

Report of the Investigation into the

Collision between

BRITISH TRENT

and

WESTERN WINNER

with the loss of nine lives

on 3 June 1993

Marine Accident Investigation Branch
5/7 Brunswick Place
SOUTHAMPTON
SO15 2AN

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An Inspector from the Marine Accident Investigation Branch (MAIB) was appointed by the Government of Bermuda to investigate the accident. This report, based on his enquiries, has been produced by MAIB on behalf of the Bermudian Authorities.

CONTENTS

		Page
Section 1	Summary	1
PART 1	FACTUAL ACCOUNT	
Section 2	Particulars of BRITISH TRENT	2
Section 3	Particulars of WESTERN WINNER	3
Section 4	Narrative	4
PART II	CONSIDERATION OF POSSIBLE FACTORS	
Section 5	Gathering of evidence	11
Section 6	Environment of the accident	12
Section 7	Events and circumstances of the collision	15
Section 8	Adherence to the International Regulations for the Prevention of Collisions at Sea	20
PART III	FURTHER COMMENT AND DISCUSSION	
Section 9	Fire-fighting	22
Section 10	Evacuation of crew	24
Section 11	Other events	26
PART IV	CONCLUSION	
Section 12	Findings	28
Section 13	Recommendations	30
PART V	FIGURES	
Figure 1	Extract from BA Chart No 1872 showing location of collision	
Figure 2	Extract from BA Chart No 125 showing vessel movements prior to collision	
Figure 3	Diagrammatic sequence of events	
Figures 4-12	Photographs of WESTERN WINNER and BRITISH TRENT	

1. SUMMARY

At 0535 hrs (UTC+2) on 3 June 1993 the Bermuda registered tanker BRITISH TRENT, 25,174 deadweight tonnes, loaded with a full cargo of gasoline, disembarked her pilot at the Pilot Station at the beginning of her voyage from Antwerp to Fiumicino in Italy. At the same time the Panama registered bulk carrier WESTERN WINNER, 30,396 deadweight tonnes, part loaded with copper dross, was approaching the Wandelaar Pilot Station inbound on a voyage from London to Vlissingen (Flushing).

The weather at the time was a north westerly wind force 3 with the visibility reduced by fog to between 50 and 200 metres. WESTERN WINNER was proceeding at a speed of 11.5 knots. BRITISH TRENT's speed increased after disembarking the pilot until it was 4 knots at 0542 hrs.

Both vessels were in the vicinity of the SW Akkaert Buoy which marks the south west end of Akkaert Bank. BRITISH TRENT was deemed to be of such a draught that she was not able to cross the bank and had to pass to the south of the buoy in order to proceed to the westbound traffic lane. WESTERN WINNER was proceeding along the eastbound traffic lane and also had to pass to the south of the buoy.

At 0543 hrs the vessels were in collision in a position 1.22 miles east of the SW Akkaert Buoy. Both vessels' hulls were opened up at their port fore-ends and the cargo which spilled from BRITISH TRENT immediately caught fire.

The result of the fire was that BRITISH TRENT had to be abandoned. Seven of the crew were taken off by pilot launches and the remainder of the crew expected to leave the vessel using the starboard lifeboat. This was frustrated when that side of the vessel became enveloped in smoke and flame forcing the crew to jump into the sea amongst patches of burning cargo. Twenty crew were rescued from the sea by the pilot launches but nine died as a result of smoke inhalation.

The fire on BRITISH TRENT was extinguished after she had lost about 3,600 tonnes of cargo, though there was no oil pollution. The remainder of the cargo was salvaged but the vessel was declared a constructive total loss and scrapped.

The crew of WESTERN WINNER suffered no fatalities or injuries.

The immediate cause of the collision was the failure of both vessels to comply with the International Regulations for the Prevention of Collisions at Sea in conditions of restricted visibility. Also the Master of WESTERN WINNER was unfamiliar with the area. A number of recommendations are made which, if implemented, should help to prevent recurrence of such an accident in the future.

PART I FACTUAL ACCOUNT

2. PARTICULARS OF BRITISH TRENT

2.1	Type	:	Steel hulled oil tanker (22 cargo tanks, inert gas)
	Built:	:	1973, at Gothenburg, Sweden
	Port of Registry	:	Hamilton, Bermuda
	Length Overall	:	177.03 metres
	Breadth	:	25.83 metres
	Depth	:	13.14 metres
	Gross Tonnage	:	15,649
	Deadweight	:	25,147 tonnes
	Engine	:	B & W 6 cylinder diesel single fixed propeller
	Power	:	6714 kW
	Speed	:	14.8 knots
	Owner	:	BP Shipping Britannic House Moor Lane, London
	Classed	:	Lloyd's Register (*100A1,LMC,UMS,IGS)

2.2 The vessel was entered into the Bermudian Register on 14 April 1986 and all the certificates were in order and fully up-to-date. The vessel was provided with a comprehensive range of navigational and communications equipment, which included one radar fitted with an Automatic Radar Plotting Aid (ARPA) and a second radar fitted with a reflection plotter.

2.3 There was a total crew of 34, comprising the Master, 5 deck officers, 6 engineer officers, 5 cadets and 17 ratings. The 5 deck officers included 2 Third Officers, which for the purposes of clarity in this report have been called Third Officer "A" and Third Officer "B" respectively. The Master and officers were from the United Kingdom or Eire, except for the Second Officer who was Polish. They were all properly certificated holding UK, Irish or Polish qualifications as required. The ratings all came from Sierra Leone. In addition two wives were on board as supernumeraries.

3. PARTICULARS OF WESTERN WINNER

3.1	Type	:	Steel hulled bulk carrier (5 holds, 4 x 25 tonne SWL cranes)
	Built	:	1982, Nippon Koran K.K. - Shimizu, Japan
	Port of Registry	:	Panama
	Length Overall	:	175.01 metres
	Breadth	:	26.04 metres
	Depth	:	14.51 metres
	Gross Tonnage	:	15,953
	Deadweight	:	30,396 tonnes
	Engine	:	Sulzer 5 cylinder diesel single fixed propeller
	Power	:	7264 kW
	Speed	:	15.25 knots
	Owner	:	Alpha Beta Investment Co Ltd Monrovia, Liberia
	Managers	:	Fortuna Navigation Co Ltd 1006-7 Harbour Crystal Centre 100 Granville Road, Tsimsdhatsui East, Kowloon, Hong Kong
	Classed	:	Lloyd's Register (*100A1,LMC)

3.2 The certificates of the vessel were in order and fully up-to-date. Details of the navigational and communications equipment were not available except that three radars were fitted, one of which was an ARPA set.

3.3 There was a total crew of 24, all of which were from South Korea. Full details of the qualifications and certificates are not known except that the Master and officers held Panamanian licences.

4. NARRATIVE

All times are Universal Co-ordinated Time + 2 hours, except where otherwise noted

4.1 WESTERN WINNER completed discharging cargo at London on 2 June 1993. She still had a part cargo of copper dross on board and her sailing draught was 6.68 metres forward and 6.73 metres aft. The Thames pilot boarded at 1820 hrs and the vessel sailed at 1830 hrs bound for Vlissingen in the Netherlands. The vessel proceeded out of the Thames and disembarked the pilot at 2300 hrs at the NE Spit.

4.2 BRITISH TRENT completed loading 24,135 tonnes of unleaded gasoline at Antwerp on 2 June 1993 and the cargo tank space was filled with inert gas (IG) from the vessel's IG system. Her sailing draught in the dock was seen to be 9.69 metres forward and 9.83 metres aft which gave maximum draught of 9.61 metres in salt water. The pilot boarded at 1803 hrs and the vessel sailed at 1830 hrs.

When BRITISH TRENT sailed the bridge was manned by the Master, Third Officer "A", a cadet, a helmsman and a lookout. The engines were on bridge control but with the engine-room on standby and manned by the Chief Engineer, the Fourth Engineer, a cadet and an oiler. It was normal practice to have a senior engineer in the engine-room whilst the vessel was on standby.

BRITISH TRENT cleared the Berendrecht Lock at 2256 hrs and, with the river pilot advising, proceeded down river.

4.3 At 2400 hrs Third Officer "A", the cadet and the two seamen were relieved by Third Officer "B", another cadet and two other seamen, one of whom acted as helmsman and the other as lookout.

The engine-room watch was relieved by the Second Engineer, the Third Engineer and another oiler. No cadet was on watch in the engine-room.

BRITISH TRENT passed Vlissingen at 0238 hrs on 3 June, where the sea pilot embarked and the river pilot disembarked. The vessel passed the Ft Maisonneuve West Cardinal Buoy abeam to port at 0324 hrs.

