ACCIDENT REPORT

Report on the investigation of

a fatal accident to the skipper of fishing vessel

Our Boy Andrew

9 miles east of Eddystone Rocks

24 March 2011

MAIB
MARINE ACCIDENT INVESTIGATION BRANCH

VERY SERIOUS MARINE CASUALTY REPORT NO 23/2011 17 NOVEMBER 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.

All MAIB publications can be found on our website: www.maib.gov.uk

For all enquiries:
Marine Accident Investigation Branch
Mountbatten House
Grosvenor Square
Southampton
United Kingdom
SO15 2JU

Email: maib@dft.gsi.gov.uk
Telephone: +44 (0) 23 8039 5500
Fax: +44 (0) 23 8023 2459

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AIS	-	Automatic Identification System
CG	-	Coastguard
EC	-	European Community
EU	-	European Union
GPS	-	Global positioning system
GRP	-	Glass reinforced plastic
gt	-	gross tonnage
ILO	-	International Labour Organization
IMO	-	International Maritime Organization
kW	-	kilowatt
m	-	metre(s)
MCA	-	Maritime and Coastguard Agency
MGN	-	Marine Guidance Note
PUWER	-	The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006
RNLI	-	Royal National Lifeboat Institution
rpm	-	revolutions per minute
SAR	-	Search and rescue
Seafish	-	Sea Fish Industry Authority
UTC	-	Universal Time, Co-ordinated
VHF	-	Very high frequency
VTS	-	Vessel Traffic Services

Times: All times used in this report are UTC unless otherwise stated

Our Boy Andrew

SYNOPSIS

Our Boy Andrew, a UK registered fishing vessel, departed Looe on the early rising tide of 24 March 2011. At 0710, the skipper, who was the only person on board, shot the port net and then towed it until 1140, at which time he decided to haul the gear. It is believed that he was manually guiding the net onto the rotating net drum when he was pulled onto the drum and sustained fatal injuries. The vessel was later found about 28 miles from her last sighted position after an extensive search and rescue operation.

The investigation concluded that a drawstring toggle on the left-hand side of the storm hood on the skipper's jacket had become entangled in the net as it was being hauled on board. Evidence indicated that the skipper had then reached towards the operating control lever to stop the net drum. He was unable to do so, and died as a result of injuries to his upper body.

The equipment and process used on *Our Boy Andrew* to haul in her fishing gear compromised safety for a single-handed fisherman because:

- It was necessary to manually feed the net onto the net drum, and this exposed the fisherman to the hazard of being snagged by the net and dragged onto the drum.
- The fisherman was required to move away from the winch controls to feed the net onto the net drum.
- There were no emergency stop controls fitted to the system.
- There was no one available to stop the net drum if the fisherman became entangled.

Since October 2010, the Marine Accident Investigation Branch has conducted investigations into marine accidents that have occurred on four small fishing vessels, all of which were being used in single-handed fishing operations. The skippers of three of the vessels lost their lives and one vessel was lost. The findings of the MAIB investigations into two of the accidents, involving the fishing vessels *Discovery* and *Breadwinner*, were combined into a single report that contained recommendations to the Maritime and Coastguard Agency (MCA). The recommendations were focused towards single-handed fishing operations and address all the safety issues identified in the accident which occurred on *Our Boy Andrew*. As a consequence, no further recommendations have been made in this report.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS *OUR BOY ANDREW* AND ACCIDENT

SHIP PARTICULARS

Flag	UK
Classification society	Not applicable
IMO number/fishing number	Not applicable/LT 1
Type	Fishing vessel - stern trawler
Registered owner	Privately owned
Manager(s)	Not applicable
Construction	Glass reinforced plastic (GRP)
Length overall	10.0m
Registered length	9.55m
Gross tonnage	17.0
Minimum safe manning	Not applicable
Authorised cargo	Not applicable

VOYAGE PARTICULARS

Port of departure	Looe, UK
Port of arrival	Not applicable (towed to Fowey)
Type of voyage	Coastal waters
Cargo information	Not applicable
Manning	One

MARINE CASUALTY INFORMATION

Date and time	24 March 2011 at about 1215
Type of marine casualty or incident	Very Serious Marine Casualty
Location of incident	9 miles east of Eddystone Rocks
Place on board	Main deck - aft of net drum
Injuries/fatalities	One fatality
Damage/environmental impact	None
Ship operation	Fishing
Voyage segment	Mid-water
External & internal environment	Fair, easterly wind force 3 with slight seas
Persons on board	One

1.2 NARRATIVE

1.2.1 Events leading up to the accident

Our Boy Andrew left the port of Looe at about 0522 on 24 March 2011. She was headed south-easterly for fishing grounds north of Eddystone Rocks **(Figure 1)**. The skipper was the only person on board.

At 0710, the skipper shot the port net and then towed it east-south-easterly until 1140, at which time he decided to haul the gear. This would have required him to haul the warps[1] and then secure the trawl doors. At about 1200, he turned the vessel onto a south-westerly heading and prepared to haul the port net onto the net drum.

1.2.2 Search and rescue

At about 2030, the Looe market manager became concerned as he had not seen *Our Boy Andrew* return to port. Communication with other local fishermen quickly established that the vessel was not in the harbour and that the last sighting of her was at sea at just after 1200. The Coastguard (CG) was alerted at 2105 and, at 2117, it tasked the Looe Royal National Lifeboat Institution (RNLI) inshore lifeboat to search the coastline.

At 2136, the CG broadcast a "Pan Pan"[2] message and, at 2143, detected the Automatic Identification System (AIS) signal of *Our Boy Andrew*. Two merchant vessels, *Atlantic Compass* and *Mersey Fisher*, were tasked by the CG to investigate the contact, and a number of local fishing vessels proceeded to assist in the search.

At about 2210, *Atlantic Compass* informed the CG that she had sighted *Our Boy Andrew* but was not receiving any response to her communications. At 2212, the CG tasked Fowey RNLI lifeboat and also requested helicopter assistance. Rescue Helicopter R193 deployed at 2238 and was the first to arrive on scene, at 2255. The winchman was lowered to the vessel but no one could be seen in the wheelhouse or in the immediate vicinity on deck. He returned to the helicopter, which was then tasked by the CG to search the immediate area.

Fowey lifeboat arrived on scene at 2331 and, at 2341, two of her crew boarded *Our Boy Andrew*. They sighted the skipper's body on the net drum and soon established that there were no signs of life. The CG then released R193 at 2344.

The lifeboat crew found the skipper's body facing forward and over the aft section and towards the starboard side of the net drum. His detached right arm was located between the starboard drum cheek plate and the supporting 'A' frame **(Figure 2)**. There was no sign of excessive bleeding. The net drum was stationary and the 'cod end'[3] was wedged between the top of the net drum and the overhead gantry.

The main engine was found running ahead with the throttle set to the 'idle' position. When the lifeboat crew later increased the engine speed, some lights illuminated and the radio was heard. The hydraulic pump was found clutched to the main engine drive and the net drum control lever was in the 'haul' position. Because of significant heat emanating from the hydraulic system, the lifeboat crew stood at a distance and used a shovel handle to move the net drum control lever to the 'neutral' position.

Fowey lifeboat then towed *Our Boy Andrew* into Fowey, arriving at 0448 on 25 March.

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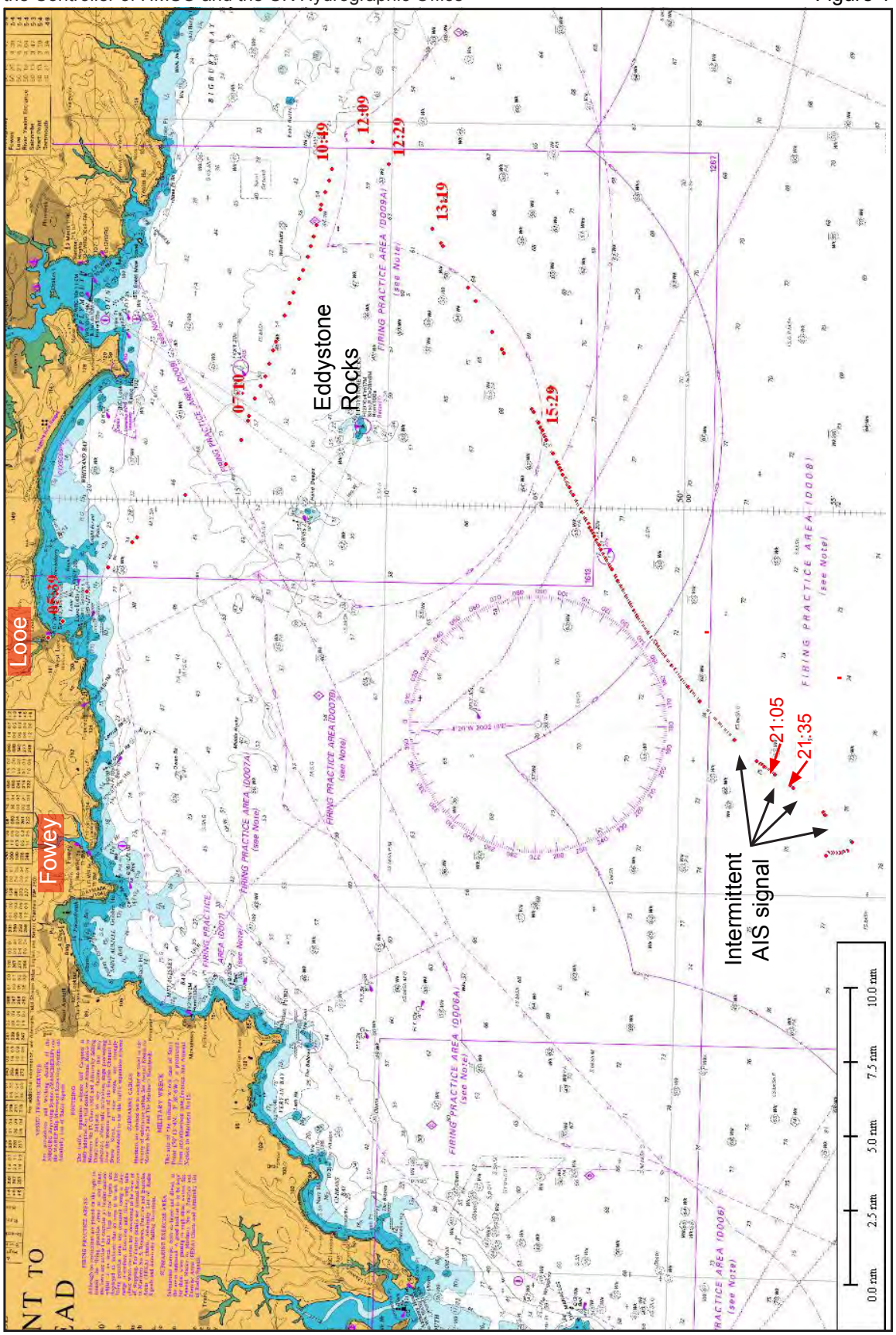
[1] Wires used for towing fishing gear.

