Report on the investigation of the collision

between the UK registered fishing vessel

Beverley Ann II

and the Liberian registered ro-ro/vehicle carrier

Cypress Pass

12 miles south-east of the River Tyne breakwaters

on 9 March 1999

Marine Accident Investigation Branch
First Floor
Carlton House
Carlton Place
Southampton
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

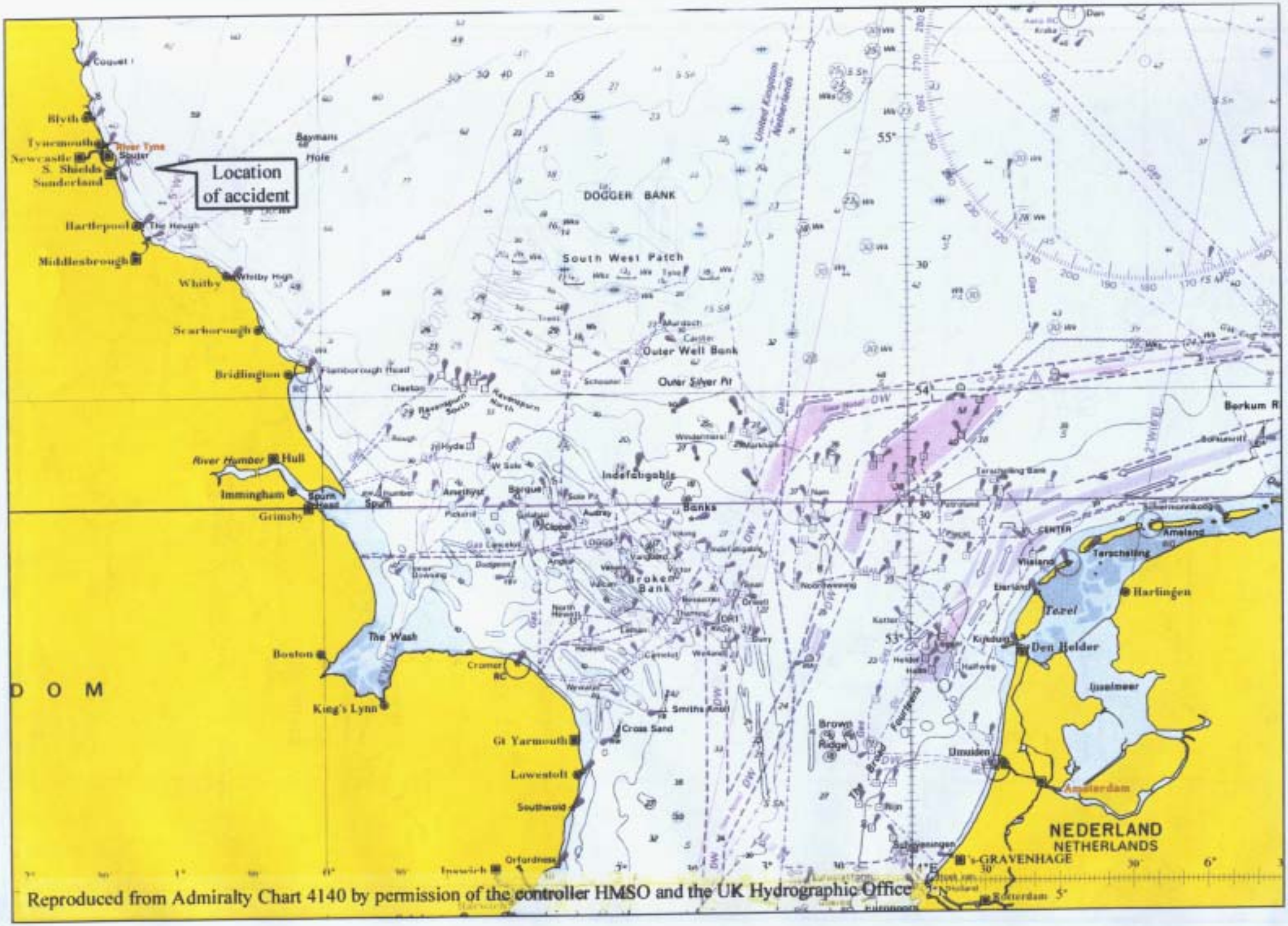
Regulations 1999

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

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARPA	Automatic radar plotting aid
cm	centimetre
DETR	Department of the Environment, Transport and the Regions
DGPS	Differential global positioning system
EBM	Electronic bearing marker
EPIRB	Emergency position indicating radio beacon
ETA	Estimated time of arrival
G	Gyro
GRP	Glass reinforced plastic
ICS	International Chamber of Shipping
IMO	International Maritime Organization
kg	kilogram
kW	kilowatt
m	metre
OOW	Officer of the watch
SWATH	Small waterplane area twin hull
T	True
UTC	Universal co-ordinated time
VHF	Very high frequency


