Report on the investigation of

the grounding of

mv *Choice*

Blyth Sands,

River Thames-Sea Reach

9 August 2001

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Carlton House
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Southampton
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(Accident Reporting and Investigation)

Regulations 1999

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

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

BA	-	British Admiralty
Dtp	-	Department of Transport
E	-	East
ETA	-	Estimated Time of Arrival
ETD	-	Estimated Time of Departure
GPS	-	Global Positioning System
Ltd	-	Limited
m	-	metre
MRSC	-	Maritime Rescue Sub-Centre
N	-	North
PLA	-	Port of London Authority
RAF	-	Royal Air Force
RYA	-	Royal Yachting Association
TSS	-	Traffic Separation Scheme
UK	-	United Kingdom
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency

GLOSSARY OF TERMS

Chart datum	-	Depths on charts are given below chart datum. Drying heights are given above chart datum. On metric charts for which the UK Hydrographic Office is the charting authority, chart datum is a level as close as possible to Lowest Astonomical Tide, the lowest predictable tide under average meteorological conditions.

SYNOPSIS

Choice, a former fishing vessel used for 'team-building' training, was on passage down the river Thames in the early morning of 9 August 2001. Ten students were embarked. At 0640 UTC she ran aground. The master, who was on watch in the wheelhouse, had not noticed that an untrained helmsman had steered the vessel out of the main navigable channel.

MRSC Thames reported the accident to the MAIB by facsimile at 1026 UTC on 9 August, and an investigation was started later that day.

It is considered that several factors might have contributed to the master failing to notice the vessel had left the navigable channel:

- He was tired.
- He was not monitoring the vessel's position.
- He did not use the electronic charts available.
- He was distracted by the number of people in the wheelhouse, and by a discussion with a student.
- Environmental factors possibly influenced his perception of the vessel's position.
- He was not alerted by others who had concerns over the vessel's position.

Recommendations to the owner are aimed at ensuring that all watchkeepers are properly rested and that training requirements are effectively managed to prevent interference with the safe operation of the vessel.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF MV *CHOICE* AND ACCIDENT

Vessel details

Registered owner	:	Nitro Classic
Flag	:	UK
Type	:	Motor pleasure yacht
Built	:	1961, Sandhaven, near Fraserburgh
Construction	:	Wood
Length overall	:	23.07m
Gross tonnage	:	50.23
Engine type	:	Diesel oil
Other relevant information	:	Draught: 3.5m

Accident details

Time and date	:	0640 UTC, 09 August 2001
Location of incident	:	51°29.5N, 000°32.8E, Blyth Sands, River Thames-Sea Reach
Persons on board	:	16
Injuries/fatalities	:	0
Damage	:	Superficial

1.2 BACKGROUND

All times are UTC

1.2.1 The vessel

Choice, a former fishing vessel, was bought in 1997 by Nitro Classic for marketing purposes. Shortly after, her owner decided to use her as a platform for corporate 'team-building' courses. Modifications to equip her for her new role were then made during a 12-month refit in Gloucester Docks, which was completed in September 2000. In December 2000 she was certificated under category two of the code of practice for *'The Safety of Small Commercial Motor Vessels'*, normally referred to as the 'Yellow Code'. This allowed *Choice* to carry up to 12 passengers and operate up to 60 miles from a safe haven. In early 2001, the vessel was moved to West India Quay in London. This was *Choice's* first trip with a 'team-building' course embarked.

1.2.2 Nitro Classic and the 'Team Building' concept

Nitro Classic was set up in 1997 to promote family entertainment. Its director, who for simplicity is referred to throughout the report as the owner, was a commercial airline pilot, who had sailed in her during all of her voyages since being purchased. He had also lived on board the vessel while she was moored in London. The idea of using *Choice* as a platform to encourage team building was developed by the owner, together with the course director, a consultant psychologist, based on their knowledge and experience of 'cockpit resource management'. Text from the Nitro Classic website stated:

The learning experience on Choice is based on the same, proven, performance-optimising program used by the world's major airlines. It teaches individuals to use all available resources in a hands-on, real-time situation to build confidence, to think clearly and to improve communication, leadership and inter-relationships.

1.2.3 The trip

A round trip from London to Antwerp between 9 and 12 August 2001 was planned. The intended schedule was:

9 August 2001	-	ETD London 0300
10 August 2001	-	ETA Antwerp 0800
11 August 2001	-	ETD Antwerp 0615
12 August 2001	-	ETA London 1100

Five crew and eleven passengers embarked. Two of the crew, including the course director, were carried on board for training or logistical purposes only; they were not carried on board for the operation of the vessel, and one of the passengers was an observer. The operative language for the course was English. General information about the course, including rules to be followed on board and safety information, was contained in a folder entitled '*The Choice CRM Programme*', which was issued to all crew and students. The objective of the course was to:

Safely manage the ship and make passage from London to Antwerp…and then returning to London in accordance with the passage plan.

1.3 NARRATIVE

1.3.1 Events before sailing

The master joined *Choice*, alongside West India Quay, at about 1200 on 8 August 2001. With the owner also on board, the vessel was then moved to Thames Quay at about 1500, with the master manning the helm and engine controls. As this was the first time he had manoeuvred the vessel, the owner passed on relevant local information, including the need to go under the highest point of the bridge on leaving West India Quay.

On arrival at Thames Quay, the master helped to load recently purchased Sea Pro electronic charts on to a laptop computer. The charts had to be loaded individually, and this took between 1 and 2 hours. As a result, the master did not start his passage planning until early evening.

After the last of the students arrived on board at about 2230, an introduction of what to expect over the next 4 days was given, followed by a tour around the vessel and a safety brief. On completion, the students divided themselves into three watches. The first watch comprised four students, and was instructed to accompany the master in the wheelhouse from sailing until about 0630. Shortly before 0300 on 9 August 2001, *Choice* slipped from her berth.