4.4 At 0400 hrs the officers and seamen of BRITISH TRENT's bridge watch changed over when Third Officer "B" was relieved by the Second Officer. The Scheur No 2 Buoy was abeam to starboard of BRITISH TRENT at 0438 hrs.

4.5 At 0100 hrs (UTC+1) WESTERN WINNER advanced her clocks 1 hour to UTC+2. At about 0430 hrs she was approaching the Wandelaar area on a course of 067°. The Chief Officer was in charge of the navigational watch and he instructed the engine-room to change from heavy fuel to diesel oil. He called the Master, who then came to the bridge.

At about 0440 hrs WESTERN WINNER's Master contacted Wandelaar pilot and gave one hour's notice of arrival. He was told that the pilot was waiting for him and to have the pilot ladder rigged on the starboard side. The vessel had recorded one mile (1,850 metres) visibility at 0400 hrs but this was reducing and there was no wind. Two of the vessel's three radars were operating, with the ARPA set on the 3 mile range. The bridge was manned by the Master, Chief Officer and a quartermaster. It is not certain if the quartermaster was actually steering. There was no dedicated lookout on the bridge or at the bow of the vessel.

At 0455 hrs when the Oost-Dyck Buoy was bearing 170° x 0.7 miles, WESTERN WINNER altered course to 090° . The visibility was such that a fog signal of one prolonged blast at intervals of not more than two minutes was being sounded automatically using the whistle on the aft mast.

- 4.6 At 0500 hrs BRITISH TRENT encountered fog with a visibility of 370 metres as she approached the Wandelaar pilot station. She arrived at the pilot station at about 0505 hrs when the vessel was approximately 1.5 miles to the east of the SW Akkaert Buoy.

The pilot vessel (LB1), which was on station between the SW Akkaert Buoy and the A1 Buoy, experienced a sudden drop in visibility to between 50 and 100 metres at 0500 hrs (see Figure 1). She was providing pilot service to a vessel, PEARL I, who embarked her pilot at 0515 hrs. BRITISH TRENT therefore had to wait to disembark her pilot and during this time, after consultation with the pilot, the Master manoeuvred the vessel so as to maintain, as far as possible, her position east of the SW Akkaert Buoy on a heading of 250° .

When BRITISH TRENT encountered the fog the Second Officer was monitoring the ARPA set which was situated at the starboard side of the chart table. The Master and pilot were at the forward radar set situated to port of the wheel position. The lookout was on the port bridge wing and the cadet was keeping a lookout on the starboard side of the bridge: there was no lookout on the forecastle.

The Second Officer had the ARPA set on the 12 mile range and the Master had the other radar on the three mile range, with occasional switches to the six mile range. The reflector plotter was not in use at this time.

The Second Officer acquired three ship targets on the ARPA set ahead of the vessel. The targets were eastbound, west of the SW Akkaert Buoy, and coming out of the traffic separation scheme. One target was ahead and to the east of the other two which were abeam of each other. The lead ship was on a course of 089° at a speed of 9 knots with a closest point of approach (CPA) of 0.8 miles. The Second Officer informed both the Master and the pilot who acknowledged this information.

4.7 At 0517 hrs WESTERN WINNER altered her course to 093° when the Kwintebank Buoy was bearing 105° x 2.2 miles (see Figure 2). The Third Officer came on to the bridge just before 0530 hrs: the vessel was in automatic steering, the quartermaster having been sent to rig the pilot ladder. The Third Officer changed over to hand steering and started the vessel himself. At 0530 hrs the visibility was reported as being 200 metres and the engines were put on "Stand-by" with harbour speed of 100 rpm.

4.8 At 0531 hrs the container vessel EVER GLOWING, on a course of 190° at 9 knots in position 1.6 miles north west of the SW Akkaert Buoy, called Traffic Centre Zeebrugge on VHF Channel 69. Information was sought about a vessel which was heading west at a speed of 12.27 knots and coming from a position two miles east-south-east of the SW Akkaert Buoy. Traffic Centre Zeebrugge informed EVER GLOWING that there were no vessels westbound but two vessels were eastbound just ahead of EVER GLOWING. The smaller of these vessels was BLUE TOPAZ but the name of the large vessel was not known. It was confirmed between EVER GLOWING and Traffic Centre Zeebrugge that there were no westbound vessels.

4.9 The Master of BRITISH TRENT immediately called EVER GLOWING on VHF Channel 69 and said that his was an outbound vessel, about to disembark the pilot in a position 1.5 miles from SW Akkaert Buoy. EVER GLOWING acknowledged this information and said that she was trying to cross the channel in front of BRITISH TRENT.

Just before the pilot left BRITISH TRENT targets were observed within the three mile radar range ahead of the vessel. One of these targets was heading south and two others, abeam of each other, were heading east.

In readiness for the pilot's disembarkation the cadet tested the portable radio and found that a replacement battery was required from the Chief Officer's office which was situated on the deck below the bridge. The pilot, escorted by the Second Officer, left the bridge at 0535 hrs. At the foot of the bridge stairway the cadet took over the escort duty and the Second Officer went back to the bridge. The bridge movement book records that the pilot disembarked at 0537 hrs.

The Master started the fog signal as the pilot was disembarking, manually sounding one prolonged blast at intervals of not more than two minutes using the foremast whistle. At the same time he brought the vessel's head round to 270°.

The Second Officer returned to the ARPA set and saw a target 1.5 miles away fine to port with a CPA of 0.3 miles and he reported this to the Master. The Master, aware that a radar target on the port bow was closing very rapidly with BRITISH TRENT, instructed the lookout on the port bridge wing to keep a sharp lookout.

The approaching target was lost in the clutter on the forward radar and very shortly after this the lookout reported a vessel about one point ($11\frac{1}{4}^{\circ}$) on the port bow. The Master ordered the wheel hard to starboard but there was a collision within seconds of the other vessel being sighted. The time was 0543 hrs and the position was 100° x 1.22 miles from the SW Akkaert Buoy ($51^{\circ}22.1'N$ $002^{\circ}48.4'E$).

- 4.10 At 0540 hrs WESTERN WINNER's Master called the pilot station on VHF Channel 69 and said that his vessel was three miles from the pilot station. This call immediately identified WESTERN WINNER's target on the traffic control radar. Zeebrugge Traffic Control then informed the Master that WESTERN WINNER was in fact only one mile from the pilot vessel and that the pilot should be contacted on VHF Channel 6.

The pilot vessel, alerted by Zeebrugge Traffic Control, called WESTERN WINNER at 0542 hrs on VHF Channel 6 and asked for her position. No reply was given, but 36 seconds later cries of surprise from WESTERN WINNER were recorded by the shore-based VHF monitor.

Onboard WESTERN WINNER the Master reported hearing a fog signal which sounded very close, and at the same time he saw the bow of a tanker on his port bow. The vessels collided immediately and he ordered the rudder hard to starboard. The stern of WESTERN WINNER pushed into the side of the tanker as the vessels slid along each other's port sides. This caused damage to WESTERN WINNER's after hull in way of the port lifeboat.

- 4.11 As the two vessels collided a fire ignited at the tanker's sheerstrake in way of No 2 port cargo tank. The fire moved aft as WESTERN WINNER scraped along the tanker's port side. At 0543 hrs WESTERN WINNER put out a "MAYDAY" call on VHF Channel 6 while at 0544 hrs BRITISH TRENT broadcast a "MAYDAY" message on VHF Channel 16 and another at 0545 hrs on VHF Channel 69.
- 4.12 Immediately after the initial impact BRITISH TRENT's Master activated the fire alarm. The port side of the vessel was on fire and the crew mustered at the starboard lifeboat where they made it ready at the embarkation deck.

Within minutes of the collision BRITISH TRENT's engine control room had to be abandoned because of thick smoke entering the compartment through the air conditioning ventilation inlets. The on-watch engineers left through the engine-room but this space also began to fill with smoke through the ventilation inlets and the engine-room became untenable. The Second Engineer, on his way out of the engine-room via the stairway leading to the crew changing room, paused at the top of the stairs to operate the stop controls for the two forward engine-room ventilation fans but this did not appear to reduce the volume of smoke entering the engine-room.

The Chief Engineer left his cabin to try and enter the engine-room through the engineer's changing room but found the engine-room to be full of smoke. He went to the bridge, closing the fire doors which were held open by fusible links behind him, and reported the situation to the Master.

At 0552 hrs a pre-arranged message was sent by the Radio Officer, via satellite communication, to BP Shipping headquarters in England alerting the company to the accident.

