Report on the investigation

into the near collision between

Hoo Finch and ***Front Viewer***

off the River Humber

on

25 February 2004

Marine Accident Investigation Branch
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Carlton House
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United Kingdom
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

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

NOTE

This report is not written with liability in mind and is not intended to be used in court for the purpose of litigation. It endeavours to identify and analyse the relevant safety issues pertaining to the specific accident, and to make recommendations aimed at preventing similar accidents in the future.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

GPS	-	Global Positioning System
gt	-	Gross Tons
IMO	-	International Maritime Organization
ISM	-	International Safety Management
kW	-	kilowatts (unit of power)
MAIB	-	Marine Accident Investigation Branch
MCA	-	Maritime and Coastguard Agency
MEOL	-	Marine Engine Operators' Licence
MSN	-	Merchant Shipping Notice
OBO	-	Ore/Bulk/Oil
STCW	-	Standards of Training, Certification and Watchkeeping for Seafarers
UK	-	United Kingdom
UTC	-	Universal Time Co-ordinated
VHF	-	Very High Frequency
VTS	-	Vessel Traffic Services

SYNOPSIS

On 25 February 2004, just before 0600 UTC, the cargo vessels *Hoo Finch* and *Front Viewer* were involved in a near collision just north of the Humber deep water anchorage. *Hoo Finch*, a general cargo vessel of 794gt, was en route between Teesport and Teignmouth, and following a planned track, which took her through the deep water anchorage and close to the pilot boarding area off the River Humber. *Front Viewer*, a bulk carrier of 89,004gt, had recently weighed anchor and, with one pilot on board, was manoeuvring to pick up a second pilot before entering the river bound for Immingham. *Hoo Finch*, as the give way vessel, failed to take early and substantial action to avoid the close quarters situation. The collision was narrowly avoided by last minute action taken by both vessels.

In accordance with her minimum safe manning certificate, *Hoo Finch* carried a total of two watchkeeping officers, the master and the mate, as well as three ratings. The mate was alone on the bridge during the 0000 to 0600 watch contrary to the requirements of the International Maritime Organization's (IMO's) Standards of Training, Certification and Watchkeeping for Seafarers (STCW). As the situation developed, he was unable to properly interpret what he could see and, consequently, he failed to take prompt and decisive avoiding action. The mate admitted to being tired. His recorded hours of work and rest during the days preceding the incident have been analysed and it is concluded that his performance was degraded due to an accumulated sleep debt and disruption to his circadian rhythm. He was not asleep, but suffering the effects of fatigue brought on by long duty hours and disrupted sleep patterns. The work on board had not been shared equitably among the crew.

At about 0545, the mate left the bridge to call the relief master. The bridge was left unmanned at this time. VHF radio calls were made from *Front Viewer* and Humber Vessel Traffic Services (VTS), which should have alerted *Hoo Finch* to the impending danger, but the mate heard none of these calls. Calls, apparently made by the mate using channel 16 VHF, were not heard on *Front Viewer* or by Humber VTS. *Front Viewer* and a pilot vessel flashed lights towards *Hoo Finch*'s bridge windows, but these were not seen by the mate.

Recommendations have been addressed to the UK and International Chambers of Shipping and the International Shipping Federation, on passage planning, fatigue, manning, and lookouts. Also, a recommendation has been addressed to the owners, regarding the proper functioning of the VHF radios on their vessels.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *HOO FINCH*

Vessel details

Owner	:	Lapthorn Shipping Ltd
Port of registry	:	London
Flag	:	United Kingdom
Type	:	General cargo vessel with a single hold
Built	:	Yorkshire Dry Dock Co Ltd –1989
Classification society	:	Bureau Veritas
Construction material	:	Steel
Length overall	:	58m
Gross tonnage	:	794
Engine and propulsion	:	Two Cummins Charleston main engines each driving an Aquamaster steerable thruster, which were both controlled from the wheelhouse. The Aquamasters could thrust in any direction. Registered power 548kW.
Service speed	:	About 8 knots

Hoo Finch is shown in **(Figure 1)**.

1.2 PARTICULARS OF *FRONT VIEWER* AND INCIDENT

Vessel details

Owner	:	Aspinall
Port of registry	:	Singapore
Flag	:	Singapore
Type	:	Ore/Bulk/Oil Carrier
Built	:	Daewoo Shipbuilding Ltd –1992
Classification society	:	Lloyd's Register
Construction material	:	Steel
Length overall	:	285m
Gross tonnage	:	89,004
Engine and propulsion	:	Single main engine driving a fixed pitch propeller.
Crew	:	Indian and Sri Lankan officers, and ratings from the Philippines

Front Viewer is shown in **(Figure 2)**

Incident details

Time and date	:	0556 UTC, 25 February 2004
Location of incident	:	Just north of the Humber deep water anchorage
Injuries/fatalities	:	None
Damage	:	None to either vessel

Photograph courtesy of FotoFlite

Hoo Finch

Figure 1

Photograph courtesy of FotoFlite

Figure 2

Front Viewer

1.3 BACKGROUND

Hoo Finch was one of 13 similar vessels owned by Lapthorn Shipping Ltd and employed carrying bulk cargoes mainly between UK and North European ports. Typical cargoes included potash, aggregate and fertiliser. *Hoo Finch* loaded a cargo of potash at Teesport and departed for Teignmouth on the evening of 24 February 2004. The passage had been planned by the mate and approved by the master before departure **(Figure 3)**. Way points, previously entered into the GPS, were used in this passage plan. The planned route took the vessel though the deep water anchorage and close to a pilot boarding ground off the River Humber.

Front Viewer was an Ore/Bulk/Oil (OBO) carrier and, at the time of the incident, was carrying a cargo of coal from Australia to Immingham. She had arrived and anchored in the deep water anchorage on 22 February 2004 to await the two pilots that are required for vessels of her size. She anchored to the south of anchorage 1. At the time of the incident she was underway and manoeuvring to pick up the second pilot.

1.4 NARRATIVE OF EVENTS

All times are UTC.

The master had the con as *Hoo Finch* left the berth at Teesport at about 1720 on 24 February 2004. She was full away on her passage to Teignmouth at about 1755. At 1800, the mate went off duty and, after eating his evening meal, he went to bed at about 1900. The master kept the 1800 to 2400 bridge watch which passed uneventfully. The mate was woken by his alarm clock, and he got up at 2330. He went to the bridge at just before midnight in preparation for the start of his watch. The master handed over the watch at 2400 and left the bridge soon afterwards. The mate undertook the bridge watch on his own from 2400 until the time of the near collision; no lookout was employed during this period.

The vessel altered course off Flamborough Head at about 0150 on 25 February. The new course, about 153° towards the next way point off the Wash **(Figure 3)**, took the vessel through the Humber deep water anchorage. The mate felt tired during his watch. He spent periods sitting in the bridge watchkeeper's chair **(Figure 4)**, but he had to frequently get up and walk around to keep himself awake. The bridge watch alarm was operational and required acknowledgement every 20 minutes.

