Report on the investigation of

the capsize and foundering of

fv *Sundance*

Off Gilkicker Point, East Solent

with the loss of one life

10 September 2001

Marine Accident Investigation Branch
First Floor
Carlton House
Carlton Place
Southampton
United Kingdom
SO15 2DZ

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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 cause with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

cm	-	centimetre
kg	-	kilogram
kW	-	kiloWatt
m	-	metre
MCA	-	Maritime and Coastguard Agency
Mk	-	Mark (an indication of the model)
MOD	-	Ministry of Defence
RIB	-	Rigid Inflatable Boat
UTC	-	Universal Co-ordinated Time
WW2	-	World War Two

GLOSSARY OF TERMS

“A” Frame	Hinged metal framework mounted on top of the gantry.
Block	On a fishing vessel, a fitting, through which a rope or wire passes to aid the process of lifting, towing, hauling or shooting nets or other gear.
Bulwark	Solid barrier formed by continuing the vessel’s side plating above the main deck. It helps stop people and gear falling over the side and also prevents water from coming inboard.
Cod end	The bag formed at the end of a fishing net which contains the catch.
Drum-end	Revolving drum connected to, and driven by, a winch and used for heaving ropes.
Foot rope	The rope at the mouth of a net, sometimes called the head rope.
Freeboard	The distance between the water’s surface and the main deck.
Freeing ports	Holes in the bulwark designed to allow water to drain over the side from the main deck.
Gantry	Fixed metal structure at the stern of a fishing vessel for supporting blocks and the “A” frame.
Gilson	The gear designed to lift the net, or parts of the net, on board.
GM	Metacentric height – an indication of the vessel’s stability.
Heel	An angle produced when a vessel is tipped by external forces, ie wind or waves.
List	An angle produced when a vessel is tipped by uneven weight distribution on board.
Luffable	Capable of being raised and lowered.
Roll	Temporary angles of heel or list produced by waves or a swinging load.
Scantlings	The dimensions of parts of the structure of a vessel.
Stability	The ability of a vessel to return to the upright when heeled.
Wash	Waves produced by a vessel as it passes through the water.
Winch	A machine for hauling ropes, wires or chains.
Wings of a net	The extremes either side of the mouth of a fishing net.

SYNOPSIS

All times are local (UTC +1).

At about 1032 on 10 September 2001, the 10m-long stern trawler *Sundance* capsized and foundered. The skipper, his son and a crew member were thrown into the water, and as a result the crew member died. The MAIB was notified of the accident at 1407 that day, and an investigation began immediately, carried out by MAIB inspector Captain Nick Beer.

Sundance had left Camber Dock in Portsmouth earlier in the morning to trawl popular grounds off Gilkicker Point which were unfamiliar to her skipper and crew. During her first trawl, she picked up part of a WW2 torpedo and along with it a quantity of mud and shells. The skipper was aware that a heavy load had been "caught" and he and the crew tried to recover it. They managed to raise the net to the surface without too much difficulty but, when they tried to lift the cod end clear of the water, the weight was too much for the trawl winch. As the winch struggled to lift the cod end through a block on the "A" frame, the vessel took an increasing list to starboard. The load snagged on the starboard quarter and, with the winch's relief valve blowing, could neither be pulled inboard, nor lowered back into the water. The situation seemed to stabilise with the vessel listed to starboard and with freeing ports on the aft starboard side probably underwater. While the crew member was cutting the net to release the unwanted load, *Sundance* encountered the wash from a passing vessel; *Sundance* rolled, took water over the starboard bulwark and rapidly capsized. The vessel stayed on the surface for only a few minutes before inverting and foundering.

The crew of a yacht witnessed the event. They quickly rescued the skipper and his son from the water and raised the alarm. Other rescue craft were on scene within a short time. The crew member, who was the co-owner of *Sundance* together with the skipper, was discovered floating face-down in the water. A rescue helicopter airlifted the injured man to hospital but, despite continuous attempts to resuscitate him, he was eventually pronounced dead. He was believed to have been a non-swimmer and he had not been wearing a lifejacket.

A combination of circumstances paved the way to the accident and, finally, when the vessel was already in a precarious position, slight wash from a passing ferry was sufficient to cause the capsize.

The investigation has highlighted the need for skippers to have a good basic understanding of ship stability so that they are able to make informed decisions when extraordinary events occur. It also, highlights, once again, the commonsense advice for fishermen to wear lifejackets when working on the open deck, even in benign weather and sea conditions.

Photograph 1

Sundance

SECTION 1- FACTUAL INFORMATION

1.1 PARTICULARS OF *SUNDANCE* AND THE ACCIDENT

(Photograph 1)

Vessel details

Registered owners	:	Mr T Cowans (50%) and Mr D Gibbs (deceased) (50%)
Port of registry	:	Weymouth
Flag	:	UK
Type	:	Fishing vessel, stern trawler
Built	:	1989 by Ron Berry at Weymouth
Construction	:	Wood
Length overall	:	9.07m
Beam	:	3.20m
Gross tonnage	:	3.21

Accident details

Type	:	Capsize followed by foundering
Time and date	:	1032 UTC 10 September 2001
Location of incident	:	50° 46.2'N 001° 08'W 135° x 0.4 mile from Gilkicker Point
Persons on board	:	Three
Injuries/fatalities	:	One fatality
Damage	:	Vessel lost

1.2 BACKGROUND

Sundance was owned and operated by two friends on a semi-commercial basis. The vessel fished for about two days each week with the intention of, at least, recovering costs. She was generally moored in Langstone Harbour, but, at the time of the accident, she had been working from The Camber in Portsmouth Harbour where she had been temporarily based for three weeks. A typical day's fishing started in the early morning, depending on tides, and comprised a passage to fishing grounds, a few hours trawling and return to harbour in the evening. Normally the two co-owners operated the vessel themselves but, occasionally, they took a third person to assist. Mr Cowans, one of the co-owners, had the most fishing experience and it was he who acted as skipper, but this was a fairly loose arrangement.

The crew of *Sundance* were unfamiliar with the grounds off Gilkicker Point. Friends had advised them to try fishing there, and they had done so two days before the accident. Because the fishing grounds were unfamiliar, initially *Sundance* had followed another vessel to avoid getting snagged on known "hangers".