- 4.13 BRITISH TRENT communicated with the pilot vessel on VHF Channel 6 at 0554 hrs. In this conversation it was established that the pilot launches would stand by to assist in evacuation, but that the crew intended to stay with the vessel for the time being. There was then a conversation with Zeebrugge Radar on the same VHF Channel at 0555 hrs when BRITISH TRENT reported that there was extensive fire onboard and the engine-room could not be entered because of smoke.
- 4.14 At 0556 hrs pilot vessel LB1 was in VHF contact with Oostende pilot control and told them of the situation. Oostende pilot control informed LB1 at 0559 hrs that a helicopter was preparing to come to the scene.
- 4.15 Onboard BRITISH TRENT a fire hose was rigged near the starboard lifeboat, but there was insufficient water in the fire-main to enable its use.

The Chief Engineer and the Electrician then went forward to start the emergency fire pump situated in the forward pump room at the after end of the forecastle. Both the port side of the main deck and the port side of the accommodation were burning. The heat was so intense that the port forward bridge front window crazed over.

On the bridge, a cadet took the wheel, and steered a course of 200° as the Master manoeuvred the vessel to keep the wind on the starboard side. The wind about this time was NW force 3 (10 knots).

The Second and Third Engineers attempted to re-enter the engine-room at the lifeboat embarkation deck entry point, wearing self-contained breathing apparatus. Their intention was to start the main fire pump situated at the bottom of the engine-room. However, the smoke was so dense that they could not see and, after making their way some three metres into the space, they had to retreat.

- 4.16 The Master contacted the pilot vessel at 0557 hrs on VHF Channel 6 and arranged for the women on board, two wives and one cadet, to be taken off. The crew under the direction of Third Officer "B" rigged a pilot ladder over the top of the starboard lifeboat but when it reached the water it was dragged aft and was deemed unsafe to use. Third Officer "B", a cadet and one seaman then went on to the starboard aft end of the main deck and rigged another pilot ladder. The women boarded pilot launch No 17 using this ladder and were put on to the pilot vessel at 0603 hrs. During this operation another pilot launch stood by BRITISH TRENT.

- 4.17 A further message was sent to BP Shipping via satellite at 0602 hrs reporting collision and major fire in position 105° x 0.92 miles from SW Akkaert Buoy. There was also satellite telephone communication between the Radio Officer and the BP Shipping duty officer, who received the call at his home, but the Radio Officer had to end this call and proceed to the lifeboat when the radio room became filled with smoke.
- 4.18 Before the Chief Engineer and the Electrician could start the emergency fire pump they were driven back from the top of the forward pump room by dense smoke coming from the port side of the main deck. They returned aft and the Chief Engineer reported to the Master on the bridge. Shortly afterwards the fire spread across the front of the bridge and the Master decided to abandon ship, ordering all bridge personnel to go to the lifeboat. Before leaving the bridge the Master stopped the engine and the Second Officer picked up the log book, the reduced visibility log book and the bridge movement book.
- 4.19 Pilot launch No 17 returned to BRITISH TRENT, took off the four catering staff and brought them to the pilot vessel at 0615 hrs. During that time BRITISH TRENT had turned northwards so that the wind was now on her port side.

At the starboard lifeboat a roll call was carried out which established that all persons remaining on the vessel were present. The order was then given to board the lifeboat. Third Officer "A" volunteered to go to the boat deck, two decks above the embarkation deck, to operate the brake and lower the boat. As the rest of the personnel were boarding the lifeboat a very hot thick black cloud of smoke came over and down onto them from the port side. The visibility was reduced to zero and in order to escape the effects of the smoke and heat, everyone either jumped or dropped into the sea from the lifeboat and the embarkation deck.

- 4.20 The visibility at sea level was reduced by smoke from oil burning on the water. The survivors reported seeing areas of daylight towards which they swam, away from the burning oil.

Three launches from the pilot vessel were in the area looking for survivors. Pilot launch No 7 rescued five people, pilot launch No 11 picked up nine survivors and three bodies while pilot launch No 17 recovered six survivors and two bodies.

The pilot launches transferred the survivors and the deceased to the pilot vessel where paramedics dressed superficial wounds and burns. The more serious cases, which included the Master, were suffering from burns and smoke inhalation and were transferred by helicopter to two hospitals in Belgium. The other survivors were taken to Oostende on the pilot vessel.

At 0757 hrs the Dutch naval vessel HMNS ZIERIKZEE picked up two bodies which meant that all of the crew, apart from two persons, had been accounted for.

- 4.21 After the collision WESTERN WINNER was told initially by the pilot vessel LB1 to come close to assist in the rescue but was then told that she was in danger and to keep clear of the burning tanker. She remained in the area until she anchored at 0842 hrs in the West Hinder anchorage, 302 ° x 5.1 miles from the SW Akkaert Buoy. There were no injuries to persons on WESTERN WINNER but she had suffered damage to her port bow, the portside of No 1 hold and her aft end on the port side. Subsequently she went into Vlissingen to discharge her cargo and to effect repairs.
- 4.22 BRITISH TRENT's port side was damaged in the collision, the hull was opened up in way of Nos 3 and 4 port cargo tanks and the port side of the accommodation was opened up in way of the Chief Engineer's bedroom. BRITISH TRENT was taken in tow and the fire eventually extinguished by fire-fighting tugs. About 3,600 tonnes of cargo was lost and the remaining cargo was transferred to another tanker off Rotterdam. The accommodation and main deck area were so severely fire damaged that she was declared a constructive total loss.
- 4.23 The body of one of the missing crew members was washed up on the Netherlands coast on 23 June, whilst the second body was recovered from the sea off Oostende on 3 July 1993.

PART II CONSIDERATION OF POSSIBLE FACTORS

5. GATHERING OF EVIDENCE.

- 5.1 All the relevant crew members of **BRITISH TRENT** who survived were interviewed by the Inspector. All ship's personnel and BP Shipping co-operated fully during the investigation.
- 5.2 The Inspector visited **WESTERN WINNER** at Vlissingen Container Terminal on the 5 June 1993, accompanying the Panamanian appointed accident investigator. The Inspector was prevented by solicitors representing the owners from both interviewing the Master and officers and from collecting any information about the vessel, apart from photographing the damage. Factual information in respect of **WESTERN WINNER** was obtained from the Belgian and Panamanian investigators.
- 5.3 The circumstances of the collision were recorded by Vessel Traffic Services (VTS) (River Scheldt and Approaches) whose radars track and record all vessel movements in this area. Recordings were also made of the VTS VHF transmissions and receptions. This information was made available to the Inspector.

Factual answers to written questions were received from the Belgian Pilotage Authority. The Inspector was not allowed to interview the pilot, the Master of the pilot vessel or those involved in the rescue of **BRITISH TRENT**'s crew, but copies of their statements and transcripts of pilots' VHF transmissions were made available.

- 5.4 The scope of this investigation was limited by the fact that the Inspector was not granted full access to some witnesses as described in the preceding paragraphs. The Inspector had no powers to require such co-operation and assistance.

6. ENVIRONMENT OF THE ACCIDENT.

(Reference extract from BA Chart No 125 - Approaches to Oostende).
(See Figure 2)

6.1 Traffic Separation Scheme

There is a Traffic Separation Scheme (TSS) which directs vessels to and from the Scheldt and Estuaries area. The eastbound lane leads vessels to pass to the north of the Kwintebank Buoy, where the lane is only 0.7 miles wide, before they proceed south of the SW Akkaert Buoy and into the Wandelaar pilot boarding area. The westbound lane of the scheme starts with its southernmost edge 0.9 miles north of the Kwintebank Buoy and is the natural course for vessels passing to the north of the Akkaert Bank.

6.2 Akkaert Bank

Akkaert Bank extends 10 miles north east with its western end marked by the SW Akkaert Buoy. A westbound vessel disembarks her pilot at the Wandelaar pilot station and if her draught does not allow her to cross the Akkaert bank she must proceed south of the SW Akkaert Buoy then go west-north-westerly in order to join the westbound traffic lane. A vessel taking this route inevitably comes into conflict with traffic coming out of the eastbound traffic lane.

Akkaert Bank has a least depth of 9.4 metres over it and the height of the tide at 0530 hrs on 3 June was 1.7 metres, with low water at 0728 hrs. The Admiralty Pilot for this area states that the Akkaert Banks move frequently according to tide and weather conditions. Both the Master and the pilot considered that BRITISH TRENT's draught of 9.61 metres was too deep, allowing for an under keel clearance (UKC) of one metre, to cross the bank safely. BP Shipping's standard practice was that a UKC of at least 10% of the vessel's draught should be maintained at all times.

One solution to this conflict would be to alter the TSS so that the eastbound lane takes traffic well to the south of the SW Akkaert Buoy and allows westbound traffic also to pass to the south of the SW Akkaert Buoy in its own lane. A mid-channel buoy could be positioned mid-way between the SW Akkaert and the Middelkerkebank N Buoys to mark the eastern end of the altered traffic separation lane.

