Report of the Investigation

into the injury of a

crew member on board

mfv ***Purbeck II*** *(SU 461)*

on 7 June 1999

Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

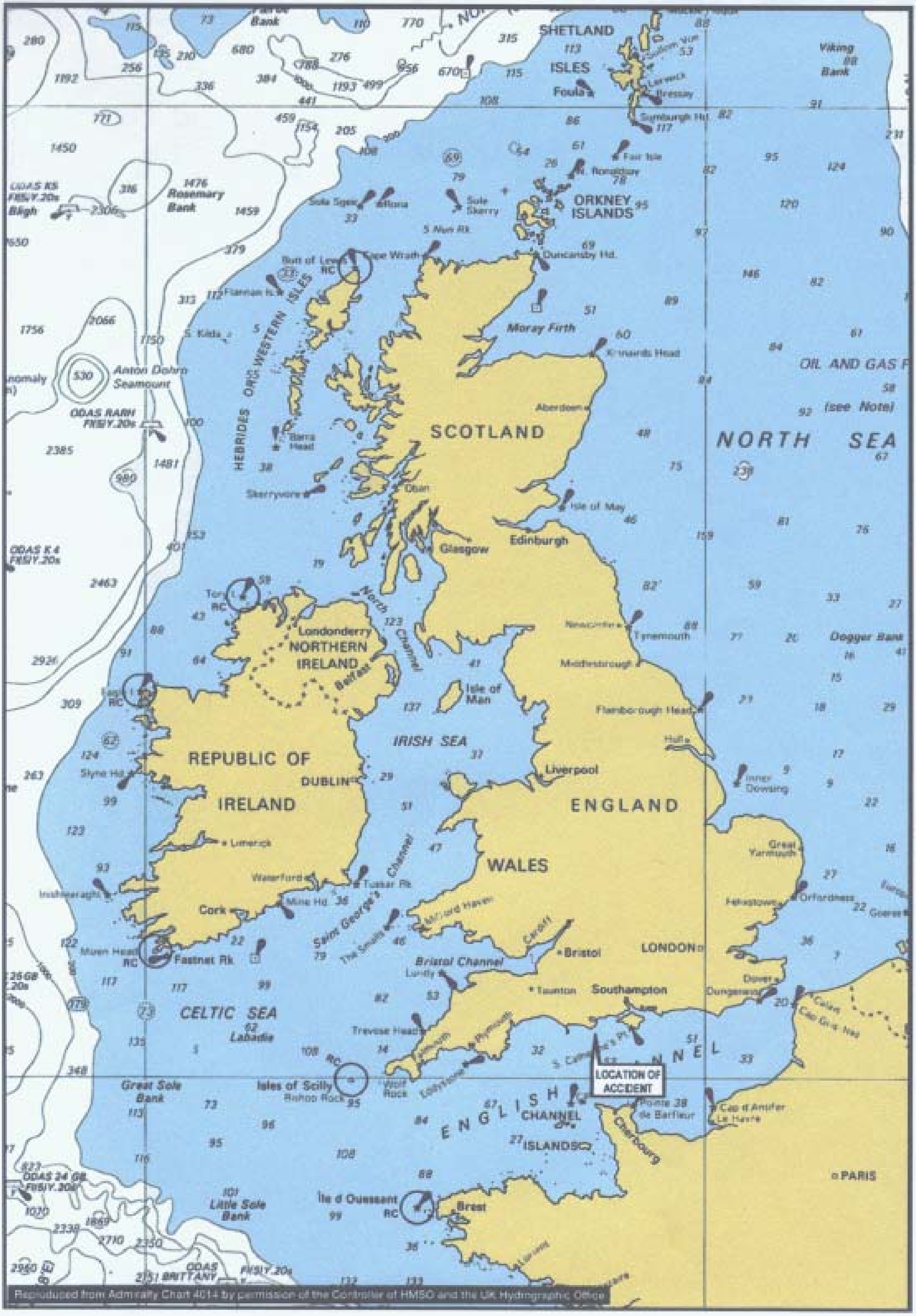
Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the causes 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.

