

FV BLUE ANGEL

Manoverboard

West of Gigha

6 January 2011

Extract from The United Kingdom Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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SUMMARY

At 1248 UTC on 6 January 2011, a fisherman on board the 8.24m potter *Blue Angel* was dragged overboard when his leg became caught in the back rope of a fleet of creels that was being shot over the stern. He was submerged for several minutes at a depth of up to 40 metres before the two remaining crewmen managed to recover him on board and administer first-aid. A coastguard helicopter arrived on scene swiftly and transferred the fisherman to hospital where he made a full recovery.

The MAIB investigation found that *Blue Angel's* creels could become jammed in the stern opening if they were dragged through at certain angles. Working

practices on board meant that when a fisherman went aft to free a jammed creel, he was likely to walk on or near the back rope and risk becoming caught in a bight of rope and being dragged overboard. Furthermore, there was no system of positive communication between the fishermen and the skipper to ensure that the boat was slowed and the weight taken off the back line when a crew member went aft. Although personal flotation devices (PFD) were available on board, they were not worn routinely by the crew. The vessel's owner has been recommended to improve the safety of the self-shooting arrangement on board.



FV Blue Angel

FACTUAL INFORMATION

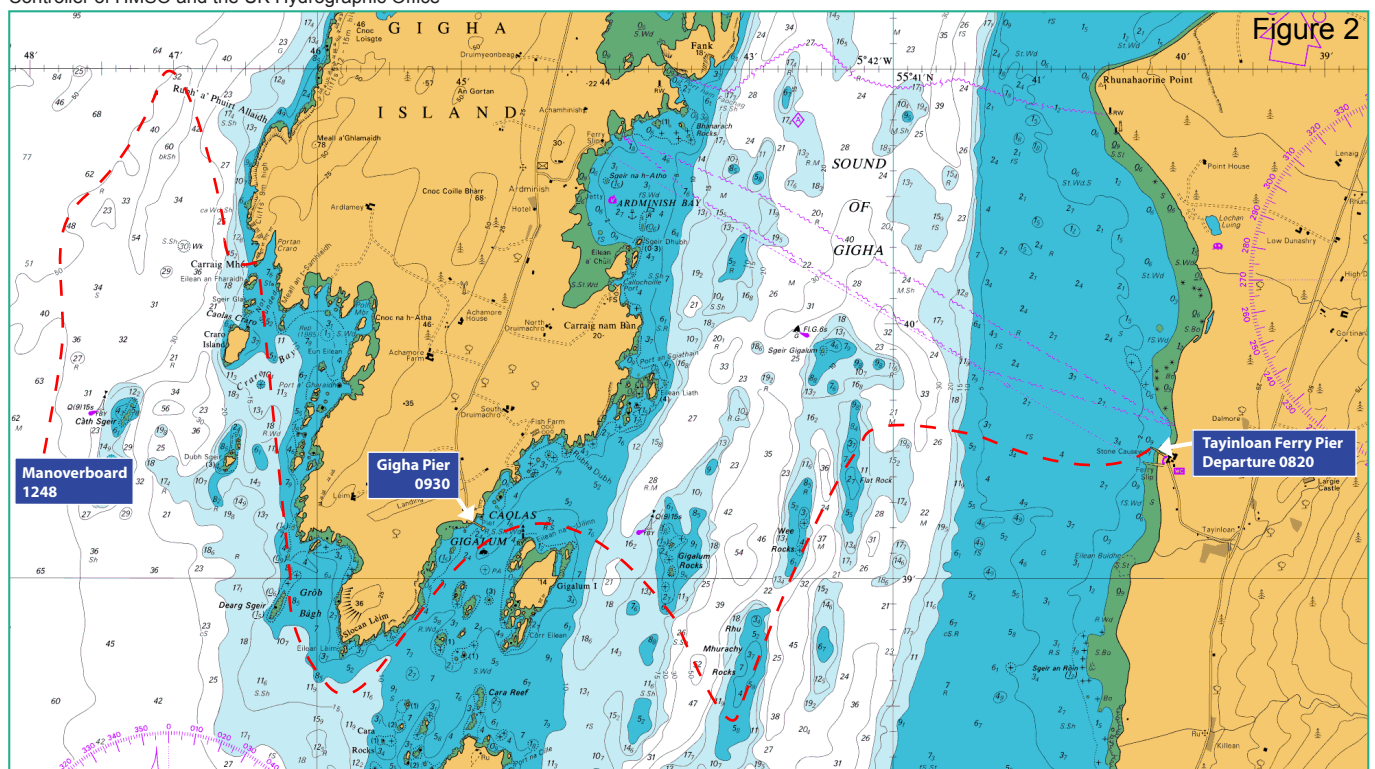
Narrative

At 0820 on 6 January 2011, *Blue Angel* departed the ferry pier at Tayinloan with three crewmen on board for a day's crab fishing around Gigha Island. The crew were all dressed warmly but no one wore a lifejacket or PFD, or carried a knife. The sea state was slight-to-moderate, the wind was north-westerly force 5, and visibility was good.