1.3.2 Events after sailing

At 0313, *Choice* cleared the Thames Quay lock and entered the Thames. The master was on watch in the wheelhouse, accompanied by the owner and chief engineer. The owner, however, only stayed for several minutes, before going to bed. The first watch secured the berthing ropes on the upper deck, then went to the wheelhouse. The remaining students went below to rest. Speed through the water was between 5 and 6 knots, and the master kept the helm until passing the Thames Tidal Barrier at about 0325. At this point, he gave the helm to a student, and briefed him to stay in the navigable channel. The student helmsman had an electronic chart, and radar to help him achieve this. The other students monitored progress using paper charts laid on a small shelf on the starboard, forward corner of the wheelhouse until about 0430, when one of them relieved the helmsman.

At about the same time, the master prompted two of the watch to plan the passage across the North Sea as far as the approaches to river Schelde. The two students examined the appropriate charts, discussed their proposed plan with the master, then wrote down the names of the buoys, and on which side they were expected to pass during this passage.

At about 0600, the master joined the chief engineer, who had been catnapping, on the bench to the rear of the wheelhouse. The master was feeling tired and he sat down to eat a bacon sandwich. Between 0615 and 0630, the next watch arrived in the wheelhouse. One student relieved the helmsman, a second monitored the electronic chart, and the third was given the notes on the buoys expected further down the river. It is thought that up to six students, all Netherlanders, were in the wheelhouse during the handover.

When the oncoming helmsman took the wheel, *Choice* was in a turn to starboard, and there was no other shipping in the immediate vicinity. He noted that, according to the position indicated on the electronic chart, the vessel was on the south side of the river in an area shaded green. The other oncoming students also believed the ship to be biased towards the south side of the river. The students discussed the situation in Dutch, and it was decided that the position shown on the electronic chart could not be correct, otherwise the vessel would be on land. The master, who could not understand Dutch, was not involved in this discussion. At some point during, or shortly after, the handover, the master moved from the bench to the starboard side of the wheelhouse to discuss the passage plan with an oncoming student using the relevant paper charts. Another student went below to get his sunglasses to counter the glare from the morning sun. The sun's glare was making it difficult to see the buoys down the river, and also prevented the helmsman from seeing the electronic chart when steering.

At about 0630, the chief engineer left the wheelhouse to check the engines and bilge pumps were working correctly. He, too, thought the ship was cutting the corner and should be more towards the middle of the river. The chief engineer did not discuss this with the master, however, as he did not want to question the master's judgment in front of the students.

Choice had left the channel, and was now heading across the shallower waters of Blyth Sands, which dries at chart datum and is accordingly shaded green on the relevant nautical charts. The master was not aware that *Choice* had left the channel. At about 0640, however, he did notice that she was starting to feel the ground, and instructed the helmsman to steer towards the middle of the river. The helmsman responded accordingly, but moments later, *Choice* touched the bottom. The master took the helm immediately, applied more rudder to port, and put the engine gear astern. Although the ship initially responded by swinging to port, she was soon hard aground in a position with a charted drying height of about 1.5m. The PLA radar plot **(Figure 1)** shows the ground track of *Choice* between 0600 and 0640, and the main navigation channel. **Figure 2** shows the corresponding ground track drawn on the appropriate BA chart.