Location of accident
DOGGER BANK
South West Patch
Outer Well Bank
Outer Silver Pit
Indefatigable Banks
Broken Bank
The Wash
NEDERLAND
NETHERLANDS
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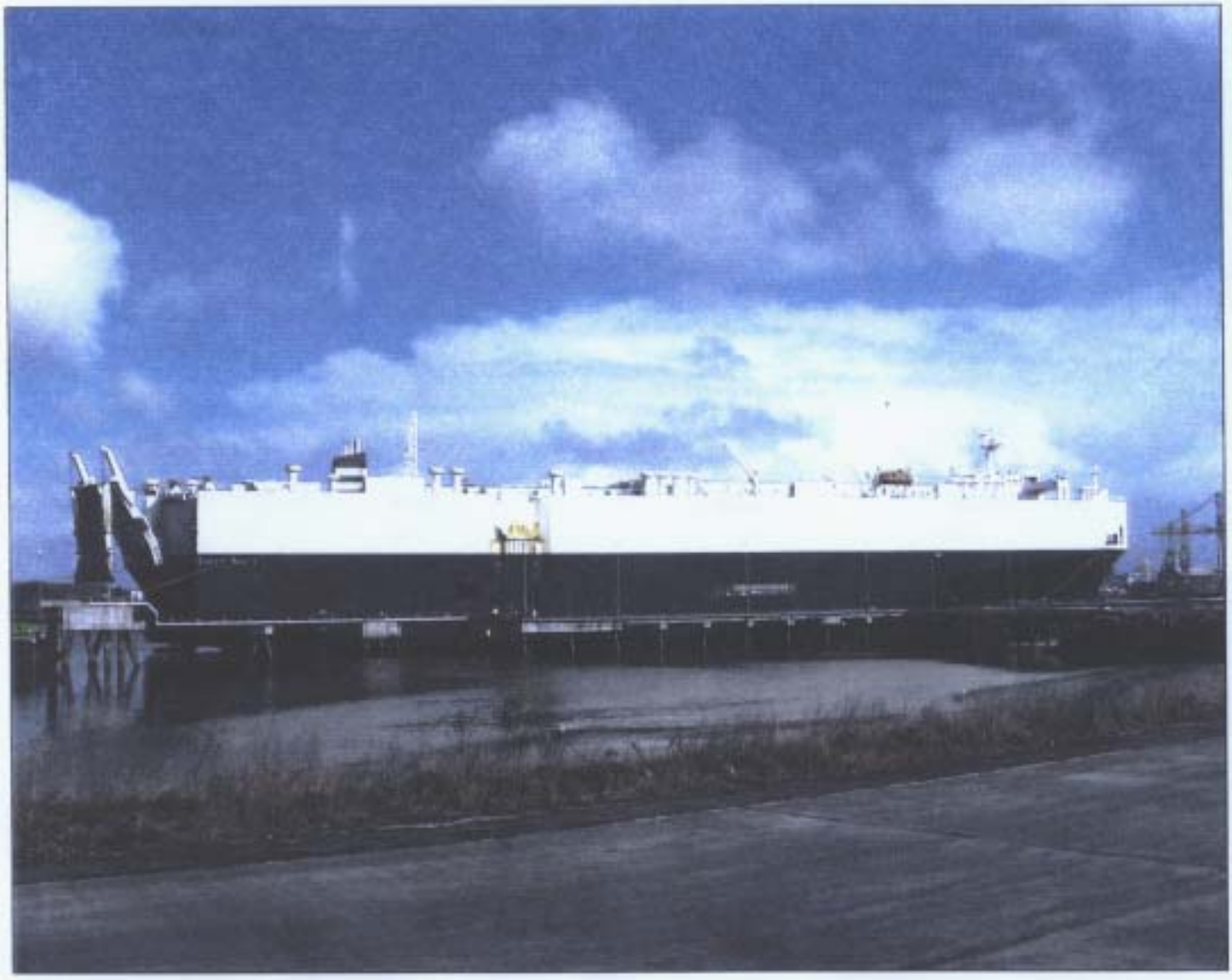
Beverley Ann II berthed at North Shields



Cypress Pass berthed at Nissan's berth at Jarrow Slake

SYNOPSIS

At about 0854 Universal Co-ordinated Time (UTC) on 9 March 1999, a collision occurred between the 9.96m fishing vessel, *Beverley Ann II*, and the 42,447gt vehicle carrier *Cypress Pass*. Tyne Tees Coastguard informed the Marine Accident Investigation Branch (MAIB) of the incident by telex at 0915 that day. Captain P Kavanagh carried out the investigation.

Cypress Pass was on passage from Amsterdam to Jarrow Slake on the River Tyne, making good a speed of 15.7 knots and steering 304° (G) to make a course of 302° (T). On the bridge, keeping watch, were the master, the third officer and a lookout. The visibility was between 1 and 2 miles, which was further reduced in squalls.

Beverley Ann II, crewed by the skipper and a deckhand, was trawling at a speed of just over 2 knots and heading in an east-south-east direction. The skipper saw a large echo appear on the edge of the radar screen at 3 miles but he did not make a full appraisal of the risk of collision. The radar had only limited facilities with which to determine if the vessel was on collision course. After a while, the skipper saw a ship very close on his starboard bow and he could see down both sides of the ship. In an attempt to avoid a collision, he stopped and then reversed both engines. However, the port bow and the mast of the fishing vessel made contact with the port shoulder of the ship. Damage to the fishing vessel was slight.

Once the fishing vessel had passed down the port side of the ship and had cleared the stern, the skipper called Tyne Tees Coastguard to report the incident. The skipper said that his vessel was not in immediate danger and that neither he nor his deckhand were injured. He then called *Cypress Pass* and told the watchkeepers that their vessel had been in collision. Up to this point, the officers had been totally unaware of the presence of *Beverley Ann II* and that any incident had occurred.

Cypress Pass continued on to the anchorage off the River Tyne and *Beverley Ann II* returned to North Shields.

The cause of the accident was twofold:

- *Beverley Ann II* - the skipper did not make a full appraisal of the risk of collision when the echo of *Cypress Pass* appeared on his radar screen, and took no avoiding action until the ship appeared at short range bearing down on him.
- *Cypress Pass* - the officers and lookout did not observe the fishing vessel either by radar or visually, and were therefore not keeping a proper lookout.

Recommendations are addressed to the skipper/owner of *Beverley Ann II* and to the management company of *Cypress Pass*.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS

1.1.1 Vessel details

Names	*Beverley Ann II*	*Cypress Pass*
Registered owners	I Wakenshaw	Cypress Auto Carriers Inc.
Managers	-	C H Sorensen Management AS
Ports of Registry	Sunderland (SN 353)	Monrovia
Flags	UK	Liberia
Classification society	-	American Bureau of Shipping
Built	1990 at Canvey Island	1988 in Ulsan, South Korea
Construction	GRP	Steel
Types	Stern trawler	Ro-ro cargo/vehicle carrier
Lengths overall	9.96m	183.9m
Breadth	5.0m	30.64m
Gross Tonnage	10.35	42,447
Engine powers	336kW	8,790kW

1.1.2 Accident details

Injuries	None	None
Damage	To port bow and mast	None
Pollution	None	None
Location of incident	12 nautical miles SE of the River Tyne breakwaters	
Date and time	9 March 1999	0854 UTC

1.2 NARRATIVE

All times are UTC.

Cypress Pass left Amsterdam at 1548 on 8 March 1999 and sailed for the Nissan berth at Jarrow Slake on the River Tyne. At 0700 on 9 March, the master was called after having had a full night's sleep. Shortly afterwards, he arrived on the bridge and called Tyne Pilots on VHF radio to tell them that his ship would be arriving off the River Tyne in two hours' time. He also tried to call the Nissan berth controllers at Jarrow on VHF radio to advise them of his estimated time of arrival (ETA), but experienced difficulties in making contact. Tyne Tees Coastguard intercepted the call and said that they would relay his message to Nissan.