Blue Angel had a self-shooting arrangement that was intended to allow a fleet of creels to be shot through an opening in the transom, without the crew needing to manhandle each creel over the side. A marker buoy attached to the end of the float and the first creel were thrown into the water and as the boat steamed slowly ahead, tension in the back rope pulled the creels into the water one by one.

The normal practice when shooting creels was for the skipper to remain in the wheelhouse to steer the boat and to record on his chart plotter the position where the fleet was being laid. One crewman stood or sat by the wheelhouse door; the other crewman stood on the starboard side of the deck (**Figure 1**). Both crewmen monitored operations on deck ready to intervene if, for any reason, the creels did not shoot correctly. The two crewmen rotated these roles after each fleet was shot.

Reproduced from Admiralty Chart 2475 by permission of the Controller of HMSO and the UK Hydrographic Office



In the first hour of fishing, two fleets of creels were hauled, emptied, re-baited and relaid in the Sound of Gigha, and at 0930 the catch was landed at a pier on the south-east coast of the island. *Blue Angel* then rounded the southern tip of the island and for the rest of the morning fished on the west side of Gigha, less than a mile offshore (**Figure 2**).

At 1247 the crew began to shoot the seventh fleet of the day. The wind had decreased to a north-westerly force 3. One crewman (crewman A) stood by the wheelhouse door, while the other crewman (crewman B) stood on the starboard side of the deck (**Figure 3 and 4**). *Blue Angel* was travelling at approximately 5.5 knots and the creels were shooting over the stern at a rate of approximately 1 every 9 seconds until the eighth creel became jammed in the stern opening. Crewman B shouted that a creel was jammed, and went aft to clear it.