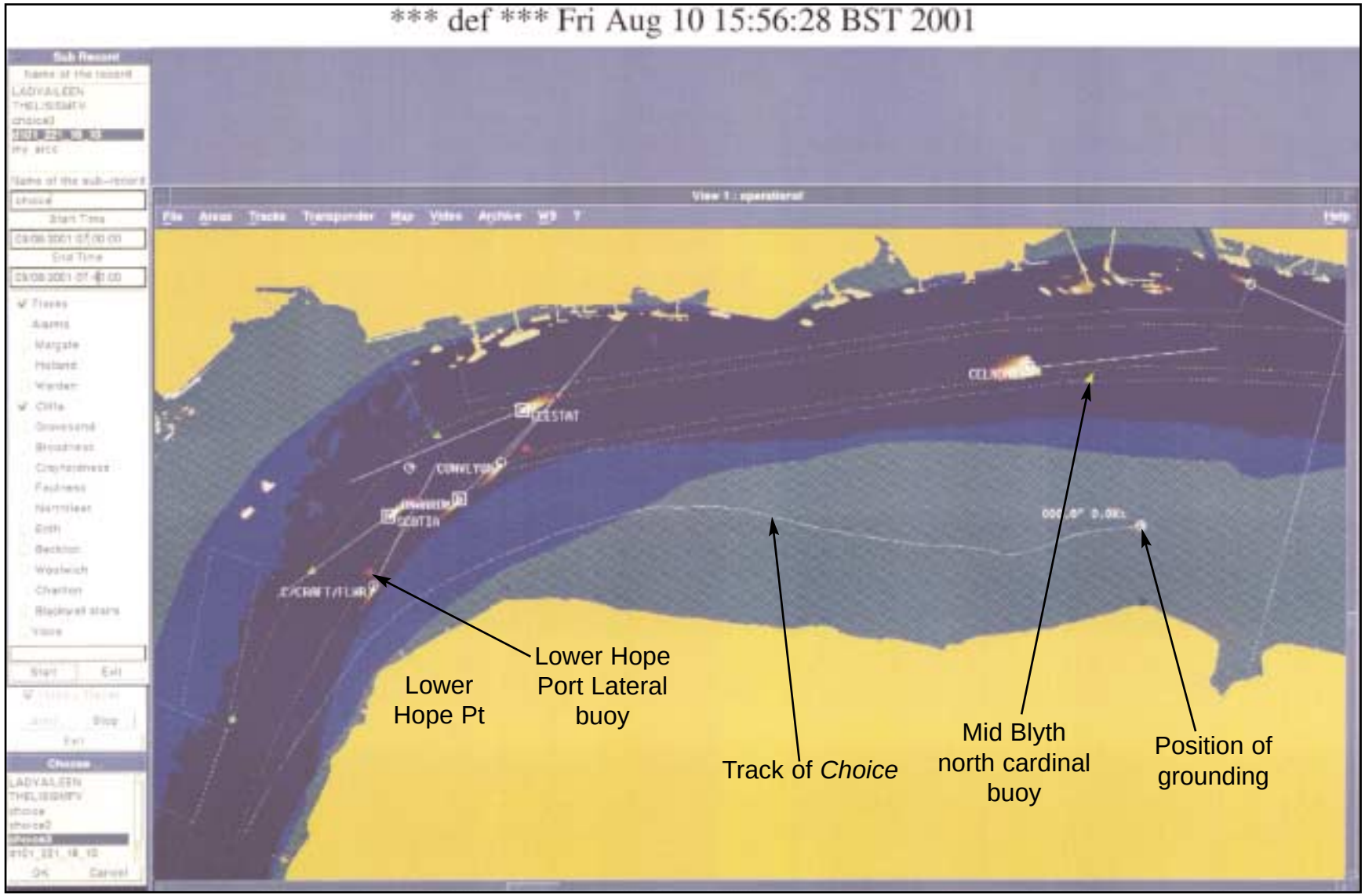


Figure 1

PLA radar plot showing *Choice*'s track history

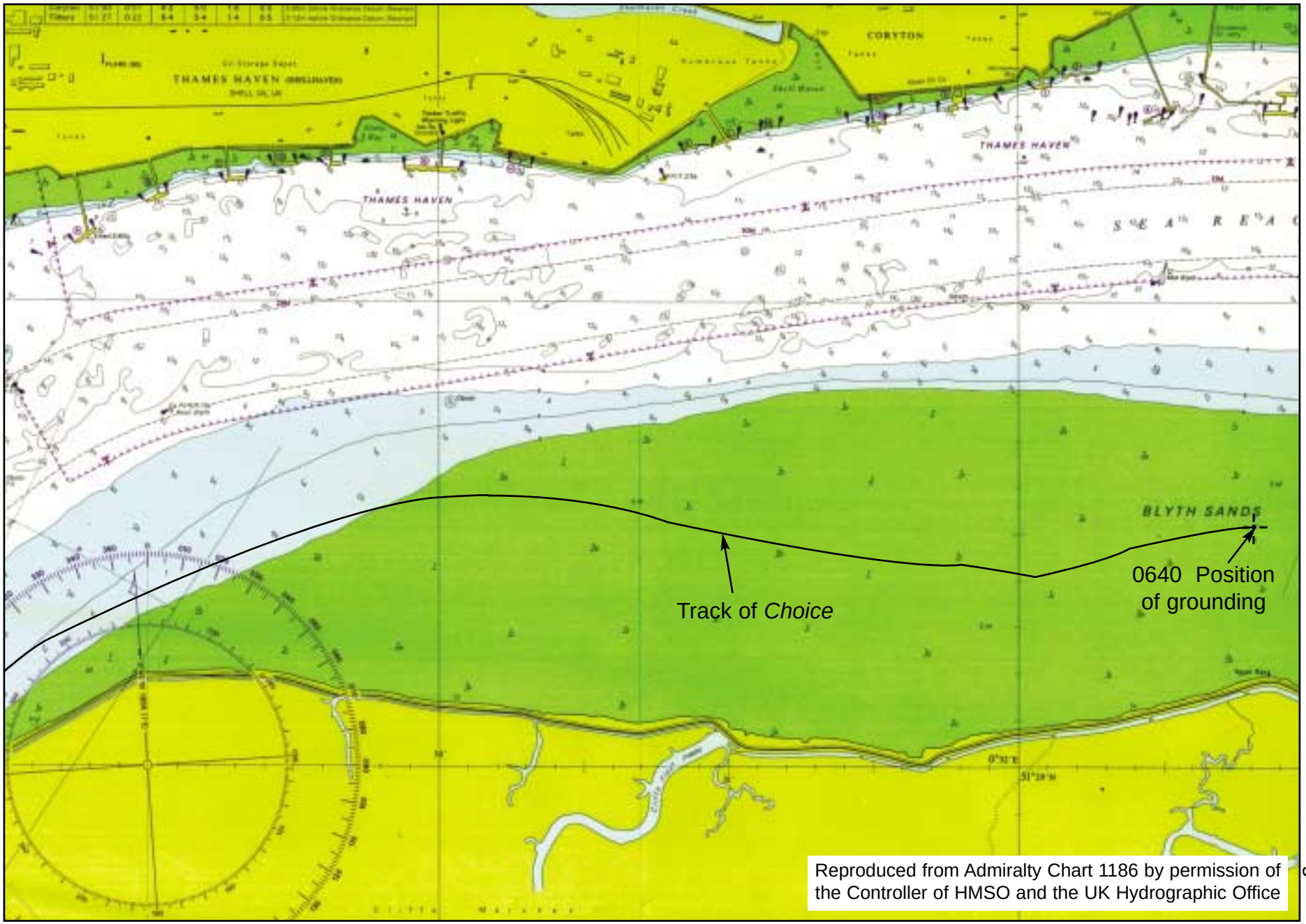


Figure 2

Extract of chart showing the approximate route taken by *Choice*

1.3.3 Events after grounding

The master tried to refloat the ship by increasing her engine speed. The engine noise woke the owner, who went straight to the wheelhouse. On his arrival, the master said something along the lines of “we’re not going anywhere”. This led the owner to believe that *Choice* had lost forward gear. The owner then went aft, and quickly realised that they were aground. He returned to the wheelhouse, and saw that the engine was going astern but that *Choice* was stationary. The owner also noted that a large scale electronic chart, showing the drying areas in green, was selected on the laptop computer. When the owner asked the master what the options were regarding informing the coastguard, the possibilities of getting a tow, how much water there was, and would the vessel fall over, the master did not respond before the owner started to take action.