CONTENTS

GLOSSARY OF ABBREVIATIONS

kW	kilowatt
MAIB	Marine Accident Investigation Branch
UTC	Universal Co-ordinated Time


SHETLAND ISLES
ORKNEY ISLANDS
SCOTLAND
NORTH SEA
NORTHERN IRELAND
REPUBLIC OF IRELAND
ENGLAND
WALES
IRISH SEA
CELTIC SEA
ENGLISH CHANNEL
CHANNEL ISLANDS
Moray Firth
Bristol Channel
North Channel
Saint George's Channel
HEBRIDES OR WESTERN ISLES
Aberdeen
Edinburgh
Glasgow
Londonderry
Belfast
Isle of Man
Liverpool
Hull
DUBLIN
Limerick
Waterford
Cork
Bristol
LONDON
Southampton
Taunton
Dover
Great Yarmouth
Cherbourg
Brest
PARIS
Calais
Le Havre
Isles of Scilly
Fastnet Rk
Tuskar Rk
Flamborough Head
Tynemouth
Kinnairds Head
Duncansby Hd.
Cape Wrath
Fair Isle
Foula
Rosemary Bank
Anton Dohrn Seamount
Great Sole Bank
Little Sole Bank
Dogger Bank
Viking Bank
OIL AND GAS
(see Note)
LOCATION OF ACCIDENT
Pointe de Barfleur
Cap d'Antifer
Ile d Ouessant
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SYNOPSIS

The accident was notified to the Marine Accident Investigation Branch (MAIB) on 7 June 1999 and an investigation commenced the same day.

A crew member from the 11.03m potting vessel *Purbeck II* was dragged overboard when a bight of back rope caught round his neck.

Once in the water the crewman lost consciousness due to the tightening of the rope.

Fortunately, the quick thinking of the skipper and a crewman on deck prevented him from being pulled beneath the sea surface and the rope becoming tighter around his neck.

He was quickly retrieved back on board by the crew, then transferred by the rescue services to hospital, where he made a full recovery after suffering from severe bruising and rope burns to the neck.

The cause of the accident was a bight of back rope being caught round the crewman's neck while shooting.

A contributory cause was the lack of a safety measure preventing the crew coming into contact with back rope during shooting operations.

The investigation has resulted in a recommendation to the skipper/owner of *Purbeck II* to adopt an alternative deck system, such as a detachable pot - toggle system, which would prevent the crew from coming into contact with the back rope during shooting operations.

SECTION 1 FACTUAL INFORMATION

1.1 Details of vessel and incident

Name	:	*Purbeck II*
Type	:	Fishing Vessel (Potter)
Port of Registry	:	Southampton
Fishing Number	:	SU 461
Built	:	1981 Hinks Appledore North Devon
Construction	:	Wood
Owner	:	Mr R W Channon, 77 Merriefield Ave, Broadstone, Dorset BH18 8BD
Gross Tonnage	:	14.35
Length Overall	:	11.03m
Length Registered	:	11.03m
Breadth	:	4.45m
Depth	:	1.58m
Propulsion	:	Volvo Penta 79kW Single Screw Shaft
Crew	:	Four
Position of Accident	:	50° 34.2' N 002° 03.2' W
Date and Time	:	7 June 1999 0843 (UTC)
Injuries	:	Severe bruising and rope burns to the neck
Damage	:	None

Figures 1 & 2

Purbeck II

1.2 Description of the vessel

Purbeck II was built in 1981 at Hinks boatbuilders, Appledore, North Devon. Constructed of wood the design of the vessel incorporates an open watertight weather deck with an aft wheelhouse and transom stern.

The main engine space is situated below the wheelhouse with an accommodation/storage area situated forward of the engine space separated from it by a bulkhead.

On deck, situated forward, there is an additional helm position which also incorporates main engine control, for use when the vessel is engaged in hauling.

A Celtic Slave hydraulic pot hauler is also situated forward on the starboard side close to the additional helm position. An open-sided hanging block, used during hauling is suspended outboard using a metal frame secured to the gunwale.

The height of the bulwarks surrounding the main deck is approximately 700mm.

A stowage/security rail, 1.2m high is attached to the bulwarks. The rail is fitted to most of the port side, continuing aft across the stern over an extended storage platform, then forward, finishing adjacent to the wheelhouse on the starboard side.

The remainder of the bulwark is left clear to facilitate the hauling and shooting of the pots.

1.3 Background to the voyage

Purbeck II was purchased by her owner (the skipper) to replace his previous vessel. He was also part owner of another local fishing vessel.

A regular crew operated the vessel on a daily basis from Poole harbour. She was permanently engaged in potting and worked the local inshore fishing grounds off the south coast of Dorset.

1.4 The crew

Purbeck II carried a crew of four people: the skipper and three deckhands.

Under the *Fishing Vessel (Certification of Deck Officers and Engineer Officers) Regulations 1984*, the vessel was not required to have any certificated people on board.