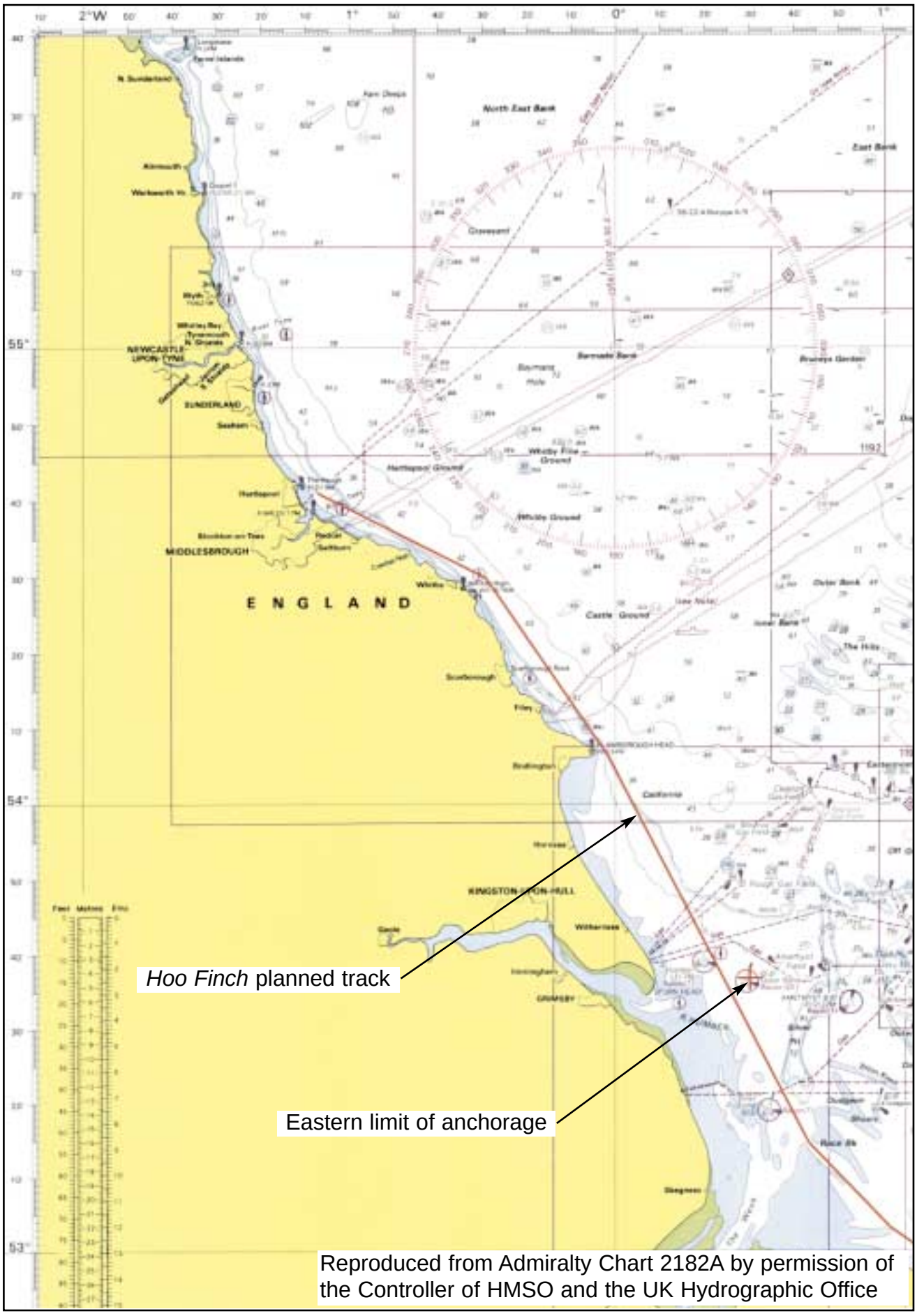


Chart showing *Hoo Finch*'s planned track

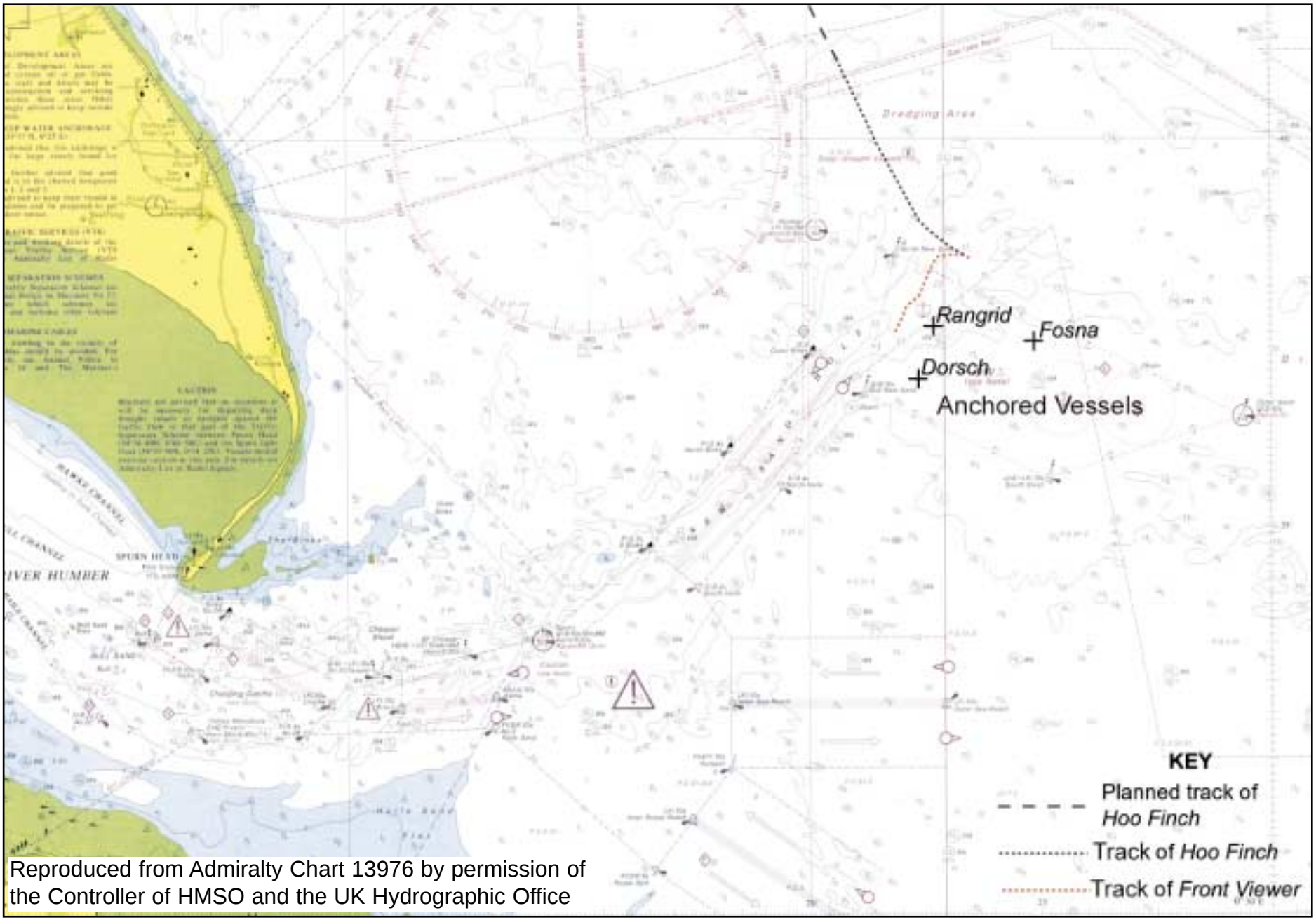
Figure 4

Hoo Finch's bridge

At 0500, the mate read *Hoo Finch'*s position from the GPS and plotted it on the chart. The mate could see anchored vessels in the deep water anchorage both visually and on the radar. The mate considered altering course to pass clear of the anchorage, but by using binoculars and the radar, he could see that his current track intersected a gap between the vessels, so he decided to maintain his course. The mate had the radar set at six miles range, offset to look ten miles ahead, in the north up, stabilised mode. The vessel was being steered by autopilot and was making a speed of 8 knots through the water.

At about 0515, *Front Viewer* got underway from her anchorage position and headed north at 4 knots **(Figure 5)**. Just after 0530, the first pilot boarded. However, the sea conditions were fairly rough and the second pilot considered it unsafe to board and remained in the pilot boat. At 0537 a call was made from *Front Viewer* to Humber VTS on VHF channel 14, confirming that the first pilot had boarded.