At 0645, the owner informed Thames Coastguard, via VHF radio channel 16, of the vessel’s situation. The time and height of low water were then established, and it was calculated that *Choice* might fall over. As a result, the owner and master agreed that all the crew and students should muster on the weatherdeck and don lifejackets. With an ebb tide now running and the tide falling, *Choice* quickly developed a 30° heel to port. This, however, was stabilised after the crew cut the boom and wedged it between the riverbed and the shelter on the port side aft. The owner then asked the master for advice regarding the use of the liferafts. Again, the master did not reply, so the owner decided to launch them. During the launch, the master did advise to leave the painters attached to the vessel. The ten students, and two of the crew, were then transferred into two liferafts.

On receipt of the VHF radio call from *Choice*, Thames Coastguard immediately declared the incident a “Mayday” and alerted the Southend and Sheerness lifeboats. A rescue helicopter was also scrambled from RAF Wattisham. The helicopter arrived at the scene at 0724 **(Figure 3)**, and was soon followed by the two lifeboats. By 0755, the personnel in the liferafts had been winched on board the rescue helicopter, and were landed in Southend at 0807. *Choice* refloated at 1333 without assistance, and proceeded to Gravesend.

1.4 THE MARINE CREW

1.4.1 The master

The master was 51 years old and held a Class 1 Certificate of Competency. He had been a lecturer at a nautical college for 2½ years, teaching various subjects on its Class 4 Certificate of Competency course. Previously, he had served for 20 years in the Merchant Navy in cargo and offshore supply ships, followed by 9 years as a pilot in Yarmouth. The master had been shown around *Choice* during a visit on 1 August, but other than when shifting berth from West India Dock to Thames Quay on the afternoon of 8 August, this was the first occasion he had sailed in her. It was also the first time he had been in command of a

vessel of this type or size, and he had only sailed down the Thames on one previous occasion, 30 years earlier. The master was recommended to the owner by a mutual acquaintance, and was not expecting to be paid for his services.

The master slept for 6 to 7 hours before getting up at 0700 on 8 August. He then travelled to London by train, which took about 3 hours. From arriving on board at about 1200, until the ship grounded, the master did not sleep. He appeared to others on board to be very quiet.

1.4.2 The chief engineer

The chief engineer was a retired teacher and engineer who had helped to redesign and refit *Choice.* He was an experienced yachtsman, and had sailed in the vessel on several occasions, including on the Thames. Apart from his engineering duties, the chief engineer was also the second-in- command, and expected to keep watches in the wheelhouse.

Figure 3

Photograph showing the rescue of the passengers and non-essential crew

1.4.3 The owner

The owner began his career as an aviator in the Royal Navy and worked as an air-to-air combat instructor. After leaving the Royal Navy, he flew commercial aircraft including 747s for over 10 years before becoming a senior business executive, and developing several major entertainment complexes overseas. He maintained his interest in aviation by flying executive jet aircraft as training captain. Having sailed, and lived on board *Choice*, he was very familiar with the vessel, and expected to keep wheelhouse watches. He also intended to assist with the students' training.

1.5 ROLES AND RESPONSIBILITIES

The course guidance issued to the crew and students stated:

"The voyage will be under the command of the Master…Second in command is the Chief Engineer…The master is responsible for the ship and all personnel at all times.."

The master's role regarding the students, however, was not specified in the course guidance. The intention of putting the students in the wheelhouse during the passage down the Thames was to enable them to familiarise themselves with the environment, and to benefit from the experience of being at sea at night. It was planned to start the training in earnest the following morning. The intention of the owner and course director was that the master should help the students only if he could and wanted to. The master, however, was under the impression that the training started as soon as the students arrived on board, and believed his role was to supervise the students, and to intervene only when necessary. The positions to be manned by the students in the wheelhouse had been determined by the students themselves, not by the master or the training staff.

The crew's wheelhouse watchkeeping arrangements for the voyage had not been organised by the master. The owner thought the master would wake him when he wanted to be relieved in the wheelhouse.

1.6 PASSAGE PLANNING

The owner had previously visited Antwerp to see the vessel's likely berth in Willemdok. After discussions with the local authorities in Antwerp regarding passage on the Schelde, he calculated the intended departure and arrival times. He also bought relevant Sea Pro electronic charts for use with a GPS receiver and a laptop computer.

Before joining, the master believed the students would plan and conduct the passage to and from Antwerp. As a back-up, however, he bought and studied paper charts of the Thames and the North Sea as far as the approaches to the Schelde. He also calculated the relevant tidal information and examined the

owner's charts of the Schelde. The master considered the navigable channel in the Thames to be well-buoyed, and that all relevant buoys would be passed within visual range. His plan was to remain within the buoyed channel. No tracks were drawn on the paper charts, nor input to the electronic charts. Waypoints for use during the passage across the North Sea, however, were entered into the master's own hand-held GPS receiver.

1.7 WHEELHOUSE EQUIPMENT

Choice was fitted with a fully serviceable Koden 3604 radar display and a new fixed magnetic compass. A hand-held magnetic compass was also carried. The fixed magnetic compass had only been fitted during the ship's last refit and had not yet been swung. An echo sounder had been fitted but had been removed for repair about 6 months before the accident. Several switches and breakers controlling navigation, instrumentation and ambient lighting, although switched on before departure, were not labelled. A dedicated chart table was not fitted, although a desk sited in the cabin immediately behind the wheelhouse was available but not used. Consequently, the paper navigational charts had to be spread over a narrow shelf in the starboard, forward corner of the wheelhouse **(Figure 4).**

Positional information from a GPS receiver was displayed on Sea Pro electronic charts, which had been used without difficulty during previous voyages, via a laptop computer sited in the forward corner on the port side of the wheelhouse **(Figure 5)**. Neither the master, nor the students received any training before sailing, on the use of electronic charts, although the master appeared familiar with similar software applications. During the passage, the students occasionally experienced difficulties when trying to use them. These included small scale charts being automatically selected when changing between larger-scale ones **(Figure 6)**, and edges of charts displaying only track history **(Figure 7)**. The master did not use the electronic chart system during the passage, or help the students to do so, because he believed it was up to them to find out how to use it.