Figure 3

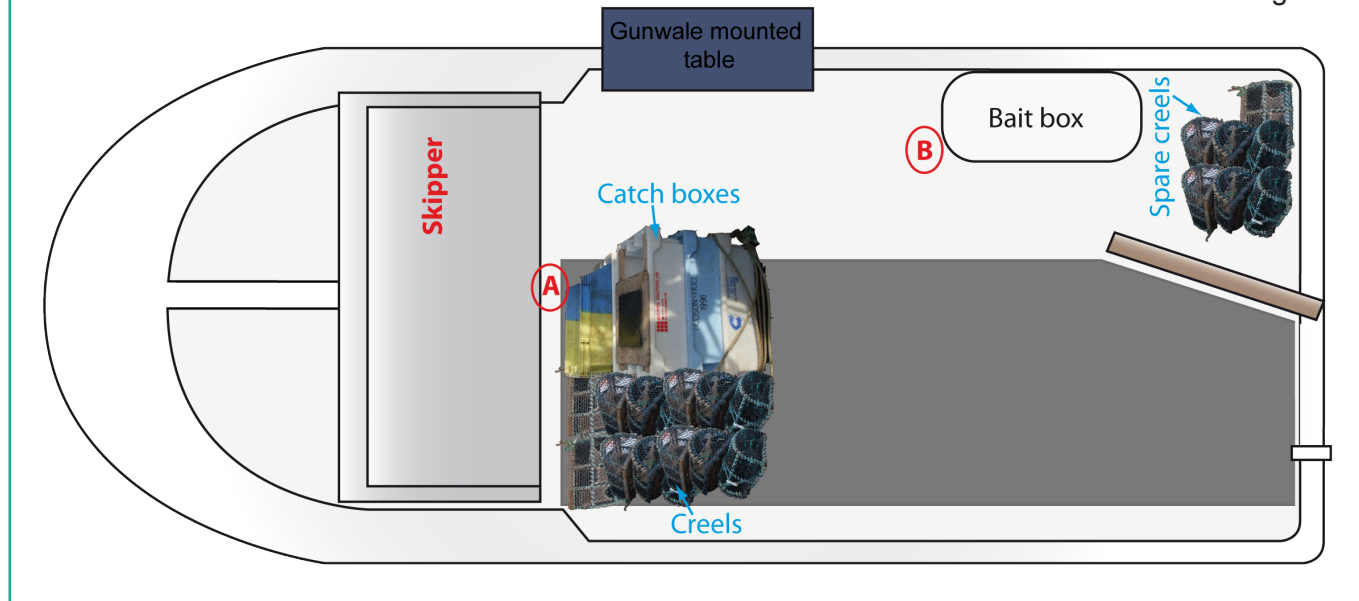


Figure 4

He did not make eye contact with either crewman A or the skipper. The skipper did not hear the shout, and continued to steer the vessel and monitor both the chart plotter and the sea ahead of him.

While he was clearing the jammed creel, crewman B felt the back rope tighten around his leg. Realising that he had stood in a bight of rope and was in danger of being dragged overboard, he knelt on the shooting guide at the stern and attempted to kick his boot free. As he was doing so, unknown to both him and the skipper, crewman A had also gone aft and he too had stood in a bight of rope. Crewman A could not recall, and none of the other crew knew, if he had intended to assist crewman B or free the jammed creel. Crewman B freed himself from the rope, turned and was surprised to see crewman A standing next to him. Almost immediately, crewman A screamed out as he was dragged to the deck and carried overboard by the back rope.

Hearing the shout, the skipper immediately put the engine into neutral to reduce speed and take the weight off the back rope. He then went aft to cut the back rope, in the hope that this would allow crewman A to free himself. By the time the skipper had cut the rope, two more creels had been shot, and this additional weight kept the line tight around crewman A's leg.

Realising that his crewman was still trapped by the back rope, the skipper steamed *Blue Angel* back to pick up the buoy that marked the beginning of the fleet, and he began to haul the creels on board. Crewman B stood on the whaleback in front and to the side of the wheelhouse, keeping a lookout where crewman A had submerged. Crewman A was recovered to the surface, his leg still caught in a bight in the back rope. He was showing no signs of life, and it is estimated from the track recorded on the chart plotter that he had spent between 4½ and 6 minutes underwater. It is likely that the weight of the creels dragged him down to the seabed, a depth of about 40m.

The skipper and crewman B recovered crewman A on board *Blue Angel*. The skipper administered Cardio Pulmonary Resuscitation (CPR) for approximately 2 minutes before being relieved by crewman B so that he could call the coastguard for assistance. After some minutes, crewman A began to cough and the two men placed him in the recovery position, kept him warm, and monitored his pulse and breathing until help arrived. At 1320, having been despatched by the Coastguard within 5 minutes of the skipper's call, the rescue helicopter arrived on scene. Crewman A was

airlifted to Crosshouse hospital, Kilmarnock. After 11 days of treatment in intensive care and high dependency medical units the crewman went on to make a full recovery. He has since returned to fishing on *Blue Angel*.

Manning

The 53-year old skipper had worked on board *Blue Angel* for 10 years. He had no previous fishing experience before this.

Crewman A was 22 years old, and had spent 3 months working on a clam dredger before joining *Blue Angel*. He had been working on the boat for 6 months at the time of the accident.