[2] A prefix used in radio telephony communications to indicate that a very urgent message concerning the safety of a mobile unit or a person is to follow.

[3] End of a towed net where the catch collects.

Reproduced from Admiralty Chart BA 1267 by permission of
the Controller of HMSO and the UK Hydrographic Office

Figure 1



Extract from BA chart 1267 showing general location of vessel and AIS track

Figure 2

Net drum - showing location of control lever

1.3 ENVIRONMENTAL CONDITIONS

The weather conditions at the time of the accident were fair. Visibility was good with a force 3 easterly wind and slight seas. High water at Plymouth was at 0851 and the resulting tidal stream at midday was in a south-westerly direction. Sunset was at 1836.

1.4 *OUR BOY ANDREW*

1.4.1 General

Our Boy Andrew (ex-*Scarlet Lady)*, was built in Norfolk in 1989 using a standard Cygnus 33 hull design **(Figure 3)**.

The vessel was required to comply with The Fishing Vessels (Code of Practice for the Safety of Small Fishing Vessels) Regulations 2001, as amended. She was equipped with a VHF radio, magnetic compass, radar, a Class-B AIS transponder, and a global positioning system (GPS) linked to an autopilot and two chart plotters. The vessel had been issued with an MCA safety certificate decal in April 2001. The most recent inspection by the MCA was carried out in March 2005, with no deficiencies identified.

The vessel operated out of the port of Looe. Being a tidal port, fishing vessels usually left on the morning tide and returned on the evening tide. This allowed the skipper the opportunity of conducting two 4-hour trawls per day.

Image courtesy of Darren Rosson

Figure 3

Ex-*Scarlet Lady* in 1995

1.4.2 Modifications

Our Boy Andrew was originally configured as a dual purpose fishing vessel. The following modifications were carried out by the skipper in 1995 when he purchased the vessel and converted her into a dedicated stern trawler **(Figures 4, 5** and **6)**:

- Fitting of a hydraulic trawl winch between the wheelhouse entrance and fish hatch.
- Fitting of a shelter deck, extending from the wheelhouse to the aft gantry.
- Lowering of the fish room hatch coaming.
- Fitting of an aft gantry assembly and associated net drum.

In 2002, the net drum was divided into two to allow the skipper to have ready access to two nets **(Figure 5)**. The diameter of the drum cheek plates was increased by 20 centimetres to accommodate the two nets **(Figure 2)**.

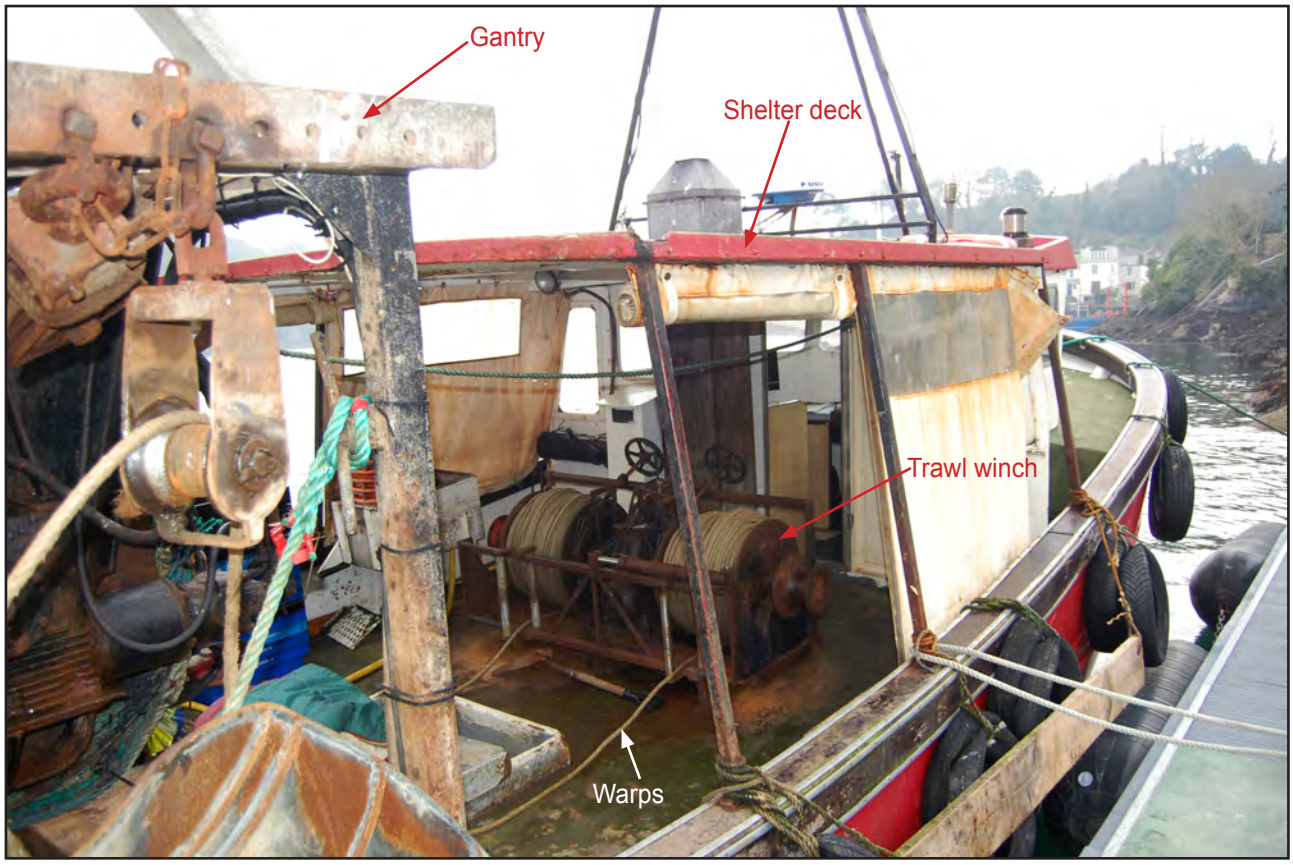
All of the modifications were carried out by a local marine engineering company in Looe.

1.4.3 Fishing gear

The trawl winch and net drum were powered by a central hydraulic pump, which was located in the engine compartment and had to be clutched into the main engine drive.

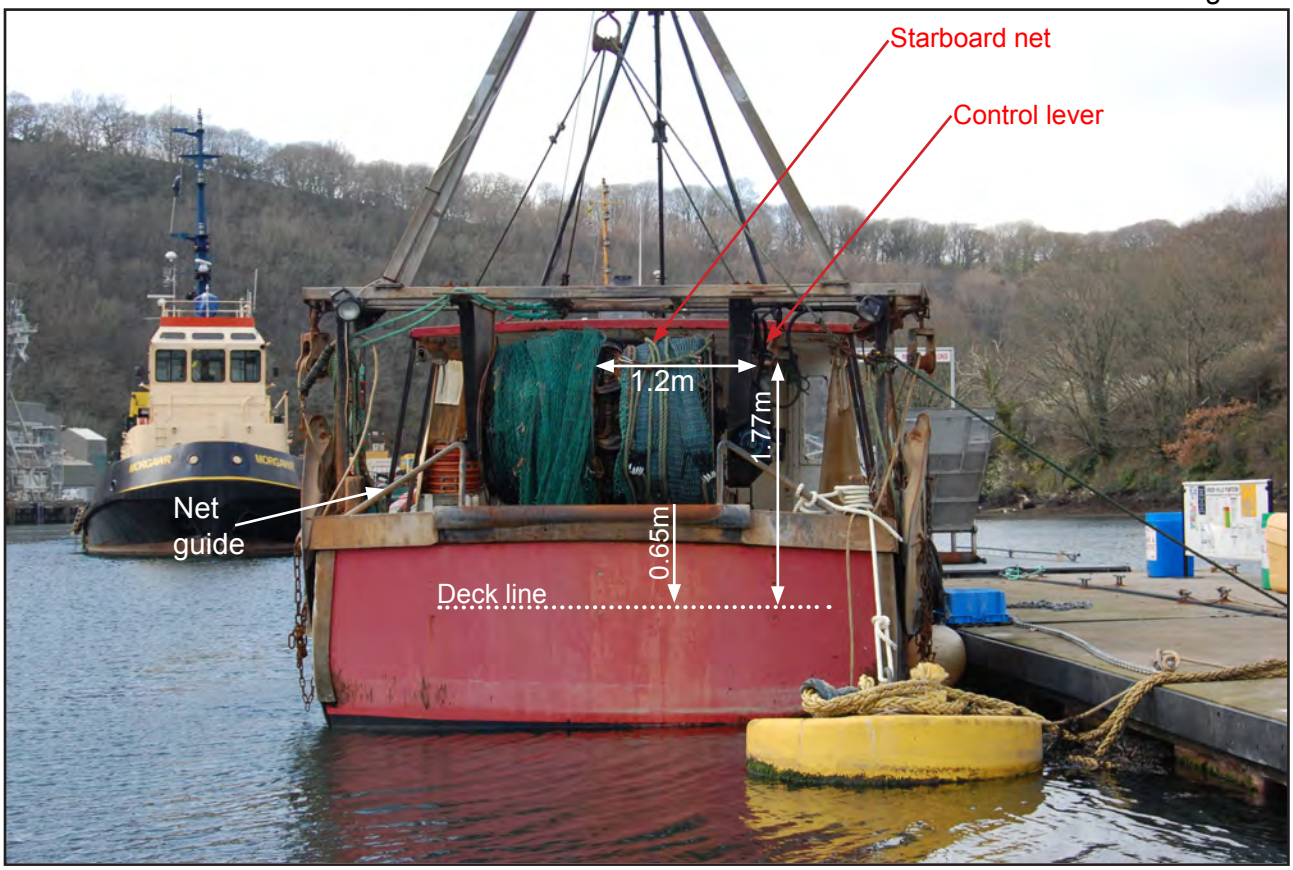
A selector valve, located on deck, distributed hydraulic power to either the trawl winch or the net drum. The net drum was operated by means of a single control lever located on the outboard side of the starboard 'A' frame that supported the net drum.