1.8 STUDENT BRIEFINGS

The students were to arrive on board at about 2000, but the last did not do so until about 2230. A safety brief was given by the master, which included details of the different lifejackets on board, the general alarm, and how to raise an alarm. It did not include information on fire-fighting equipment, access to the upper deck, or action in the event of a man overboard. The owner had planned to conduct this brief himself, but thought it might be more appropriate if given by the master. The master is reported to have appeared reticent during the brief, and surprised the owner by not going into greater detail. Because one of the students arrived late, intended briefs on how to steer, navigation, and watch duties, were omitted.

Position where paper charts were spread open

Figure 4

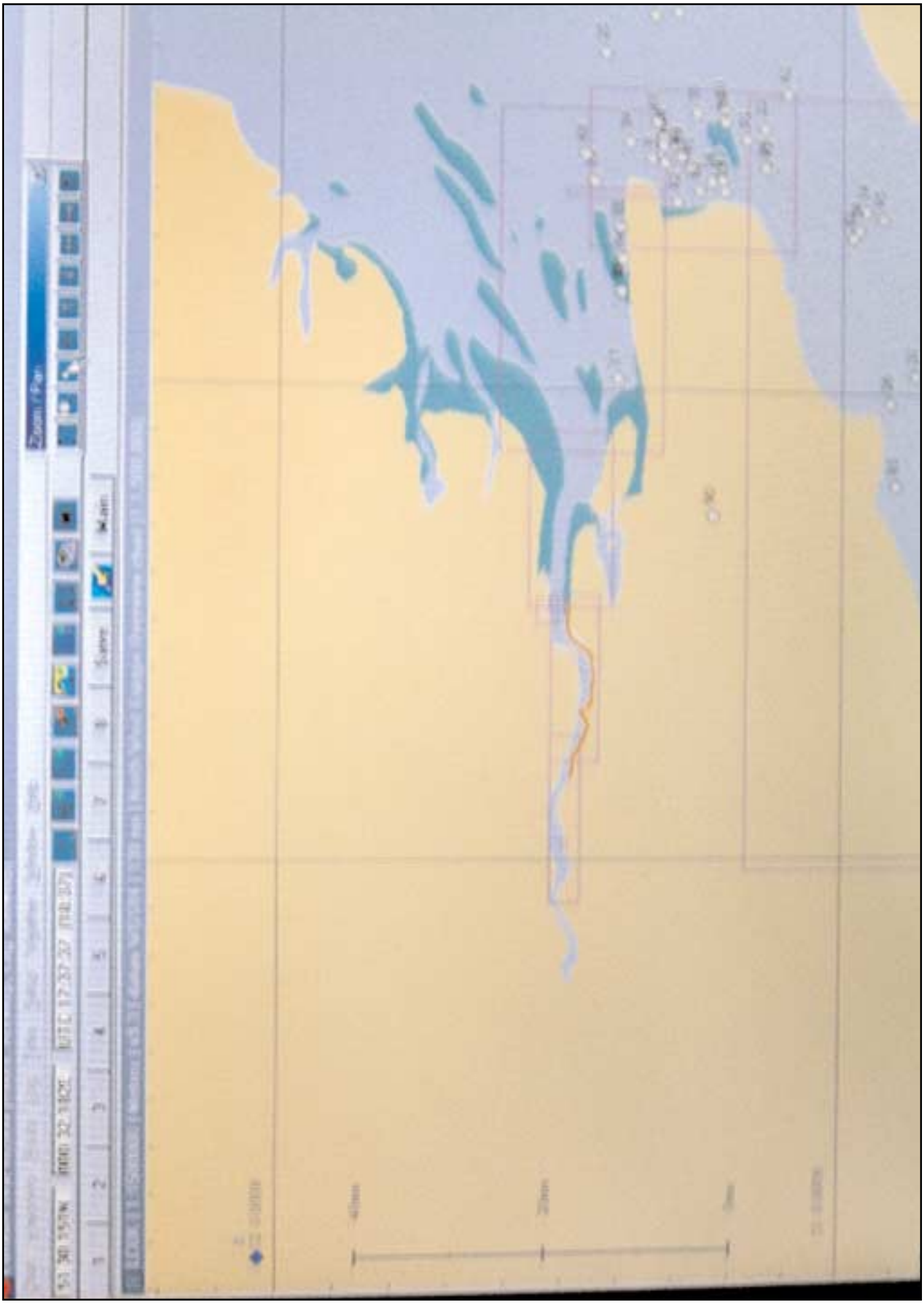
View of the starboard side of the wheelhouse