The skipper was an experienced fisherman having been employed in the fishing industry for 30 years. During this period he had owned and operated seven vessels all engaged in potting.

Of the three remaining crew, one had over 14 years experience on vessels engaged in potting. Another, the skipper's son, had one year's experience spent aboard *Purbeck II* with his father.

The other crew member, the casualty, was the youngest crew member aboard the vessel and was the least experienced, having only joined three months previously as a new entrant to the fishing industry.

The more experienced deckhand had undergone formal training in Basic Sea Survival, Fire Fighting and First Aid. However, the skipper, his son, and the casualty had not.

1.5 Type of fishing

Purbeck II was engaged in potting for crab and lobsters using static holding pots (traps) which are baited and shot in a string of several pots on the fishing grounds.

Each pot is attached to a main back line by means of a rope leg. Anchors or weights are then attached to both ends of the back line to keep the pots in position on the seabed. To identify the position of the pots, a dhan buoy on the sea surface is attached to both anchors in the string by means of a dhan rope.

Normally the pots are baited and shot from the vessel during one day and hauled back on a later day. The catch is removed and the pots are re-baited and shot again.

1.6 The hauling operation

During the hauling operation all four crew members are on deck. The skipper operates the pot hauler and controls the vessel from the extra helm position. The other crew members are strategically positioned on deck to handle, bait and stack the pots ready for shooting.

Once the dhan buoy identifying the fleet of pots is retrieved, the dhan rope and the anchor are heaved on board using the hauler.

The back rope is then taken around the hauler and lifting of the pots begins **(see Figure 3)**. As the rope is heaved on board, it piles up next to the hauler.

The catch is removed from each pot as it is hauled on board. The pots are then re-baited and stacked in rotation on deck. Each pot is still connected to the back rope with a leg rope. The leg rope is pushed close into the base of the

stack to avoid tangles. Often the rope is not long enough to reach the stack, so a bight of back rope is pulled from the pile to enable the pot to be stacked correctly.

By the time all the pots in the fleet have been hauled there is very little free space remaining on deck. The back rope has now accumulated in a large pile next to the hauler **(see Figure 4)**. Preparations are then made for the shooting operation.

1.7 The shooting operation

For the shooting operation the skipper moves from the hauler to the wheelhouse. The dhan buoy and rope are paid out. Once the vessel has been manoeuvred into the desired position, the dhan rope is released and the anchor, with the start of the back rope attached, is dropped overboard.

The shooting bar, a vertical steel pole set into the gunwale, or similar arrangement just forward of the wheelhouse, guides the back rope over the vessel's bulwark as the rope is pulled from the pile and across the deck by the forward movement of the vessel.

The pots are taken from the stack in reverse order. A crewman lifts the pot from the stack and rolls it over to another crewman who is positioned at the shooting bar. The pot is lifted on to the gunwale and held until it is pulled overboard.

As the crewman is holding the pot on the gunwale, the back rope is crossing the deck near his feet.

As each pot goes overboard, the next pot in sequence is rolled over to the shooting position. During this time the back rope is still being pulled overboard, and often whips across the deck in bights. Particular care is required by the crewman at the shooting position to ensure that he is not caught by a bight of back rope.

When the last pot has gone overboard, the anchor and dhan buoy are thrown overboard to mark the other end of the fleet.

1. 8 Environmental conditions

The weather at the time of the incident was a south-westerly wind of force 4 to 5 with a 1.5m south-westerly swell. The visibility was good.

Figure 3

Hauling - *Purbeck II*

Figure 4

Back rope pile on deck, after hauling - *Purbeck II*

1.9 Narrative of events (All times are UTC)

Purbeck II sailed from Poole harbour at 0430 on 7 June 1999 bound for the fishing grounds off St Alban's Head, where the vessel's pots had been shot on previous days.

At 0600 *Purbeck II* arrived at the fishing grounds and started hauling her first string of pots. Nine strings of pots had been shot. Each string contained 75 pots.

It was the skipper's intention to haul six or seven strings that day, leaving the remainder until the following day.

The weather conditions did not adversely affect the hauling and shooting operations and, by approximately 0815, three strings of pots had been hauled and shot. The fourth string had been hauled on deck and the crew made preparations to shoot again. Normally the vessel would steam into the tidal current at a speed of approximately four knots while the pots were being shot.