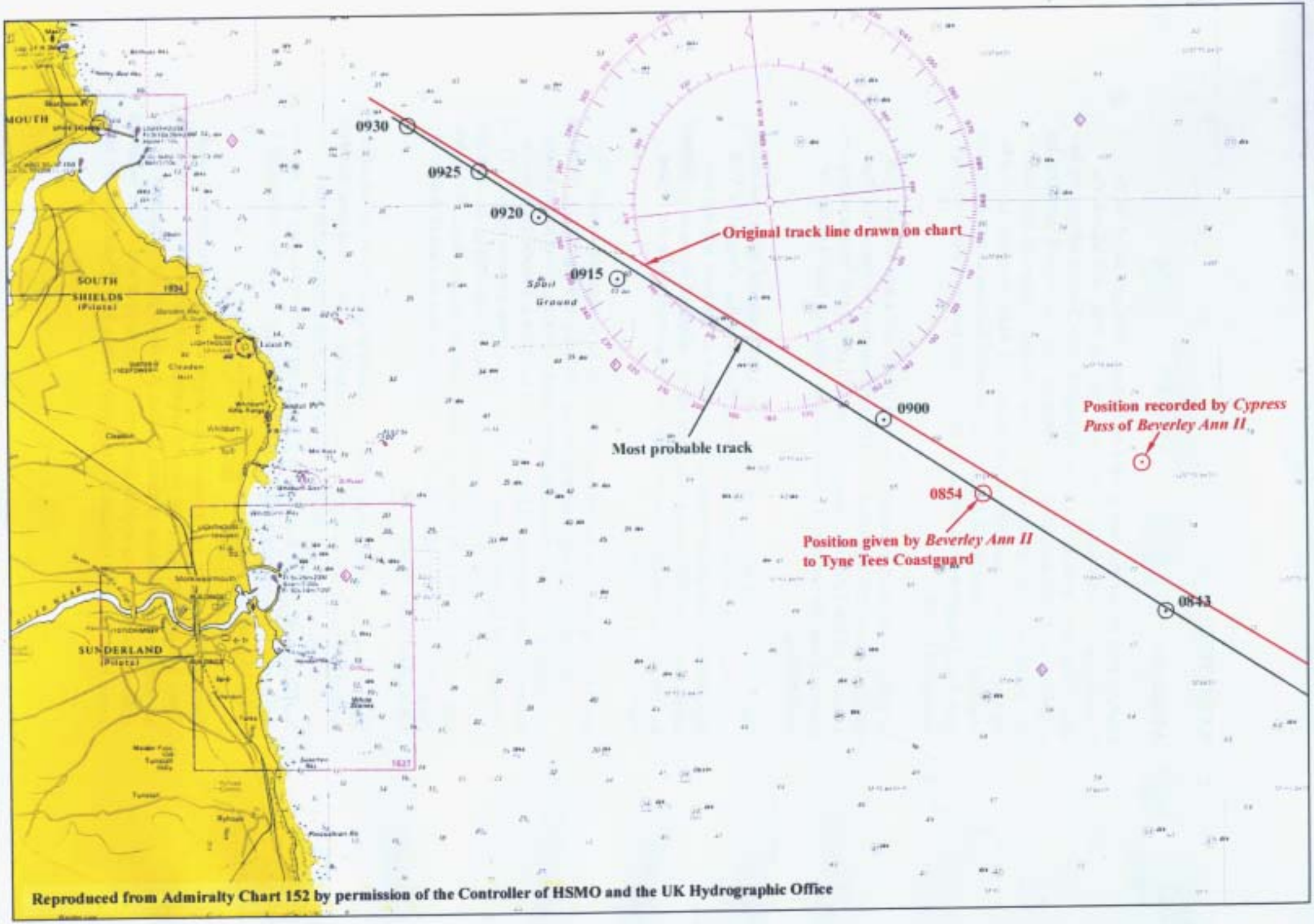
At 0800, the third officer relieved the chief officer and a new lookout took station on the port bridge wing. At 0815, with one hour to run to her final waypoint off the Tyne, the master told the third officer that he was taking over command and that the engine room should be given one hour's notice for manoeuvring.

Both radars were in operation on the 6-mile range scale and in the true motion, north-head-up mode. At 0830 the master called Tyne Port Control on VHF radio and was told that he would have to anchor off the river and the ship would berth later that evening. The third officer called the bosun to go forward and prepare the windlass for anchoring. The bridge controls for the engine were tested at this time.

At 0842, in preparation for the approach to the anchorage, the engine computer-load-down sequence was begun, gradually slowing the ship from full sea speed of 17.5 knots to manoeuvring speed. The engine was still in bridge control in case it was needed for emergency use. The automatic pilot was in operation and the heading was 304° (G) to make good a course of 302° (T). At 0843, the third officer plotted the ship's position. He returned to the radar and saw one echo on the port quarter; he did not see any echoes ahead of the ship. He plotted another position from the radar at 0900 **(see extract of Admiralty Chart No 152 overleaf)**.

That morning *Beverley Ann II* left North Shields at about 0630 for the fishing grounds 9 miles south-east of the Tyne breakwaters. The fishing gear was shot away at about 0745, and the skipper and his deckhand remained in the wheelhouse during the tow. The boat was being steered manually and she was, within one point, making a course of east-south-east at a speed of between 2 and 2.5 knots.

The radar was on the 3-mile range scale and in a head-up, unstabilised mode. There was an echo, which the skipper assumed to be another fishing vessel, on his port bow at a distance of about 3 miles. A new large echo appeared on the starboard bow and was approaching rapidly. The skipper was unable to see the vessel because of the reduced visibility **(see section 1.3)**. There was only an



Reproduced from Admiralty Chart 152 by permission of the Controller of HSMO and the UK Hydrographic Office

electronic bearing marker (EBM) **(see section 1.4.2)** on the radar to determine whether the echo was on a steady bearing. After a while, the skipper saw a ship appear out of a squall about 0.5 miles away. He could see both bows and down each side of the ship. Although both engines were not quite on full ahead, he thought that because he was towing, an increase in engine speed would make little difference in moving ahead. If the ship passed close astern, the skipper feared that his gear would be caught by the ship and that his vessel would be in danger of being dragged down. He decided to stop and then reverse both engines.

The fishing vessel collided with the ship's port bow shoulder in way of her port bow corner. She was turned to starboard by the impact and then ran alongside the ship's port side, during which time the mast was damaged. Then *Beverley Ann II* cleared the stern of *Cypress Pass*.