Position of the laptop computer displaying the electronic charts

Figure 5

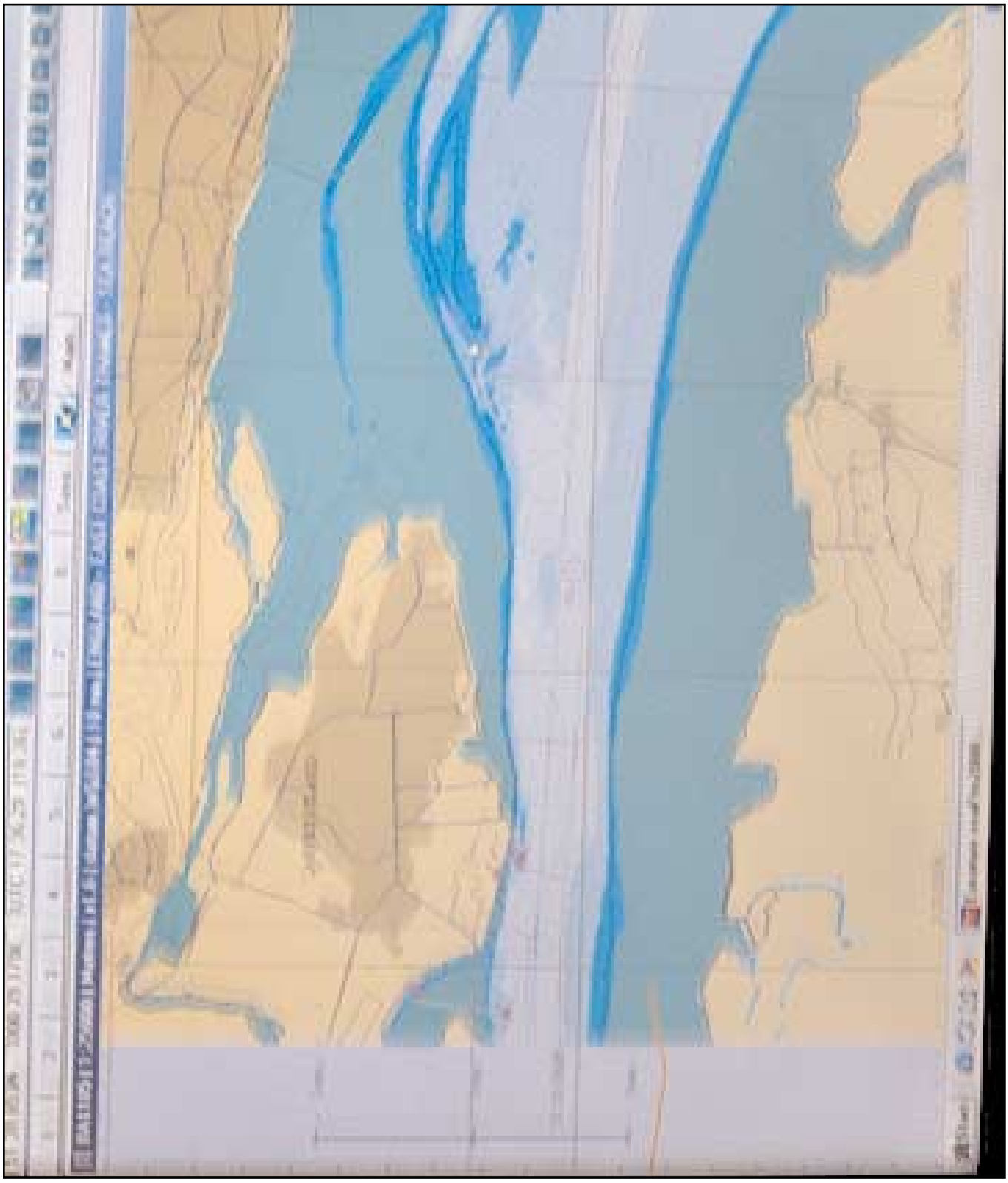
Photograph of the port side of the wheelhouse

Figure 6



Example of a small scale chart inadvertently selected

Figure 7



Photograph of an electronic chart showing only track history on its left hand edge
Note : This does not represent the scale of chart in use at the time of grounding

1.9 ENVIRONMENTAL CONDITIONS

Sunrise was at 0434 on a bearing of 064°; the bearing of the sun at 0630 was 085°. Visibility was 4. Wind was south-west force 2, and the sea was calm. High water at London Bridge was 0444 and at Tilbury it was 0354. It was 40% spring tides and the height of tide recorded at Coryton at 0640 was 2.98m, which was 0.2m higher than predicted. Predicted tidal stream was ebbing at 2.3 knots. Visibility generally was good, although there was some morning haze.

1.10 MANNING REQUIREMENTS

The 'Yellow Code' requires skippers of vessels on voyages of up to 60 miles from a safe haven to hold at least an RYA/Dtp Certificate of Competency as Yachtmaster Offshore (Motor). It also requires that there should be a second person deemed by the skipper to be experienced.

1.11 ACTION TAKEN FOLLOWING THE ACCIDENT

On 15 August 2001, the master received a formal warning from the PLA harbourmaster (Lower District) regarding his future conduct on the Thames. The warning was copied to the Chief Examiner of Masters and Mates.

An echo sounder has been fitted in *Choice,* and the switches and breakers in the wheelhouse have been labelled.

SECTION 2 - ANALYSIS

2.1 AIM AND SCOPE

Although the nature of the 'team-building' course required its students to have practical experience in operating a vessel at sea, the students were nevertheless passengers, not members of the crew. In addition, they had no relevant nautical experience. The purpose of the analysis is to determine the contributory causes and the circumstances of the accident as a basis for making recommendations to prevent similar accidents in the future. Therefore, while the students' actions might have directly contributed to the grounding of *Choice*, it is considered appropriate to focus the analysis primarily on the factors influencing the actions of the vessel's crew.

2.2 VOYAGE PREPARATION

2.2.1 The marine crew and watchkeeping arrangements

It is considered the vessel's crew met the manning requirements of the 'Yellow Code'. The owner had engaged the services of a master mariner, and both he and the chief engineer were familiar with *Choice,* and had sailed in her previously.

It is also considered reasonable that the master, as the most experienced and qualified mariner on board, kept the wheelhouse watch for the night passage down the Thames. However, it is surprising that the master did not organise the wheelhouse manning arrangements for the entire passage with the owner and the chief engineer. The passage from London to Antwerp is potentially very taxing, as it involves two lengthy river transits, and the crossing of the eastern section of the Dover Strait TSS. The master would, therefore, have been required to be in the wheelhouse for long periods. In such circumstances, it would probably have been advantageous for the master to identify times when it would have been possible for him to rest, rather than calling for a relief when he was tired.