6.3 Pilotage

Westerschelde forms the approach to the Netherlands' ports of Vlissingen and Terneuzen and the Belgian port of Antwerp. The Wandelaar pilot station is used by vessels approaching this area from the west. Pilotage is compulsory for all seagoing vessels of 60 metres or more overall length with a destination in the Netherlands. For Belgian ports pilotage is compulsory for all seagoing vessels except those in ballast and of less than 2.2 metres draught.

The pilot boarding area is between the SW Akkaert and the A1 Light Buoys. Vessels are required to request pilotage six hours before arrival and to contact Wandelaar pilots on VHF Channel 69 one hour before the expected time of arrival (ETA) at the pilot boarding position. After that time communications continue on VHF Channel 6.

WESTERN WINNER used her agents in the United Kingdom and the Netherlands to inform the pilots of her intended arrival and the requirement for a pilot to proceed to Vlissingen. The Master called the pilots on VHF Channel 69 at 0440 hrs on 3 June giving one hour's notice of arrival.

The engines were not put on standby until 0530 hrs and the second call giving the ETA to the pilots was made at 0540 hrs when the vessel was exactly 3 miles from the pilot boarding area symbol shown on BA Chart No 1872. It is possible that WESTERN WINNER was unaware that the pilot boarding area was between the SW Akkaert and the A1 Buoys. (See Figure 1)

6.4 Vessel Traffic Service

WESTERN WINNER was using BA Chart No 1872, "Dunkerque to Vlissingen", which had been corrected to BA Notice 541/1993. A note on this chart states that vessels are required to participate in the VTS (Scheldt and Estuaries) and that Admiralty List of Radio Signals Volume 6 Part 1 (ALRS 6 Pt 1) should be consulted for working details. This notice points out that different procedures apply for differing conditions of visibility, more than 2000 metres and 2000 metres or less.

The procedures stated in ALRS 6 Pt 1 (1992) are that all vessels equipped with VHF are required to maintain contact with the appropriate Traffic Centre. Under all circumstances vessels are to report, communicate and listen out on the assigned VHF channels within the Vessel Traffic Service - Scheldt Mondingen (VTS-SM) area. Vessels should make an initial administrative report to the Traffic Centre to which they are bound, in this case Wandelaar Approach on VHF Channel 69, 30 minutes before arrival at the VTS-SM working area. Another call should be made when entering the VTS-SM working area, in this case on VHF Channel 65 when passing the Kwintebank Buoy.

A pamphlet issued by VTS-SM states the main task of the VTS-SM is to provide information to shipping and, if necessary, traffic organisation could be implemented. This pamphlet also states that as soon as a vessel uses its VHF installation, radio direction finders ascertain the vessel's position and use this to identify that particular vessel's target on the VTS-SM radars. The computer control assigns an identifying label to the target and then follows and registers the vessel's movements very accurately. The recorded radar tracks for BRITISH TRENT and WESTERN WINNER have been plotted on the extract from BA Chart No 125. (See Figure 2)

WESTERN WINNER did not give 30 minutes notice of arrival at the VTS-SM working area nor did she make the required call when passing the Kwintebank Buoy and entering the VTS system. BA Chart No 1872 shows a reporting position symbol just to the north of the Kwintebank Buoy which reinforces the note about participation in the VTS system. Because WESTERN WINNER failed to report as required, her personnel appear to have been unaware of the existence of the VTS system. From this and the lack of knowledge about the pilotage area, it is surmised that no passage plan had been prepared.

The failure to report to VTS-SM resulted in WESTERN WINNER not being identified on the VTS radar until the Master made a call to the pilot at 0540 hrs, less than three minutes before the collision.

BRITISH TRENT reported at 0438 hrs when passing Scheur No 2 Buoy as required by the VTS system. At all times the VTS radar target of this vessel carried an identification label.

6.5 Weather and Tide

The wind throughout the incident was from the north-west force 3 (7-10 knots). WESTERN WINNER logged the visibility as one mile (1870 metres) when she was about 22 miles south west of the SW Akkaert Buoy. At about 0445 hrs BRITISH TRENT's pilot reported to the pilot vessel and learnt that the visibility was reducing at the pilot station and that West Hinder was forecasting thick fog. At 0500 hrs the vessel reported the visibility as being between 50 and 200 metres. At this time WESTERN WINNER was 8.5 miles west, and BRITISH TRENT was about 3 miles east, of the SW Akkaert Buoy.

From about 0500 hrs the tide in the vicinity of the pilot station was setting westerly at between a half to one knot.

7. THE EVENTS AND CIRCUMSTANCES OF THE COLLISION

7.1 Speeds and courses of the vessels

The recorded radar information for the target later identified as WESTERN WINNER gave the ground speed of the vessel as 13.5 knots from 0515 hrs until 0530 hrs; this is consistent with a speed of 14 knots through the water into a westerly setting tide of about 0.7 knots during this time. Her plotted positions for times preceding the radar contacts give a speed of 14 knots before the tide set to the west.

WESTERN WINNER's engines were put on stand-by at 0530 hrs and reduced to full ahead manoeuvring speed from full ahead sea speed. The radar recording shows a slowing down of the vessel's speed so that at 0543 hrs it was 11.5 knots. This is consistent with information that the vessel's full ahead manoeuvring speed was 12 knots. She made good a course of 093° from 0517 hrs until the time of the collision.

BRITISH TRENT arrived at the pilot station at about 0505 hrs and waited to disembark the pilot. Her speed at this time was minimal. The recorded radar information shows that from 0515 hrs until 0537 hrs, when the pilot disembarked, the speed over the ground was between 1.5 and 2.5 knots, of which 0.7 knots was due to the west setting current, and she travelled a distance of 0.7 miles. Once the pilot had left the vessel the speed was increased until at 0543 hrs it was 4 knots. The record shows that the course made good until 0537 hrs varied between 292° and 250° whilst she was waiting to disembark the pilot. After this the course was altered to starboard from 258° to 280°.

The resulting damage to both vessels shows they had side to side contact indicating that they were on nearly reciprocal courses until they both altered course to starboard. Figure 3 is a diagrammatic representation of the sequence leading up to the collision. It is considered that the plating in the way of BRITISH TRENT's Nos 3 and 4 port cargo tanks was torn off by WESTERN WINNER's bulbous bow whilst WESTERN WINNER's hull was damaged by the panama leads on the deck of BRITISH TRENT. The tanker's accommodation was damaged when the port side after end of WESTERN WINNER's forecastle head cut into it as the two vessels passed each other.

7.2 Radar Observation

WESTERN WINNER's bridge was equipped with three radars; two of these, which included one fitted with an ARPA, were operating as the vessel approached the pilot. The radars were inspected by Belgian investigators when the vessel was in Vlissingen after the collision and were found to be operating satisfactorily. From the information presented by the radars the Master deduced that because the targets on the starboard side were small they must have been fishing vessels and that the targets on the port side were westbound in the northern channel. BRITISH TRENT's target was not seen.

It is probable that no proper radar watch or plotting was carried out. There appears to have been no knowledge that a very large container ship, which must have presented a large radar target, was approaching from the north and crossing the intended track of WESTERN WINNER. In fact WESTERN WINNER crossed about one mile ahead of the container ship EVER GLOWING at 0531 hrs. (See Figure 2)

The failure to detect BRITISH TRENT may have been due to a blind sector in WESTERN WINNER's radar coverage caused by the deck cranes. If such a sector existed then extra vigilance would have been expected when proceeding in very restricted visibility with such a sector almost right ahead of the vessel. The existence of any blind sector should have been documented onboard and known to the ship's officers but, for the reasons stated in section 5.2, this could not be verified.

BRITISH TRENT was equipped with two radars one of which had the ARPA facility. They were both reported to be working satisfactorily by the ship's officers and the pilot, but could not be checked after the collision because they were destroyed in the fire. The Second Officer was monitoring the ARPA set and told both the Master and the pilot about three targets which were coming out of the eastbound traffic lane ahead of BRITISH TRENT. The lead target of these three was reckoned by the Second Officer to be almost on a collision course because it had a CPA of 0.8 miles and was on a course of 089° at 9 knots. BRITISH TRENT's Master also remembers seeing the three targets on the forward port radar. They were near the SW Akkaert Buoy, which he identified.

It is judged from the radar recordings that the Second Officer's and the Master's recollection of the three targets was the situation at 0530 hrs when WESTERN WINNER was three miles away. It is considered most likely that the vessels seen were BLUE TOPAZ being overtaken by WESTERN WINNER with HELLA someway to the south and east of these two vessels. It is considered possible that the vessel reported to the Master as having a CPA of 0.8 miles was HELLA. (See Figure 2)

The Second Officer did not recall a vessel approaching at a speed of 13.5 knots, a fact of which he should have been aware because his radar was on the 12 mile range. WESTERN WINNER was within this range at 0520 hrs, ten minutes before she reduced to full ahead manoeuvring speed.