At 0855, after finding that his boat was not taking in water, the skipper called Tyne Tees Coastguard on VHF radio channel 16 and told them on channel 67 that he had been in collision with a ship called *Cypress Pass*. He added that he and his deckhand were not injured; there was little hull damage and no ingress of water, but there was damage to the mast and aerials. The skipper gave his position as latitude 54° 56'.25 north and longitude 001° 05'.30 west.

At 0905, *Cypress Pass* was called by *Beverley Ann II* on VHF radio channel 16 and was asked to change to channel 11. The skipper told the master that their two vessels had been in collision and that his fishing vessel had passed down the port side of the ship. The master and the third officer did not know that the collision had occurred and asked for the fishing vessel's position. The skipper gave his position, which was noted by the officers as latitude *54° 56'.58* north and longitude *00° 01'.7* west. The master plotted this position on the chart and, on looking at the radar, could not see any vessel in that position. He did see an echo entering the Tyne breakwaters and another echo moving in a southerly direction between *Cypress Pass* and the coast. The conversation between the two vessels ended at this point.

Beverley Ann II retrieved her fishing gear and returned to North Shields. *Cypress Pass* continued on passage to the anchorage and by 0948 she had been brought up to her port anchor.

At 1415, the master received a telex from his agent informing him that it had been reported that his ship had been in collision with a fishing vessel.

1.3 ENVIRONMENTAL CONDITIONS

1.3.1 Weather

The wind was east-north-east force 4 to 5 with slight seas and a 2-metre swell. It was overcast and the visibility was between one and two miles, which was further reduced in squalls.

1.3.2 Tidal stream

The tidal stream was running in a south-east-by-south direction at a rate of 0.3 knots. Predicted high water at North Shields was 0739.

1.4 *BEVERLEY ANN II*

1.4.1 The skipper

The skipper/owner was 41 years old and had been employed in full-time fishing since 1974. He sailed firstly on cobble boats and then on trawlers. When he was 20 years old, he bought his first fishing vessel, a trawler, which he sailed out of North Shields and up to about 100 miles offshore. After four years he sold his trawler and bought a larger one, which was named *Beverley Ann* and which he still owns. He held a Second Hand Special certificate of competency and in September 1998 he bought *Beverley Ann II*.

1.4.2 The boat and fishing practices

Beverley Ann II is a glass reinforced plastic (GRP) constructed, small waterplane area twin hull (SWATH) type vessel. She has two engines geared to two propellers, giving a free-running speed of 14 knots and a towing speed of between 2 and 2.5 knots when engaged in fishing. There is a wheelhouse but no accommodation.

The navigational equipment consists of a 36-mile range unstabilised radar; three differential global positioning system (DGPS) sets, two of which input to a video plotter; a standby video plotter; an echo sounder; a magnetic compass and an autopilot which has a separate fluxgate compass. There is a radar reflector mounted on top of the wheelhouse **(see section 1.4.4)**.

Given that the radar had only an EBM, was not gyro-stabilised and the fishing vessel was steering within one point, it would have been difficult to make a systematic and accurate assessment to determine if the echo was on a steady bearing. To accurately plot, he would have needed to take a series of ranges, EBM bearings of the echo and magnetic compass headings. The magnetic compass headings were graduated at 5° intervals. This information would then have had to have been plotted on a sheet of paper.

The skipper and his crewman sailed each day from North Shields at about 0600. They trawled for prawns and returned to port at about 1800. The tows lasted about four hours, and the process of hauling and shooting took about half-an-hour.

1.4.3 Life saving appliances

Beverley Ann II was not equipped with either a liferaft or an Emergency Position Indicating Radio Beacon (EPIRB).

Recognising that EPIRBs, liferafts and float free arrangements are not mandatory for fishing vessels of less than 12m in length, *Merchant Shipping Notice No M.1467* (issued in September 1991) continues to recommend that they should be provided in such vessels. The Department of the Environment, Transport and the Regions (DETR) strongly recommends that all fishing vessels of less than 12m in length should carry a liferaft for everyone on board. The Notice observes that, from experience of casualties to small fishing vessels, liferafts have been effective in providing essential out-of-water support in a cold climate.

1.4.4 Radar reflectors

Beverley Ann II had a 0.5m corner radar reflector, which was mounted aft of the mast, about 1m above the wheelhouse top and 4.5m above sea level. The IMO recommends in *Resolution A.384(X) 1977* that member states should require vessels of less than 100gt to carry reflectors whose equivalent echoing area is at least $10m^2$, a figure which is given for peak performance. However, IMO is satisfied with $2.5m^2$ from most directions (240°). This requirement is close to the performance specification of a 0.5m corner reflector.

Radar performance specifications require that an object with an equivalent echoing area of $10m^2$ shall be detected at 2 miles and a vessel of 10m in length shall be detected at 3 miles.

In the 1992 *Merchant Shipping Notice No. M.1638 Radar Reflectors for Small Vessels*, attention is drawn to the fact that, in adverse weather conditions, radar detection ranges may be affected by sea clutter. It advises that to improve the chances of detection, users should install reflectors with the largest equivalent echoing area that is practicable relative to the size of vessel. However, it recognises that it may not be practical to fit reflectors to the above standards on all vessels. It recommends that reflectors, to the above standards, are fitted to vessels of 15m and more in length. Owners and operators of craft less than 15m in length are recommended to fit reflectors with the greatest practicable echoing area.

There are three types of radar reflector:

- the **corner reflector** is made of flat metal plates arranged at right angles to form internal corners. It acts in a similar way to a mirror, and works most effectively when mounted in the "catch rain" position, in which none of the points of the triangles is in the vertical;

- the **lens reflector** consists of a spherical plastic lens which focuses the incoming radar waves onto a metal coating and reflects them; and

- the **radar target enhancer** contains electronics which transmit a signal when they receive radar waves.

The above M Notice states that the orientation of the reflector must follow the manufacturer's recommendations if it is to be effective. In all cases the reflector should be mounted as high as possible for maximum detection range.

Beverley Ann II had a 0.5m corner reflector which was mounted on the after side of the mast and about 4.5m above the water level. The orientation of the reflector meant that its main axis was vertical or "point up". Manufacturers recommend that this type of reflector should have its main axis at an angle to the vertical or in a "catch rain" position.