When the first pilot reached the bridge, he decided, in consultation with the officers on *Front Viewer,* to steer out of the anchorage and then head approximately north-east to provide a lee on the starboard side of the vessel to enable the second pilot to board. The speed was to be maintained at about 4 knots and the pilot would have the con during this manoeuvre.



Reproduced from Admiralty Chart 13976 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 5

Chart showing tracks of *Hoo Finch* and *Front Viewer*

When *Front Viewer* got underway, the anchor lights were turned off and the steaming lights and three red lights were turned on. The three red lights indicated that *Front Viewer* was constrained by her draught, and were a local requirement for entry to the river. Some deck lights on *Front Viewer* were left on while she was underway to assist the second pilot in boarding. From about 0537 she was heading approximately north-easterly.

Between 0515 and 0545 *Hoo Finch* continued to approach the anchorage on a course of about 153°. Her speed over the ground was about 9 or 10 knots due to the effect of the southerly flowing tide. During this period the mate did not notice that one of the ships in the anchorage had started to move.

At about 0545, the mate left the bridge and went below to call the relief master. The mate knocked on the relief master's door, then opened it and turned the cabin light on to ensure that he had been roused. The mate remembers that he was away from the bridge for about 2 minutes. There was an intercom between the bridge and the master's cabin, which could have been used, but the relief master preferred to be called in this way. The mate returned to the bridge but, because of the lighting in the accommodation, he had lost his night vision. It took about a minute for his eyes to readjust.

The pilot on *Front Viewer* was concerned about *Rangrid*, the anchored vessel on his starboard side, because the wind and tide were setting him towards her. Once clear of *Rangrid*, the pilot turned his attention to, and became concerned about, *Hoo Finch,* although he didn't know her name. At 0545, he called Humber VTS, using VHF channel 14, and asked if the identity of the vessel approaching the Humber Light Float from the north was known. VTS replied that they didn't know her name. At 0548, an officer on *Front Viewer* made the following call on VHF channel 16: *"Calling the vessel approaching Humber Light Vessel, this is the vessel on your starboard side, three miles off, with a pilot, how do you copy on channel 16?"*

At about 0550, the mate on *Hoo Finch* became concerned about one of the radar targets, which appeared to be on a constant bearing. However, he still believed that all the vessels ahead were at anchor, and he therefore considered the possibility that *Hoo Finch* was being set down on this target by the tide. He plotted his own position from the GPS on the chart and, in so doing, he had to face aft for about a minute to use the chart table. The position showed that his vessel was on track and, therefore, not being set down by the tide.

The mate then used binoculars to try and understand what was happening ahead. At this time, *Front Viewer* had the anchored vessels *Rangrid* and *Dorsch* directly behind her **(Figure 5)**. The anchored vessels were brightly lit and might have obscured *Front Viewer'*s steaming lights.

At 0550 an officer on *Front Viewer* made the following call on VHF channel 16, *"Calling vessel at 53° 39.1' North 000° 22.3' East"*. Shortly after, the pilot called Humber VTS on channel 14 to say that avoiding action was being taken. At 0551 an officer on *Front Viewer* made another call: *"Calling vessel at 53°39.0' North 000° 22.4' East, this is the vessel on your starboard side showing deep draught vessel lights, how do you copy on channel 16?"*

The mate on *Hoo Finch* does not recall hearing any of the radio calls made from *Front Viewer*. At about 0552, using VHF channel 16, he tried twice to contact the vessel that was on a constant bearing. Neither of these calls was heard on *Front Viewer*, nor were they received by Humber VTS.

At about 0553, the mate was still confused about the vessels ahead, so he selected manual steering and turned the vessel about 20° to port. Shortly after he put the Aquamasters to neutral to give him more time to assess the situation. He still believed that all the vessels ahead were at anchor.

At about this time, *Front Viewer* sounded five short and rapid blasts on the ship's whistle, and an Aldis light was flashed through the bridge windows of *Hoo Finch*. The pilot launch moved from her station to starboard of *Front Viewer* and flashed her searchlight at the bridge windows of *Hoo Finch*. The mate saw none of these signals.

At 0554, the pilot called Humber VTS on VHF channel 14 to say that a collision was imminent, that no response had been received from the other vessel, and they were full ahead and hard to starboard.

At about 0555, the relief master on *Hoo Finch* was getting dressed in his cabin on the starboard side. He looked out of his window and saw the deck lights of a large vessel close by. As he rushed out of his cabin, he heard *Hoo Finch* go astern. He arrived on the bridge and noted that the other vessel was very close. He took control and put *Hoo Finch's* thrusters hard over and applied full ahead power to turn his vessel sharply to port. A collision was narrowly avoided.

At 0556, the pilot on *Front Viewer* called Humber VTS to say that the collision had been avoided: he estimated that the closest point of approach had been about 60m. After the incident, *Hoo Finch* made a complete round turn to port and then resumed her original heading.

The crew of the pilot launch shone a light on *Hoo Finch'*s stern as she passed, and her name was reported to *Front Viewer*. At 0600, the pilot informed VTS that the other vessel's name was *Hoo Finch* and that "she was a danger to navigation".

At about 0601 the mate on *Hoo Finch* was told to go below and rest.

At 0603 the following call was made from *Front Viewer* on VHF channel 16. "*Hoo Finch*, *Hoo Finch*, *come in*". The relief master on *Hoo Finch* does not remember hearing this call, and he made no attempt to contact *Front Viewer*.

1.5 ENVIRONMENTAL CONDITIONS

Sunrise occurred at 0659 on 25 February, and nautical twilight started at 0543; it was predominantly dark at the time of the incident. The visibility was good. There was a force 7 wind from the north-west and a moderate sea. The tide was running approximately southerly with a speed of about 1.8 knots.