Figure 4



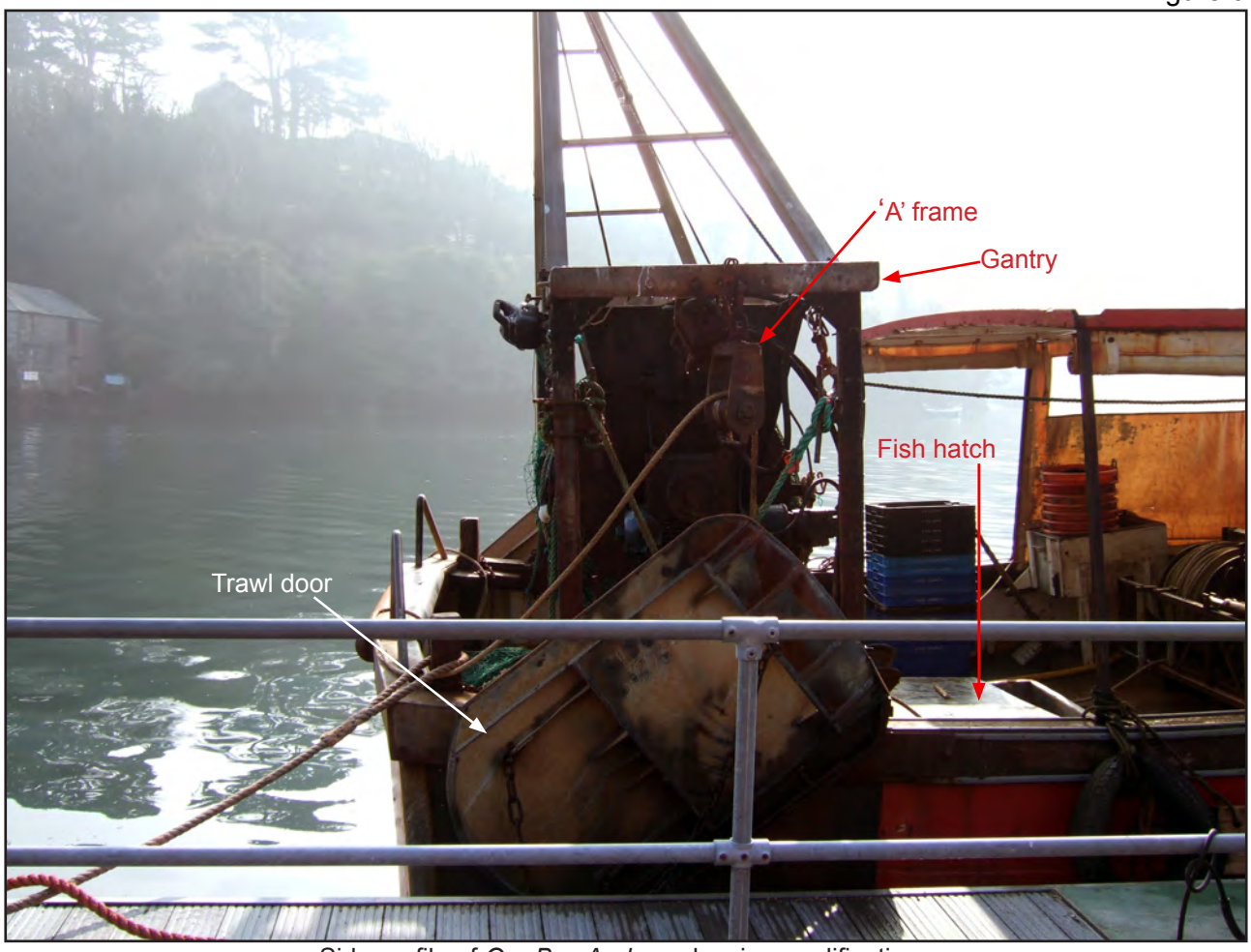
Modifications carried out after purchase in 1995

Figure 5



Stern view of *Our Boy Andrew* showing general dimensions and modifications

Figure 6



Side profile of *Our Boy Andrew* showing modifications

The skipper was known to predominantly use the starboard net as it allowed him to be within reach of the net drum control lever when shooting or hauling. However, on 24 March, the port net was in use. The vessel's log recorded that the skipper had changed over to using the port net on 21 March, but the reason for this was not stated.

1.4.4 Hauling operation

The skipper was known to haul the vessel's fishing gear in the following manner:

The hydraulic selector valve was set to power the trawl winch **(Figure 4)**. After the trawl winch clutch was engaged and brakes released, the warps **(Figure 7)** were heaved in. When within reach, the trawl doors were secured to the side of the vessel **(Figure 6)**. At this point the hydraulic selector valve was set to power the net drum, enabling the sweeps to be transferred from the trawl doors and wound onto the net drum. Thereafter, the skipper manoeuvred the vessel to bring the wind astern, if not already in that position. Keeping the engine in gear with the throttle in the 'idle' position, he moved the net drum control lever to the 'haul' position. Standing between the net drum and stern bulwark, he then manually guided the net onto the drum.

Diagram courtesy of Seafish

Figure 7

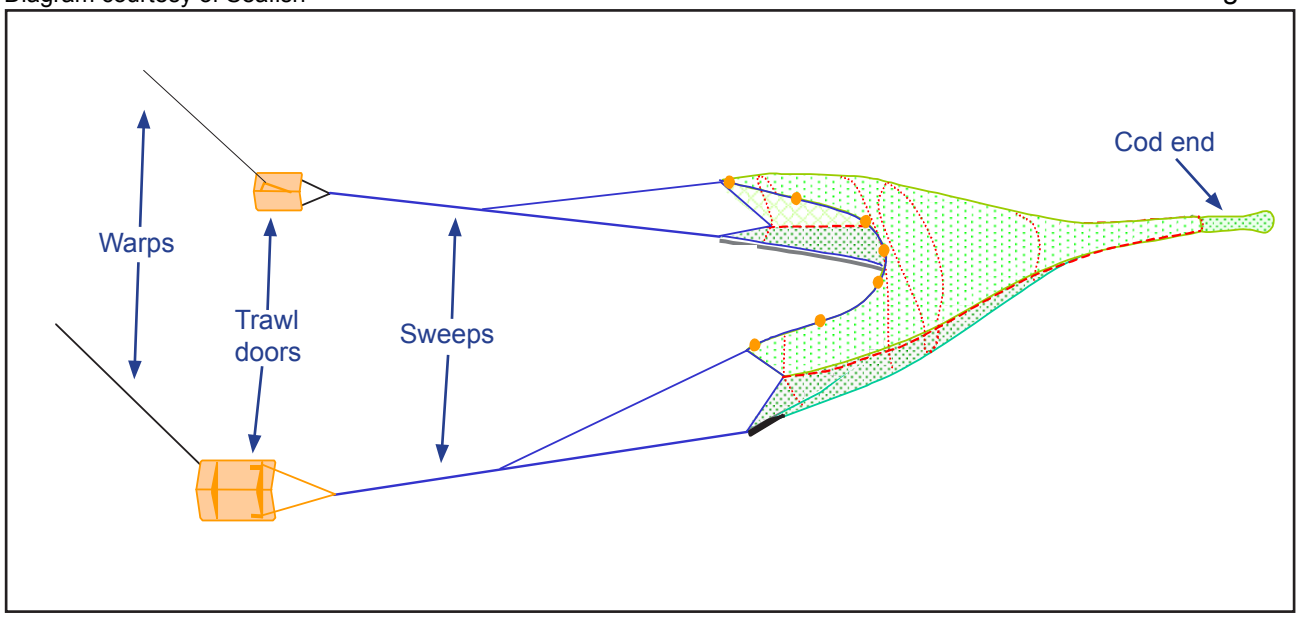


Diagram of a basic bottom trawl net

1.4.5 Skipper

The skipper was a 57 year old UK national who had been a fisherman since he was 20. In 2003, he completed all mandatory safety courses as required by The Fishing Vessels (Safety Training) Regulations 1989, as amended.

Over the years, the skipper had owned three fishing vessels, the latest being *Our Boy Andrew*. Since 2003, he had operated his vessel single-handedly except for a brief period in 2005, when he suffered health problems and, as a matter of caution, employed a second crew member.

The skipper was well respected in the local fishing community and was known for his positive attitude towards safety.

The skipper normally wore a commercially available fishermen's bib and a jacket which incorporated a storm hood similar to that shown in **Figure 8**.

Figure 8

Similar type of clothing to that worn by the skipper

1.5 POST-ACCIDENT EXAMINATION OF VESSEL

1.5.1 First examination

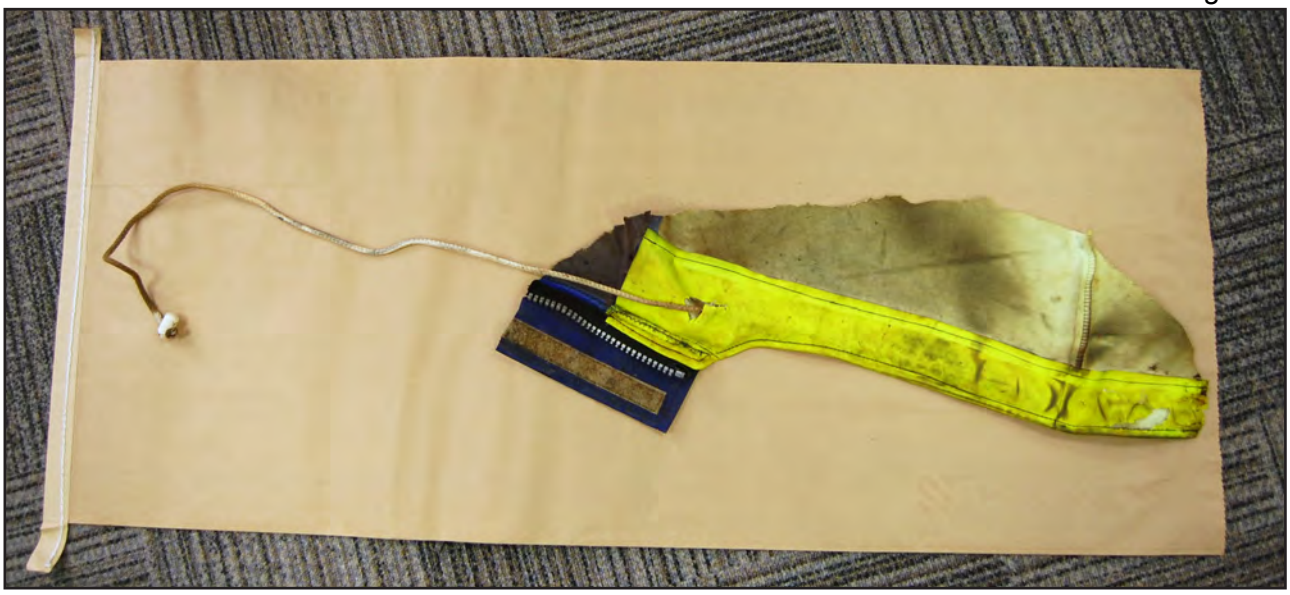
Our Boy Andrew was first examined by MAIB inspectors on 25 March while she was alongside in Fowey Harbour. By this time, the police had overseen removal of the skipper's body, which had required part of the skipper's jacket to be cut free.