The pilot on BRITISH TRENT reportedly saw a target on the radar screen at about 2.5 miles range almost directly ahead just before he left the bridge. The Master was aware of this target at that time and reportedly expressed the hope that the target would "give him some sea room". He expected eastbound traffic to keep to the south of westbound vessels dropping their pilots at the Wandelaar station, which he considered to be common practice in this area.

When the Second Officer returned to the ARPA set after escorting the pilot off the bridge he saw a target at 1.5 miles. It is possible that he thought that this target was the one he had previously reported to the Master as having a CPA of 0.8 miles and that the information read was applied to HELLA and not WESTERN WINNER.

BRITISH TRENT was on a different course from when HELLA's target was first acquired so that the CPA had changed to about 0.3 miles and this was passed to the Master as applying to the approaching vessel.

The lack of awareness of the speed and close approach of WESTERN WINNER indicates that between 0530 hrs and 0537 hrs the radars on BRITISH TRENT were not monitored closely. This was possibly because personnel were involved in the disembarkation of the pilot. During this period WESTERN WINNER overtook BLUE TOPAZ, so that the 0530 hrs configuration changed.

Information given by the Master of BLUE TOPAZ to the Inspector was that the other vessel had passed so close that he had been obliged to alter course to starboard to keep clear of it.

It does not appear to have been observed that WESTERN WINNER and BRITISH TRENT were involved in a potential collision situation until they were so close that there was no time to take avoiding action. The manoeuvrability of BRITISH TRENT was hampered by her slow speed and the proximity of the Akkaert Bank to starboard. Had the dire situation in which BRITISH TRENT found herself been appreciated earlier, the Master could have taken the risk of turning out of the navigation channel towards the Akkaert Bank and taken shelter behind the Akkaert Buoy. By executing a slow turn to starboard, the transfer, at dead slow ahead, would have been a maximum of about 0.4 miles. The least depth of water in this area is 9.9 metres and with the height of tide of about 1.7 metres the vessel, even with the draught of 9.61 metres, could have gone to the north of the SW Akkaert Buoy. (See Section 6.2)

7.3 Lookout, fog signal and lights

The Master of WESTERN WINNER came to the bridge at 0430 hrs and the bridge was then manned by the Master, Chief Officer and quartermaster; there was no dedicated lookout. Sometime between then and 0530 hrs the quartermaster was sent to rig the pilot ladder. At 0530 hrs the Third Officer came to the bridge and at the Master's command changed over to manual steering and steered the vessel on a course of 093°. The fog signal for a vessel underway and making way was being made from about 0500 hrs by automatically operating the whistle on the after mast. The vessel's navigation lights were on.

BRITISH TRENT's bridge had been manned since leaving Antwerp by the Master, a deck officer, a cadet, a quartermaster, a lookout on the bridge wing and, until 0537 hrs, a pilot. As the pilot disembarked, the fog signal for a vessel underway and making way was sounded from the whistle on the foremast, activated manually on the bridge by the Master. It was this signal that first drew the attention of WESTERN WINNER to the presence of BRITISH TRENT in the instant before the collision. BRITISH TRENT's navigation lights were on.

7.4 Communication between pilot vessel LB1 and WESTERN WINNER

The pilot vessel (LB1) was about 0.2 miles astern on the port side of BRITISH TRENT whilst the pilot was being taken off by a small pilot launch. The Mate of the LB1 reportedly saw on his radar a target one mile directly ahead of BRITISH TRENT. At about 0538 hrs the pilot vessel was talking on VHF Channel 6 to BLUE TOPAZ, an inbound vessel which was just passing the SW Akkaert Buoy.

The pilot vessel told BLUE TOPAZ that there was an unknown vessel about one and a half miles in front of the BLUE TOPAZ that was coming through quickly. BLUE TOPAZ replied that the unknown vessel had "just passed".

At 0542 hrs Zeebrugge Radar informed the pilot vessel's Mate that the unknown vessel was WESTERN WINNER. It was immediately after this while the pilot vessel was in VHF radio contact with WESTERN WINNER that the collision occurred.

No record was provided to the Inspector to show that there were any warning calls on the designated working VHF channels from the pilot vessel either to "the unknown ship" or to WESTERN WINNER.

7.5 Radar control and monitoring of the situation by VTS.

At 0531 hrs Traffic Centre Zeebrugge was asked by EVER GLOWING about westbound vessels. The reply was that there were no westbound vessels; in fact BRITISH TRENT was westbound albeit proceeding very slowly.

Radar information supplied to the Inspector showed that WESTERN WINNER was being monitored from at least 0515 hrs even though she was not identified until 0540 hrs. No call appears to have been made asking for the identity of this vessel.

Radar control knew the position, course and speed of BRITISH TRENT and that there was reduced visibility in the pilotage area. They were also aware that an unknown vessel was proceeding on an easterly course towards the pilotage area at a relatively high speed. Unfortunately the potential hazard of this situation was not recognised and no warning information was passed to BRITISH TRENT or to her pilot.

7.6 Fatigue and stress

Both vessels were sufficiently manned so that the watch officers and crew were not suffering from fatigue. BRITISH TRENT had a well organised watch system and carried four certificated watchkeeping deck officers, though the Chief Officer was not a watchkeeper on this voyage. WESTERN WINNER had three licensed watchkeeping deck officers and an organised watchkeeping rota.

The Masters of the two vessels were possibly not as well rested as the watchkeeping officers. The Master of BRITISH TRENT had been awake since 0630 hrs the previous day and had been on the bridge since sailing from Antwerp at 1830 hrs. Thus at the time of the collision he had had no rest for 23 hours. The start of the working day for the Master of WESTERN WINNER is not known but it is assumed he was engaged in ship's business for the day before his vessel sailed at 1830 hrs on 2 June from London. He did have three hours rest before being called at 0430 hrs on 3 June.

BRITISH TRENT's Master's lack of rest plus the possibility of a further stressful period when navigating the vessel in fog may have affected his judgement prior to the collision.

The Master of WESTERN WINNER had taken more time off the bridge than the Master of BRITISH TRENT, but it is not known to what extent he was rested or what pressure he was under in order to meet arrival deadlines.

It is not a satisfactory situation that ship's masters and other seafarers should be either expected, or allowed, to put to sea when they are not fully rested. There are regulations which govern the hours of work and rest of those employed in road, rail, and air transport. It is considered to be in the interest of safety at sea that seafarers' hours of work and rest should be subject to regulation.

8. ADHERENCE TO THE INTERNATIONAL REGULATIONS FOR THE PREVENTION OF COLLISIONS AT SEA.

8.1 The situation which prevailed at the time of the collision was one of restricted visibility in a coastal area where vessels were proceeding to a common point to embark and disembark pilots.

8.2 **Rule 5 - Lookout** - requires that at all times every vessel shall maintain a proper lookout by sight and hearing as well as by all available appropriate means so that a full appraisal of the situation and the risk of collision can be made. In this case the restricted visibility called for a proper, efficient and continuous radar watch as well as aural and visual observation to be made.

WESTERN WINNER's officers' use of the radar was well below the standard of that which the circumstances required. It appears that no continuous radar watch was carried out nor was the ARPA set used. There also appears to have been a lack of appreciation of the limitations in the use of radar.

The manning of the bridge of WESTERN WINNER did not include a dedicated lookout. It is not known for how long the bridge staff were reduced to just the Master and Chief Officer whilst the quartermaster was absent. BRITISH TRENT's fog signal was heard but too late for any effective collision avoiding action to be taken.

On BRITISH TRENT the radar was monitored and the ARPA set was used. However, the efficiency of the radar watch must be questioned in view of the fact that the danger represented by WESTERN WINNER was not ascertained. The bridge was well manned with a dedicated lookout on the bridge wing who saw WESTERN WINNER but only moments before the collision.

8.3 **Rule 6 - Safe Speed** - requires that every vessel proceeds at all times at a safe speed so that she can take proper and effective action to avoid collision and can be stopped within a distance appropriate to the prevailing circumstances and conditions. There are many factors to be taken into account when determining safe speed including visibility, traffic density and manoeuvrability of the vessel concerned.

WESTERN WINNER was proceeding at a speed of 11.5 knots prior to the collision and the stopping distance with engines going full astern was likely to have been in the order of about 700 metres. In visibility of between 50 and 200 metres this was too fast. The area that the vessel was entering was one where other vessels could have been expected to embark and disembark pilots and where the vessel may have had to manoeuvre accordingly. Taking the above into account, WESTERN WINNER cannot be considered to have been proceeding at a safe speed.

By comparison BRITISH TRENT was proceeding at 4 knots which was about the minimum speed required to steer and is considered to have been a safe speed prior to the detection of WESTERN WINNER.