1.6 VESSEL TRACKS

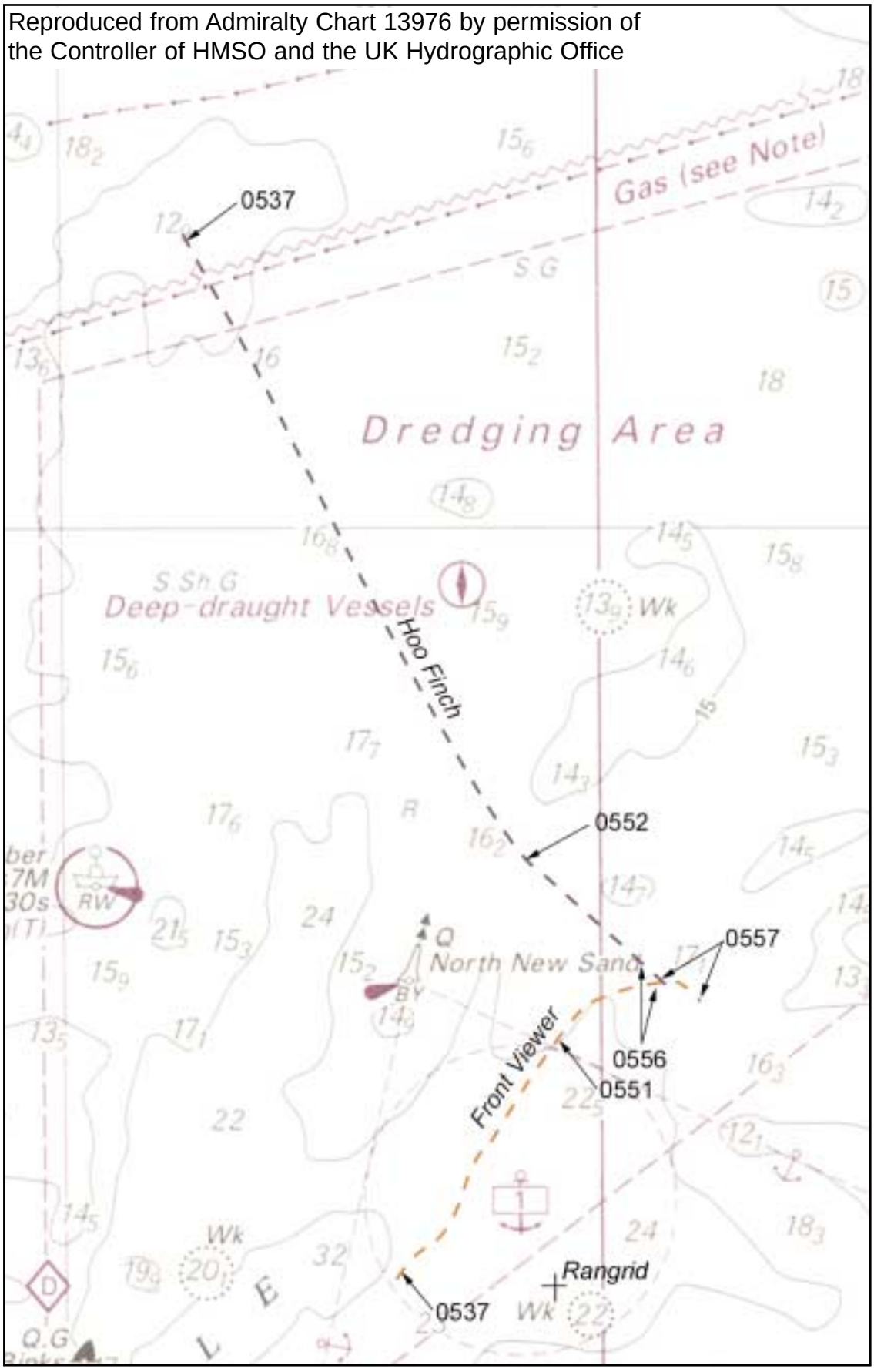
Humber VTS recorded the radar tracks of the vessels involved, which have been plotted on an enlarged extract of the chart **(Figure 6)**. The plots of the two vessels start at 0537 UTC, the time that it was confirmed that the first pilot was on board *Front Viewer*. They end at 0557, when the separate radar identity of *Hoo Finch* was temporarily lost. The closest point of approach occurred at 0556.

The plots show that *Hoo Finch* maintained her track of about 153° until 0552 when she altered course to about 133°. Up until about 0553 her speed over the ground had been just under 10 knots, but after that she began to slow down.

Front Viewer made a speed of about 4 knots in a north-easterly direction, until 0551, when she speeded up and turned to starboard.

Still radar images for each minute between 0550 and 0557 have been included as figures in this report **(Figures 7 to 14)**. Please note that the time displayed in each of the images is 5 minutes fast. The limit of the deep water anchorage is indicated on the radar images by a green line. During this period, the name of *Hoo Finch* was not known, therefore her radar target is labelled S 337.

Figure 6



Enlarged chart extract showing radar tracks of both vessels plotted from VTS recordings

