounding and loss of the crabber *Our Nicholas* near the entrance to Stornoway Harbour on 24 July 2001.

fv Our Sarah Jayne/Thelisis – collision between vessels in the Thames Estuary on 20 June 2001.

Pamela S – capsizing and foundering of *fv Pamela S IH308* in Carmarthen Bay on 17 June 2006 with the loss of one life.

Pescalanza – sinking of a fishing vessel with the loss of six lives on 2 November 1998.

Philomena – fatal accident on board vessel in the Moray Firth on 6 March 2001.

Primrose – grounding of vessel on the Island of Rhum on 15 June 2001.

Purbeck II – injury of crew member on board on 7 June 1999.

Purdy – man overboard fatality from angling boat at Shipwash Bank off Harwich, on 17 July 1999.

Rachel Harvey – grounding and loss of fishing vessel off Peninnis Head on 1 October 1999.

Radiant – capsizing and foundering of a fishing vessel about 45 miles north-west of the Isle of Lewis with the loss of one life on 10 April 2002.

Radiant Star III – foundering of a fishing vessel 60 miles northeast of Fraserburgh on 6 August 1999.

Random Harvest – flooding of a fishing vessel south-west of Brighton on 3 July 1999.

Rebecca Kay – loss of a fishing vessel off Bideford Bar Buoy on 20 April 2001.

Reno and Ocean Rose – collision between *Reno* and *Ocean Rose* off Whitby, North Sea 6 March 2004.

Resplendent – grounding of a fishing vessel in Bluemull Sound Shetland Islands on 13 June 2001.

Ross Alcedo – fire on board vessel while underway about 32 miles north-west of the Isles of Scilly on 16 January 2000.

Sally Jane – capsizing alongside in Shoreham Harbour on 27 July 1998.

mv Sand Heron and *fv Celtit* – collision between vessels NE Traffic Lane, Dover TSS on 30 July 2001.

Shark & Royalist dual investigation report – Dual investigation report into the fire on board *fv Shark* on 19 January 2008 and the foundering of *fv Royalist* on 23 January 2008.

Sharona – flooding and foundering of a fishing vessel 80 miles north-east of Peterhead on 3 August 1999.

Sian Elizabeth – investigation of the injury to a member of the crew on board the fishing vessel *Sian Elizabeth* 3 miles north of Kings Lynn on 14 September 2006.

Silvery Sea/Merkur – collision between *Merkur/Silvery Sea* which then foundered about 35 miles west of Esbjerg, Denmark with the loss of five lives on 14 June 1998.

Solstice II – investigation of a fatal accident to a crew member, 25 miles south-west of Rockall on 13 May 2000.

Solway Harvester – summary report on the investigation of the capsizing and sinking of *fv Solway Harvester* 11 miles east of the Isle of Man on 11 January 2000 with the loss of 7 lives.

Solway Harvester – capsizing and sinking of fishing vessel, 11 miles east of the Isle of Man on 11 January 2000 with the loss of seven lives.

Sundance – capsizing and foundering of a fishing vessel off Gilkicker Point, East Solent with the loss of one life on 10 September 2001.

Suzanne – see *Elm*.

Tullaghmurry Lass – sinking of a fishing vessel with the loss of three lives in the Irish Sea on 14 February 2002.

Union Arbo/Philomena – collision between Bahamian cargo ship *Union Arbo* and UK *fv Philomena* about 10 miles south of Newlyn, Cornwall on 2 September 1999.

Van Dijck – loss overboard of a fisherman from fishing vessel while fishing 30 miles south-west of Guernsey on 16 April 2001.

Vertrauen – investigation of the loss of *Vertrauen* about 75 miles north-east of Peterhead on 19 July 2001.

Vision II – Report on the investigation of the fire on board the fishing vessel *Vision II* alongside at Fraserburgh on 1 August 2008 resulting in three fatalities.

Wakil II – investigation of an accident to the skipper of a fishing vessel 3.5 miles south-west of St Bees Head on 10 April 2000.

GLOSSARY of abbreviations

DSC	Digital Selective Calling	MRCC	Maritime Rescue Co-ordination Centre
EPIRB	Emergency Position Indicating Radio Beacon	MSN	Merchant Shipping Notice
HRU	Hydrostatic Release Unit	Pan-Pan	The International urgency signal (spoken)
"Mayday"	The International distress signal (spoken)	RNLI	Royal National Lifeboat Institute
MCA	Maritime and Coastguard Agency	VHF	Vary High Frequency
MGN	Marine Guidance Note		



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