2.2.2 Passage planning

Other than the owner calculating the estimated times of departure and arrival, and relevant electronic charts being purchased, no further passage planning appears to have been done until the master's arrival, the day before sailing. Then, the shifting of berth, the loading of the electronic charts into the laptop computer, and the safety brief, severely reduced the time available to the master to complete this important task. Although, initially the master believed the students would plan the passage, this would not have been practical, given their lack of nautical experience and planned time of arrival on board. In any event, the master was responsible for planning the passage, and even though his preparations were rudimentary, there is no doubt that safe passage down the Thames could have been achieved, providing *Choice* was kept within the navigable channel.

2.2.3 Vessel and equipment familiarisation

Having been shown around *Choice* during his visit on 1 August, and having shifted berths on 8 August, the master was reasonably acquainted with her. He was not, however, completely familiar with the Sea Pro electronic charts. The problems with the electronic charts encountered during the voyage can occur when charts are selected prematurely, appropriate chart information is not selected for display, and 'automatic folio selection' arrangements are not managed correctly. As the students had no training in the use of these electronic charts, it is therefore not surprising such difficulties were encountered. With alternative methods of monitoring the vessel's position available, however, including visual appreciation, radar, GPS and paper charts, the master's decision not to use the electronic chart system should not have affected his ability to keep *Choice* within the navigable channel. Had he occasionally used the electronic chart system in conjunction with the other methods, notwithstanding the problems occasionally encountered by the students, it would have provided a ready, and real time method of assessing the vessel's position.

2.3 CONDUCT OF NAVIGATION

2.3.1 Employment of the students

As the students had not been briefed on key tasks relating to their wheelhouse watchkeeping duties, and the passage down the Thames can be problematic, the owner's intention that they should not start their training in earnest until the following morning, appears to have been a sensible approach. The master, however, believing he had a supervisory role with the students, allowed them to take on key navigational functions. While this misunderstanding between the owner and the master was unfortunate, particularly as the students had not been given key briefings, it should not have affected the safe navigation of the vessel. This was provided the master, who was solely responsible in this respect, effectively monitored the actions of the students, and intervened when necessary to keep the vessel in the navigable channel.

2.3.2 Monitoring of the vessel's position

The master would have been able to estimate the vessel's position visually, relative to the buoys marking the navigable channel. Navigating in this manner requires judgment, and to maximise the accuracy of estimating a vessel's position relative to the outer limits of a channel, it is prudent to monitor buoys ahead and astern of the beam. The master could not have been doing this from when he sat down at about 0600; otherwise he would have seen that *Choice* had left the buoyed channel.

The master would also have noticed that *Choice* had left the buoyed channel if he had monitored either the electronic charts, or the radar.

2.3.3 The grounding

It is surprising that *Choice* did not ground virtually as soon as she started to cross Blyth Sands. With a height of tide of just under 3m and a draught of 3.5m, it would have been reasonable for her to start touching the bottom as soon as the charted depth was less than 0.5m. As **Figure 2** shows, much of *Choice's* track, after rounding Lower Hope Point, passed over an area that dries above chart datum. It is therefore probable that she would have been interacting with the riverbed much earlier than when the master noticed she was feeling the ground. The interaction with the riverbed might have manifested itself in a reduction of speed made good, difficulty in steering, and increased vibration. If present, it is unlikely that any of these symptoms would have been recognised by the inexperienced students; they should have been by the master.

2.4 CONCENTRATION AND ALERTNESS

2.4.1 General

Between 0615 and 0620, as *Choice* proceeded down Lower Hope Reach, the helmsman altered course to starboard to pass around Lower Hope Point towards Blyth Sands. As a result, the vessel left the Lower Hope port lateral buoy about 365 metres to port, rather than about 137 metres to starboard as intended. As a consequence, *Choice* finally grounded about 5 cables south of the main navigable channel, marked by the Mid-Blyth north cardinal buoy. Neither this deviation from the navigational plan, nor the probable interaction with the riverbed, were detected by the master until immediately before the vessel grounded. At some point, either just before, or when he decided to sit down at 0600, the master stopped carrying out his duty to ensure the safe navigation of the vessel. The precise reason, or reasons, why he did so cannot be determined, but it is believed either one, or a combination of several factors, contributed to the master's actions, perception and lack of alertness in the 30 minutes before the grounding.

2.4.2 Fatigue

Everyone has a minimum sleep requirement to maintain alertness and reasonable functionality. Most people require between 7.5 and 8 hours sleep per day, and if they don't achieve this, they develop a sleep debt. As the master had not slept for over 23 hours, it is not surprising he was tired. In addition, having been a college lecturer for 2.5 years, which he worked during the day and slept at night, his internal body clock, which regulates the precise timings of body functions, including periods of maximum alertness and sleepiness, would have been based upon this pattern. Studies show that for a person adjusted to sleeping at night, the maximum period of sleepiness normally occurs between 0300 and 0500 daily.

Experience shows that when a sleep debt is combined with a disruption to a person's body clock, the effects can seriously impair that individual's performance. Signs of such impaired performance often include; a reduced level of vigilance, a failure to anticipate danger, a willingness to take risks, the ignorance of normal checks and procedures, and the adoption of an attitude that 'everything is too much trouble'. The master's decision to sit on the bench at the rear of the wheelhouse, from where he was less likely to effectively see where *Choice* was heading, and his failure to register that she had left the navigable channel when observing from the starboard side of the bridge, were symptomatic of varying levels of fatigue. The chief engineer and the inexperienced students were able to judge that the vessel was biased towards the south bank of the river, the master, using the same information, was not.

2.4.3 Internal and external environment

Between 0615 and 0630, the wheelhouse inevitably became crowded and noisy during the watch changeover, particularly as the on-coming watch needed to be briefed on what to do, and there were about six students present. This would undoubtedly have been a distraction, which could have been avoided had the watch changeover been better organised.

While discussing the passage plan with a student on the starboard side of the wheelhouse, the master had a good view out of the window ahead, and should have seen that *Choice* had left the channel. It is probable that he was distracted from the current navigational situation by his focus on the passage plan and charts relevant to later stages of the passage.