The net drum was examined and found with the skipper's cap and a remaining part of his jacket **(Figure 9)** trapped between the turns of the net **(Figure 10)**. The net drum was manually turned and the cap and the jacket part came free after the first turn. However, it took a further two turns to reach the end of the storm hood

drawstring which traversed from the starboard side to the port side of the drum. The left-hand side toggle of the storm hood **(Figures 11** and **12)** was sighted firmly entangled in the net on the third turn.

The fish hold contained half a box of an assortment of fish from the previous day's catch.

Figure 9



Partial storm hood with drawstring and toggle found on net drum

Figure 10

Net drum showing location of trapped cap and partial jacket

Figure 11

Partial storm hood and drawstring leading across to port drum

Figure 12

Storm hood drawstring with toggle embedded in net

1.5.2 Second examination

The second examination of the vessel was carried out on 30 March at a local boatyard in Polruan.

The net drum was tested to prove functionality and was found to operate satisfactorily with the control lever in the 'haul' and 'veer' positions. The drum was noted to rotate at 22 revolutions per minute (rpm) without load.

The net drum operating control lever was not spring-loaded and, therefore, did not automatically return to the 'stop' position when released.

No 'emergency stop' controls were fitted to either the trawl winch or the net drum.

1.6 REGULATIONS

1.6.1 Provision and Use of Work Equipment (PUWER) Regulations

The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006 came into force on 24 November 2006. The regulations place the onus of responsibility on an employer[4] to ensure that all work equipment made available to workers[5] is suitable for its intended purpose and is safe to use. These regulations also apply to a self-employed fisherman in respect of work equipment which he provides for use and uses himself, or provides for use by another person.

Extracts from the Annex to Marine Guidance Note (MGN) 331 (M+F) The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006, with guidance on the following relevant sections of the regulations, are at **Annex A**.

Part 1, Regulation 4, Application

Part 2, Regulation 6, Suitability of work equipment

Part 2, Regulation 17, Controls for starting or making a significant change in operating conditions

Part 2, Regulation 18, Stop controls

Part 2, Regulation 19, Emergency stop controls.

1.6.2 Risk assessments

The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 came into force on 31 March 1998. They require an employer to carry out a risk assessment. The purpose of risk assessment is to ensure the health and safety of workers and other persons so far as is reasonably practicable, by the application of certain principles. These principles include the avoidance of risks, and the evaluation of unavoidable risks and the taking of action to reduce them. The regulations do not apply to self-employed fishermen.

Guidance is provided in MGN 20 (M+F) Implementation of EC Directive 89/391, Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997.

[4] 'Employer' means a person by whom a worker is employed under a contract of employment.

[5] 'Worker' means any person employed under a contract of employment.

1.6.3 Code of Practice for the Safety of Small Fishing Vessels

The Fishing Vessels (Code of Practice for the Safety of Small Fishing Vessels) Regulations 2001 came into force on 1 April 2001. The aim of the regulations was to update existing requirements in order to increase the safety of fishing vessels of less than 15 metres length overall in foreseeable operating conditions, and the survival of the crew in the event of an accident.

A requirement was introduced in 2007 for all new vessels to be constructed and outfitted in accordance with the latest release of the construction and outfit standards issued by the Sea Fish Industry Authority (Seafish)[6]. Part 12, section 12.13 of the construction standards **(Annex B)** provides information on the outfit requirements of fishing equipment.

There is no requirement for existing vessels undergoing modification to meet these standards.

The code of practice makes reference to the requirement for risk assessments to be undertaken by the employer. However, there is no requirement for these assessments to be written. Nonetheless, the MCA strongly recommends that such assessments be written as they can be readily reviewed at a later date to ensure the hazard control measures are still appropriate.

The code of practice contains generic information and guidance and does not specifically address single-handed fishing operations.

1.6.4 International developments

The International Labour Organization (ILO)[7] Convention No. 188 on Work in the Fishing Sector (2007) (ILO 188) will apply to all 'fishers[8] and fishing vessels engaged in commercial fishing operations' when it comes into effect.

It covers issues such as risk assessments, safe manning levels, hours of rest, and enforcement.

ILO 188 Article 13 requires States to adopt laws, regulations or other measures requiring fishing vessel owners to ensure that:

> *'their vessels are sufficiently and safely manned for the safe navigation and operation of the vessel and under the control of a competent skipper.'*

Article 33 requires:

> *'Risk evaluation in relation to fishing shall be conducted, as appropriate, with the participation of fishers or their representatives.'*

In May 2008, it was decided that EU Member States should endeavour to ratify ILO 188 as soon as possible. The UK is working towards implementation in consultation with the fishing industry through the Fishing Industry Safety Group.

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[6] Seafish is a Non Departmental Public Body funded and supported by the four UK government fisheries departments. It provides vocational and safety training to the industry through its network of affiliated Group Training Associations.

[7] The ILO formulates international labour standards in the form of Conventions and Recommendations. These set out minimum standards of basic labour rights, including fair working conditions.

[8] Means every person employed or engaged in any capacity or carrying out an occupation on board any fishing vessel, including persons working on board who are paid on the basis of a share of the catch.

1.7 GUIDANCE

1.7.1 Safe working practices and emergency procedures

Fishermen's Safety Guide, a guide to safe working practices and emergency procedures for fishermen, is published by the MCA and sponsored by Seafarers UK and Trinity House. The latest edition was issued in January 2008.

The publication provides guidance on a variety of subjects. Guidance on working with machinery is contained in section 4. Relevant extracts are at **Annex C**.

1.7.2 Marine Guidance Note 415 (F)

Guidance on the safe operation of fishing vessels can be found in MGN 415 (F), Fishing Vessels: The Hazards Associated with Trawling, including Beam Trawling and Scallop Dredging, which replaced MGN 265 (F) in July 2010.

Relevant to the accident, the note recommends to owners that:

> *'Emergency stop buttons to be fitted so the operator of the equipment can reach them without endangering themselves by leaning across the equipment or risking any other hazard'* [sic]

1.7.3 Fishing Vessel Safety Folder

The Fishing Vessel Safety Folder was produced by Seafish with the help of the fishing federations and it has been endorsed by the MCA. It is intended to assist fishing vessel owners and skippers to comply with the health and safety requirements.

The folder covers a wide subject of activities and includes a risk assessment for trawling operations. It covers the risk of being dragged into the net drum, the hazards of unguarded winches and machinery, and inadequate 'emergency stop' controls. A copy of Section C3, D2 and D3 of the folder outlining the possible hazards and consequences associated with trawling is at **Annex D**.

1.7.4 Small Vessel Safety Guidance Booklet

The Small Vessel Safety Guidance Booklet was also produced by Seafish and endorsed by the MCA. The booklet contains a list of questions that the owner/ operator of a vessel should consider in order to assess the safety of the fishing operation.

In the booklet's section on trawling, the following relevant questions are posed:

> *'**Unguarded Winch/Warp Runs**: Is the winch adequately guarded, if a person fell against the moving winch would they be safe? A hand rail or a simple guard could be sufficient to prevent someone being caught up in the winch. Is there a danger from the moving warps? Could a frayed wire snag on oilskins and pull a hand or foot into the sheave? Can you prevent such risks by a guard or a barrier?'*

> *'**Emergency Stops**: Is there a provision to stop the winch or other machinery in an emergency from a position other than normal controls? Consider the operations and the layout on your vessel and decide if an additional emergency stop in a suitable position is needed.'*

1.7.5 Single-handed operations

The MCA had previously published an industry sponsored safety leaflet entitled *Single Handed Operation*, which provided simple advice in the form of a list of do's and don'ts. This leaflet was no longer in print at the time of the accident.

A copy of the leaflet is reproduced at **Annex E**.

1.8 AUTOMATIC IDENTIFICATION SYSTEMS

The purpose of AIS is to help identify vessels, assist in target tracking, simplify information exchange (eg reduce verbal mandatory ship reporting) and provide additional information to assist situation awareness.

AIS is able to receive transmissions from ships within VHF radio range around bends and behind islands, if the land masses are not too high. A typical reception range to be expected at sea is 20 to 30 nautical miles depending on antenna height. With the help of repeater stations, the coverage for both ship and VTS stations can be improved.

Currently, only passenger ships regardless of size engaged on international voyages or of 300gt or more in domestic trade, and other vessels of 300gt or more engaged on international voyages, are required to be fitted with Class-A AIS. There is no requirement for fishing vessels to be fitted with AIS. However, following the introduction of a Class-B AIS standard, many fishing vessels are being fitted with Class-B equipment. Vessels fitted with Class-A AIS units transmit at 12 watts and have priority over Class-B transmissions, while Class-B units transmit at 2 watts.

AIS can be used to good effect in SAR operations as it enables the detection and direct presentation of the position of the vessel in distress on electronic chart displays.

1.9 SIMILAR ACCIDENTS

Since 1991, the MAIB has recorded 153 accidents involving single-handed operations on board UK registered fishing vessels, of which 32 have resulted in fatalities.

The following are some of the accidents which have been investigated by the MAIB and were found to have similar safety issues to those of this accident.

In April 2000, the skipper of *Wakil II*, operating single-handedly, slipped and fell onto the trawl warp while it was being heaved in, and was then dragged into the winch. The trapped skipper provided enough resistance to stop the winch and, although he suffered multiple injuries, he was able to free himself after about 8 hours, and raise the alarm. The MAIB recommended that the skipper/owner carry out a risk assessment and fit a spring-loaded operating handle to the winch control.

In July 2003, the skipper of a 9m stern trawler, operating single-handedly, died after becoming entangled in the net. The MAIB made enquiries into the circumstances of the accident, but did not publish a report. The skipper, having disconnected his warps, started to heave his nets in. He latched the spring-loaded lever of the net drum into the 'haul' position using a bent wire hook. His gloved hand then snagged the swivel shackle as he guided the net onto the drum. He was unable to reach the control lever and was dragged onto and around the moving drum.

Since October 2010, the MAIB has investigated accidents that have occurred on four small fishing vessels that resulted in three fatalities. While the circumstances of each case have been different, the common recurring safety issue has been single-handed operation.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 THE ACCIDENT

Analysis of the evidence indicated that the accident occurred when the cod end was about 10 metres from the net drum. It is believed that the skipper was manually guiding the net onto the drum when the left-hand side toggle of his storm hood became entangled in the net. This would have caused the skipper to be pulled towards the rotating drum. Evidence indicates that he then reached towards the operating lever to stop the motor but was unsuccessful. The net drum stopped rotating when the cod end became wedged between the net drum and the overhead gantry. The skipper died as a result of injuries to his upper body.