1.4.5 Damage

There were scrape marks to the GRP and traces of black paint on the port bow corner. The mast, on top of the wheelhouse, was bent and a number of aerials had become detached from it **(see photographs opposite)**.

1.5 *CYPRESS PASS*

1.5.1 The master and crew

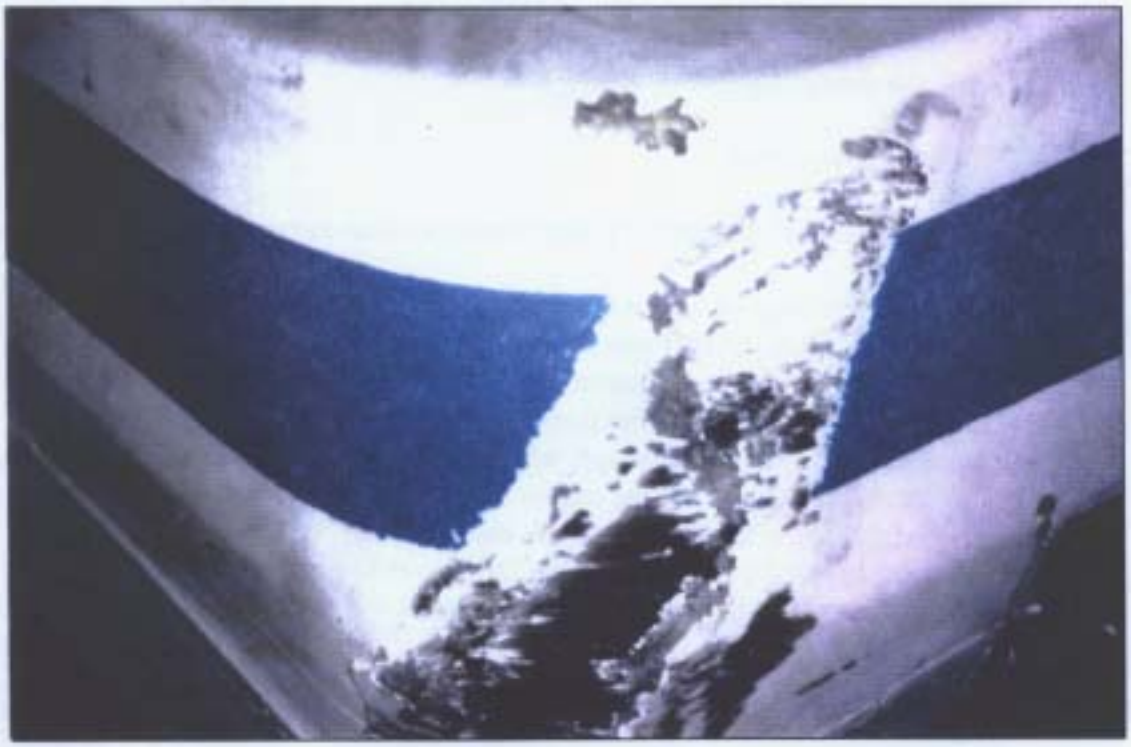
The master was 51 years old. After attending a nautical college in the Philippines, he first went to sea in 1974 as a deck cadet, serving on foreign-going general cargo ships. After obtaining his third officer's licence, he changed company and served on bulk carriers. In 1986 he transferred to another company, serving on bulk carriers and vehicle carriers. He obtained his master's licence in 1991 and was promoted to master in 1992, being employed at this time by a manning agency. He joined *Cypress Pass* on 12 December 1998 and took command in January 1999, after having undertaken a familiarisation period. While serving on vehicle carriers, he had visited the River Tyne on a number of occasions.

The complement consisted of 21 crew members, all of whom were Filipino nationals, and two Norwegian supernumeraries*. Excluding the master, there were three navigating officers. The third officer was on the bridge at the time of the incident. He was 22 years old and had attended a four year course at a

Photograph 1

A view of the port bow corner of *Beverley Ann II* showing the slight damage to the GRP and the paint traces

Photograph 2



A close view of the damage from which a sample of paint was taken for forensic analysis

nautical college. During this time he spent one year at sea as a cadet. He obtained his third officer's licence in July 1998 and went back to sea on bulk carriers. He joined *Cypress Pass* on 18 January 1999.

The ship complied with the conditions of the Liberian Minimum Safe Manning Certificate.

(*Note: The management of the ship had been taken over by the Norwegian company C H Sorensen Management AS on 16 December 1998.)

1.5.2 Navigational practices and documentation

At the time of the incident, *Cypress Pass* was on passage from Amsterdam to the Nissan vehicle discharge berth at Jarrow Slake on the River Tyne. She was on voyage number 60, which had begun in Japan and continued on to Korea, Jeddah, Koper and Amsterdam. Once she had discharged the last of her cargo of vehicles at Jarrow, she was scheduled to begin her return voyage to the Far East.

The three navigating officers carried out the conventional four-on, eight-off navigational watches while on passage at sea. The master did not carry out navigational watches and had had a full night's sleep on the day of the accident. The third officer carried out the eight-to-twelve watches and had been off watch since midnight.

There were three navigational procedures documents in place:

a) the management company's bridge resource management manual;

b) the master's standing orders; and

c) the voyage plan.

The management company's bridge resource management manual

The master was responsible for the overall navigation of the vessel, and the officer of the watch (OOW) was his representative; responsible for safe navigation and proper organisation of the navigational watch and available resources. During heavy traffic, poor visibility, arrival at port or at anchorage the master was to be on the bridge, while the OOW performed his duties as if the master was not there. If the master should take over direct command, it was to be entered in the deck log book and the OOW informed by direct order. After being relieved by the master, the OOW was to continue to perform his normal duties and assist the master in navigation.

The document continued with a reference to the ICS *Bridge Procedure Guide*, bridge team composition, bridge team duties/functions and style, the deck log book, orders/information/rules, manual/auto steering change-over, weather conditions, and the reporting of non-conformities. Under duties and functions,

the lookout was never to leave the bridge without permission, and was to be posted on the bridge wing, not inside the wheelhouse. An annexe was attached which dealt with attitudes and management skills, communications and briefings, workloads, human involvement in errors with lists of underlying factors, external errors and internal errors, and judgement and decision making.

The master's standing orders

The OOW was reminded that the International Regulations for Preventing Collisions at Sea should be complied with, the engines were at his disposal and he should not hesitate to use them when necessary. There was a list of the circumstances in which the master should be immediately notified and of the OOW's responsibilities when taking over a watch. The document was signed by all the serving navigating officers.