The skipper was in the wheelhouse. The positions of the crew on deck were regularly interchanged to allow familiarity with all aspects of the shooting operation. The casualty was positioned at the shooting bar and the other two crew members were stationed on the port side, ready to unstack, then roll the pots across the deck to the casualty. He then collected the pot and shot it over the side, as the back rope ran free with the way on the vessel.

Two-thirds of the pots on deck had been shot when the casualty bent down to collect the next pot in rotation. As he bent down the back rope flipped over his head resting on the back of his neck. His immediate reaction was to clear the rope from the back of his neck with one of his hands. This action created a bight in the back rope which then caught round his neck.

The bight of back rope began to tighten round the casualty's neck due to the way on the vessel and the weight of the pots that had already been shot. Realising what was happening, the casualty allowed himself to be dragged over the side of the vessel in the hope that some slack would be created in the back rope and he would manage to free himself. He was unable to free himself once in the water and the tightening of the back rope around his neck rendered him unconscious.

The skipper who had seen the incident, immediately came full astern on the main engine. One of the crewmen on deck immediately shot the next pot in rotation thereby creating slack in the back rope and then cut free the following pot.

The quick thinking of the skipper and the crewman on deck prevented the back rope becoming tighter around the casualty's neck. The skipper was then able to manoeuvre the vessel alongside the casualty who was now lying face down in the water. All three crew members quickly retrieved the casualty back on

board, where the rope was cut free from his neck. At the same time, 0843, the skipper called Portland Coastguard, reported the situation and requested immediate help.

The casualty soon began to regain consciousness but was bleeding heavily from the mouth.

At 0844, rescue helicopter Hotel Lima was scrambled and tasked to the scene, arriving at 0859.

At 0907 the casualty was airlifted from the vessel and transferred to Poole General Hospital where after several days (initially in the intensive care unit), he made a full recovery.

1.10 Safe fishing (potting and creeling)

Potting and Creeling, a leaflet produced by The Fishing Vessel Safety Trends Initiative Steering Group as part of a *Safe Fishing* campaign, contains the following safety advice:

Getting it right:

- *Make sure the equipment is set up to ensure smooth and safe operation and keep all unnecessary gear away from the shooting and hauling areas.*

- *Try to separate the back rope from the working area (eg. By fitting pound boards).*

- *Keep clear of the person who is shooting the pots and stay foreside of all pots and ropes.*

Getting it wrong:

- *Stepping in bight of wire or rope.*

- *Allowing concentration to lapse during shooting and hauling operations.*

1.11 Sea Fish Industry Authority

In May 1999, the Sea Fish Industry Authority produced a report entitled *Potting*.

Safety Assessment (Seafish Report No. SR524). The report was the conclusion of an investigation into the safety of pot fishing. As part of the investigation, field trips were undertaken on four potting vessels, varying in vessel size and layout of the working deck.

Various hazards in pot fishing were identified during the hauling and shooting operation.

During the shooting operation the main hazard identified was being caught in a bight of rope; a bight of rope caught around a limb during shooting will result in serious injury or death. The limb is likely to be severed or the person will be dragged overboard and, even if wearing a lifejacket, pulled down by the weight of the pots.

Two hazard reduction methods were suggested:

1. Detachable pots - Toggle system

The key to this system is a toggle clip which connects into a loop to join together the two-piece leg rope at a point quite close to the pot. During hauling each pot is detached from the back rope, which allows the pot to be stored independently of the rope.

The loops on the leg rope are placed, in order, over a vertical pole. When the pots are shot, the toggle is connected back to the loop and the pot is allowed to go over the side of the vessel.

Apart from the ability to stack the pots out of sequence, the system gives more compact storage of the back rope, which allows a division to be constructed, separating the rope from the deck area where the crew handle the pots **(see Figure 5)**.