Crewman B was also 22 years old, and had 9 months' experience working on a salmon farm and 2½ years working on prawn trawlers. He had been working on *Blue Angel* for only 3 days at the time of the accident.

The skipper and crewman A had completed Seafish¹ courses in safety awareness, first-aid, basic fire-fighting and basic sea survival. Additionally, the skipper held the Seafish 'Watchkeeping on a fishing vessel' certificate. Crewman B had completed a Seafish basic sea survival course and a non-Seafish first-aid course with a previous employer.

Blue Angel

Blue Angel was built in 1996 and purchased by the skipper in 2000. In 2006, the vessel was converted to facilitate self-shooting of creels over the stern. Being unaware of any guidance on the subject the skipper had based *Blue Angel*'s self-shooting arrangement on the layout of a friend's boat, resulting in a stern opening that was 96cm wide by 73cm high.

Unless moving fleets to new fishing grounds, *Blue Angel* only carried one fleet of creels on board at a time; the fleet involved in the accident consisted of 20 creels. The creels were hauled on board via the block on the starboard side of the boat, and were emptied and re-baited on a gunwale mounted table just aft of the wheelhouse. They were then stacked on the port side of the boat.

Restricted space on *Blue Angel*'s deck meant that the first six creels of a fleet (which would be the last ones to be shot) had to be stacked two abreast, in a three-high brick-like pattern so that the remaining 14 creels could be placed in a conventional, single tier self-shooting configuration. These six creels would not self-shoot, a crewman had to place them on the deck once the single stack creels had been shot. To do this, the crewman was required to work in close proximity to the back rope.

Space on deck was limited when the creels were positioned ready to shoot and the back rope was laid out, and the spare creels, bait boxes and catch boxes restricted the space further. At the time of the accident the spare creels were stored behind the shooting guide, making it very difficult for a crewman to stand there, safely separated from the back rope, when clearing a jammed creel (**Figure 3**).

Blue Angel's crew were instructed that when a creel became wedged they should alert the skipper by shouting, and then one person should proceed aft to clear the jam. On hearing the shout, the skipper would immediately put the engine into neutral which would reduce the vessel's speed and the tension in the back rope, stopping or generally reducing the speed of the shooting process. He would then monitor the crewman while he cleared the creel.

The boat had one knife secured on the bulkhead by the line-hauler, and eight other knives were available just inside the wheelhouse door. There were no other knives located around the vessel's deck

In April 2010, in response to increasing concern over safety on potting vessels, Seafish published an Industry Advisory Note with guidance to fishermen on ways to improve safety on potting vessels². At the time of the accident, the skipper was not aware of this guidance.

Fishing gear

Each creel was 88cm long by 44cm wide (98.4cm across the diagonal), 39cm high, and weighed 23kg. Both ends of the fleet of creels were marked

¹ Seafish – the Sea Fish Industry Authority works across all sectors of the UK seafood industry to promote good quality and sustainable seafood, and to improve the safety and standards of training for fishermen.

² http://www.maib.gov.uk/resources/other_useful_documents.cfm

with buoys, which were connected to the ends of the back rope by 73m dhan ropes. The creels were spaced at 22m intervals along the back rope. With crewman A trapped between the eighth and ninth creels, at least 226m of rope had to be recovered before he could be brought to the surface.