It is also possible, however, that when he looked out of the window he did not see anything to raise doubt over the vessel's position. To the east of Lower Hope Point, the distance between the banks of the Thames widens considerably. As the height of tide at this time was sufficient to cover Blyth Sands, this gave the impression that the width of the navigable channel was greater than it was. Consequently, as the master stood up from the bench and looked ahead, he might have assumed there was ample safe water, particularly in view of his lack of familiarity with the waters. This assumption would have been reinforced by the glare from the sun, which made it difficult to detect the absence of any navigational buoys ahead. To the tired master, the urgent need to check the vessel's position might not, therefore, have been obvious.

2.4.4 Communication

The students were concerned about the vessel's position, but discussed the matter in Dutch, rather than English as indicated in the course instructions. This was probably because they felt more comfortable talking in their first language. They also expected the master to be aware of the situation, and to have intervened if he felt it necessary. In addition, the master's apparent quiet manner, together with his supervisory approach, did not encourage the students

to interact and converse with him. The lack of intervention by the master indicated to the students that all was well. Had the students discussed their concerns in English, the master might have been alerted to the situation much sooner.

The chief engineer also believed *Choice* was too far to the south, but did not query her position with the master. His reluctance to question the master's judgment in front of the students was understandable, as he, like the students, must have expected the master to be aware of the situation. However, had the chief engineer drawn the situation to the master's attention, this might also have prompted the master into taking action.

2.5 ACTIONS FOLLOWING THE GROUNDING

It is probable that the master did not respond quickly to the owner's questions, or issue any instructions following the grounding, through a combination of fatigue, lack of recent sea experience, lack of experience in this size and type of vessel, and shock. Failure to respond in an emergency situation is another recognised symptom of fatigue. In this case, however, it is considered that the other factors mentioned also affected the master's lack of action in varying degrees. It is also probable that the owner's background as a pilot, greater familiarity with the vessel, and recent sleep, probably equipped him to think and react more quickly than the master. Once the owner had taken charge of the situation, it is likely the master would have been reluctant to intervene, particularly if he lacked confidence, as possibly indicated by his manner at the safety brief.

The actions taken following the grounding are considered to have been appropriate. Although *Choice* was successfully refloated with four of the crew on board, the disembarkation of the students and non-essential crew into the liferafts was prudent, particularly in view of the fact that the vessel had a 30° heel, and was in danger of falling over. The use of the boom to prevent the vessel heeling further demonstrated quick-thinking, and might have prevented her from sustaining more serious damage.

2.6 WHEELHOUSE EQUIPMENT

An echo sounder is a useful piece of equipment, which enables a watchkeeper to monitor the depth of water under the keel. In this case, had an echo sounder been fitted, switched on, and used by the master, a steady decrease in the depth of water beneath the keel would have been observed as *Choice* left the channel and crossed the 10m, 5m, 2m and 0m depth contours.

Given the master's failure to effectively use other key navigational equipment such as the radar display, however, it cannot be certain that he would have utilised an echo sounder, had one been available.

Using paper charts to navigate, without a suitable table on which to place them, can be extremely awkward. This was almost certainly so when the master and students were trying to use the charts in the starboard, forward corner of the wheelhouse. Ideally, the paper chart in use should be fully opened to allow a watchkeeper ready access to its information, and to allow appropriate positional information to be annotated. This is achieved normally by the provision of a suitably sized flat surface. When training at sea, it is important that the training requirements do not interfere with the safe operation of a vessel. Consequently, in such circumstances, it is frequent practice to duplicate navigational resources, such as chart tables, to allow ships' crew and students to work independently. While this was not possible, and not necessary on *Choice*, it is considered the provision of one chart table, or use of the desk behind the wheelhouse, would be of benefit to the wheelhouse watchkeeper and the students alike.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

3.1.1 Cause

The adjustment of the vessel's course to take *Choice* across Blyth Sands, where the depth of water was insufficient to keep her afloat. [1.3]

3.1.2 Contributing factors

1. The master was not monitoring the position of the vessel, and did not notice that she had left the navigable channel. [2.3.2]

2. The master was tired, and his failure to register that *Choice* had left the navigable channel was probably symptomatic of fatigue. [2.4.2]

3. The crowding in the wheelhouse during the watch changeover, and discussions regarding the passage plan, could have distracted the master's attention from the navigational situation. [2.4.3]

4. A comprehensive passage plan was not produced before sailing. [2.2.2]

5. The width of the River Thames east of Lower Hope Point might have given the master the impression that there was ample safe water. [2.4.3]

6. The glare from the sun obscured the absence of any navigational buoys. [2.4.3]

7. The master did not use the Sea Pro electronic charts, which provided a ready and real time assessment of the vessel's position. [2.2.3]

8. The students and chief engineer did not voice concern over the vessel's position because they expected the master to be aware of where she was. [2.4.4]

9. The master was not aware of the students' concerns about the vessel's position, because they discussed them in Dutch. [2.4.4]

10. The master's apparent quiet manner and supervisory approach would not have encouraged interaction and open communication in the wheelhouse. [2.4.4]

3.2 OTHER FINDINGS

1. It would have been advantageous for the master to organise the wheelhouse watchkeeping arrangements for the entire voyage before sailing. [2.2.1]

2. Although there was a misunderstanding between the master and the owner regarding the employment of the students, and the students had not been given key briefing, this should not have affected the safe navigation of the vessel. [2.3.1]

3. The actions of the owner following the grounding are considered to have been appropriate. [2.5]

4. An echo sounder, which might have alerted the master to the shallow water, was not fitted. [2.6]

SECTION 4 - RECOMMENDATION

The owner, Nitro Classic, is recommended to**:**

With respect to the navigation of *Choice:*

- Ensure that all crew are adequately rested before taking up a wheelhouse watch.
- Ensure the master produces a comprehensive passage plan before sailing.
- Review the organisation for training students in the wheelhouse.
- Encourage all personnel to voice concern if they see a potentially dangerous situation arising.

Marine Accident Investigation Branch
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