1.3 NARRATIVE

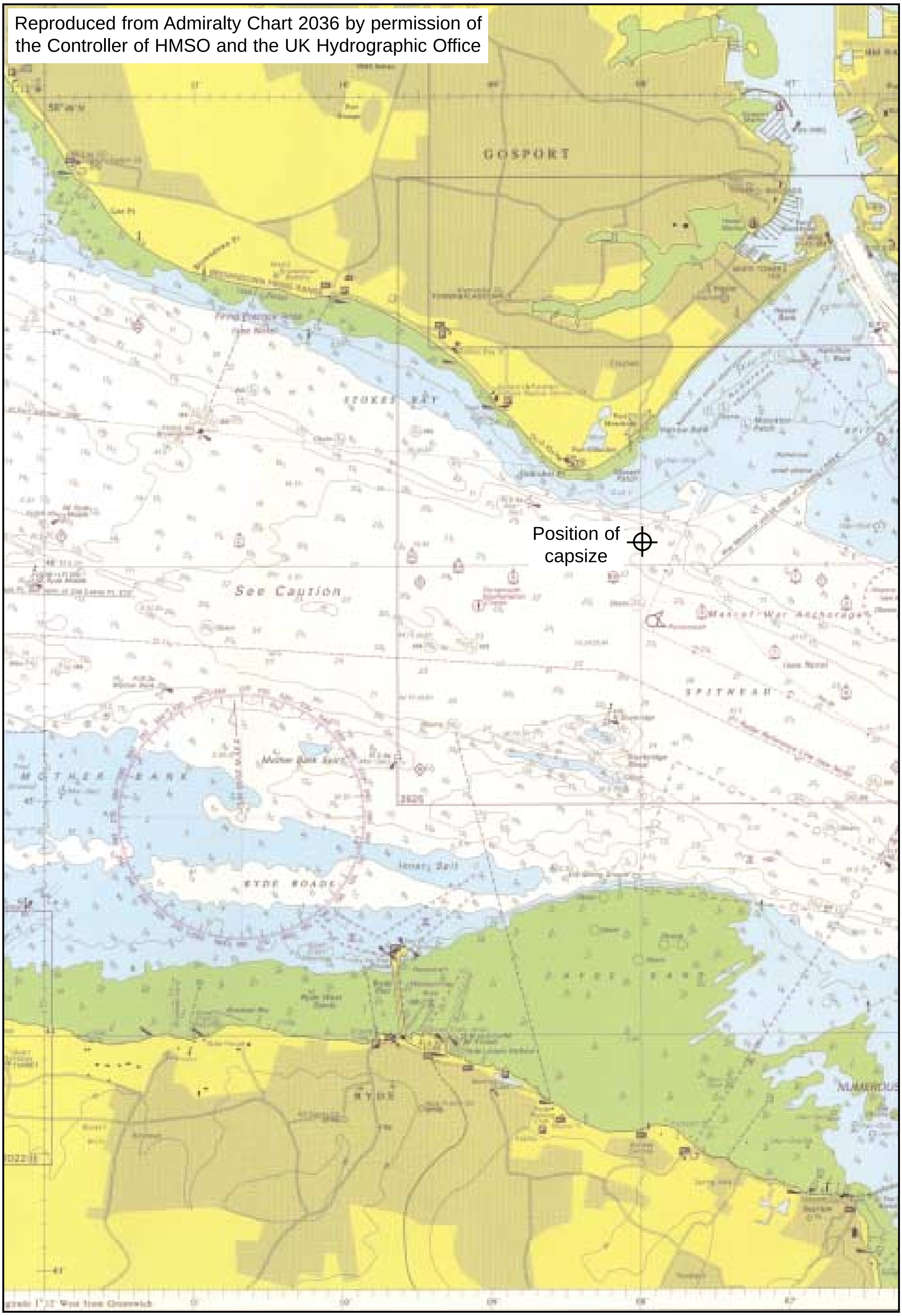
All times are local (UTC +1).

On 10 September 2001, *Sundance* left Camber Dock at 0800 with three people on board: the skipper Mr Trevor Cowans, the other co-owner Mr Derek Gibbs, who was acting as crew for the day, and the skipper's son Mr Ben Cowans. There was a west-north-westerly wind of force 4 and it was cloudy but fine. The visibility was good.

Sundance began the first trawl of the day near to the outfall pipe in Stokes Bay and trawled east at about 2 knots **(see chart extract)**.

After they had trawled for some time the crew felt a "knock", and the vessel slowed. They concluded that something heavy had been caught in the net. As they were near to the end of the trawl, the crew decided to haul and recover the gear.

The winch was placed in gear and hauling began with *Sundance* still making headway. The lead of the trawl warps was noted to be almost vertical. Trevor Cowans was driving the boat and the winch from inside the wheelhouse, Ben Cowans was standing-by on the starboard side of the after deck to assist as necessary, and Derek Gibbs was right aft, ready to unclip the doors and to assist the net inboard.


Reproduced from Admiralty Chart 2036 by permission of the Controller of HMSO and the UK Hydrographic Office
GOSPORT
STOKES BAY
Position of capsize
See Caution
SPITHEAD
MOTHER BANK
RYDE ROADS
RYDE

The crew brought home the doors successfully, and then hauled home the wings. As they did so, they felt a juddering as though something heavy had rolled down in the net. They continued hauling, and the mouth of the net was brought to the surface and close up under the vessel's stern. They connected a rope to the foot rope and hauled it to a block at the top of the gantry. The foot rope was tied off **(see Figure 1)**.

The cod end rope was then connected to a gilson rope which was led permanently through the block at the top of the "A" frame and a lead block sited on the gantry to starboard of the centre line, to the drum-end on the starboard side of the trawl winch. The gilson rope was hauled until the cod end was at, or near to, the surface of the water.

By this time the vessel had taken a starboard list. The winch, which was designed for a maximum working load of 984kg (1 ton), was straining, its relief valve was operating and the winch was unable to lift the weight further. Mr Gibbs, who was right aft, tried to pull the net inboard without success. The crew then tried to lower the net back to the seabed, but it had become snagged at the vessel's stern and would not lower.