Risk assessments

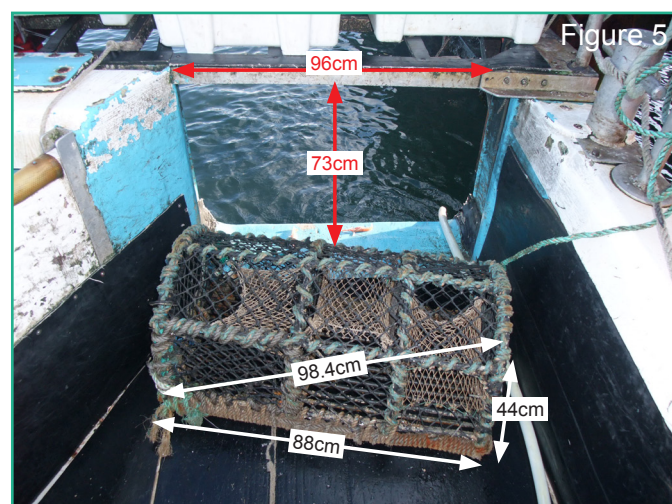
In February 2010, *Blue Angel*'s skipper had completed the risk assessment for his vessel using the template provided in the Seafish fishing vessel safety folder. The risk assessment identified the risks of a crew member becoming tangled in a rope and being dragged overboard, and of a crew member becoming tangled in a back rope when shooting. The control measures for these hazards were to have the skipper '*keep checking the deck while shooting*' and '*all crew alert during shooting*'.

The hazard of poor communication during shooting and hauling with a consequence of serious injury or death was estimated as '*harmful*' and no control measures were listed. If the option, listed in the risk assessment pro forma of '*very harmful*', had been selected, the skipper would have been prompted to '*take action subject to it being reasonable and sensibly possible*'.

ANALYSIS

Jammed creel

Blue Angel's creels measured 98.4cm across the diagonal, and consequently it was not unusual for them to jam in the vessel's 96cm wide transom opening during shooting operations. Had this



opening been larger, or the creels smaller, the risk of a single creel becoming jammed during shooting would have been significantly reduced (**Figure 5**).

Procedure for clearing a creel

On board *Blue Angel* it was not the routine, and there was no procedure for a crewman to wait for the skipper to acknowledge his warning shout that a creel had jammed during shooting, before moving aft to clear it. Had such a procedure been in place, crewman B would have realised that the skipper had not heard his shout, and this would have prompted him to shout again. Similarly, crewman A might have shouted, either to warn the skipper that crewman B was now clearing a jammed creel, or to indicate that he was going to assist crewman B.

Once he was aware that a creel was jammed, the skipper would have then reduced speed to ease the tension in the back rope. This would have made crewman B's task easier, thus reducing the chance of him becoming caught in a bight. The skipper would also have been more likely to notice crewman A going aft to assist crewman B, and been able to stop him from putting himself in danger. On the day of the accident the procedure did not work because communication between the crew was not effective. It is possible that there would have been a more robust procedure if during the risk assessment process a better estimate had been made of the harm that could be caused as a result of poor communication.

Working practices and guidance

The main safety benefit of a self-shooting arrangement is that it keeps the crew clear of the back rope and therefore reduces the risk of a crew member becoming caught in fishing gear and being dragged overboard. On board *Blue Angel*, the protection provided by the self-shooting arrangement had been significantly reduced in two ways. Firstly, stowing the spare creels behind the shooting guide prevented the crew from using this space as a safe area, separated from the back rope, while clearing jammed creels. Secondly, the need to manhandle the last six creels from their stacked position onto the deck for shooting inevitably put the crew in contact with the back rope. The need to clear the creels that often jammed in the narrow stern opening increased the risks to the crew still further.

These safety issues were not identified by the skipper when he had *Blue Angel* modified for self-shooting. He was not aware of the advice in the Seafish potting guide and had not recognised that the layout of his friend's vessel was not appropriate for his own. If an external organisation had reviewed *Blue Angel*'s stern shooting arrangement, the lack of a safe area for crew to stand in, and the risk of a jammed creel, could have been eliminated at an early stage. The Maritime and Coastguard Agency's (MCA) periodic inspections of vessels in use concentrate on the condition of the boat and its equipment and do not generally consider the operation of the vessel. In the absence of guidance on how to operate more safely, the skipper did not appreciate the risks that he and his crew faced.

Personal equipment, recovery and rescue

The skipper's decision to cut the back rope had its risks as it severed his direct connection with the man in the water. It is believed that crewman A lost consciousness very quickly and if two more creels had not been shot before the back rope was cut, the line could have become slack and the leg freed. If this had been the case, a PFD would have provided the buoyancy needed for crewman A to remain on, or float to, the surface of the water, and in these circumstances would have much improved his chances of successful rescue.