The voyage plan

This was in a tabulated form of seven pages. It was completed on 6 March 1999 and signed by the second officer.

The plan consisted of:

- port of departure information;
- the pilot-to-pilot passage details including courses, waypoints, distances, and chart numbers;
- navigational information between waypoints, which included parallel indexing information and minimum distances of radar targets of 1 mile for ships and 0.5 mile for small craft;
- port arrival information; and
- pilotage plans for departure and arrival ports.

The working Admiralty Chart No 152, in use at the time of the incident, was up-to-date and showed the course line, which was denoted by 302°(T), and the final waypoint 3 miles off the Tyne breakwaters. In the later stages, during the approach to the anchorage off the River Tyne, positions were being fixed by single radar bearings and ranges from points of land.

1.6 POST INCIDENT FORENSIC EXAMINATION

Doubt existed as to whether the collision had occurred or not, as the officers on the bridge of *Cypress Pass* had been unaware of the presence of *Beverley Ann II* until they were called after the accident by the fishing vessel on VHF radio.

The port bow corner of the fishing vessel had been damaged slightly and there were black marks on it. A small piece of GRP was taken from this area. On 18 May, a representative of the Liberian authorities took paint samples from various locations on the port side of *Cypress Pass* **(see photograph overleaf)**.

Photograph 3

A view of the port shoulder of *Cypress Pass*.
The scrape marks are from tugs, pilot boats etc.

The samples from both vessels were sent to the Forensic Science Services (an executive agency of the Home Office) for analysis.

The following is a direct quote from the report on the analysis:

> *Microscopic examination of one of the paint samples from Cypress Pass showed it was composed of six layers. The top coat was black and had small clumps of translucent particles with a few orange coloured particles.*
>
> *The sample from the Beverley Ann II was a small piece of white fibreglass with a smear of black paint on it. Part of this smeared black paint was removed and examined microscopically. This showed that it consisted of a single layer with translucent particles dispersed throughout it together with a few orange particles. This paint was indistinguishable microscopically from the topcoat of the Cypress Pass.*

In the forensic scientist's opinion, the findings of the analysis provided moderate support for the proposition that the two vessels were in collision with each other. The level of support was based on a scale of none, limited, moderate, strong, very strong, or conclusive. The moderate rating was given on the presumption that there were other ships in the immediate area with the same paint.

1.7 STATUS OF THE VESSELS WITH REGARD TO THE COLLISION REGULATIONS

Cypress Pass was a power-driven vessel underway and making way. *Beverley Ann II* was a vessel engaged in fishing and she was restricted in her ability to manoeuvre because of her extended trawling gear. The fishing vessel was showing her day signal of two cones with their apexes together. Although it was daylight she was also showing her navigating lights to indicate that she was trawling and making way.

SECTION 2 - ANALYSIS

2.1 RADAR DETECTION OF SMALL CRAFT

Radar reflectors should ideally return radar waves from a perfectly lined-up metal plate with the all-round consistent performance of a sphere.

A problem in detecting small craft arises with sea clutter, because salt water is highly reflective to radar waves. In force 6 winds, the theoretical limit of sea clutter extends to a range of 6 miles on 10cm wavelength (or S band) radars and 2 miles on 3cm (or X band) radars. There is a control to suppress sea clutter, and if the gain is turned up too high, smaller/weaker echoes may also be suppressed and missed. Too little gain and echoes may be lost in the sea clutter. Only at the correct settings will echoes at close range be detected.

The problem of detecting small craft is compounded further by interference from the craft itself. A GRP constructed vessel is a very poor reflector of radar waves, but metal components inside the hull such as the engine or cooker do have reflective properties. If the craft has a radar reflector, whose radar cross section (RCS) matches the energy returned by metal objects inside the craft, but the returns are out of phase, the returning signal strength to the ship's radar can be nullified. But, if the returns from the objects and the reflector are in phase, the returning signal strength will be increased, producing a strong echo. As the craft pitches and rolls in the seaway, the radar wave returns to the ship can be erratic. Therefore, a radar reflector does not guarantee a strong consistent echo on a ship's radar screen: even if the radar is properly adjusted.

Ideally, an effective radar reflector needs an RCS larger than the boat itself. However, a large radar reflector on a small boat can create problems because it can be physically too large and too heavy, especially if it is mounted high up to 'see' over the tops of waves. To give the best performance over the range of angles and radar frequencies, the geometry of radar reflectors has to be optimised. This leads to compromise and a reduction in peak performance.

Corner reflectors have to be relatively large to be efficient; lens reflectors can be more efficient but are heavy. Radar target enhancers are the most efficient, but they are expensive and depend on electrical power.

The siting of the corner reflector on *Beverley Ann II* behind the mast, and not in the "catch rain" position was not ideal, and increased the likelihood of the vessel not being detected by *Cypress Pass*'s radars.

2.2 THE COLLISION

2.2.1 General

Between *Cypress Pass*'s positions plotted at 0843 and 0900, she covered a distance over the ground of 4.45 miles, which gave a speed of 15.7 knots. As

Beverley Ann II was making just over 2 knots and the two vessels were nearly end-on, the closing speed was about 18 knots **(see reconstruction overleaf)**.

The skipper gave the coastguard his position as:

Latitude 54 56'.25 N, Longitude 001 05'.30 W

Having three DGPS sets to refer to, this position is likely to have been very accurate and, being stopped in the water, is likely to have been very close to the position of the collision.

Given the speed of the ship and the above position, the time of the collision has been calculated as 0854. This is supported by the fact that the skipper called Tyne Tees Coastguard at 0855, shortly after the collision.

A track line has been drawn through the mean of all the positions plotted between 0843 and 0930. The above position lies very close to this mean track line **(see extract of Admiralty Chart No 152 above)**. This indicator, together with the results of the forensic analysis* of the paint samples taken from both vessels, leads to the conclusion that the vessels did actually collide.