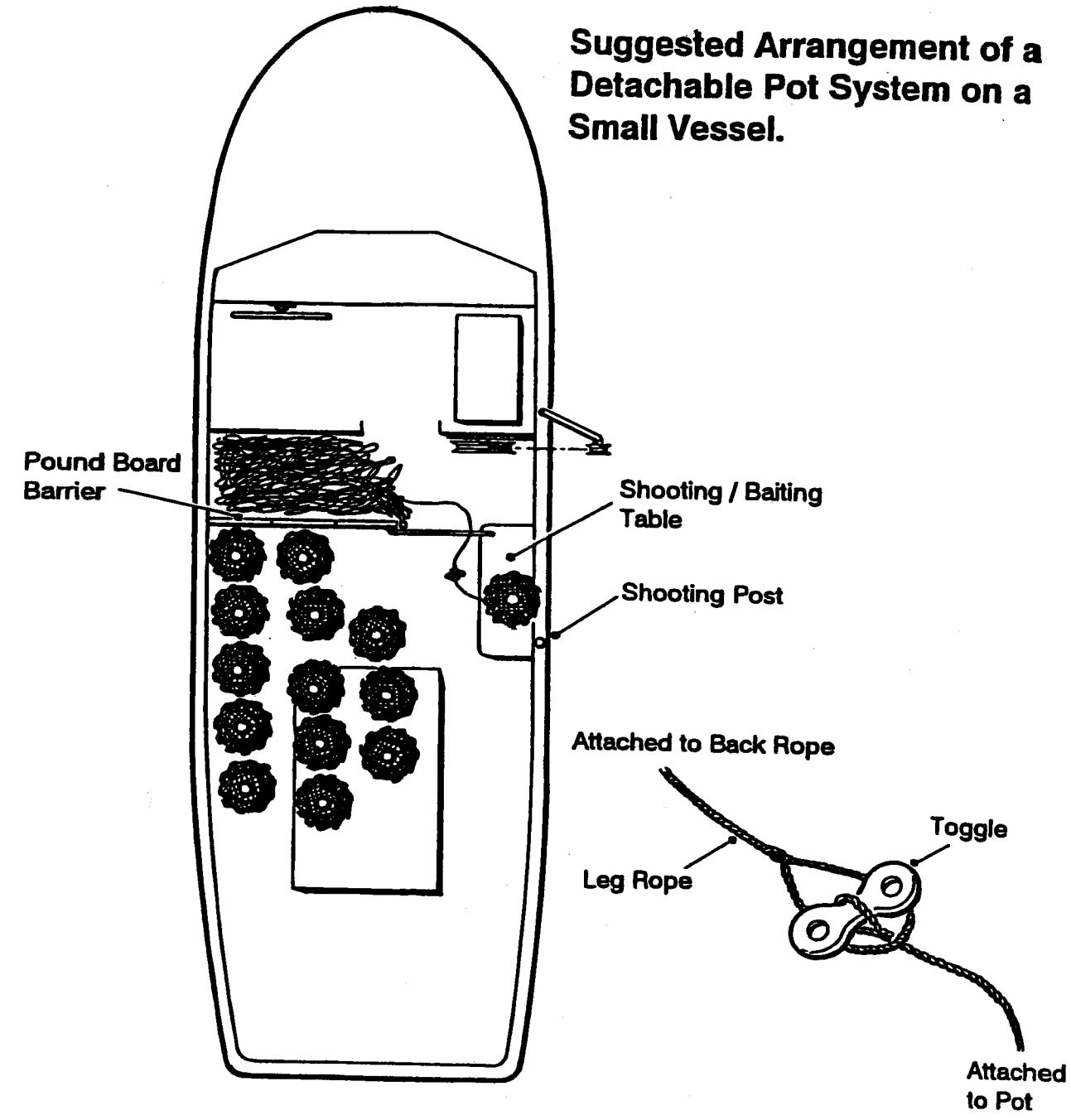
2. Rope pounds or divisions

A method of separating the back rope and leg ropes from the crew is to use pound boards or divisions. The design of the barrier will depend on the layout of the vessel and the stacking of the pots.

Figure 6 shows a separation system devised by an Orkney skipper who introduced it after one of his crewmen, who had become snagged in the back rope while shooting, was killed.

Figure 5

Suggested Arrangement of a Detachable Pot System on a Small Vessel.