Sundance was listing to starboard at a dangerous angle. The skipper instructed Derek Gibbs to cut the net to release the load. He had started to cut when the vessel encountered the wash of a passing vessel. *Sundance* rolled, took water over the starboard bulwark and capsized rapidly, throwing all three crew into the water. The time was about 1032.

The crew of the yacht *Quintette Too* had seen the accident. They notified the coastguard and proceeded to assist at the scene.

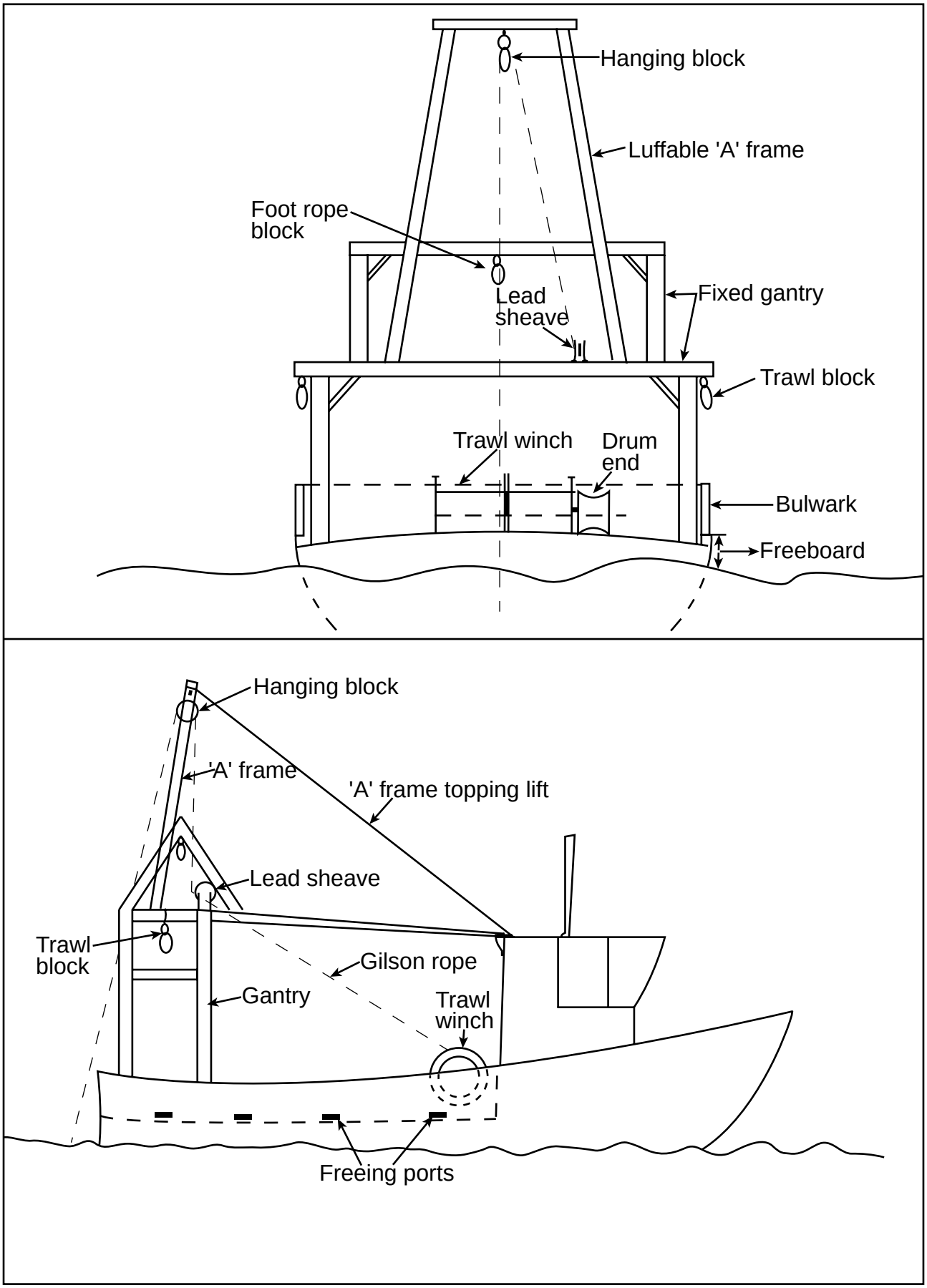
Soon after capsizing, *Sundance* turned upside down and then sank in about 20 metres of water. Trevor and Ben Cowans could see one another, but they could not see Derek Gibbs. *Quintette Too* successfully recovered the skipper and his son from the water. When on board *Quintette Too*, the survivors saw Derek Gibbs floating face-down in the water. Very soon afterwards an MOD police RIB arrived on scene and recovered the unconscious man. The RIB's crew began resuscitation immediately.

The MOD police launch *Endeavour*, and an inshore lifeboat, soon joined the vessels on scene. The coastguard rescue helicopter lifted the injured crewman and transferred him to hospital. All attempts to revive him were unsuccessful and he was eventually pronounced dead.

Mr Gibbs had been wearing "Guy Cotton" waterproof jacket and trousers, wellington boots but no lifejacket. It is believed he could not swim.

Sundance was located and raised a few days after the accident. The cod end of the net was found to contain shells, mud and part of a WW2 torpedo which was later positively identified as the air vessel section of an Air Steam Torpedo (UK Mk8) **(see video still 1)**.

Figure 1



Sundance (not to scale)

Video still 1

Part of a WW2 torpedo

1.4 THE CREW

The skipper, Trevor Cowans, was 54 years old at the time of the accident. Although not a professional fisherman, he had been involved part-time with fishing boats for 25 years, and had been the co-owner of *Sundance* for 7 years. He had been a friend and neighbour of Derek Gibbs for 20 years. He had been medically retired from his job with British Telecommunications plc just before purchasing *Sundance* and going into partnership with Mr Gibbs.

Ben Cowans was 22 years old at the time of the accident. He was a professional actor who had owned a small fishing boat in the past. He did not normally sail with his father on *Sundance* but occasionally, if the weather was good and he was not otherwise occupied, he would do so.