2.3 SYSTEM OF WORK

The equipment and process used on *Our Boy Andrew* to haul in her fishing gear compromised safety for a single-handed fisherman because:

- It was necessary to manually feed the net onto the net drum, and this exposed the fisherman to the hazard of being snagged by the net and dragged onto the drum.
- The fisherman was required to move away from the winch controls to feed the net onto the net drum.
- There were no emergency stop controls fitted to the system.
- There was no one available to stop the net drum if the fisherman became entangled.

Prior to 2002, *Our Boy Andrew* operated with a single net on the net drum that could amply accommodate the complete net. This, combined with the steel net guides fixed above the transom **(Figure 5)** resulted in a system designed so the net would self-stow onto the drum while hauling with minimum need for manual intervention.

Splitting *Our Boy Andrew*'s net drum with a central divider and carrying two nets introduced a requirement for an operator to manually handle the net while hauling as the unmodified net guide did not prevent the net from spilling over the net drum's central divider. Additionally, despite the extension pieces fitted to the perimeters of the drum cheek plates **(Figure 2)**, there was barely sufficient space on each half of the drum to accommodate a net, resulting in the need for the nets to be fed onto the drums carefully so as to avoid them spilling over the extension pieces. With only one person on board, this manual intervention required the operator to move away from the net drum control lever while the drum was rotating, contrary to the latest Seafish construction and outfitting standards. This also required the control lever to remain in the 'haul' position by itself. If the net drum modification had not required the skipper to manually guide the net onto the drum, he would not have been exposed to the hazard of the moving net.

As *Our Boy Andrew* was not a new vessel, and the modifications to the net drum were carried out prior to 2007, the skipper was not required under the Code of Practice for the Safety of Small Fishing Vessels to seek verification that they met

the latest Seafish construction and outfitting standards. Had the skipper sought independent advice, he might have been alerted to the system's shortcomings and the need for further modifications to ensure safe single-handed operations.

2.4 RISK ASSESSMENTS

The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, as amended, require an employer to carry out a risk assessment to identify and mitigate hazards. However, these regulations are not applicable to self-employed fishermen.

The requirements of ILO 188 have the potential to have a positive impact on the fishing industry and may provide a catalyst for the development of practical safety solutions. As the Convention will apply to all 'fishers', it will challenge the current exemption in UK legislation that exists for self-employed fishermen.

Our Boy Andrew's skipper was an experienced fisherman who had completed a safety awareness course in 2003 that included a module on risk assessment. Therefore, the concept of hazard identification and implementing control measures to reduce the severity of the risk should have been known to him. Had he conducted a sufficiently comprehensive risk assessment following his decision to operate the vessel single-handedly, he might have identified and mitigated the hazard of being dragged onto the rotating net drum.

2.5 EMERGENCY STOPS

Regulation 19 of PUWER requires that, where appropriate, work equipment is provided with one or more readily accessible emergency stop controls. *Our Boy Andrew*'s net drum was not fitted with an accessible emergency stop control.

The advice and guidance contained in MGN 415 (F), Fishermen's Safety Guide, Fishing Vessel Safety Folder, the Small Vessel Safety Guidance Booklet and the Single Handed Operation leaflet recommend the fitting and testing of emergency stop controls.

Although the system of work that required the net to be manually fed onto the drum was inherently hazardous, the accident could still have been prevented had an emergency means of stopping the rotating net drum been readily accessible to the skipper.

2.6 SNAG HAZARDS

Both ends of the skipper's storm hood drawstring **(Figure 9)** were noticeably dirty compared to the rest of the line that would have normally remained within the seam of the hood. This indicated that the drawstring would have been routinely exposed for about 15cm on either side of the hood, potentially creating a snag hazard.

The dangers of loose clothing becoming snagged on moving machinery are highlighted in the Fishermen's Safety Guide, Fishing Vessel Safety Folder and the Small Vessel Safety Guidance Booklet. The guidance promotes the fitting of a guard, thereby placing a physical barrier between the operator and equipment and minimising the snagging hazard. Although it would have been preferable for the skipper not to have had to work in close proximity to the moving net, the risk of an accident within the confined area adjacent to the net drum could have been lowered by ensuring that any snag hazards on the clothing he was wearing were reduced to a minimum.

2.7 SINGLE-HANDED OPERATIONS

The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, as amended, do not apply to self-employed fishermen who own and operate their fishing vessels single-handedly. Consequently, there is no requirement for inspection authorities to encourage these owners to adopt the safe practices these regulations promote.

The most obvious risk of operating a fishing vessel alone is that there is no one else close at hand to assist in the event that the lone fisherman gets into difficulty, is taken ill, or suffers an emergency. Further, the lone operator can only be concentrating properly on one task at a time, with the result that dangers can materialise unnoticed until it is too late to take proper mitigating action. However, careful consideration of the tasks to be conducted and the hazards posed can result in systems of work that considerably reduce or even remove many of the risks faced by the single-handed operator.

Much of the advice published in the Fishermen's Safety Guide and MGN 415 (F) to assist a fisherman in making his operation safe can be applied to single-handed operations, but neither publication provides specific guidance to assist the single-handed fisherman. Consequently, the MAIB has made a recommendation to the MCA to extend the current advice in the Fishermen's Safety Guide to cover the safety considerations appropriate to single-handed fishing operations. The full text of this recommendation is at section 4.2.

2.8 AIS DETECTION

It is fortunate that *Our Boy Andrew* was fitted with an AIS transponder as this assisted in locating the vessel about 28 miles south-west from her last known position. About 38 minutes after the alarm was raised, the CG detected the vessel's intermittent AIS signal and was able to direct the emergency services towards her. Had the vessel not been fitted with AIS, the emergency services would have undoubtedly spent additional time and resources in locating the vessel.

AIS is only mandatory on passenger ships regardless of size engaged on international voyages or of 300gt or more in domestic trade, and other vessels of 300gt or more engaged on international voyages. Nonetheless it is becoming popular on all types of vessels, especially small craft that can be otherwise difficult to locate either visually or on radar, in moderate to rough sea conditions.

Owners of all types of small craft should consider installing Class-B AIS equipment. This would enhance detection of their craft and enable SAR assistance to be directed accordingly in the case of an emergency; it would also help in the early detection of other vessels for collision avoidance purposes.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT

1. The equipment and process used on *Our Boy Andrew* to haul in her fishing gear compromised safety for a single-handed fisherman because:

    - It was necessary to manually feed the net onto the net drum, and this exposed the fisherman to the hazard of being snagged by the net and dragged onto the drum.
    - The fisherman was required to move away from the winch controls to feed the net onto the net drum.
    - There were no emergency stop controls fitted to the system.
    - There was no one available to stop the net drum if the fisherman became entangled.

    [2.3]

2. Had the skipper conducted a sufficiently comprehensive risk assessment following his decision to operate the vessel single-handedly, he might have identified and mitigated the hazard of being dragged onto the rotating net drum. [2.4]

3. The accident could have been prevented had an emergency means of stopping the rotating net drum been readily accessible to the skipper. [2.5]

4. Although it would have been preferable for the skipper not to have had to work in close proximity to the moving net, the risk of an accident within the confined area adjacent to the net drum could have been lowered by ensuring that any snag hazards on the clothing he was wearing were reduced to a minimum. [2.6]

3.2 OTHER SAFETY ISSUES IDENTIFIED DURING THE INVESTIGATION

1. The skipper was not required under the Code of Practice for the Safety of Small Fishing Vessels to seek verification that the modifications carried out in 2002 met the latest Seafish construction and outfitting standards. Had he sought independent advice, he might have been alerted to the system's shortcomings and the need for further modifications to ensure safe single-handed operations. [2.3]

2. The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 as amended, do not apply to self-employed fishermen who own and operate their fishing vessels single-handedly. Consequently, there is no requirement for inspection authorities to encourage these owners to adopt the safe practices these regulations promote. Widening the application of Health and Safety regulations to include single-handed fishermen should be addressed when the UK ratifies ILO 188. [2.4, 2.7]

3. Apart from the Single Handed Operation leaflet which was out of print until recently, the relevant guidance published by the MCA makes no specific reference to single-handed operations. [2.7]

SECTION 4 - ACTION TAKEN

4.1 THE MARITIME AND COASTGUARD AGENCY

The MCA has, as an interim measure, re-instated the Single Handed Operation leaflet **(Annex E)** on its website[9].

4.2 THE MARINE ACCIDENT INVESTIGATION BRANCH

4.2.1 Following the MAIB's investigations into the loss overboard of the skippers from the fishing vessel *Discovery* on 9 October 2010 and *Breadwinner* on 20 January 2011, the MCA was recommended to:

1. Extend the current guidance published in the Fishermen's Safety Guide to cover the additional safety considerations needed for single-handed operations. This should, as a minimum, include:

    - The additional workload that single-handed operation imposes on the individual.

    - Advice on how to mitigate the additional hazards of operating fishing equipment single-handedly, including: guarding of dangerous machinery; positioning of operating controls; the need for working areas to be safely separated from hazards such as revolving drums and back-ropes; and the provision of emergency stops.

    - Additional measures that can be taken to deal with emergency situations, such as: use of automated man overboard alarm systems, including remote engine shut-off where appropriate; positioning of emergency equipment so that it is easily accessible; and, the wearing of appropriate personal protective equipment such as personal flotation devices and/or safety harnesses and the carrying of rescue knives or similar cutting tools.

2. Through its chairmanship of Fishing Industry Safety Group[10], work with the wider fishing sector to ensure that means are established to engage with and educate fishermen in the methods of recognising and mitigating the occupational hazards of professional fishing.

4.2.2 The MAIB has issued a flyer to the fishing industry **(Annex F)** highlighting the lessons learned from this tragic accident.

[9] http://www.dft.gov.uk/mca/single_handed_operation.pdf

[10] Fishing Industry Safety Group's overall objective is to work with industry to develop appropriate safety standards for fishing vessels and crew that prevents accidents and environmental damage and promotes a safety culture that reduces risks to fishermen in their work.

SECTION 5 - RECOMMENDATIONS

In view of the actions already taken, no recommendations have been made.

Marine Accident Investigation Branch
17 November 2011

Annex A

Extracts from the Annex to MGN 331 (M+F) The Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006

The following gives the text of the individual regulations as well as general guidance on the requirements of the Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006.