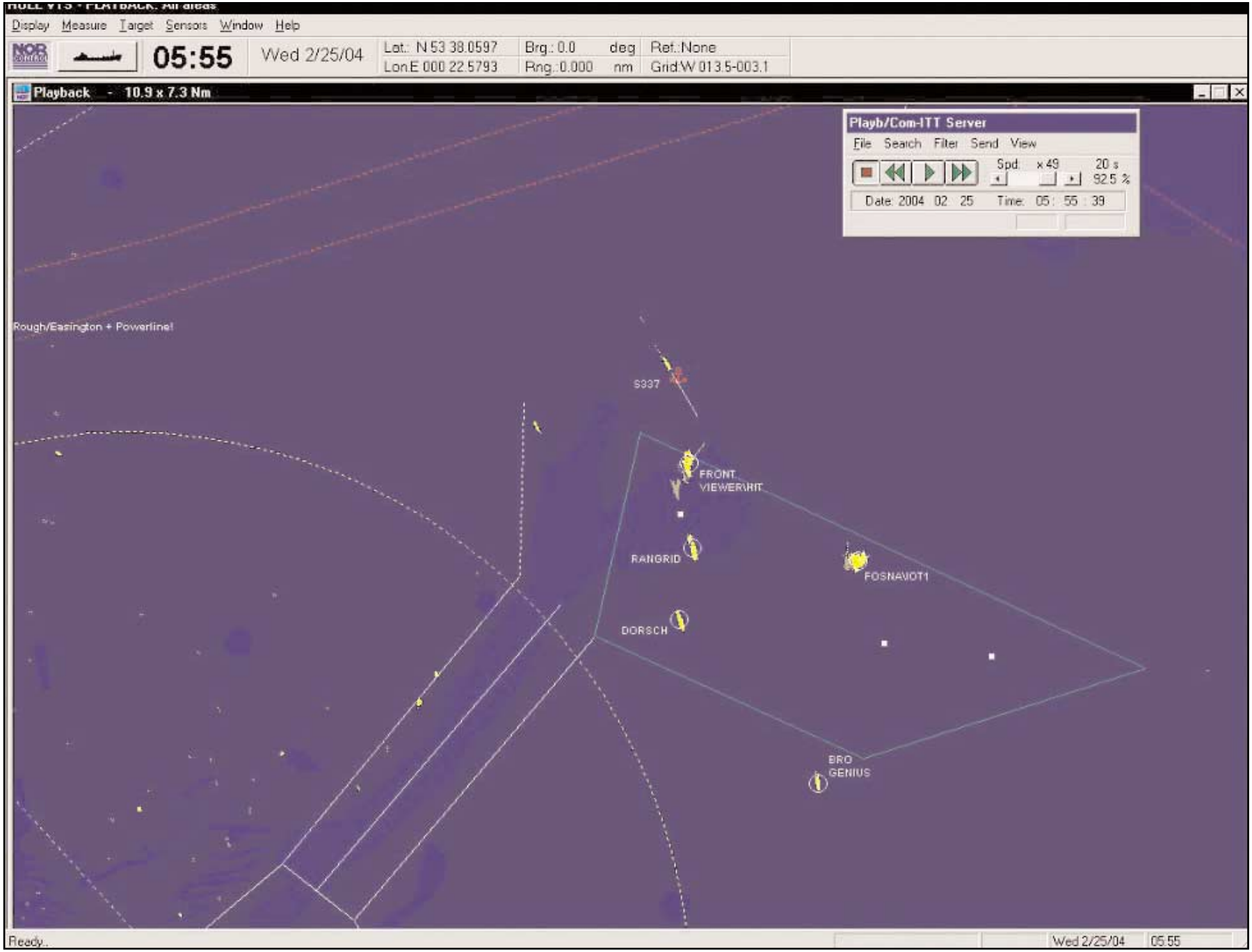


Figure 7

Note: The displayed time is 5 minutes fast of UTC

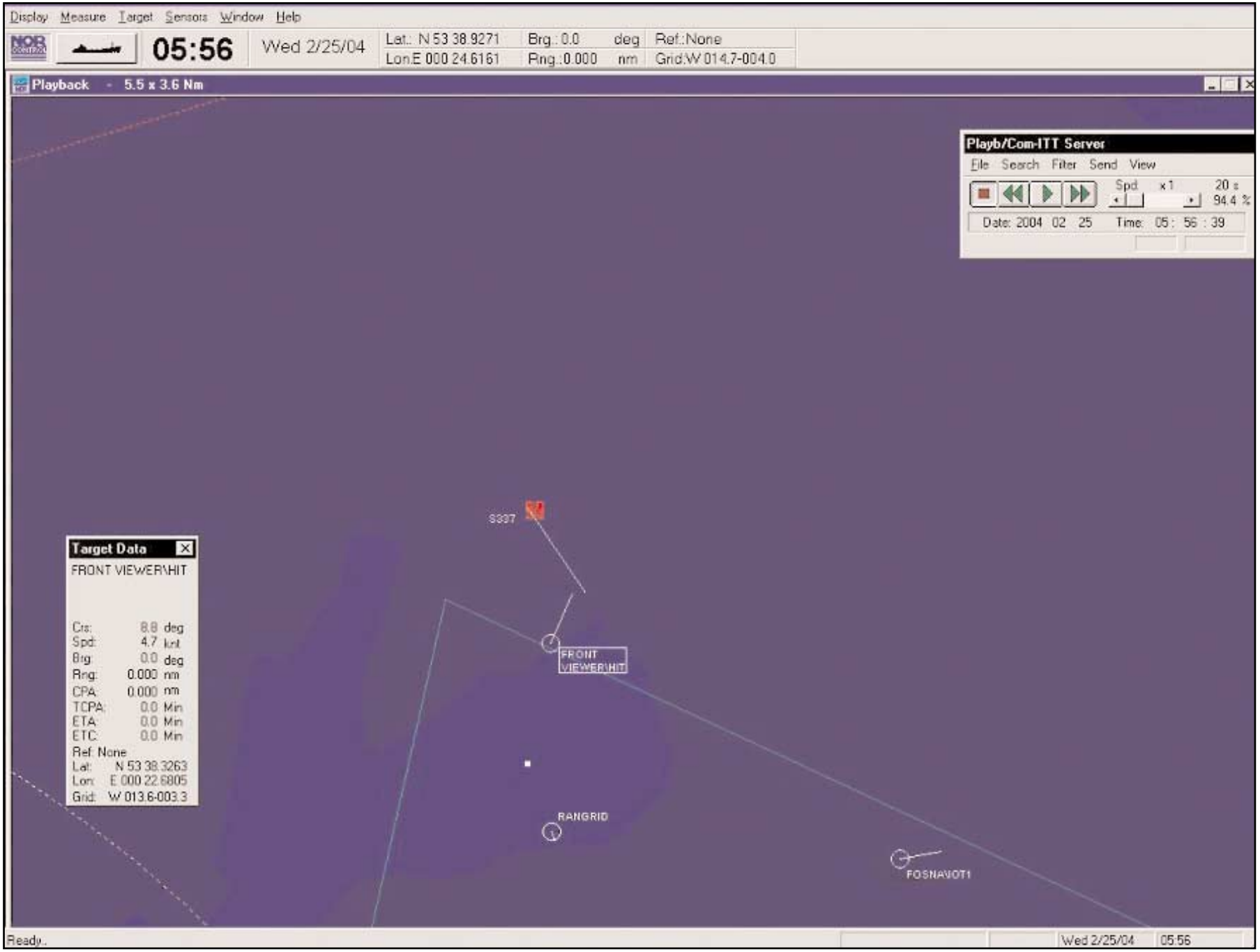


Figure 8

Note: The displayed time is 5 minutes fast of UTC

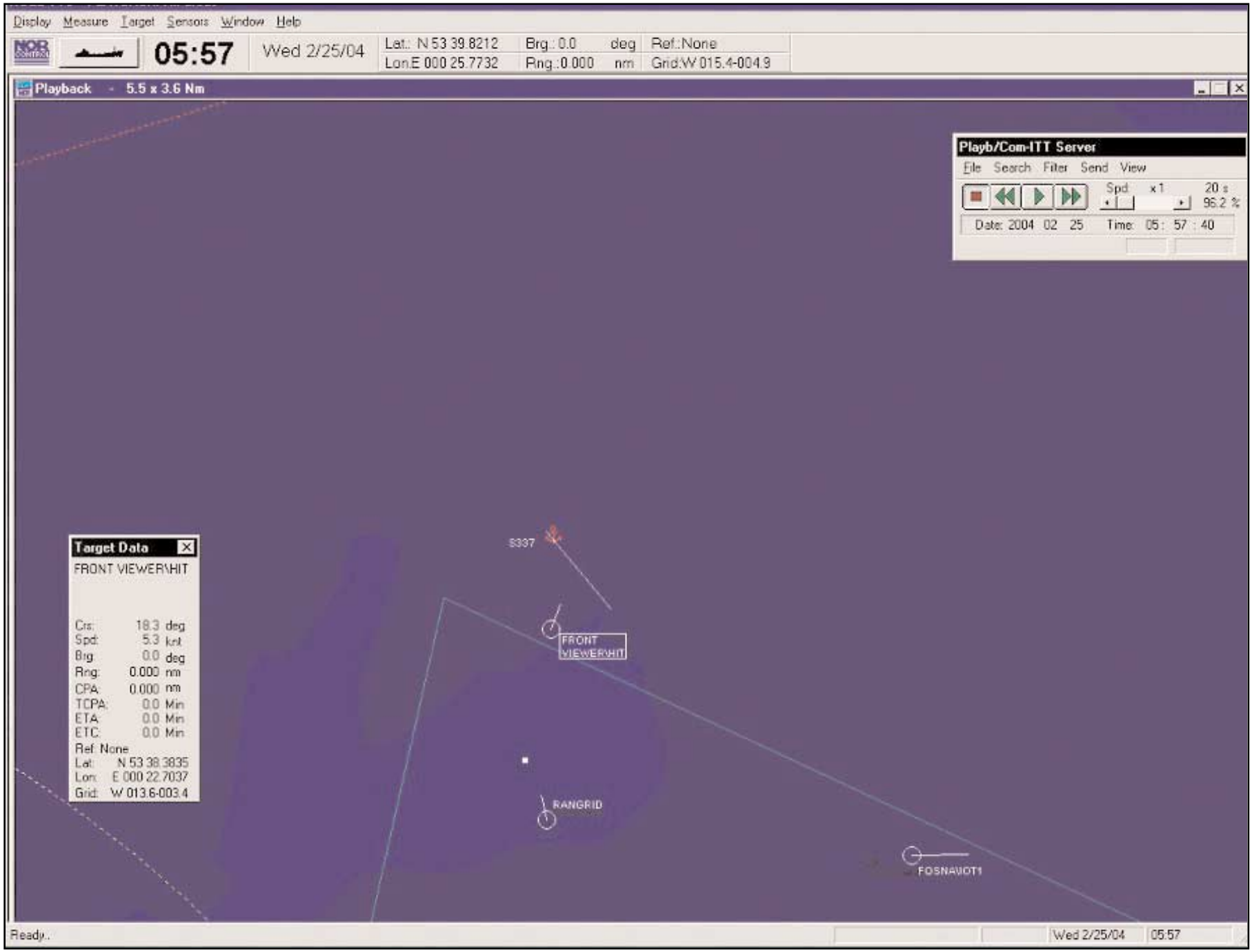


Figure 9

Note: The displayed time is 5 minutes fast of UTC

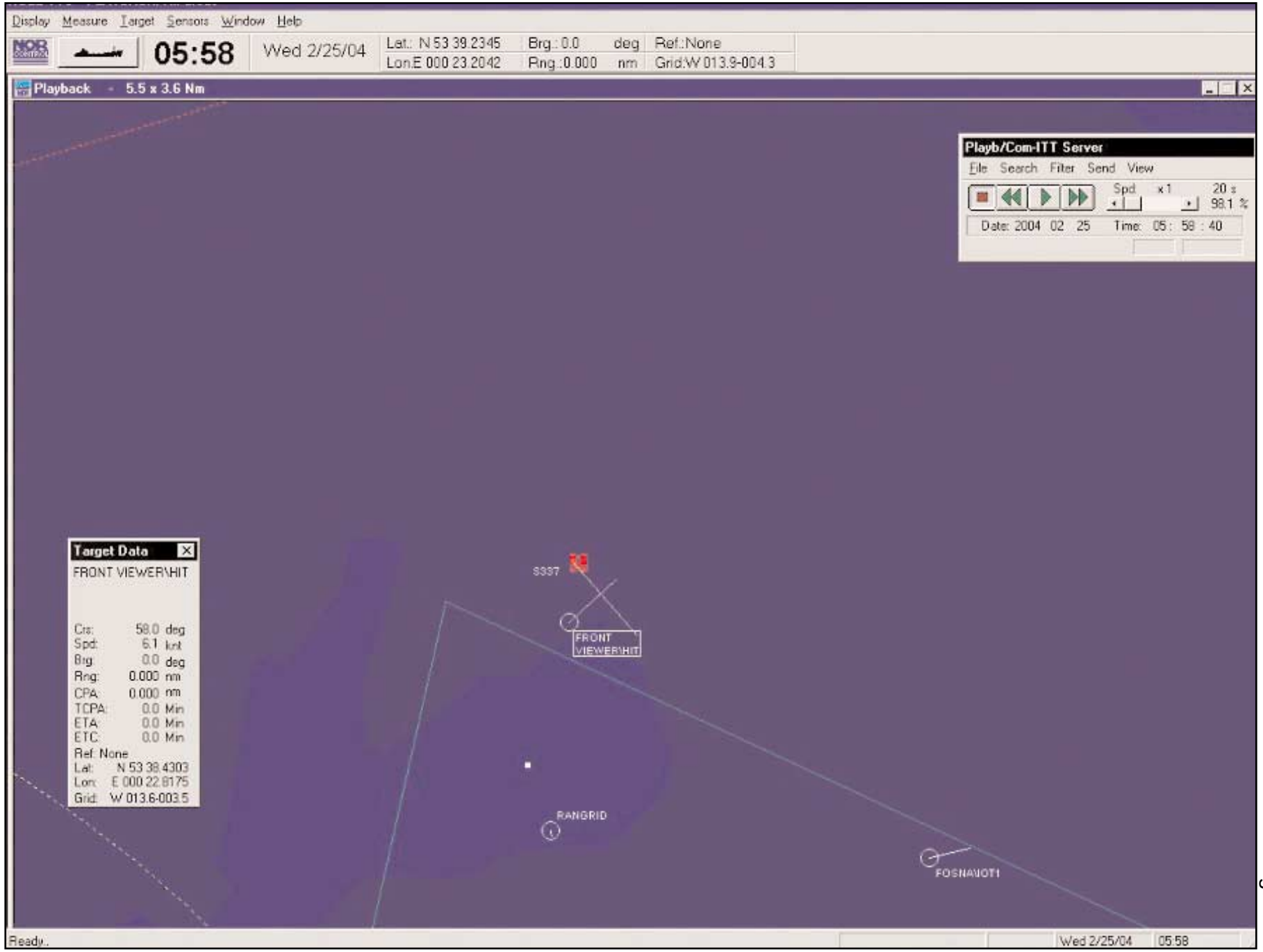


Figure 10

Note: The displayed time is 5 minutes fast of UTC

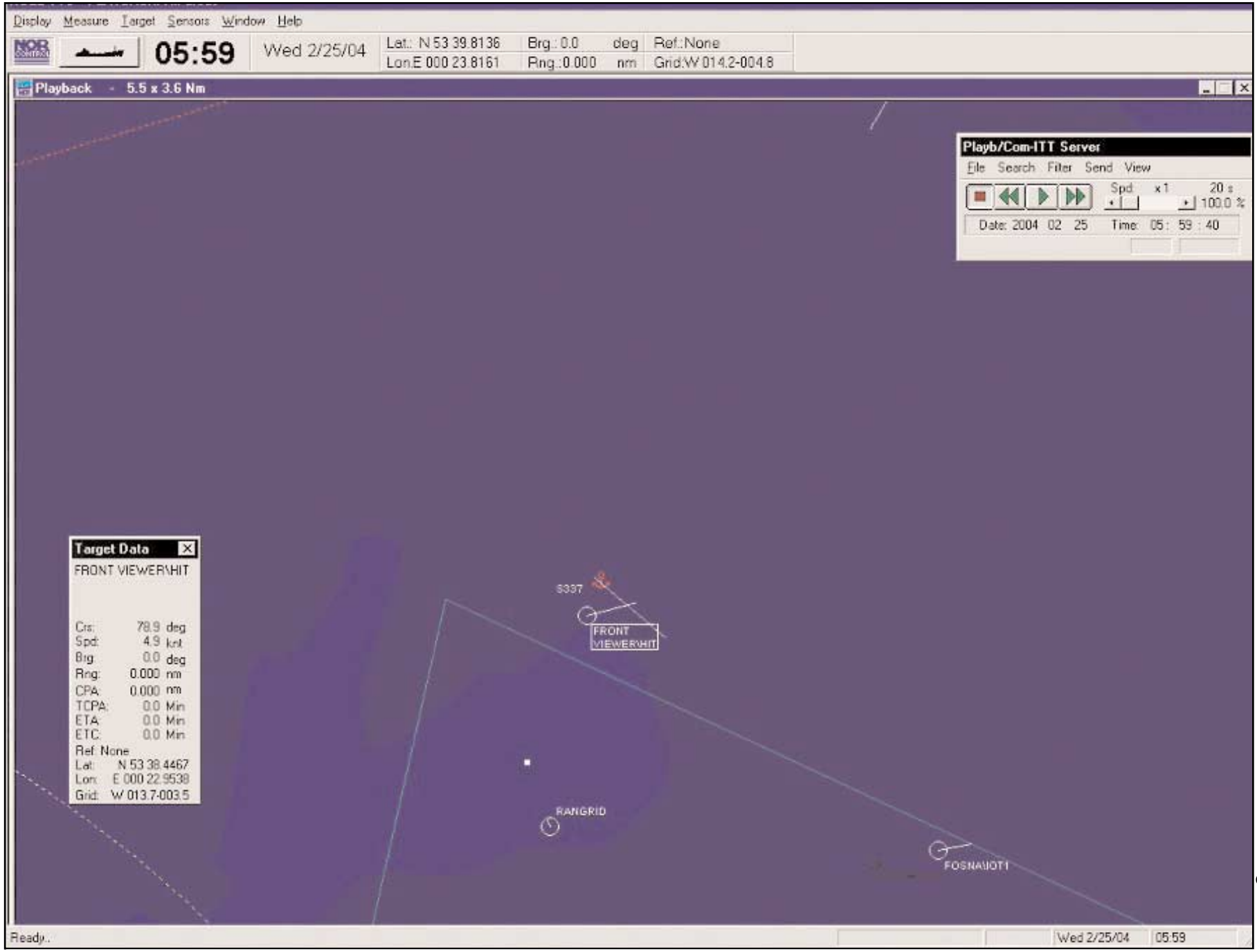


Figure 11

Note: The displayed time is 5 minutes fast of UTC

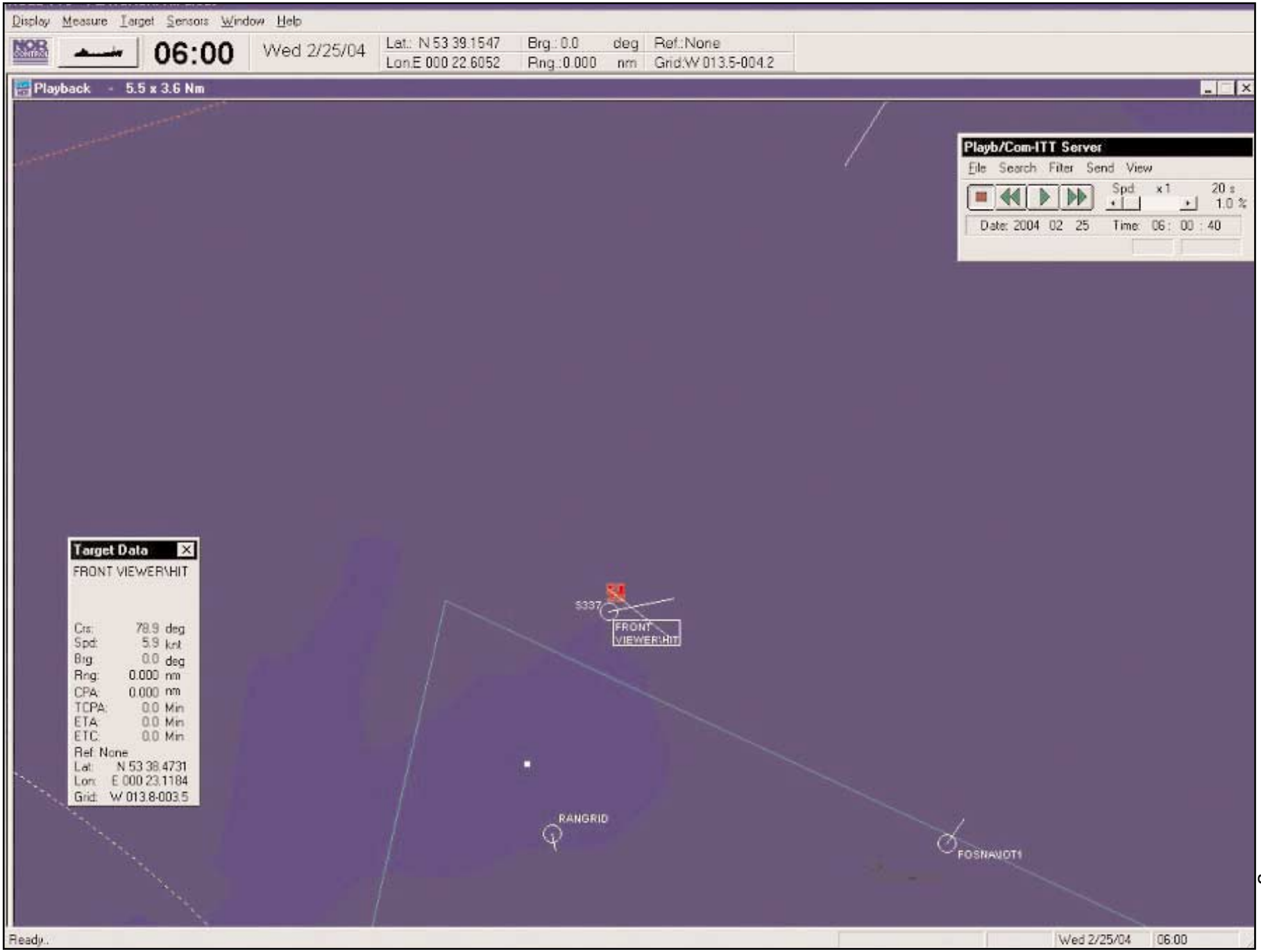


Figure 12

Note: The displayed time is 5 minutes fast of UTC

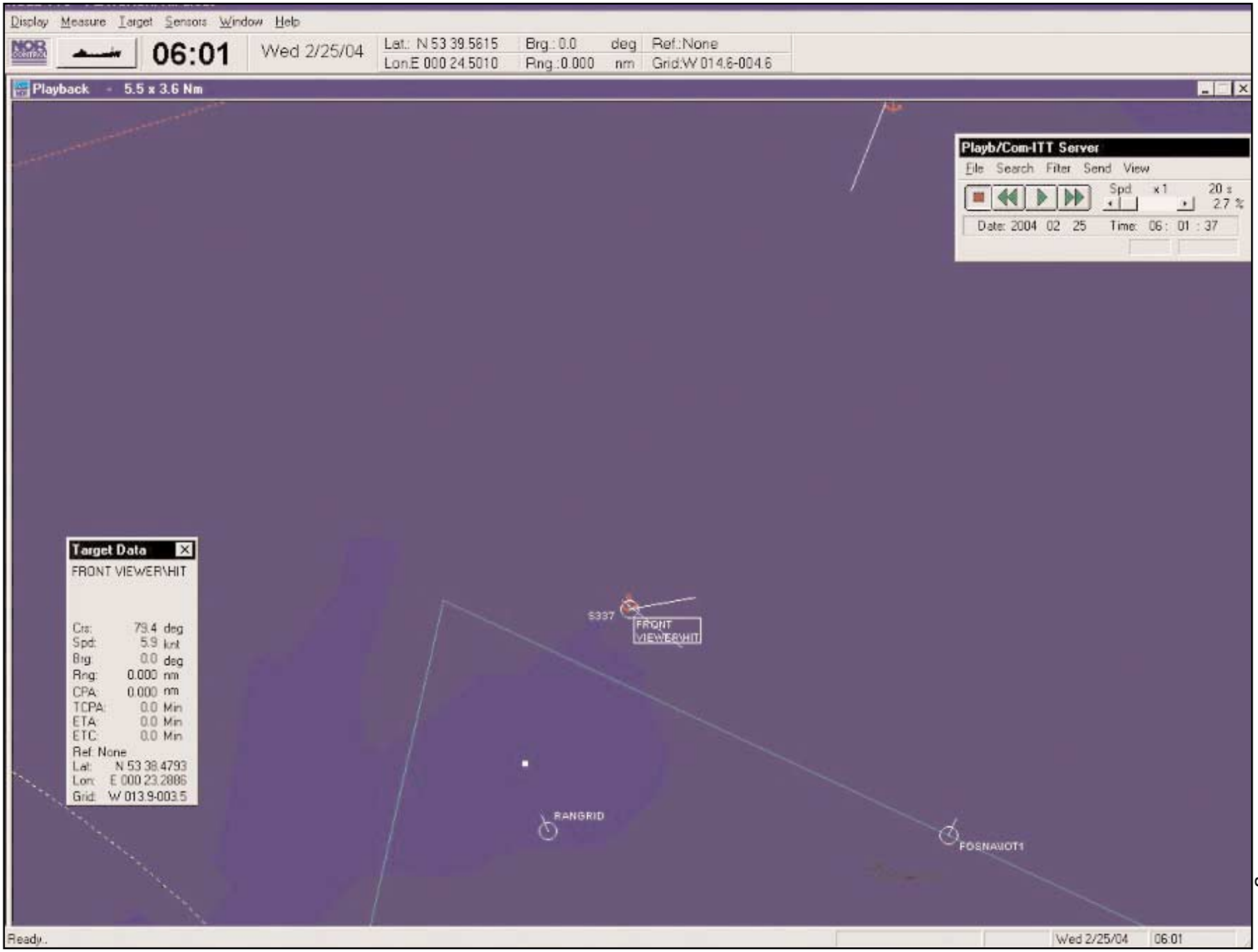


Figure 13

Note: The displayed time is 5 minutes fast of UTC

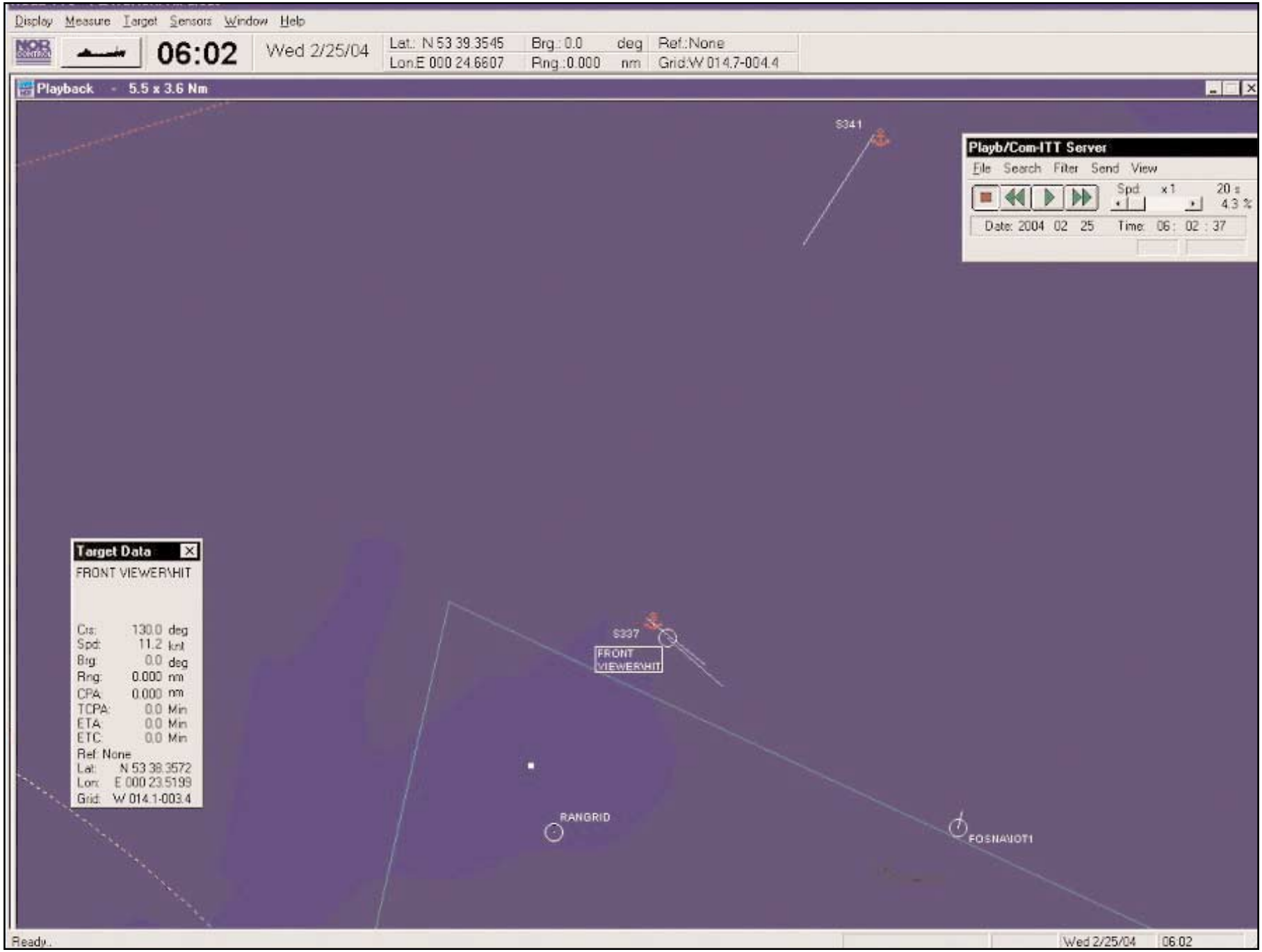


Figure 14

Note: The displayed time is 5 minutes fast of UTC

1.7 VHF RADIOS – *HOO FINCH*

Hoo Finch was fitted with two VHF radios **(Figure 15)**, which will be referred to as the upper radio and the lower radio in this report.

The mate recalled that the lower radio was tuned to VHF channel 16, and the upper radio to channel 14. However, the relief master recalled that during his watch, which began at 0600, the lower radio was tuned to VHF channel 12, and the upper radio to channel 14 and 16 (dual watch). With the upper radio set on dual watch, it was possible to send and receive on channel 14 while being open to receive any calls on channel 16. If calls were received on channel 16 (the distress and calling channel), they would automatically override channel 14.