Derek Gibbs was 67 years old and was physically fit. He had retired from the Merchant Navy 7 years before the accident, and had gone into partnership, at that time, to own and operate *Sundance* with Trevor Cowans, his friend and next-door neighbour. The partnership operated on the basis that Trevor Cowans would provide most of the fishing skills and that Derek Gibbs would do most of the physical work.

1.5 *SUNDANCE* - GENERAL DESCRIPTION

Sundance was built in Weymouth in 1989. She was of wooden carvel built construction with a small wheelhouse forward and a large open working deck aft **(see photograph 2)**. A small cabin was reached by steps leading forward from the wheelhouse. The diesel engine was sited aft and protected by a casing.

The afterdeck drained through eight freeing ports each of about 10 x 4 cm. The freeing ports were each capable of being blocked off by wooden "doors" that could be kicked quickly into position **(see photograph 3)**. Generally, the four aftermost freeing ports were kept open. The freeboard in the seagoing condition was about 18 to 20 cms. The height of the bulwarks aft was about 60cm above the deck.

The "Spencer Carter" trawl winch, which was sited just aft of the wheelhouse at the forward end of the working deck, was powered by a hydraulic motor which had been adjusted to allow a maximum lift of 984kg (1 ton) **(see photograph 4)**.

Sundance had undergone a general inspection by the MCA in July 2001 and no faults had been found. Her certification was valid until 2005. Lifejackets were stowed in the cabin, and two lifebuoys were stowed on the wheelhouse top. She did not carry a liferaft, and was not required to do so.

Sundance was fitted with a bilge pump which was tested by the co-owners frequently. It had been last tested a few days before the accident. The skipper was in the general habit of switching on the bilge pump frequently to ensure that the bilges were kept dry.

Photograph 2

Sundance

Photograph 3

One of the freeing ports

Photograph 4

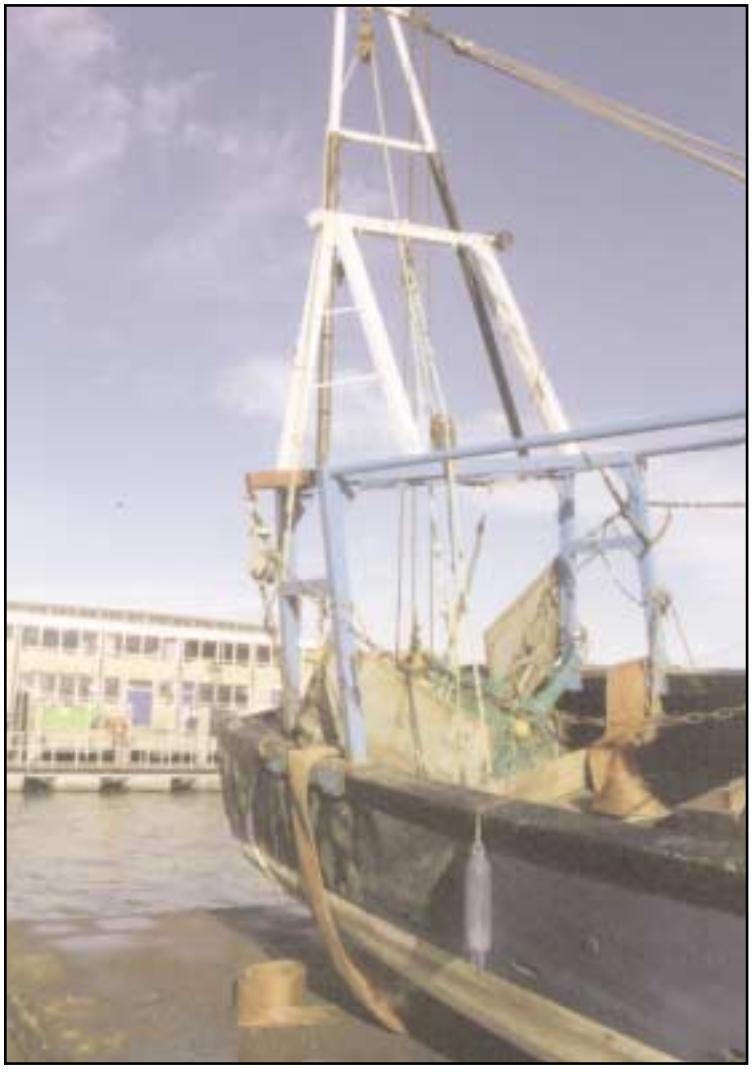
The trawl winch

1.6 THE FISHING METHOD AND THE ARRANGEMENT FOR HANDLING THE GEAR

Sundance was arranged as a twin-warp stern trawler. She had a fixed stern gantry, on top of which was mounted a luffable "A" frame **(see photograph 5)**. The gantry had been renewed earlier in 2001. The new gantry was of similar design to the old one but possibly built with slightly bigger scantlings. The original "A" frame was retained, and the overall height of the arrangement was not changed. Although the "A" frame was luffable (capable of being raised and lowered) generally it remained topped up in one position during trawling operations.

The net was towed on twin warps which were led through trawl blocks situated either side of the gantry. To recover the net it was necessary to haul the trawl wires until the doors came home. The doors would then be hung off and the chains, which connected the doors and the wings of the net, were hauled through the same lead blocks either side of the gantry. When the foot rope and

Photograph 5



The gantry and "A" frame

the mouth of the net came tight up to the stern of the vessel, the foot rope was hauled through a hanging block which was sited on the top of the gantry. When the foot rope was lifted to the height of the block it was tied off. After this, the cod end rope was attached to a gilson rope and heaved. The gilson rope was permanently led through the highest hanging block on the "A" frame, to a lead sheave sited on the gantry to starboard of the centre line, and from there to the drum-end on the starboard side of the trawl winch **(see Figure 1)**. Using this method, the cod end could be lifted and swung inboard over the stern to land the catch on deck.

The cod end lifting block was a swinging block about 4.8m above the deck, and the lead sheave was sited to starboard of the centre line on the gantry. Any load lifted by this gear acted slightly to starboard of the centre line and caused a starboard list **(see Figure 1)**. Anecdotal evidence suggests that the boat generally assumed a small starboard list in the latter stages of recovering the nets. The size of the list increased with a larger load.