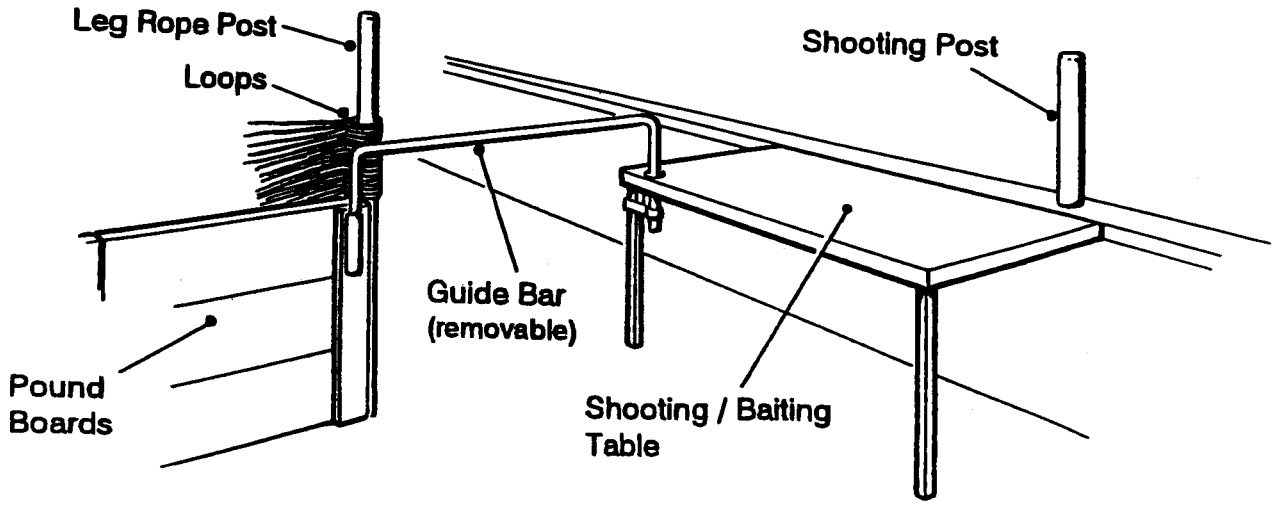
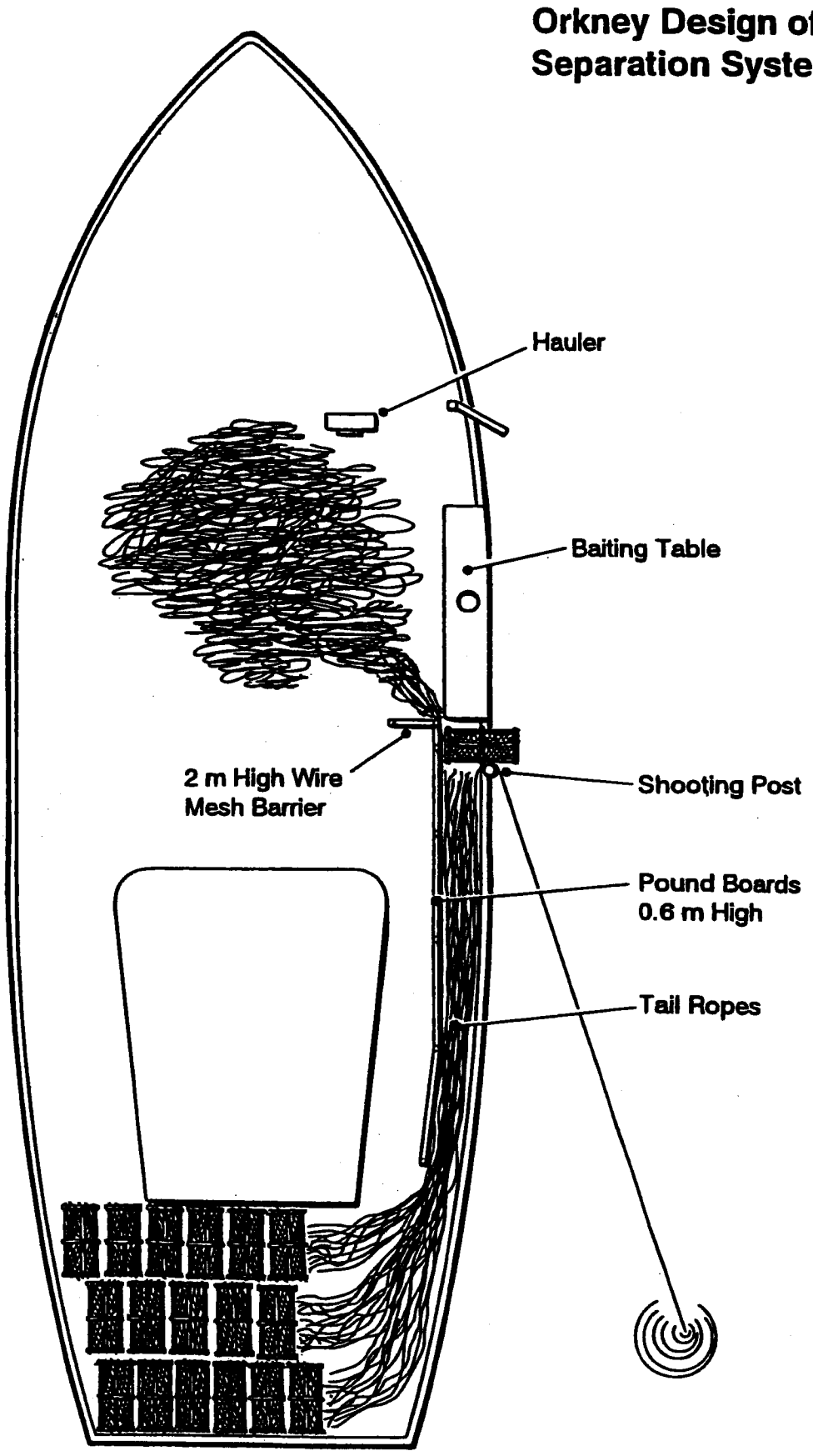