The relief master recalled that the volume setting on both radios was turned up, and the squelch controls were at the right settings. The relief master was on the bridge at 0603 when *Front Viewer* called *Hoo Finch*, but he does not remember hearing the call.

There was an intermittent fault with the handset of the lower radio. The press to transmit switch on the handset did not always make electrical contact. The crew were not aware of this fault at the time of the incident. It was discovered by the regular master during his next period of duty. Once the problem had been found, it was immediately rectified.

During his watch between 0000 and 0600 on 25 February 2004, the mate does not remember hearing any calls on either radio.

Figure 15

Photograph of the two VHF radios on the bridge of *Hoo Finch*

1.8 THE CREW OF *HOO FINCH*

1.8.1 Relief master

The British relief master had started working at sea in 1980. He joined Lapthorn Shipping Ltd in 1990, and initially worked as mate. He obtained a master's certificate, valid for vessels sailing in the limited European area, in 1992 and was promoted to this role in the company. Since 1992, he had worked as both a regular master and a relief master. He relieved the regular master on *Hoo Finch* on 17 February, 8 days before the incident.

1.8.2 Mate

The mate was born in Nigeria. He started working at sea as a deck cadet on Nigerian National Line vessels in 1986. He moved to the UK and became a British citizen in 1995 and he obtained a Class 3 certificate of competency, which qualified him to serve as mate on vessels up to 5,000gt worldwide and vessels up to 10,000gt in the limited European area. He had experience on a wide variety of vessels before joining Lapthorn Shipping in December 2002. He initially worked on *Hoo Plover* before transferring as permanent mate on *Hoo Finch* in October 2003. He had started the current tour of duty on *Hoo Finch* on 16 January 2004.