- 8.4 **Rule 7 - Risk of Collision** - requires that every vessel uses all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt then risk shall be deemed to exist. Proper use has to be made of radar equipment, including long range scanning and radar plotting or equivalent systematic plotting of detected objects, to obtain early warning of risk of collision. Assumptions shall not be made on scanty information, especially scanty radar information.

Both the vessels in this case failed to carry out the provisions of this rule. WESTERN WINNER was apparently totally unaware of the presence of BRITISH TRENT and incorrect assumptions were made from such information as was gleaned from the radar. Proper use of the radar, VHF monitoring and participation in the VTS system could all have been used to give an indication of which vessels were in the area.

BRITISH TRENT could have made better use of her radar equipment to obtain earlier information about WESTERN WINNER and to ascertain the risk of collision with that vessel. Once information was obtained it was assumed that the approaching vessel would keep clear because BRITISH TRENT was disembarking a pilot.

- 8.5 **Rule 19 - Conduct of Vessels in Restricted Visibility** - applies to vessels not in sight of one another when navigating in or near an area of restricted visibility. Every vessel is required to proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility and a power driven vessel shall have her engines ready for immediate manoeuvre. Every vessel is required to take into consideration the conditions of restricted visibility when complying with Rules 5, 6 and 7. A vessel which detects the presence of another vessel by radar alone is to determine if risk of collision exists and if it does, is to take avoiding action in ample time.

WESTERN WINNER failed to comply with Rule 6 by not proceeding at a safe speed and by not having her engines immediately available for manoeuvring until 0530 hrs. Rules 5 and 7 were not being complied with while the failure to carry-out effective radar plotting prevented early action being taken to avoid a collision.

BRITISH TRENT was making very little way until after the pilot left and had only achieved a speed of 4 knots before the collision so that her speed was not excessive. Her engines were ready for immediate manoeuvring using bridge control. However, had the presence of WESTERN WINNER been detected earlier and an assessment of the risk of collision made, then action could have been taken in ample time. A turn hard to starboard would have been readily apparent on another vessel's radar, although it is appreciated that BRITISH TRENT did not know the quality of WESTERN WINNER's radar watchkeeping.

PART III FURTHER COMMENT AND DISCUSSION

9. FIRE-FIGHTING

9.1 The sounding of BRITISH TRENT's fire alarm immediately after the collision, sent the ship's complement to their respective fire fighting stations. Not many minutes after this, when the port side of the vessel was seen to be on fire, the fire alarm was changed to the abandon ship alarm. The Master manoeuvred the vessel to try and keep the wind on the starboard side, by use of the engines and by steering a course of about 200°. During this time the crew had mustered and prepared the starboard lifeboat.

Several of the survivors thought that an attempt had been made to fight the fire and it was reported that fire hoses had been run out. However, it is considered that fire hoses were rigged in an attempt to provide a water curtain for the open starboard lifeboat, but the use of the hydrants was frustrated because the fire-main was damaged and rendered ineffective by the collision.

9.2 Use of fire pumps

It was normal practice to have the auxiliary fire pump running continuously to maintain a pressure of 4 bar in the fire-main. This was sufficient to provide general service water for the inert gas system water seal, the refrigerated store system and for immediate use in the 25mm diameter fire hoses within the accommodation. In the event of an emergency the procedure was for an engineer to go to the engine room pump flat, the lowest flat in the engine room, and start one of the two 10 bar main fire pumps. In addition to the local start there was a remote starting facility in the emergency generator room which was situated on the port side of the third poop deck.

During this emergency the pumps could be started neither locally, because the engine-room was full of smoke, nor remotely, because the emergency generator room was enveloped in flames and smoke. The provision of a remote starting facility on the bridge would have saved time and reduced the risk to the crew members who showed considerable courage and determination in attempting to start the fire pumps.

9.3 Use of emergency fire pump

Unaware that the fire-main had been damaged and made ineffective by the collision, the Chief Engineer and the Electrician went forward in an attempt to start the emergency fire pump in the forward pump room. However, whilst setting up the valves at the top of the pump room they were enveloped in smoke and had to retreat before they could start the pump. On their way forward the fire was mainly along the port sheerstrake but when they returned it was reaching across the port side of the main deck to the flying bridge.

9.4 Failure of the fire-main

Examination of BRITISH TRENT after the fire revealed that the collision had damaged the fire-main so that, even if the main or emergency fire pumps had been started, there would probably have been little water available to fight the fire. This occurred when the port side of the accommodation was damaged at the point where the fire-main, which was on the outside of the structure, ran upwards from the forward end of the second poop deck to the third poop deck. If the Master had known that the fire-main had been damaged he may have decided to abandon ship at an earlier stage. It is worth stating at this point that the fire was only brought under control after a number of fire fighting tugs were used for many hours. The vessel's own fire fighting resources were comparatively minor.

9.5 Smoke filled engine-room

The engine-room was ventilated by four fans, two on the port side and two on the starboard side of the lifeboat deck. It is probable that the port side fans drew in smoke from the burning petroleum cargo, which was spilling from the ruptured tanks and passing down the port side of the vessel as it moved ahead through the water. The air conditioning unit for the engine control room drew its air supply from one of the port side engine-room fan intakes. The engine control room rapidly became filled with smoke. The Second Engineer stopped the two forward fans as he left the engine-room but the two aft fans were left running. When the Second and Third Engineers later tried to re-enter the engine-room it was completely smoke filled. This prevented them from getting to the lower level of the engine-room to start the main fire pumps. Despite the smoke, the main engine and auxiliaries were reported to be still running at that time.

10. EVACUATION OF CREW

10.1 Evacuation using the vessel's lifeboat

After the collision the only serviceable lifeboat on BRITISH TRENT was the starboard one. The boat was a 7.93 metres long open motor lifeboat constructed of glass reinforced plastic with foam internal buoyancy and with a capacity for carrying 52 persons. It was stowed on Schat SPG (VL) gravity davits situated on the third poop deck.

The design of the lifeboat launching arrangements was such that the boat could only be lowered by operating the brake of the winch situated at the aft side of the davits. In order to board the lifeboat it had first to be lowered to the embarkation deck (first poop deck), have the bowsing-in tackle rigged, the tricing pennants released and a painter rigged from the lifeboat's bow and made fast at the aft end of the main deck. Once the boat was loaded with personnel it was necessary for the bowsing-in tackles to be released and for one person to go up to the boat winch and lower the boat into the water using the winch brake. This person then had to board the boat either by using the lifeboat ladder or by climbing down the knotted rope hanging from the wire span between the davit arms.

However in this case all the above procedures could not be put into effect, and the remaining crew, some already aboard the lifeboat and some in the process of boarding, were forced to jump into the sea when they were enveloped in smoke and fire. It is thought that the heat was so intense that the lifeboat caught fire.

10.2 History of BRITISH TRENT's life-saving appliance requirements

BRITISH TRENT was built in 1973 and registered in the United Kingdom. The life-saving appliances complied with the Merchant Shipping (Life-saving Appliances) Rules 1965.

These rules were revoked and replaced in 1980 by new regulations which gave effect to the Safety of Life at Sea Convention (SOLAS) 1974. In July 1986 further regulations came into force which gave effect to the 1983 amendments to Chapter III (Life-saving Appliances) of SOLAS 1974.

In April 1986 the vessel transferred to the Bermuda registry whose regulations are either re-drafted UK regulations or UK Statutory Instruments applied under the 1987 Amendment Act.

One of the requirements of the 1983 amendments to SOLAS 74 is that tankers similar to BRITISH TRENT, but which were built after 1 July 1986, should be provided with totally enclosed fire protected lifeboats. A feature of these lifeboats is that they can be launched by one person from within the lifeboat. It is not normal for new regulations to be applied to vessels built prior to their introduction. Such was the situation for BRITISH TRENT, therefore her lifeboats, although of the open type which could not be launched from within the boat, complied with the current regulations. If she had been fitted with the totally enclosed fire protected lifeboats, capable of being lowered from within, it is possible that no lives would have been lost.

10.3 Use of pilot launches for evacuation of all crew

The question is raised as to whether or not the pilot launches could have been used to take off all the ship's personnel. The Master did organise the evacuation of the women and catering staff to the pilot launches with the expectation that the rest of the crew would leave the vessel via the starboard lifeboat. This is considered consistent with standard shipboard training practice and therefore the use of the pilot launches was probably not considered necessary.

It is not thought likely that the Master could have foreseen that the starboard side of the vessel would become enveloped in smoke and flame. He manoeuvred the vessel so as to keep the wind on that side until forced to evacuate the bridge. The starboard side of the vessel suffered much less fire damage than the port side indicating that his actions were effective whilst the bridge was manned.