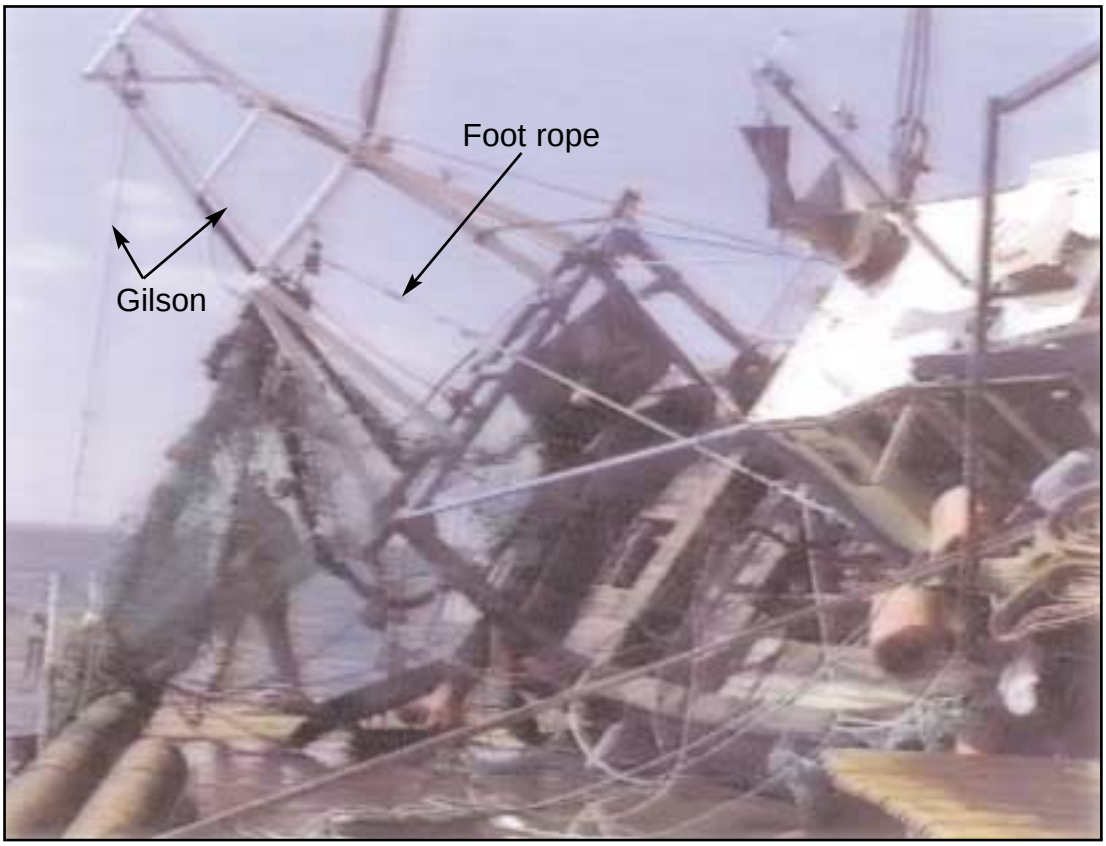
1.7 THE ACCIDENT

Just before the accident, neither of the surviving crew members saw clearly the position of the cod end, relative to the sea surface. Divers who surveyed the wreck, briefly noted that the cod end was full and the bag was spherically shaped measuring about 2m in diameter and was situated tight up to the starboard quarter of the vessel. When the vessel was recovered, the net was retained, lifted on board the salvage vessel and weighed. It is estimated that about half of the mud and shells had been washed from the net in the process of recovery. The torpedo air vessel, and the remaining mud, weighed approximately 570kg.

At the time of the accident the cod end was being lifted via the highest swinging block on the "A" frame **(see video still 2)**. This was a single purchase and, although it is impossible to be precise about the weight in the net, it is likely that in air it neared the 980kg (1 ton) at which the winch's pressure relief valve was set. The winch appeared to be just able cope with the weight of the load while it was in the water, but failed to cope with it as it was being hauled clear.

The whole event was captured and recorded on Southampton Vessel Traffic Services (VTS) radar. Examination of the radar recording clearly shows the radar echo of *Sundance* disappearing from the screen at 1032. Just before this a vessel, which is assumed to have been an Isle of Wight ferry, can be seen passing on its way into Portsmouth at a speed of about 16 knots **(see video still 3)**.