In the early stages of the accident, cutting the back rope could have prevented any of the crew from being dragged overboard. Neither crewman A nor crewman B were able to cut themselves free, as neither carried a knife and there were no other knives readily available at the aft end of the boat. Once he was in the water, crewman A would have needed a knife on his person in order to have any chance of cutting himself free. Eventually, the line was cut using a knife that the skipper had brought from the wheelhouse, but by this time two more creels had been shot and their combined weight ensured the line around crewman A's leg remained under tension. Given the seriousness of the hazard, it would be appropriate for the crew to have ready access to a sharp knife when working in the vicinity of the back rope.

In incidents reported to MAIB, it is rare for a fisherman who has been dragged overboard to survive such an ordeal. The skipper's prompt call to the Coastguard, the early despatch of the rescue helicopter, and the successful implementation of lifesaving techniques that both the skipper and crewman B had learned during their first-aid training undoubtedly saved the life of crewman A.

CONCLUSIONS

- The self-shooting system on *Blue Angel* was unsafe as the creels could jam in the transom opening, and there was no effective means of separating the crew working on deck from the moving back rope during self-shooting operations.
- The risks to crew while clearing creels that jammed while shooting had not been fully assessed, with the result that the procedure adopted for clearing jammed creels allowed crewmen to move into the hazardous area by the transom opening without the skipper's approval or supervision.
- The crew working on deck were not wearing PFDs or carrying knives, both of which had the potential to increase their survival chances.
- The skipper was unaware of the existence of the Seafish Potting Guide and there was little additional guidance available for the skipper to refer to regarding the best layout for a self-shooting arrangement.
- The prompt actions of the skipper, crewman B and the Coastguard maximised crewman A's chances of survival.
- First-aid courses provided the skipper and crewman B with the knowledge and skills that were needed to save crewman A's life.

ACTION TAKEN

By MAIB:

Two separate fatal accidents on the potting vessels *Discovery* and *Breadwinner* are currently under investigation. The issues of the guidance available on potting operations and a review of working methods during statutory surveys are being further considered as part of those investigations.

By the MCA:

Inspected *Blue Angel* (March 2011) during which the attending surveyor discussed the vessel's risk assessments with the skipper.

By the skipper of *Blue Angel*:

- Installed a large rear view mirror to help him monitor activities on deck.
- Instructed all crew to wear PFDs at all times.
- Mounted additional knives amidships and at the stern.
- Instigated a system of positive communication between the skipper and crewmen ensuring that no one goes aft to clear a creel without the skipper's verbal or physical acknowledgement.
- Made arrangements to have the stern opening widened to a size appropriate to the creels when the vessel entered a refit period in May 2011.

RECOMMENDATIONS

The owner of *Blue Angel* is recommended to:

2011/125 Improve the creel self-shooting system used on board *Blue Angel* to ensure the crew are safely separated from the back rope during shooting operations.

SHIP PARTICULARS

Flag	British
Port of registry	Oban – OB 595
Classification society	N/A
IMO number	N/A
Type	Fishing vessel – potter
Registered owner	Privately owned
Manager(s)	N/A
Construction	Fibreglass
Length overall	8.24m
Registered length	7.79m
Gross tonnage	5.46
Minimum safe manning	N/A
Authorised cargo	N/A

VOYAGE PARTICULARS

Port of departure	Tayinloan
Port of arrival	Tayinloan
Type of voyage	Coastal
Cargo information	Fishing
Manning	3

MARINE CASUALTY INFORMATION

Date and time	6 January 2011, 1248 UTC
Type of marine casualty or incident	Less Serious Marine Casualty
Location of incident	55°39.5'N 005°47.8'W
Place on board	Working deck
Injuries/fatalities	Burst lung and other injuries due to immersion at depth
Damage/environmental impact	Nil
Ship operation	Fishing
Voyage segment	Mid water
External/internal environment	NW'ly winds, force 5 Slight to moderate seas Air temperature 6°C Sea temperature (estimated) 8°C
Persons on board	3