Figure 6


Orkney Design of a Separation System
Hauler
Baiting Table
2 m High Wire Mesh Barrier
Shooting Post
Pound Boards 0.6 m High
Tail Ropes

SECTION 2 ANALYSIS

2.1 General

Potting, a traditional fishing method carried out in all regions of the country, can by its very nature of operation, be hazardous.

The majority of crews on potting vessels are well aware of the hazards involved and take care to avoid them. However the MAIB continues to receive numerous accident reports involving potting vessels.

2.2 Action taken by the casualty

When the casualty realised he had a bight of back rope around his neck he allowed himself to be dragged over the side of the vessel into the water to prevent the rope from tightening around his neck.

Even though the back rope did not free itself once the casualty was in the water, his action in allowing himself to be dragged overboard contributed to his eventual survival. Had he resisted going over the side of the vessel, he could have been killed as a result of the rope tightening.

2.3 Action taken by the skipper and crew

Once the skipper realised what had happened, his immediate reaction was to come full astern on the main engine reducing the way on the vessel. At the same time the crewman on deck immediately shot the next pot in rotation, which created some slack in the back rope, then cut free the following pot.

The quick thinking of the skipper and crewman prevented the back rope from tightening around the casualty's neck and strangling him. It also allowed the casualty to be recovered speedily back on board.

The action taken by the skipper and the crewman on deck was commendable. If they had not acted this way, the accident would most certainly have been fatal.

2.4 Crew experience

Between them, the crew members on board had several years experience in potting. However, the casualty's experience was limited to three months.

While it is recognised that it is necessary for all deck crew to gain experience sooner or later in every aspect of the shooting operation, it is significant that the accident happened while the youngest and least experienced crew member was stationed in the most vulnerable position.

It cannot be said with certainty that the accident would have been avoided had a more experienced crewman been in that position. However, the awareness of a more experienced person may have resulted in that person extricating himself from the danger involved.

2.5 Shooting operation

During the shooting operation, the back rope, which was piled on deck after hauling, was allowed to run free across the deck often whipping and snaking as the pots were shot. No safety measure was in place to prevent the crew coming into contact with the back rope, making them, and in particular the crewman positioned at the shooting pole, vulnerable to being caught in any snags or bights which might form.

Separating the back rope from the crew will reduce the danger of crew becoming snagged in the rope when shooting, and would probably have prevented this accident.

2.6 Alternative system

An alternative system which during the hauling operation, allowed the back rope to be detached from the pots and, stored independently, and which during the shooting operation was kept separated from the crew, would be an appropriate safety measure aimed at preventing a recurrence of the accident.

Such a system however, especially on smaller vessels such as *Purbeck II*, would require more working space on deck than is presently available after hauling on board a string of 75 pots.

Decreasing the amount of pots in a string would inevitably add to the overall time taken to haul and shoot the original number of pots, but it would create additional working space on deck which would facilitate the operation of a safe system.

SECTION 3 CONCLUSIONS

3.1 Cause

The accident, which resulted in injury to a crew member on board *Purbeck II*, was caused when a bight of back rope caught round his neck during a shooting operation.