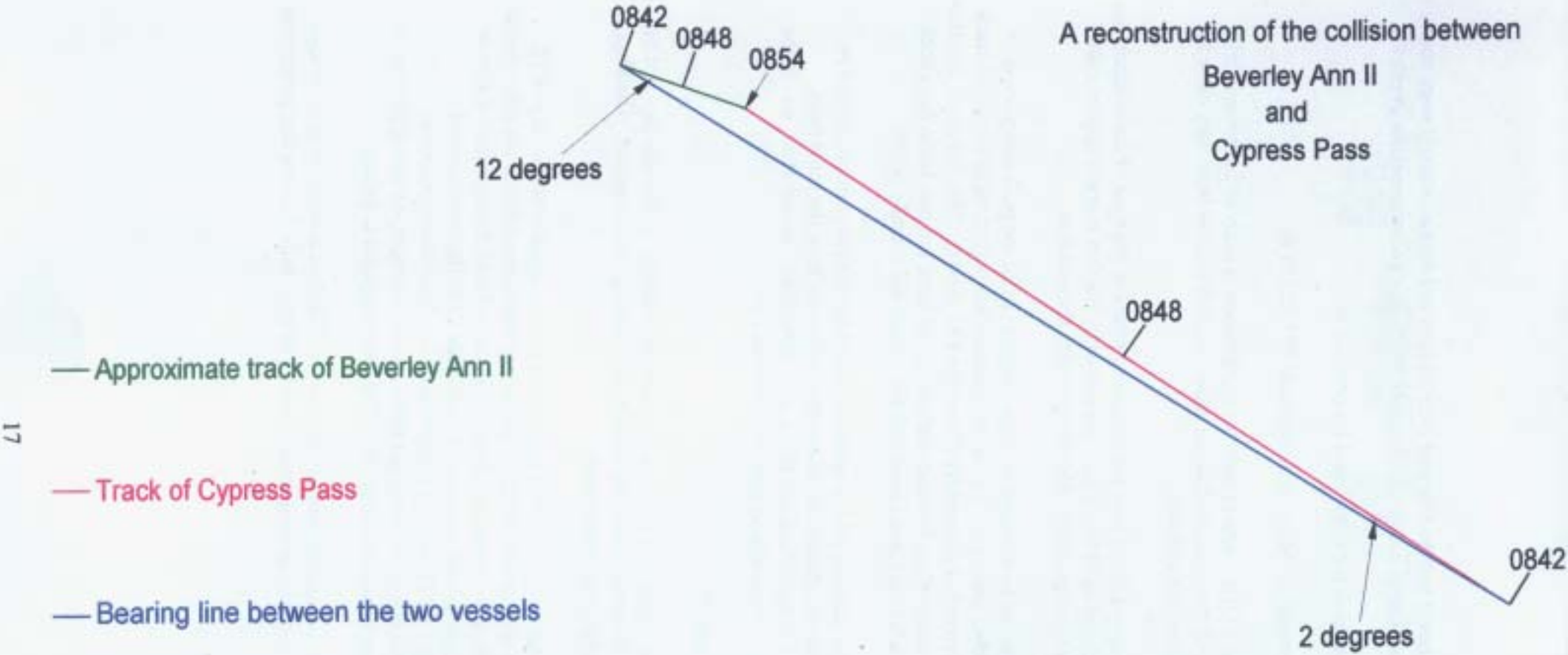
(* Note: the scientist gave a moderate rating for the proposition that the two vessels were in collision, because other ships may have the same paint. However it is highly unlikely that a ship, other than *Cypress Pass*, was in the same area of the collision with the same paint.)

2.2.2 *Beverley Ann II*

The fishing vessel was trawling in restricted visibility, in that she detected the presence of another vessel by radar before making visual contact. The skipper had the radar on a 3-mile range.

With a radar range scale of 3 miles and a closing speed with the ship of 18 knots, the skipper had about 10 minutes to determine whether the other vessel was on collision course and, if so, to decide and take the necessary action to avoid a close quarter situation. Under Rule 19 of the *International Regulations for Preventing Collisions at Sea (collision regulations)* the skipper was obliged to carry out these actions, because the rule applies to all vessels in restricted visibility, including those engaged in fishing.

The radar was unstabilised and only had an EBM with which to determine whether an echo was on a steady bearing or not. Rule 7 states that proper use


A reconstruction of the collision between
Beverley Ann II
and
Cypress Pass
0842
0848
0854
12 degrees
0848
0842
2 degrees
— Approximate track of Beverley Ann II
— Track of Cypress Pass
— Bearing line between the two vessels

should be made of radar equipment, including long range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects. By assessing if a vessel is on a collision course, early and substantial avoiding action can be taken.

The skipper did not take any action, including making sound signals, until he saw the ship. By this time, *Cypress Pass* was 0.5 miles away and was bows onto him, and a very close quarters situation existed. He had less than two minutes to avoid a collision. He took the correct avoiding action by stopping his vessel and reversing his engines, as directed by Rule 17(b). This resulted in a glancing blow on the port bow of the fishing vessel and contact with the mast as she ran down the side of the ship.

2.2.3 *Cypress Pass*

The vehicle carrier was in the process of gradually slowing down for her approach to the anchorage off the Tyne. There were three people on the bridge: the master, the third officer and the lookout - all of whom had an uninterrupted view forward from the bridge because it is not far aft of the bow. The 3cm and 10cm radars were in operation and were being used by both the master and the third officer.

The bridge team was acting in compliance with the basic requirements of its onboard bridge procedures guides and instructions.

Although the officers had a number of tasks to perform in preparation for the ship's arrival, when they were monitoring the radars, they did not observe the echo of the fishing vessel on either of the two radars.

Although it was daylight, visibility was restricted, and they were in busy coastal waters, so the master kept the lookout posted. The lookout moved from one bridge wing to the other.

The officers did not make visual contact with the fishing vessel. If they had, and with a closing speed of about 18 knots and a range of visibility of 0.5 mile, the officers would have had about two minutes in which to determine that a close quarter situation existed, and then take the necessary avoiding action. The lookout either did not see the fishing vessel or, if he had, he did not report it to the officers.