10.4 Use of the life saving appliances and actions by the crew

After the fire alarm had sounded BRITISH TRENT's crew immediately went to their emergency stations and they quickly and efficiently prepared the starboard lifeboat. This included rigging the painter and the bowsing-in tackle so that the boat was ready for use at the embarkation deck 10 to 15 minutes after the collision.

The controlled manner in which the lifeboat preparation was reported to have been carried out indicates that the crew were well practised. It is noted that a thorough count of the crew members was carried out before the vessel was abandoned. All the crew had life-jackets and some had taken, but not donned, Thermal Protective Aids (TPA).

The ship's safety manual, provided by BP Shipping and reviewed in 1988, gave a list of the types of drills and some advice as to how they were to be carried out. The list included different types and locations of fires, but a collision and fire of the scale which befell BRITISH TRENT was not covered in that manual.

It is felt that the Owners should have provided more guidance to the crew. There are perhaps lessons to be learned from the Cullen Report into the Piper Alpha incident, with regard to the evacuation of personnel from dangerous and potentially explosive situations. The Flag Administration will initiate discussions with interested parties on this subject and refer the results to the International Maritime Organization.

11. OTHER EVENTS

11.1 Movement of BRITISH TRENT after the collision

Given the extreme circumstances, the Master was probably unaware of the vessel's position after the collision. The radar recordings showed that the vessel initially headed north-west, a result of the hard to starboard manoeuvre when WESTERN WINNER was sighted. About eight minutes later she was making good a course of about 270° at about 2.5 knots. This was probably a result of the Master's action to place the wind on to the starboard side and to steer 200°, using the engine to gain steerage way. She then continued to come round to port and increased speed until at 0600 hrs she was making a course of about 200° at 4.0 knots. It was at about this time that the bridge had to be abandoned, possibly before the vessel was steadied on the 200° course. When the vessel was inspected after the fire had been extinguished, the rudder angle indicator in the engine control room showed the rudder to be hard to port. This could have been either the last helm position or the result of fire damage to the electrical control system on the bridge. Although the engines were stopped when the bridge was abandoned, the vessel still had way on her and is reported to have continued to swing to port. The Second Engineer said that after he had jumped into the water he appeared to be swept against the stern of the vessel. The Chief Engineer reported that he saw only the port side of the vessel when he was in the water.

11.2 Rescue of the crew

The Master and crew of the pilot vessel are to be commended for their prompt response to the collision situation. Launches from the pilot vessel were immediately on hand to rescue BRITISH TRENT's crew. This became very important when the crew were forced to jump into the sea, and the crews of the pilot launches displayed particular courage and bravery in recovering people. It is to be remembered that the sea was covered in burning oil and they were very close to a tanker which was on fire with the potential for a massive explosion. No explosion occurred, probably because of the inert gas in the intact cargo tanks; this prevented a much greater loss of life.

11.3 Fatalities

Nine members of the crew of BRITISH TRENT died in the tragedy. The deceased were the Chief Officer, the two Third Officers, the Radio Officer, the Third Engineer, the Electrician and three ratings. During the abandonment and when the wind came to the port side, smoke and flames from the oil burning on the sea was blown around the stern of the vessel and onto the crew as they boarded the starboard lifeboat. Burning oil with attendant thick black smoke was blown across the sea surface and survivors reported the oil lying in "burning fingers" coming towards them. The nine members of the crew who died did so whilst in the water; they suffered asphyxia and carbon monoxide poisoning as a result of breathing in fumes from the burning oil.

11.4 Control at the scene of the accident

In the minutes after the collision there was confusion and the thick fog made identification and location of other vessels especially difficult. The Master of the pilot vessel took on the role of on-scene commander though he was hampered in his ability to carry out this task because his crew were involved in the actual rescue and he lacked information in respect of vessels in and approaching the area. Information was passed to WESTERN WINNER to come closer to assist with the rescue and the radar recordings show that she and BRITISH TRENT were very nearly in collision again. The presence of WESTERN WINNER proved to be hazardous and the VHF radio transcripts record her as being ordered away.

When incidents such as this occur it would be prudent to introduce immediately the procedures which apply when pilotage is suspended. This would give remote pilotage advice to vessels through the VTS-SM system so that they could be kept clear of both the casualty and one another. The VTS-SM system has the ability to readily identify and communicate with all vessels in the area.

PART IV CONCLUSION

12. Findings

- 12.1 The cause of the accident was failure to comply with the International Regulations for the Prevention of Collisions at Sea, in conditions of restricted visibility.
- 12.2 The scope of the investigation with respect to the actions of WESTERN WINNER was limited because the Inspector was prevented by the solicitors representing the owners from interviewing the Master and officers of that vessel. The Inspector had no powers to compel such co-operation and assistance.
- 12.3 WESTERN WINNER is considered not to have proceeded at a safe speed, not to have kept an effective lookout and not to have made proper use of radar given the conditions of restricted visibility that existed. BRITISH TRENT was not detected and risk of collision was not ascertained in sufficient time for WESTERN WINNER to take appropriate avoiding action.
- 12.4 BRITISH TRENT did not make proper use of her radar and assumptions were made about the actions of approaching vessels. The risk of collision with WESTERN WINNER was not ascertained until the vessels were so close that any action taken would not have avoided a close quarters situation. It was assumed that inbound vessels would keep clear of a vessel disembarking her pilot. By the time it was realised that this assumption was wrong it was too late to avoid the collision.
- 12.5 The Master of WESTERN WINNER was unfamiliar with the area and appeared not to have prepared a passage plan. He was thus unaware of the pilot vessel's cruising ground; this may have affected his decision as when to put the engines on stand-by. This decision did not take into account the restricted visibility. He did not participate in the Vessel Traffic Service system which meant that his vessel was not identified on the Traffic Service radar.
- 12.6 Vessel Traffic Service - Scheldt Mondingen did not monitor the traffic situation and did not give information about the developing dangerous situation when an unidentified relatively fast moving vessel entered a manoeuvring area in restricted visibility.
- 12.7 The Traffic Separation Scheme in the approaches to the SW Akkaert Buoy puts eastbound vessels in direct conflict with westbound vessels which are unable to cross the Akkaert Bank.
- 12.8 Judgement of both Masters may have been impaired because of fatigue and stress.