3.2 Contributory cause

1. The lack of a safety measure preventing the crew coming into contact with the back rope during shooting operations.

3.3 Other findings

1. The action taken by the casualty, allowing himself to be dragged overboard in the bight of back rope, aided his survival. **[2.2]**

2. The action taken by the skipper and the crewman on deck prevented the accident from being fatal. **[2.3]**

3. The least experienced crew member was stationed in the most vulnerable position. **[2.4]**

4. The accident might have been avoided had the casualty been a more experienced person. **[2.4]**

5. Separating the back rope from the crew will reduce the danger of becoming snagged in the rope while shooting. **[2.5]**

6. An alternative deck system such as the detachable pots - toggle system, would provide the required safety measure. **[2.6]**

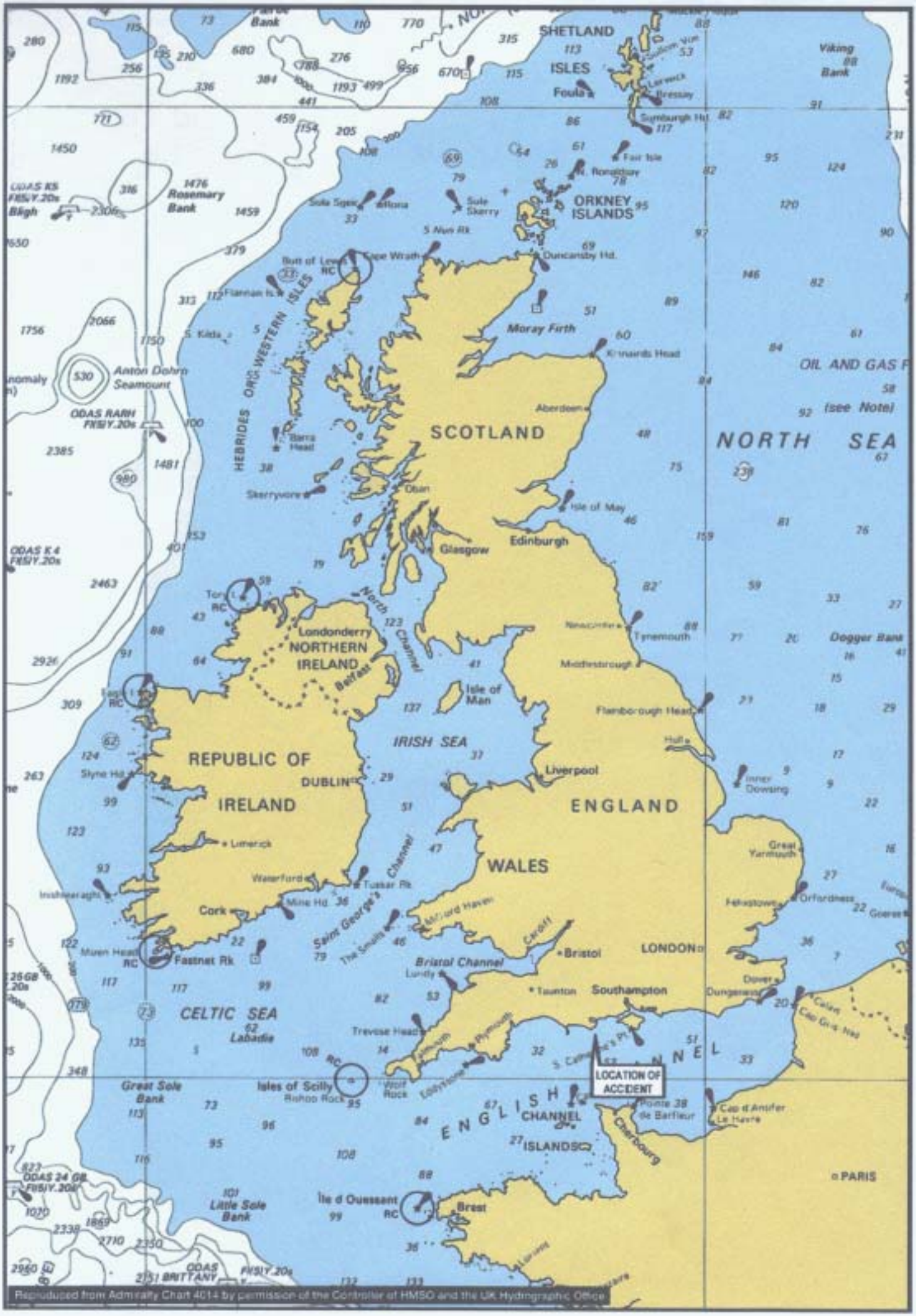
7. Decreasing the number of pots in a string would provide sufficient working space on deck to adopt an alternative deck system. **[2.6]**

SECTION 4 RECOMMENDATIONS

4.1 The skipper/owner of *Purbeck II* is recommended to:

Adopt an alternative deck system, such as a detachable pot - toggle system which would prevent the crew from coming into contact with the back rope during shooting operations.

Marine Accident Investigation Branch
November 1999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