	Part 1: General
Regulation 1	***Citation, commencement and repeal*** (1) These regulations may be cited as the Merchant Shipping and Fishing Vessels (Provision and Use of Work Equipment) Regulations 2006 and shall come into force on 24 November 2006 (2) The following provisions are hereby revoked (a) the Merchant Shipping (Guarding of Machinery and Safety of Electrical Equipment) Regulations 1988; (b) regulation 10 of the Merchant Shipping (Safe Movement on Board Ships) Regulations 1988; (c) regulation 2 of the Merchant Shipping (Safety at Work) (Non-UK Ships) Regulations 1988
Guidance on Regulation 1	The Merchant Shipping (Guarding of Machinery and Safety of Electrical Equipment) Regulations 1988 have been replaced in their entirety by these regulations although certain provisions of those regulations have been incorporated in these Regulations. Regulation 10 of the Merchant Shipping (Safe Movement on Board Ships) Regulations 1988 related to the movement of vehicles and has been replaced by regulation 30 of these Regulations, which covers the use of mobile work equipment. Regulation 2 of the Merchant Shipping (Safety at Work) (Non-UK Ships) Regulations 1988 amended the Merchant Shipping (Guarding of Machinery and Safety of Electrical Equipment) Regulations 1988 to apply those Regulations, other than regulation 7, to non-UK ships when they were in a UK port. These provisions have now been superseded by these Regulations which also apply to non-UK ships in UK waters to the extent indicated in regulation 3(2) below.
Regulation 2	**Interpretation** (1) In these Regulations - "the Act" means the Merchant Shipping Act 1995; “CE marking” means a marking signifying compliance with the basic requirements of design and manufacture of, and the specifications and test methods applicable to, a piece of work equipment which have been adopted by the appropriate authorities in the European Economic Area;

Regulation 4	**Application** (1) These Regulations shall apply to the use of work equipment by a worker or by the person mentioned in paragraph (6) on United Kingdom ships except when— (a) the use of work equipment by a worker is on a public service vessel or a vessel engaged in search and rescue; and (b) characteristics of that use of work equipment inevitably conflict with a provision of these Regulations, and in such a case there shall be a duty on the employer so far as is reasonably practicable to ensure the health and safety of workers when using that work equipment. (2) Regulations 4(1), (4) to (6), 13, 14, 24 and 39 to 41 apply in relation to ships other than United Kingdom ships when they are in United Kingdom waters. (3) Regulation 8(5)(b) shall not apply in relation to a Government ship unless it is commercially managed, and for these purposes "commercially managed" means the management of which is entrusted by the owner to some other person pursuant to a contract. (4) The duties imposed by these Regulations on an employer in respect of work equipment shall apply in relation to such equipment provided for use or used by a worker who is an employee of his. (5) The requirements imposed by these Regulations on an employer shall also apply to a self-employed person in respect of work equipment on a ship, which he--- (a) provides for use and uses himself, or (b) provides for use by another person (whether self employed or not). (6) In respect of his own use of such equipment on a ship, whether provided by him or not, a self-employed person shall be treated as a worker and shall ensure that the requirements of these Regulations in relation to a worker are met. (7) These Regulations shall not apply in relation to the activities of a worker which are covered by the Provision and Use of Work Equipment Regulations 1998 or the Provision and Use of Work Equipment (Northern Ireland) Regulations 1999. (8)The provisions of the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 shall continue to apply, but without prejudice to any more stringent or specific provisions contained in these Regulations
Guidance on Regulation 4	1. These Regulations cover the use of all work equipment on UK ships except where such equipment is being used by a worker on a public service vessel or a vessel engaged in search and rescue and the way in which such equipment is used conflicts with a provision of these Regulations. These provisions come from the EC Framework Directive (1989/391/EEC), which was

Guidance on Regulation 4 continued	implemented by the Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997, which refers to public service activities as activities such as the armed forces or the police, or to certain specific activities in the civil protection services. 2. For the purposes of these Regulations therefore it is considered that "Public service vessel" will include vessels operated by bodies such as the police, customs and other similar public bodies. It will not however cover vessels providing a service to the public such as ferries and similar vessels. 3. "Vessels engaged in search and rescue" is considered to cover any vessels when engaged in search and rescue activities. However it should be noted that both these derogations only apply to vessels when actually engaged in such activities such that it is not possibly to comply fully with one or more requirements of these Regulations. Where this is the case such vessels should comply as far as is possible and the employer or other person responsible for the work being undertaken must ensure so far as is possible that the health and safety of workers is safeguarded. Where the use of the equipment on such a vessel does not conflict with these requirements then these Regulations will apply in full. 4. The following regulations also apply to non-United Kingdom ships, which are in United Kingdom waters. Regulation 4(1) - Application to Public Service Vessels Regulation 4(4) to (6) - Application to self employed persons Regulation 13 - Dangerous Parts of Work Equipment Regulation 14 - Electrical Equipment Regulation 24 - Lighting Regulation 39 - Inspection and other measures in respect of ships registered outside the UK Regulation 40 - Enforcement of Detention Regulation 41 - Compensation 5. Because of legislative restrictions regulation 8(5)(b) will not apply to Government ships, unless they are commercially managed. This provision requires an employer to ensure that no work equipment obtained from outside the ship, is used in the ship, unless it is accompanied by physical evidence that the last inspection required to be carried out under this regulation has been carried out. MCA would however strongly recommend that, notwithstanding this disapplication for certain Government ships, operators of such vessels should require the production of evidence that such equipment has been properly inspected. 6. The Provision and Use of Work Equipment Regulations 1998 and the Provision and Use of Work Equipment (Northern Ireland) Regulations 1999 cover the activities of land-based workers. There may be circumstances when persons covered by those Regulations are carrying out work activities on a ship, in which case those Regulations continue to apply. 7 These Regulations apply not only to employers and workers but also to any self-employed person carrying out any occupation on board any ship or fishing vessel. Where these Regulations impose a duty on an employer that duty also applies to a self-employed person in so far as his occupation affects others on that ship or fishing vessel or in relation to his employment of or responsibility for any workers. Similarly a self-employed person in carrying

Guidance on Regulation 4 continued	out any occupation on board any ship or fishing vessel shall have regard to, and comply with, any instructions issued by any employer of workers on that ship or fishing vessel to those workers as if that self employed person were a worker for the purposes of these Regulations. 8. Where on any ship or fishing vessel the crew comprises self-employed persons wholly or in part, the person responsible for the operation of that ship or fishing vessel shall be responsible for compliance with the provisions of these Regulations as if those self-employed persons were workers and shall ensure compliance by those persons as if they were workers for the purposes of these Regulations. 9. The Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997 continue to apply fully to all equipment provided for, or used at, work except where more stringent or specific provisions are contained in these new Regulations.
	Part 2 : Duties of Employers
Regulation 5	**Persons on whom duties are imposed** Where a person on whom a duty is imposed by any provision of these Regulations does not have control of the matter to which the regulation relates because he does not have responsibility for the operation of the ship, then any duty imposed by that regulation shall also extend to any person who has control of that matter.
Guidance on Regulation 5	It is important that those on whom duties are placed are in a position to carry them out. Employment relationships on board ship can be complex - for example the master may not be employed by the owner or operator of the ship, or by the same employer as the crew. There may also be people working on board such as contractors and sub-contractors, stevedoring companies and those under franchising arrangements (eg in retail or service outlets) whose employer has no direct responsibility for the safety of the ship. There is therefore no single “person” on whom it is appropriate to place the entire “employment” responsibility for health and safety on board. More detailed information on employment relationships and the responsibilities of the various employers are contained in Marine Guidance Note MGN 20 which provides guidance on the requirements of the Merchant Shipping and Fishing Vessel (Health and Safety at Work) Regulations 1997, on which these Regulations build.
Regulation 6	**Suitability of work equipment** (1) The employer shall ensure that the work equipment made available to workers on the ship - (a) is suitable for the work to be carried out, or (b) is properly adapted for that purpose, and (c) may be used by workers without impairment to their health or safety.

Regulation 6 continued	(2) In selecting work equipment, every employer shall have regard to the working conditions and characteristics and to the risks to the health and safety of workers which exist in the particular ship where that equipment is to be used and any additional risk posed by the use of that work equipment. (3) The employer shall ensure that work equipment is used only for operations, and under conditions, for which it is suitable. (4) In this regulation, "suitable" means suitable in any respect which it is reasonably foreseeable will affect the health and safety of any worker. (5) In this regulation, the duty to ensure work equipment can be used without impairment to health or safety includes ensuring that the working posture and position are consistent with ergonomic principles.
Guidance on Regulation 6	All work equipment provided for use by workers on ships must be safe and fit for purpose. In selecting the work equipment to be used consideration must be given to the type of work to be undertaken and the conditions under which it will be carried out. Selection of equipment should also take account of the working posture and position of the user, whilst using the work equipment, to ensure it is consistent with ergonomic principles. Account must also be taken of any additional risks to health and safety which could arise from the use of a particular piece of equipment in the specific ship as such risks could vary between individual ships or types of ships. For example, equipment that is safe to use on a general cargo vessel may not be safe for use on an oil or gas tanker.
Regulation 7	**Maintenance** (1) The employer shall ensure that work equipment is maintained in an efficient state, in efficient working order and in good repair. (2) The employer shall ensure that where any machinery has a maintenance log, the log is kept up to date.
Guidance on Regulation 7	All work equipment must be maintained properly and any maintenance log must be kept up to date.
Regulation 8	**Inspection** (1) The employer shall ensure that, where the safety of work equipment depends on the installation conditions, it is inspected by a competent person - (a) after installation and before being put into service for the first time; or (b) after assembly at a new site or in a new location, to ensure that it has been installed correctly, in accordance with any manufacturer's instructions, and is both safe to operate and capable of operating safely.

Guidance on Regulation 15	Where the risk assessment carried out by the employer indicates that a worker using work equipment could be exposed to one or more of the hazards in paragraph 2 of the regulation, any risk to his health and safety must be prevented, or failing that adequately controlled.
Regulation 16	**High or very low temperature** The employer shall ensure that work equipment, parts of work equipment and any article or substance produced, used or stored in work equipment which, in each case, is at a high or very low temperature shall have protection where appropriate so as to prevent injury to any worker.
Guidance on Regulation 16	Where any equipment, parts of equipment or anything produced by, used by or stored in such equipment has the potential to burn or scald or cause any other injury to any worker by virtue of being at a high or low temperature, the employer is required to take steps to prevent injury to any worker. Isolation and appropriate Personal Protective Equipment must be supplied and worn.
Regulation 17	**Controls for starting or making a significant change in operating conditions** (1)The employer shall ensure that, where appropriate, work equipment is provided with one or more controls for the purposes of - (a) starting the work equipment (including re-starting after a stoppage for any reason); or (b) controlling any change in the speed, pressure or other operating conditions of the work equipment where such conditions after the change result in risk to health and safety which is greater than, or of a different nature from, such risk before the change. (2) Subject to paragraph (3), the employer shall ensure that, where a control is required by paragraph (1), it shall not be possible to perform any operation mentioned in sub-paragraph (a) or (b) of that paragraph, except by deliberate action on such control. (3) Paragraph (1) shall not apply to re-starting or changing operating conditions as a result of the normal operating cycle of an automatic device.
Guidance on Regulation 17	Where any work equipment contains moving parts or is mobile and, as a result, could constitute a risk to health or safety, the employer must ensure that one or more controls for the purposes of starting it and controlling any change in its speed, pressure or other operating conditions are provided. This requirement does not apply to re-starting or changing operating conditions which form part of the normal operating cycle of an automatic device. Where such a control is required, it must not be possible to start the machine or change its speed, etc other than by deliberate operation of that control.