Even when they had become aware of the presence of the fishing vessel after the collision, they could not see her on the radar screens. An incorrect position was noted and they would have been looking in the wrong place. However, it can be assumed that the officers had missed the radar echo of *Beverley Ann II* because the radar reflector did not produce a strong enough signal return, due to its less than ideal siting, or the signals were spurious and they had missed them, or the radar gain/sea clutter controls were set such that her radar echo was suppressed.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

1. At 0854 UTC, 9 March 1999 in a position 12 miles south-east of the Tyne breakwaters, the fishing vessel *Beverley Ann II*, while engaged in trawling, collided with the vehicle carrier *Cypress Pass*, which was on passage from Amsterdam to Jarrow. [1.2]

2. Before the accident, the visibility was restricted to between 1 and 2 miles and reduced further to about 0.5 miles during a squall at the time of the collision. [1.3]

3. The fishing vessel was on a course of east-south-east and making between 2 and 2.5 knots and the vehicle carrier was steering 304° (G) and making about 15.7 knots. [1.2, 2.2.1]

4. The two crew members, the skipper and the deckhand of *Beverley Ann II* were in the wheelhouse. [1.2]

5. The fishing vessel was equipped with a radar, which was not compass stabilised and only had an EBM to determine if an echo was approaching on collision course, and three DGPS sets. [1.4.2]

6. The skipper saw a large echo on the edge of the radar screen at 3 miles but did not assess if it was on a steady bearing. [1.2, 2.2.2]

7. The vehicle carrier was seen at a range of 0.5 miles and was bearing down on the fishing vessel. [1.2]

8. The skipper reversed his two engines but his vessel made contact with the port shoulder of the ship. [1.2]

9. The fishing vessel sustained damage to her port bow and to her mast; both were relatively slight. [1.4.5]

10. There were no injuries and no pollution. [1.2]

11. Once his vessel had cleared the ship, the skipper called the coastguard and then *Cypress Pass* to inform them of the collision. [1.2]

12. *Cypress Pass* complied with her Liberian Minimum Safe Manning Certificate. [1.5.1]

13. The bridge of *Cypress Pass* was manned by the master, the third officer and a lookout. [1.2]

14. The two officers were using a 10cm radar and a 3cm radar; both had ARPA facilities. [1.2, 1.5.2]

Therefore, they did not detect the presence of the fishing vessel by the two radars. This possibility is a factor to take into account, together with the state of visibility, in determining a safe speed under Rule 6 of the collision regulations. Even if *Beverley Ann II* had been detected, it would have been at a relatively short range, thereby reducing the time available to make a proper assessment and take effective avoiding action.

Although the collision regulations make it mandatory to make sound signals in restricted visibility, it is debatable whether they are effective if the visibility is greater than the range of audibility. Even if the whistle had been sounded, the skipper of *Beverley Ann II* was still aware of the presence of a large vessel before she could be seen.

Although a lookout was being maintained, it was not effective in detecting the presence of *Beverley Ann II* before the collision, contrary to Rule 5 of the collision regulations.

2.3 SURVIVABILITY OF THE FISHING VESSEL CREW

If the skipper had taken the wrong avoiding action, (which was possible given the short time he had to make a decision), his vessel may have been run over by the ship. If the two crew members had survived the impact and *Beverley Ann II* had been destroyed, they would have been left in the sea with only lifebuoys to keep them afloat. The officers were unaware of the fishing vessel, so the two fishermen's predicament was unknown. Their non-arrival back in port would probably have been reported to the coastguard later that evening. It is unlikely that any survivors would be found during the search operation as the area where the men were fishing was so large. If they had been found after a long search, it is doubtful they would still have been alive.

To enhance their chances of survival after the loss of their fishing vessel, they would have needed a liferaft. An EPIRB would have alerted the coastguard that something was amiss, and a search and rescue operation could have been mounted immediately.

Beverley Ann II had neither items of safety equipment and it was most fortunate that the contact with the ship only produced minor damage to the fishing vessel.

15. The bridge team was acting in compliance with the basic requirements of its onboard bridge procedures guides and instructions. [2.2.3]

16. The ship was in the process of slowing down gradually from her service speed of 17.5 knots to her manoeuvring speed in preparation for her approach to the anchorage off the River Tyne. [1.2]

17. Regular positions were being plotted by the third officer and the master had the con. [1.2]

18. The officers and the lookout did not observe *Beverley Ann II* by radar or by sight, either before or after the collision. [1.2]

19. The fishing vessel was not equipped with either a liferaft or an EPIRB. [1.4.3]

20. Neither vessel was making sound signals in restricted visibility. [2.2.3]

21. The fishing vessel was equipped with a corner type radar reflector but it was incorrectly mounted to produce maximum radar signal returns. [1.4.4, 2.1]

3.2 CAUSES

3.2.1 Immediate cause

Beverley Ann II

Before he made visual contact with *Cypress Pass*, the skipper saw a large echo appear on the edge of the radar screen at 3 miles. He did not however, make a full appraisal of the risk of collision and took no avoiding action until the ship appeared at short range bearing down on him. [2.2.2]

Cypress Pass

The officers and the lookout did not observe the fishing vessel either by radar or by sight and therefore the bridge team was not keeping a proper lookout. [2.2.3]

3.2.2 Contributory causes

1. *Beverley Ann II*'s radar had limited facilities with which to assess the approach of an echo. [1.4.2, 2.2.2]

2. Longer range scanning on the fishing vessel's radar would have given an earlier warning of the approach of an echo. [2.2.2]

3. The less than ideal mounting of the radar reflector, and its inherent problems of efficiently returning radar signals, may not have produced a consistent echo on the screens of either radar on *Cypress Pass*. Alternatively, the officers may have not observed the echo of *Beverley Ann II* by oversight or the sea clutter controls were incorrectly set, suppressing her echo. [2.1]

4. The lookout may have seen the fishing vessel but did not report her presence to the officers. [2.2.3]

5. The presence of the fishing vessel may have been brought to the attention of the lookout if the former had been making sound signals. [2.2.2]

6. Before the accident, the visibility was restricted to between 1 and 2 miles and reduced further to about 0.5 mile during a squall at the time of the collision. [1.3]

3.3 OTHER FINDINGS

1. The majority of radar reflectors, have inherent problems in practicality and in producing a consistent echo on a radar screen from all angles. [2.1]

2. If the fishing vessel had been lost, it is highly likely that the two fishermen would have lost their lives due to the absence of a liferaft. [2.3]

SECTION 4 - RECOMMENDATIONS

Mr Wakenshaw, the owner and skipper of *Beverley Ann II*, is recommended to:

1. Ensure that the radar reflector on board *Beverley Ann II* is properly sited and orientated in accordance with the manufacturer's recommendations; and

2. Comply with the collision regulations, by making the appropriate sound signals and taking the correct action when in restricted visibility.

C H Sorensen Management AS is recommended:

3. To disseminate the lessons learned from this accident to its personnel in the fleet; and

4. To review the company's bridge resource management document and the master's standing orders to emphasise Rules 5 and 6 of the collision regulations and to warn that some vessels are difficult to detect by radar (even with radar reflectors) and sometimes difficult to see in poor visibility.

Marine Accident Investigation Branch
January 2000