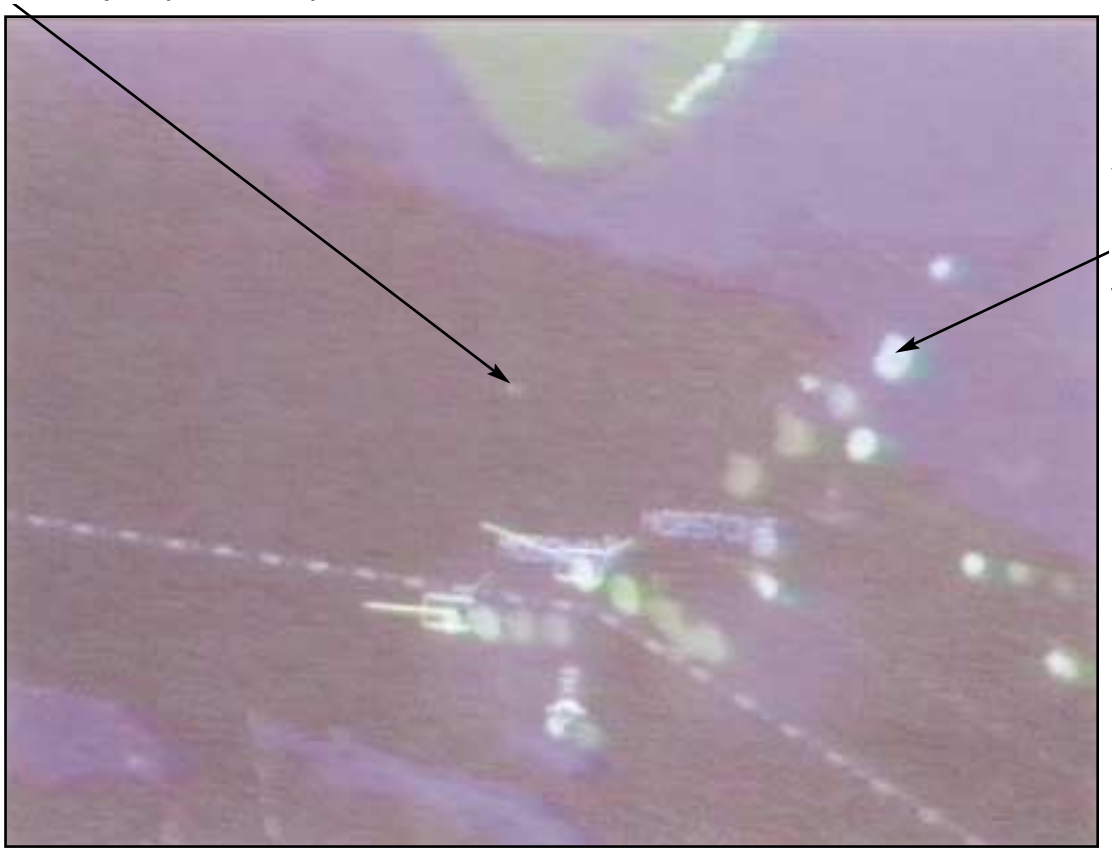
Video still 2



Sundance showing the foot rope hauled in and the gilson rope connected to the cod end

Sundance just prior to capsize

Video still 3



VTS radar showing vessel passing in-bound to Portsmouth

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 WHAT CAUSED *SUNDANCE* TO CAPSIZE?

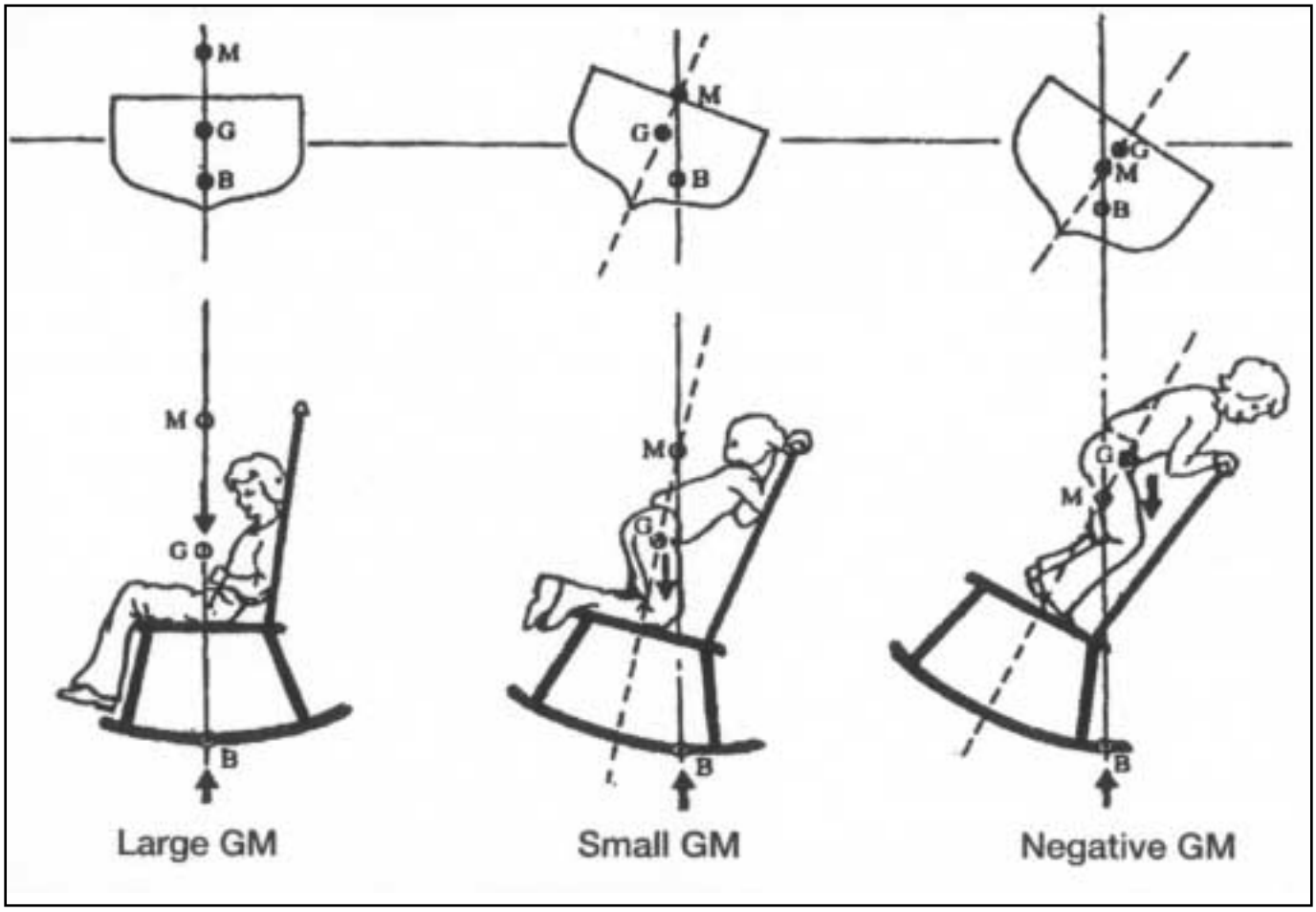
During trawling and for the first part of the net recovery process the loads were hauled and lifted through the trawl blocks. Although the load was unusually large, the vessel's stability was able to cope because the trawl blocks were sited low on each side of the gantry. When the cod end rope was connected to the gilson and hauled through a block hanging at 4.8m above the deck, the heavy load was effectively transferred to act at that height in the vessel. This made the vessel top-heavy and led to a dramatic reduction in the vessel's stability **(see Figure 2)**.