Regulation 18	**Stop controls** (1) The employer shall ensure that, where appropriate, work equipment is provided with one or more readily accessible controls the operation of which will bring the work equipment to a safe condition in a safe manner. (2) The requirement in paragraph (1) shall include the provision of controls which are capable of bringing the work equipment to a complete stop as well as switching off all sources of energy to, and from, the work equipment. (3) Any control required by paragraph (1) shall operate in priority to any control which starts or changes the operating conditions of the work equipment.
Guidance on Regulation 18	Where work equipment contains moving parts or is mobile and could constitute a risk to the health or safety of anybody using it or in the vicinity of it, the employer must ensure that one or more readily accessible controls are provided to either bring the work equipment to a stop or otherwise render it safe. It is for the employer to decide the form such controls will take but they must be capable of bringing the equipment to a complete stop as well as switching off all sources of energy to, and from, the work equipment. Any control required by this regulation must override any control required by regulation 17.
Regulation 19	**Emergency stop controls** (1) The employer shall ensure that, where appropriate, work equipment is provided with one or more readily accessible emergency stop controls. (2) Any control required by paragraph (1) shall operate in priority to any control required by regulation 18(1).
Guidance on Regulation 19	Where work equipment contains moving parts or is mobile and could constitute a risk to the health or safety of anybody using it or in the vicinity of it, provision should be made for one or more readily accessible emergency stop controls. Any such control shall override any control required by regulation 18.
Regulation 20	**Controls** (1) The employer shall ensure that all controls for work equipment are clearly visible and identifiable, including by appropriate marking where necessary. (2) Except where necessary, the employer shall ensure that no control for work equipment is in a position where any worker operating the control is exposed to a risk to his health or safety, including any risk as a result of unintentional operation. (3) The employer shall, so far as is reasonably practicable, ensure that the user of any controls for work equipment can ensure from the position of those controls that no other worker is in a place where he would be exposed to any risk to health or safety as a result of the starting up or use of the work equipment.

Annex B

Extracts from Part 12 of Seafish's construction standards for new fishing vessels less than 15m length overall

Section 12.13 - Fishing equipment

12.13.1 Masts, derricks and lifting equipment may be of suitable timber, steel or other approved material and securely fastened to the vessel's structure. The maximum safe working load and maximum radius of operation of all derricks and lifting equipment is to be stated in the building specification or approved constructional drawings, and are the responsibility of the vessel Builder.

12.13.2 The associated ropes, wires and guys, eyeplates, shackles and blocks are to be designed to meet these loads. Derricks should be tested as rigged for services to not less than the appropriate British Standards or equivalent requirement, and the maximum safe working load is to be permanently indicated on the derrick. In all cases the LOLER and PUWER regulation referenced in Paragraph 12.13.4 shall apply.

12.13.3 Where practical, warp rollers and leads are to be fitted with guards and be positioned to enable safe passage by crew members. All deck machinery is to be of a good marine standard and be suitable for the size of vessel and type of fishing to be prosecuted. The controls of all equipment are to be arranged adjacent to the Operator's position to enable a clear view of the gear being hauled. An emergency stop facility is to be provided at the helm position for all hydraulically operated deck equipment. Where a winch or hauler is controlled from the helm position, a local emergency stop device is to be fitted at the winch or hauler.

12.13.4 It is the responsibility of the Builder/Designer and Owner to ensure that all equipment necessary for the operation and use of the vessel meets the requirements as laid out in **PUWER: Provision and Use of Work Equipment Regulations** and **LOLER: Lifting Operations and Lifting Equipment Requirements**. These regulations cover any equipment that is used in the course of the work aboard the vessel, including all equipment used in any way for lifting operations including attachments for anchoring, fixing or supporting structures and equipment used in conjunction with the operation of the vessel.

Annex C

Extracts from Fishermen's Safety Guide, a guide to safe working practices and emergency procedures for fishermen

Machinery

Machinery is very unforgiving – treat it with respect.

Is the deck machinery in good working order? Do brakes and clutches work properly for a safe and efficient operation? Are the guide rollers worn and in need of replacement? Repair broken or damaged controls immediately. Are adequate tools and spares carried on board?

Think about the equipment on the vessel; can it be made safer by the addition of a guard or other safety measures? If in doubt about the reliability of any of your equipment employ a specialist. Test warning alarms and emergency stops.

Never remove guards or safety devices from equipment. If they have to be removed for maintenance purposes put them back immediately afterwards.

Operations

Only experienced persons should operate the deck machinery.

Have new persons on the vessel been trained and made aware of the dangers before being allowed to control the machinery?

Do you know the safe load of machinery?

Do not be tempted to overload machinery.

Is there a clear system of signals in place to communicate with the operator? The person should stand clear and give signals in a clear unmistakable manner. Do not rely on shouted instructions as they can easily be confused.

Always complete the task; secure the winch and close down machinery before you leave – the job is not finished until the area is made safe.

Can the operator clearly see the operation and that the crewmen, handling the winch, trawl doors and other operations, are stood clear before operating the winch? If not, a clear systems of signals needs to be established to ensure the safety of the crew.

Do not get in the way of the person operating the winch and do not distract his attention by unnecessary conversation or behaviour.

Hauling Gear

Is the winch adequately guarded? A hand rail or a simple guard could be sufficient to prevent someone being caught up in the winch. Is there

danger from the moving warps? Could a frayed wire snag on oilskins and pull a hand or foot into the sheave? Can you prevent such risks by a guard or a barrier? Many vessels now fit separate winches for these tasks, which is now much safer and usually gives a more efficient operation.

Keep your clothing, especially cuffs and gloves well clear of a warping drum, and if your hands are too close, a sudden surge can drag you into the turning drum.

Vee wheel type line and pot rope haulers should never be operated without the 'stripper knife' piece correctly fitted. This knife is to eject the slack rope out of the vee section and without it, the free rope can be carried around the hauler; dragging you into it.

Remain close to the controls when hauling pots and be ready to stop as the pot emerges from the water. Leaving the controls can result in a pot hitting the davit block and striking you. This is especially a danger with anchors and weights.

Lifting Gear

Stand well clear when deck cranes are being used; they can move in many planes and the operator may cause it to move in a direction that you do not expect. Will your lifting and towing gear cope with expected loads? Know the safe working load of deck cranes and do not exceed it.

Do not simply tie a piece of rope to lift items. Vessels should carry proper slings and shackles which are suitable for the load.

A lifted load may swing; use a steadying rope – NOT your hands.

Great care is needed when positioning the net into the power block as men can be easily struck by the power block or knocked overboard. The crane operator must ensure that the men at the rails are aware before moving or operating the power block.

After use the deck crane must be returned to its stowed position with the power block securely located in a purpose designed rest.

Manual handling

Lifting baskets, boxes of fish and other heavy or awkward items can easily result in injuries unless great care is taken and correct techniques are used.

Never bend your back over the load when lifting heavy weights. Stand with your feet a little apart, and keep your back straight.

Annex D

Extracts from Fishing Vessel Safety Folder

How likely that harm may occur (L)		How harmful (H)	
1	Very unlikely	**1**	Slightly harmful
2	Unlikely	**2**	Harmful
3	Likely	**3**	Very harmful

Risk Factors (L x H)

1 - No action is needed
2 - Can be tolerated, but make sure that it does not become worse
3/4 - Take action but subject to it being reasonable and sensibly possible
6 - Must be attended to, you must reduce the risk
9 - Cannot be accepted and work/activity must not continue

Standard Risk Assessment Form			**ALL VESSELS**			
Activity or area	**Possible hazards**	**Possible Consequences**	**L**	**H**	**LxH**	**Control measures necessary with respect to your vessel**
General Working on the deck of the vessel cont.	Manual handling of fishing gear and the catch	Back injuries, sprains etc				
	Noise	Hearing damage, misheard instructions				
Other						
Shooting and Hauling Operations	Clothing snagged in fishing gear	Serious injuries, man overboard				
	Unsafe deck areas	Slips, trips and falls: minor-serious injuries				
	Working above deck level	Falling overboard/ serious injuries				
	Poor on board communication	Serious injuries, death				
	Inadequate lighting	Cannot see dangers; injuries man overboard				
	Gear parting	Serious injury/death				
	Inexperience of a new fishing method	Serious injury/death				
Other						

Assessment Date ..... Review Date ..... Review Date .....

Signature ..... Signature ..... Signature .....

How likely that harm may occur (L)		How harmful (H)	
1	Very unlikely	**1**	Slightly harmful
2	Unlikely	**2**	Harmful
3	Likely	**3**	Very harmful

Risk Factors (L x H)

1 - No action is needed
2 - Can be tolerated, but make sure that it does not become worse
3/4 - Take action but subject to it being reasonable and sensibly possible
6 - Must be attended to, you must reduce the risk
9 - Cannot be accepted and work/activity must not continue

Standard Risk Assessment Form			**Trawling/Pair Trawling/Seining**			
Activity or area	**Possible hazards**	**Possible Consequences**	**L**	**H**	**LxH**	**Control measures necessary with respect to your vessel**
Net Drums	Crewmembers handling the net cannot be seen from the control position	Men dragged overboard or into net drum. Serious injury/ death				
	Control defective or exposed to accidental operation	Serious injury				
Power Blocks	Lack of visibility from control position	Injuries to crewmembers handling net				
	Worn controls	Injuries to crewmembers				
	Heavy items dropping over the power block	Head injuries				
Trawl Doors	Stuck or trapped by swinging door	Serious injury Crushed limbs				
	Winch man unable to see door handling	Serious injury				
Independent Links and Towing Chains	Sweeping sideways or suddenly becoming tight	Crushed Being thrown overboard				
Pair Trawling, warp transfer	Crewmember struck by weighted end of heaving line	Minor/serious injuries				
	Slip hook flying back as tension is released	Minor/ serious injuries				
Other						

Assessment Date ..... Review Date ..... Review Date .....

Signature ..... Signature ..... Signature .....