1.8.3 Senior seaman

The senior seaman was a Cape Verde Islands national. He had started at sea in 1980, and had always worked on UK registered ships, in the UK coastal and near continental trade. He joined Lapthorn Shipping in 1991. His trip on *Hoo Finch* leading up to the incident started on 12 July 2002. He spoke fairly good English.

1.8.4 Junior seaman

The junior seaman was also a Cape Verde national. He joined *Hoo Finch* on 16 February 2004. Prior to this he had apparently been working on a Dutch vessel for about six months, but there was no record of this in his discharge book; the only sea time shown in this document was that on *Hoo Finch*. He could not communicate in English.

1.8.5 Cook/seaman

The cook/seaman was British, and had worked for Lapthorn's since 1991. During the months prior to the incident, his work had comprised mainly domestic duties, cooking and cleaning the accommodation, but he had undertaken sufficient work on deck in the past to qualify him as a seaman.

1.9 CERTIFICATION AND MANNING

Hoo Finch's statutory certificates of Load Line, Safety Construction, Pollution Prevention, Safety Radio, Safety Equipment, Safety Management and Safe Manning were all current at the time of the incident. *Hoo Finch*'s international Safety Management (ISM) system had been audited by the MCA, and Lapthorn Shipping was in possession of a valid Document of Compliance.