As the crew attempted to lift the weight in the cod end of the net clear of the water, the load on the top block increased rapidly (the load weighed less when submerged). Because the lead sheave was sited just to starboard of the centre line on the gantry, the top block hung at an angle slightly to starboard, and the increasing load acted slightly to starboard of the centre line **(see Figure 1)**. This caused the vessel to list to starboard. The list increased with the increasing load as part of it came clear of the water. As the vessel listed, the load swung further to starboard, thus further increasing the list. The pressure relief valve operated when the load on the winch reached its maximum of 984kg. At this time the situation stabilised, but the load had snagged on the starboard quarter and could be neither brought inboard, nor lowered back into the water.

Sundance was listing dangerously to starboard as attempts were being made to cut the net and release the load. At this time she is reported to have encountered wash from a passing vessel. After examining the Southampton VTS' radar recording, the MAIB inspector believes it likely that the wash which *Sundance* reported experiencing, came from an Isle of Wight ferry which had passed inbound for Portsmouth just before the accident **(see video still 3)**. The wash was not exceptional. Similar wash is encountered frequently in the area off Gilkicker Point.

With *Sundance* listing dangerously, the freeboard on the starboard side was reduced. The wash waves came over the starboard bulwark. The freeing ports were small and were unable to cope with the amount of water which came on board. A wedge of water formed on the starboard side of the deck, which reduced the vessel's freeboard and stability further, and increased the list. The increased list tended to swing the load in the net further to starboard, exacerbating the already dire situation and this, or possibly the effect of more wash waves, ultimately caused the vessel to capsize.

Figure 2



Source: University of Texas, Austin

2.3 HOW COULD THE CAPSIZE HAVE BEEN PREVENTED?

Sundance capsized because her stability was insufficient to cope with the combined effects of the circumstances outlined above. The main factors that contributed to the event were:

- The weight of the load and the decision to lift it
- The height and design of the gear-handling arrangement
- The freeboard and freeing arrangements on *Sundance*
- The wash from a passing vessel
- *Sundance*'s stability.

These factors are considered separately below.

2.3.1 The weight of the load and the decision to lift it

While trawling off Gilkicker Point, *Sundance* accidentally trawled up part of a WW2 torpedo, and this weight in the net caused her to collect a large amount of mud and shells.

All the evidence suggests that the combined weight in air of the torpedo air vessel, and the mud and shells, approached 984kg (1 ton). The load appeared less in the water, but was still far greater than could have been expected of the largest catch of fish.

The skipper and crew were aware they had caught a heavy weight in their net, first when they felt a “knock” during trawling, and then again when they felt juddering as the weight “rolled” down in the net as it was lifted. As they lifted the weight, they noted that the trawl wires were leading vertically despite the fact that *Sundance* still had headway; this, again, indicated that they had an abnormally heavy load. Additionally, the winch was straining and, as the weight came to the surface, the pressure relief valve blew, indicating a load of about 984kg (1ton).

When the crew realised that a heavy load had been caught in the net, they had a number of choices:

- Lift the net and hopefully get the “catch” landed safely on deck.
- Lift it to the surface, see what it was and then release the load back into the sea. This could have been achieved by releasing the cod end or cutting the net.
- Tow the load into shallow water where the net could be released and buoyed. Examination of the load could then have taken place at low water and the net subsequently recovered. The skipper had done this on a previous occasion when he had caught, what he discovered later, was a 3m-long ship’s anchor. On that occasion, the winch’s relief valve had blown and they were unable to hoist the load. They towed it into Langstone Harbour and beached it for inspection at low water.
- Cut and buoy the net where it was, so a specialist vessel could later recover it.

The skipper decided, along with Mr Gibbs, to try and lift and recover the net on the basis that, although the load was heavy, it was not too heavy for the winch to lift. It was not until they got the net to the surface, and transferred the lift to the cod end rope, that they realised the load neared the maximum for the winch. The winch’s relief valve was blowing, so they decided to lower the load and tow it to shallow water. However, the load snagged and they were unable to either lift it further or lower it. Mr Gibbs could not reach the cod end to release the load so, on the skipper’s instructions, he attempted to cut the net. Before he could do this, the vessel encountered wash waves which caused it to capsize.

The co-owners of *Sundance* had cut and buoyed their net a number of times previously, when the net had become snagged on an obstruction on the seabed. Although this was an option on this occasion, the net was not snagged on the bottom and other options were open to them. To cut and buoy it was a last resort, to be used only if all else failed.

When taking decisions in this extraordinary situation, the skipper might have benefited from a greater understanding of ship stability. When it was decided to transfer the load to the top of the “A” frame, the vessel’s stability was seriously affected. This was the key decision in the causal chain. The accident would have been avoided if the co-owners had decided to cut and buoy the net or to tow it into shallow water.

2.3.2 The height and design of the gear-handling arrangement

Sundance was not required to be built and tested to comply with any particular stability criteria. She had been built to the individual specifications of her first owner. The builder is a well-respected firm that has built numerous other similar vessels. Like most vessels, *Sundance* had undergone change during her life which affected her stability. Her gantry had been renewed four months before the accident but, although the steel structure had previously been of round section and the new one was square, the scantlings and the weight of the structure had not changed significantly. Crucially, the height of the “A” frame had not altered. The vessel had been in her present ownership for 7 years, and had been operated safely and successfully throughout that time. She was described as a good sea boat, and experience had shown her to be capable and safe under normal conditions.

On 10 September 2001, she encountered an abnormal situation. Ideally, the gear-handling arrangement, the vessel and its equipment should be matched so that, for instance, the maximum load on the winch should not be too much for the other equipment and the vessel’s stability. This cannot always be the case. Fishermen require extra capability, for instance, when freeing snagged nets. On this occasion, the limits were being stretched, maximum load was being lifted at maximum height.

Like many other vessels, *Sundance* was arranged and operated to maximise her performance. The height of the “A” frame, to some extent, dictated the size of the net that could be handled. In normal circumstances, the gear-handling arrangement worked well, but special care was needed in coping with an abnormally heavy load. The tendency for the vessel to take up a starboard list when lifting the cod end because of the lead of the gilson rope was a factor which needed careful consideration.

In the event, the crew decided to try and lift the cod end, and it was not until all else had failed that this decision was reversed. Even so, the gear and the vessel’s stability seemed to cope, and it was only the addition of other unforeseen factors which caused a dangerous event to turn into a disaster.