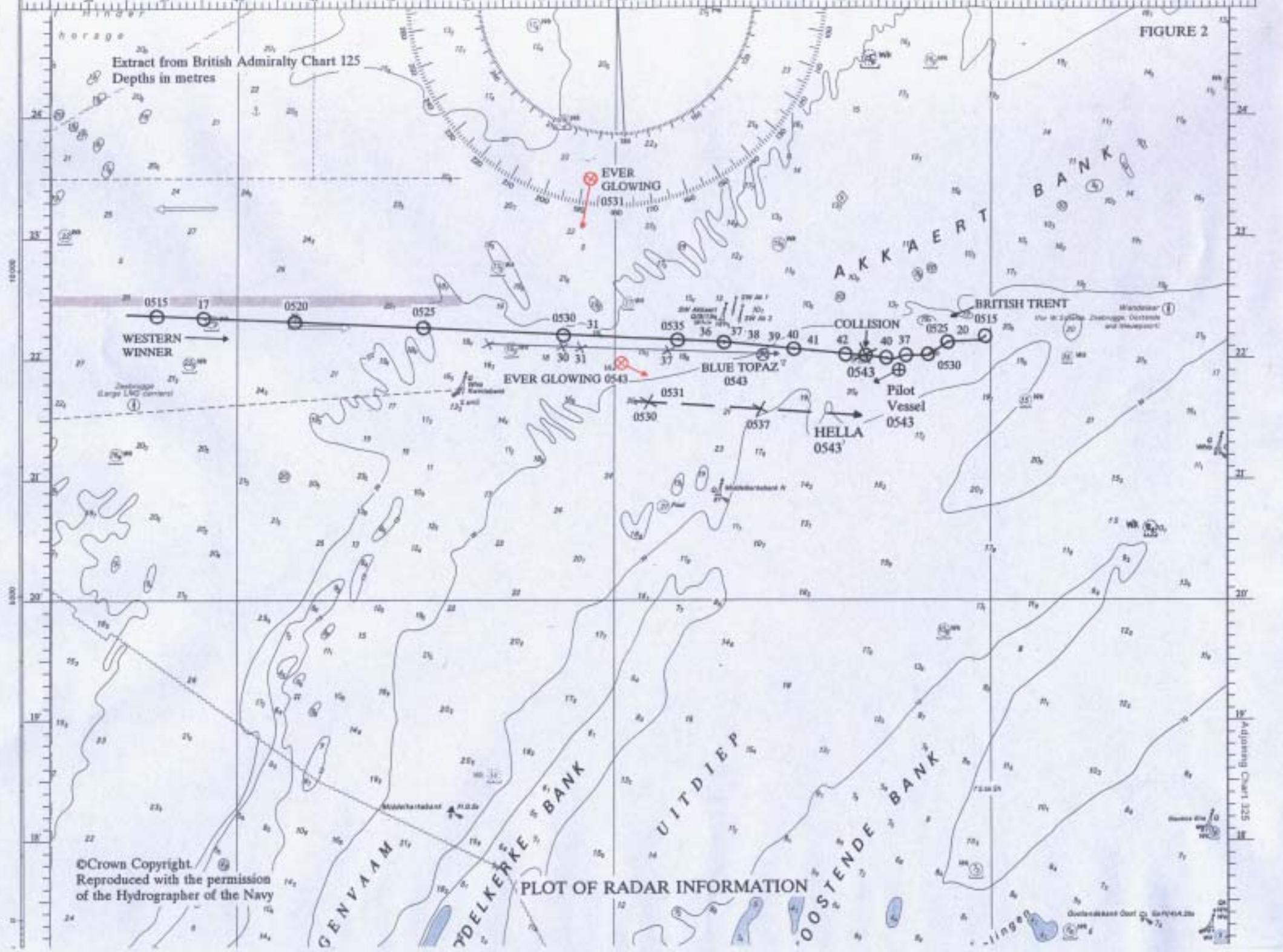
- 12.9 On BRITISH TRENT the collision ruptured Nos 3 and 4 port cargo tanks and the volatile cargo which spilled out caught fire. It was this fire that led to the dense smoke which caused all personnel to leave the engine-room, the eventual evacuation of the bridge and finally the abandonment of the vessel.
- 12.10 After the collision BRITISH TRENT's crew went to their emergency stations and performed their duties in an orderly and creditable manner. On the bridge the Master quite correctly manoeuvred the vessel so as to keep the wind on the starboard side.
- 12.11 On BRITISH TRENT no fire fighting or water cooling was possible because the main fire pumps had not been started and the fire-main had been damaged in the collision. The ability to start the fire pumps from the bridge would have saved time and reduced the risk to the crew members who showed courage and determination in attempting to get them started. The damage to the fire-main might also have been noticed if it had been possible to start the fire pumps from the bridge, and if the Master had known this he may have decided to abandon ship at an earlier stage.
- 12.12 Seven members of BRITISH TRENT's crew were transferred to a pilot launch after a pilot ladder was rigged on the starboard aft end of the main deck. No other members of the crew were evacuated by this means because it was expected that the vessel's own lifeboat would be used.
- 12.13 After the bridge was abandoned and before the lifeboat could be used, BRITISH TRENT started to turn which caused the wind to blow the flames and smoke over the starboard side. The lifeboat launching position became untenable due to the heat and smoke and, because the lifeboat was an open type without fire protection and could not be lowered from the boat itself, the crew were forced to jump into the sea where nine of them perished as a result of smoke inhalation.
- 12.14 BRITISH TRENT's life-saving appliances met all SOLAS requirements for a vessel of her age.
- 12.15 The launches from the pilot vessel LB1 successfully rescued 20 of the crew in difficult and dangerous circumstances.

13. RECOMMENDATIONS

1. The Bermuda Registry of Shipping should request the Belgian and Netherlands Authorities to liaise with the International Maritime Organization and other interested parties to investigate and implement improvements in the Traffic Separation Scheme and provision of pilotage to render safe passage in the area of the Scheldt estuary.
2. The Bermuda Registry of Shipping should liaise with the Belgian and Netherlands Authorities responsible for the operation of the Vessel Traffic Service, in order to make it more effective in traffic control.
3. The Bermuda Registry of Shipping should request the International Maritime Organization to review the requirements of SOLAS for the provision of lifeboats onboard tankers built before 1 July 1986, with the intention of improving the arrangements for the protection and escape of the crew.
4. The Bermuda Registry of Shipping should consult with interested parties within the International Maritime Organization and the shipping industry to identify practicable improvements which can be incorporated into new and existing tankers to deal with emergencies such as that which befell BRITISH TRENT.
5. The Bermuda Registry of Shipping should request the International Maritime Organization to consider adequate rest of seafarers as a safety matter.

FIGURE 2

Extract from British Admiralty Chart 125
Depths in metres

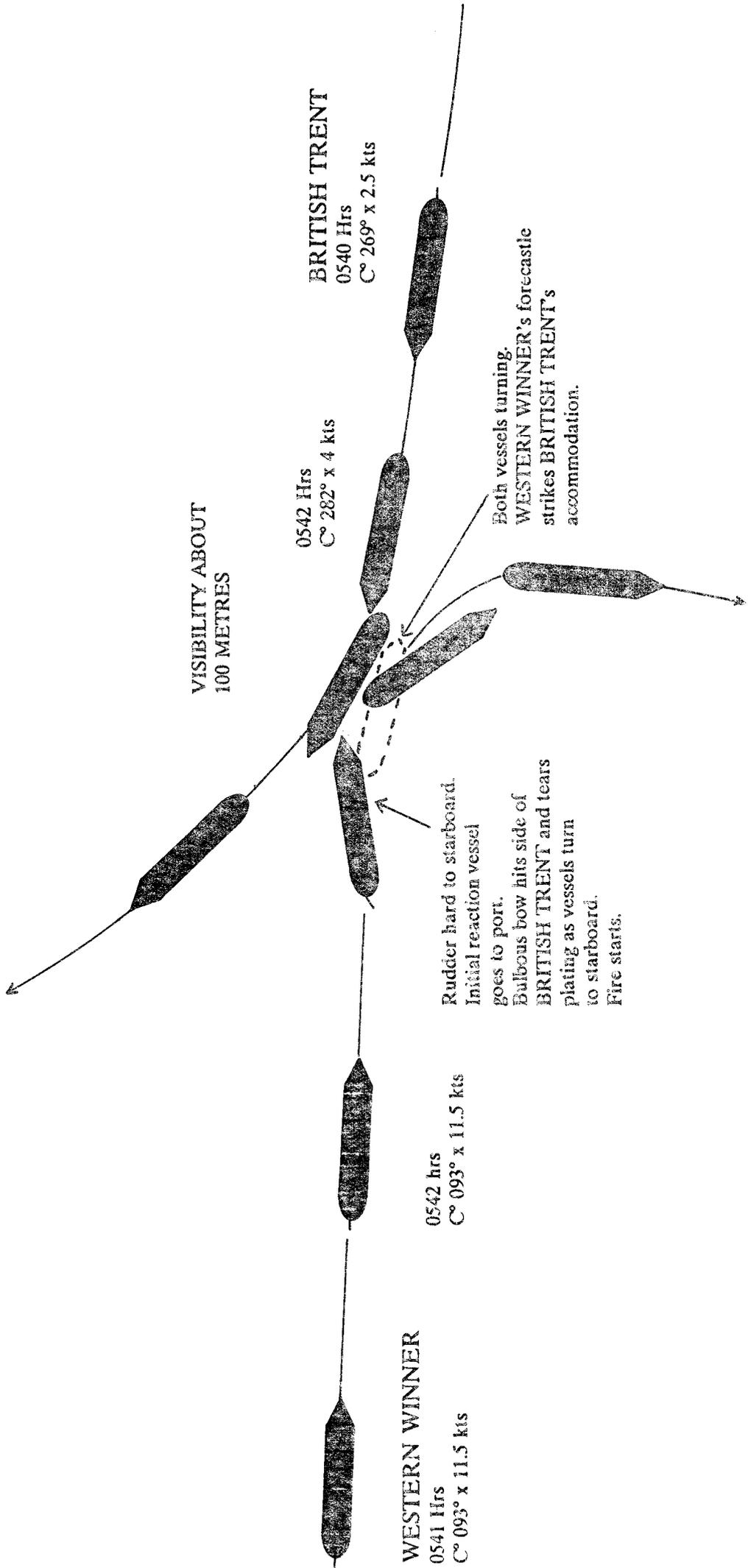


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PLOT OF RADAR INFORMATION

Quillemant Chart 125

DIAGRAMMATIC SEQUENCE OF EVENTS



0 50 100 150 175 metres

FIGURE 4



WESTERN WINNER - showing extent of damage to Port bow

FIGURE 5



WESTERN WINNER - View of above damage looking outboard through No 1 hatch

FIGURE 6



WESTERN WINNER - Port quarter showing collision damage and fire scorched paintwork

FIGURE 7



WESTERN WINNER - Smoke blackened after accommodation and bridge

FIGURE 8



BRITISH TRENT - Port side showing the ruptured tanks and distorted sheerstrake

FIGURE 9



BRITISH TRENT - View of port quarter

FIGURE 10



BRITISH TRENT - View of main deck clearly showing the boundary between the fire damaged and undamaged areas

FIGURE 11



BRITISH TRENT - Extent of heat and smoke damage in engine control room



BRITISH TRENT after her abandonment