How likely that harm may occur (L)		How harmful (H)	
1	Very unlikely	**1**	Slightly harmful
2	Unlikely	**2**	Harmful
3	Likely	**3**	Very harmful

Risk Factors (L x H)

1 - No action is needed
2 - Can be tolerated, but make sure that it does not become worse
3/4 - Take action but subject to it being reasonable and sensibly possible
6 - Must be attended to, you must reduce the risk
9 - Cannot be accepted and work/activity must not continue

Standard Risk Assessment Form			**Trawling/Pair Trawling/Seining**			
Activity or area	**Possible hazards**	**Possible Consequences**	**L**	**H**	**LxH**	**Control measures necessary with respect to your vessel**
Winch and warp dangers	Dragged into warping head	Serious injury/ Death				
	Unguarded moving rope/ wires	Serious injury				
	Unguarded winches and machinery	Serious injury/ death				
	Worn components	Gear damage Serious injury				
	Winch operator cannot see the operations on deck	Serious injury				
	Inadequate emergency stops	Serious injury Vessel damage				
	Inability to jettison trawl gear	Vessel capsize/ founder				
Seining- Rope Reels	Falling onto rotating reel	Carried around reel – serious injury death				
	Rope reels cannot be seen from the control position	Crewmember seriously injured or killed				
Bag lifting	Reaching outboard to hook into the lifting becket	Falling overboard				
	Crewmembers in exposed positions	Falling overboard				
	Struck by swinging 'bag'	Serious injury/man overboard				
	Winch operator cannot see crew handling cod ends	Serious injury				
	Excessive loads in net	Serious injuries/ vessel damage, capsize				
Other						

Assessment Date ..... Review Date ..... Review Date .....

Signature ..... Signature ..... Signature .....

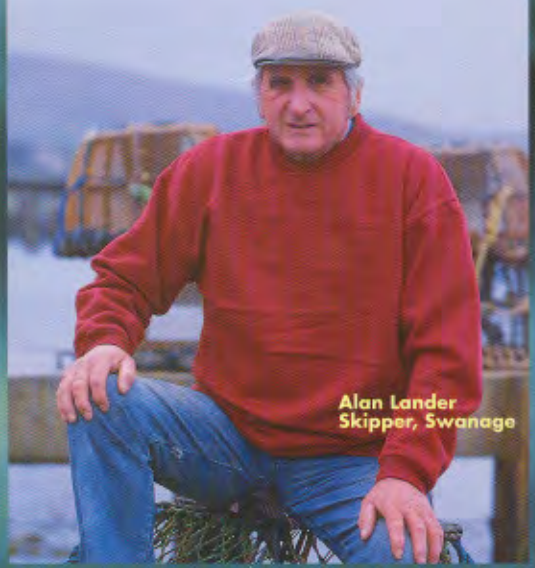
Annex E

Leaflet on Single Handed Operation

SINGLE HANDED OPERATION

"The risks of working single handed are obvious.

If you don't take adequate precautions, a minor incident can soon develop into a tragedy when there's nobody around to help."



Alan Lander
Skipper, Swanage

Vyvyan Ping,
Mylor Bridge, Cornwall

Geoff Ping worked single handed from Mylor in Cornwall. Nine years ago he left port never to return.

Here are the words of his widow, Vyvyan: "Nine years on and it still hurts. Seeing our daughters Sarah (16) and Helen (14) hurts even more, because Geoff never saw them grow up. If he hadn't been fishing single handed perhaps it may never have happened. We will never know, and that's the worst pain of all.

I hear of many fishermen working single handed saying they're safe because other fishermen are nearby, but the truth is that nobody's ever close enough.

If you work on your own, you must take extra care. Be prepared for everything."

Geoff's 28ft netter, Nil Desperandum, was found unmanned only hours after he left port.

SAFE FISHING

KEEPS YOU FISHING, KEEPS YOU ALIVE

Produced by The Fishing Vessel Safety Trends Initiative Steering Group with support from mca

SINGLE HANDED OPERATION

GETTING IT RIGHT

- ✓ Making sure you and your vessel are fit to go to sea.
- ✓ Checking the weather forecast before you set off.
- ✓ Telling someone ashore where you intend to fish and when you expect to return.
- ✓ Carrying a VHF radio and keeping in regular contact with other vessels in the area or shore base.
- ✓ Fitting machinery emergency stops and maintaining them.
- ✓ Dressing to keep as warm, dry and safely protected as possible.
- ✓ Making sure safety equipment is easily accessible.
- ✓ Wearing a flotation garment (buoyancy aid, lifejacket or survival suit) at all times.
- ✓ Considering using a safety harness while you are working on deck.
- ✓ Considering wearing a personal locator beacon and carrying mini flares.

GETTING IT WRONG

- ✗ Leaving on your fishing trip without checking the engine over.
- ✗ Sailing in bad weather or fog.
- ✗ Operating beyond the limitations of your radio equipment.
- ✗ Forgetting to keep a clear lookout whenever possible during fishing operations.
- ✗ Relying entirely on a mobile phone for emergency communication.
- ✗ Overloading your vessel.
- ✗ Exhausting yourself.
- ✗ Forgetting to check that you have all your safety equipment on board before you leave.
- ✗ Delaying calling for assistance if you are in difficulties.
- ✗ Not carrying an alternative means of propulsion on a small vessel (oars or a spare outboard motor).
- ✗ Taking unnecessary risks. There is no one to help you if you make mistakes.

If you would like more information on Single Handed Operation risks or any aspects of safety at sea, please phone FREE on 0800 731 9872

SAFE FISHING

KEEPS YOU FISHING, KEEPS YOU ALIVE

MAIB flyer to the fishing industry

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FLYER TO FISHING INDUSTRY

Our Boy Andrew: Fatal Accident to Skipper

Our Boy Andrew, a UK registered fishing vessel, departed Looe early on the 24 March 2011 and headed south-easterly to her fishing grounds north of Eddystone Rocks. The skipper was the only person on board. At 0710, he shot the port net **(Figure 1)** and then towed it east-south-easterly until 1140, at which time he decided to haul the gear. This would have required him to haul the warps and secure the trawl doors. At about 1200, he turned the vessel onto a south-westerly heading and prepared to haul the port net. It is believed that he set the net drum control lever to the 'haul' position and then stood between the net drum and stern bulwark **(Figure 2)** so that he could manually guide the net onto the drum.

Figure 1

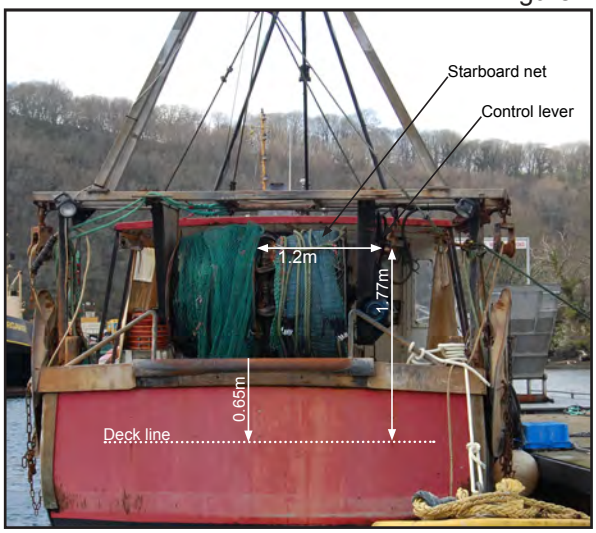
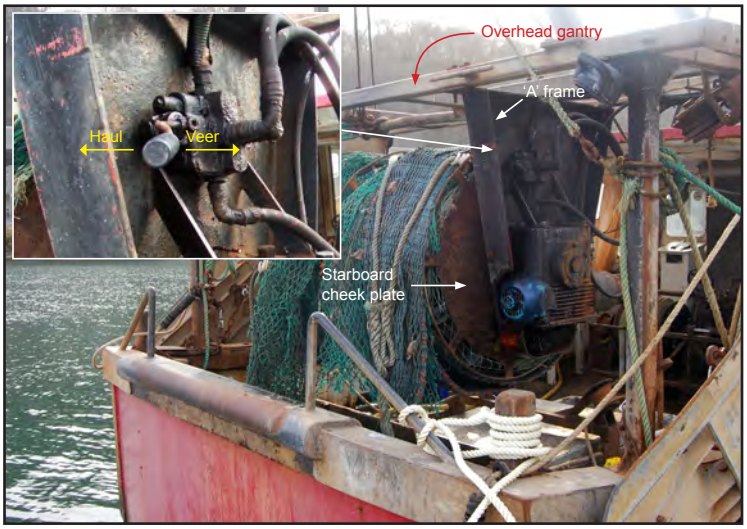


Figure 2



A drawstring toggle on the left-hand side of the stormhood on the skipper's jacket became entangled in the net **(Figure 3)** when the cod end was about 10 metres from the net drum. This would have caused the skipper to be pulled towards the rotating drum. Evidence indicates that he then reached towards the operating lever to stop the motor but was unsuccessful. The net drum stopped rotating when the cod end became wedged between the net drum and the overhead gantry. The skipper died as a result of injuries to his upper body.

Figure 3

At 2105, the coastguard was informed that *Our Boy Andrew* was overdue. Thereafter, an extensive search and rescue operation was launched which involved a lifeboat, a helicopter, merchant vessels and local fishing vessels. *Our Boy Andrew* was sighted at 2210 and a rescue helicopter arrived on scene at 2255, about 28 miles from the vessel's last known position at around midday.

Safety Lessons

1. The equipment and process used on *Our Boy Andrew* to haul in her fishing gear compromised safety for a single-handed fisherman because:

    - It was necessary to manually feed the net onto the net drum, and this exposed the fisherman to the hazard of being snagged by the net and dragged onto the drum.
    - The fisherman was required to move away from the winch controls to feed the net onto the drum.
    - There were no emergency stop controls fitted to the system.
    - There was no one available to stop the net drum if the fisherman became entangled.

2. Had the skipper conducted a sufficiently comprehensive risk assessment following his decision to operate the vessel single-handedly he may have identified and mitigated the hazard of being dragged onto the rotating net drum. Independent advice might also have helped him identify the hazards.

3. Although it would have been preferable for the skipper not to have had to work in close proximity to the moving net, the risk of an accident within the confined area adjacent to the net drum could have been lowered by ensuring that any snag hazards on the clothing he was wearing were reduced to a minimum.

4. *Our Boy Andrew* was fitted with a Class-B AIS transponder which assisted the coastguard in directing the emergency services towards the vessel. Had the vessel not been fitted with AIS, the coastguard would have undoubtedly spent additional time and resources in locating the vessel.

This flyer and the MAIB's investigation report are posted on our website:
www.maib.gov.uk

For all other enquiries:

Marine Accident Investigation Branch
Mountbatten House
Grosvenor Square
Southampton
SO15 2JU

Tel: 023 8039 5500
Fax: 023 8023 2459
Email: maib@dft.gsi.gov.uk

Marine Accident Investigation Branch
17 November 2011

Marine Accident Report

INVESTORS IN PEOPLE