2.3.3 The freeboard and freeing arrangements on *Sundance*

The freeboard and freeing arrangements are described in section 1.4. The freeing ports were very small and some might have been blocked off. The freeboard was small and the bulwark height was low, about 60cm. However, these aspects are typical of this size and type of boat.

The boat took up a large angle of list because of the weight of the load, and the gear-handling arrangement, as described earlier. One of the witnesses estimated the "freeboard" in the listed condition to have been about 30cm. The MAIB inspector believes that the witness was referring to the distance between the waterline and the top of the bulwark. The actual freeboard in the upright condition was only about 18 to 20cm so, at the list angle described, the after most freeing ports on the starboard side became submerged.

In this condition, with the deck edge immersed, stability was reduced and only a small wash or extra amount of movement was needed to cause water to come over the top of the bulwark, effectively reducing the stability further and increasing the list.

There is a balance to be drawn between, on the one hand, the safety provided by a large freeboard and high bulwark and, on the other, the reduction in fishing efficiency caused by the working deck being further away from the water. A large freeboard generally provides greater reserve of stability which will enable the vessel to return safely from larger angles of heel. *Sundance* was not unusual in respect of her low freeboard and low bulwark height, but, on this occasion, they combined with other factors to assist in the vessel's demise.

2.3.4 The wash from a passing vessel

The position in which *Sundance* was recovering her nets, while outside the principal channels, is close to the main routes into both Portsmouth and Southampton. Traffic on these routes is frequent, and includes ferries and high-speed craft, as well as large merchant vessels. Frequently, vessels in the vicinity of Gilkicker Point encounter wash.

Examination of the radar recording from Southampton VTS shows a number of vessels in the vicinity of *Sundance*, but only one which might have produced wash waves that would have reached her at the time of her disappearance from the screen. That vessel appears to have been an Isle of Wight ferry proceeding into Portsmouth. The ferry passed some distance from *Sundance*, and was not making excessive speed. There is no reason to think that she should have passed further away or slowed to reduce the effect of wash. There is no reason to think that the wash produced was in any way excessive. The condition of *Sundance* was such that even a small amount of wash would have had the effect described.

2.3.5 *Sundance*'s stability

No stability checks have been carried out on *Sundance* since the accident, as there is no evidence to suggest that her basic stability was deficient.

The bilge pump has been mentioned in Section 1.4. *Sundance* was reasonably well-equipped and maintained, and there is no reason to believe that water in the bilges contributed to a reduction in her stability.

The inspector believes that most vessels of similar length and type would have succumbed in a similar way to *Sundance*, given the same combination of circumstances.

The MCA's publication "*Capsize Safety for Fishing Vessels*" has very good advice for fishermen concerning stability, including the following statements:

Do not lift pots (creels), nets, cod ends, etc. from unnecessarily high points, as any suspended load acts from the point of suspension; and,

Remember that ***the lives of the crew and the vessel are always more valuable than fishing gear or lost time****. If in any doubt, run off or cut away fastened gear, buoy off and return later with assistance for retrieval.*

2.4 LIFESAVING EQUIPMENT

The lifesaving equipment carried on board *Sundance* has been described in Section 1.4. Of the equipment carried, lifejackets and/or lifebuoys could have assisted the crew when they were in the water. The lifejackets were stowed in the forward cabin and, in the event, could not be reached in time. The lifebuoys appear to have floated off when the vessel sank, but the two survivors did not use them.

Mr Derek Gibbs was, it is believed, a non-swimmer. With this in mind, before the accident, the two co-owners had discussed the advantages and disadvantages associated with wearing inflatable lifejackets during work on deck, and the deceased man had been considering the matter.

Although the exact circumstances which caused the fisherman to lose his life are not known, had he been wearing a lifejacket, his chances of survival would almost certainly have been improved considerably. Even in benign conditions, circumstances can suddenly and unexpectedly arise where the wearing of a lifejacket, while out on the open deck of a small fishing vessel, can be advantageous.

SECTION 3 - CONCLUSIONS

3.1 CAUSES AND CONTRIBUTING FACTORS

3.1.1 The principal causes

The accident was caused by a combination of circumstances that occurred during attempts to clear *Sundance*'s nets of an unwanted "catch". The principal causes were as follows:

- *Sundance* trawled up part of a WW2 torpedo and consequently a large quantity of mud and shells; [2.3.1]
- While establishing both what had happened and what to do about it, and having already raised the net to the surface, *Sundance'*s skipper and other co-owner decided to lift the load on board; [2.3.1]
- The load became snagged on the starboard quarter of the vessel and could neither be lowered nor raised; [2.3.1]
- *Sundance* encountered wash from a passing vessel when she was already in a precarious condition. She took water over the starboard bulwark and capsized. [2.3.4]

3.1.2 Contributing factors

The following latent factors in the design of the vessel and her fishing arrangement, each contributed to the accident:

- The height of the "A" frame meant that when the cod end and its contents were lifted by the gilson rope, the weight was transferred to a block which was 4.8m above the deck. This substantially reduced the vessel's stability. [2.3.2]
- The arrangement for handling gear on board caused the vessel to list to starboard while recovering the catch: the heavier the catch the larger the angle of list produced. [2.3.2]
- *Sundance*'s low freeboard and low bulwark height affected her ability to recover from large angles of heel safely. This meant that she became more vulnerable to the roll produced by wash waves, especially when already in a listed condition. [2.3.3]

3.2 OTHER FINDINGS

When working close to the margins of the vessel's stability, a good understanding of the principles of ship stability is very beneficial to making the correct decisions.

Sundance carried lifejackets to comply with requirements under the regulations. These were stowed in the forward cabin, and were of no use during this emergency. [2.4]

The deceased fisherman had considered wearing an inflatable lifejacket while working on deck, but had not obtained one by the time of the accident. [2.4]

SECTION 4 - RECOMMENDATIONS

No specific recommendations arise from this accident. However, the MAIB hopes that by publishing this report, and widely publicising the findings:

- the growing argument for fishermen to wear lifejackets when on the open deck will be reinforced; and
- fishermen will be encouraged to read the MCA publication "*Capsize Safety for Fishing Vessels*" which includes sensible advice concerning stability.

Marine Accident Investigation Branch
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