The Minimum Safe Manning certificate allowed *Hoo Finch* to trade with a crew of five, consisting of master, mate, engineer and two seamen. For the UK coasting and near continental trade, an engineer was not required as long as somebody, other than the master, held a Marine Engine Operators' Licence (MEOL). At least five crew members were still needed. The only person on board with an MEOL at the time of the incident was the relief master, so this requirement of the Minimum Safe Manning certificate was not met.

Due to his seafaring experience, the cook was considered to be one of the seamen as regards complying with the Minimum Safe Manning Certificate. This was because the junior Cape Verde crewman had only been at sea for a short time, and was not qualified as a seaman.

1.10 DUTY ROUTINES AND HOURS OF WORK

The Merchant Shipping (Hours of Work) Regulations 2002, Statutory Instrument 2002 No 2125, requires, in Regulation 5(1)(a), that the minimum hours of rest shall not be less than 10 hours in any 24 hour period. Another way of expressing this is that the maximum hours of work are 14 hours in 24. The Table of Shipboard Working Arrangements posted up in *Hoo Finch* is shown in **Figure 16**.

The relief master generally worked for 28 days on each vessel, to cover for regular masters when they were on leave. After three such consecutive periods of duty, he usually took a period of leave. The February 2004 timesheet for the relief master is shown at **(Figure 17)**. The relief master joined the vessel on 17 February 2004. There were no breaches of the Hours of Work Regulations in respect of the master's hours, indeed, in the 2½ days starting at 0000 on 22 February, to 1600 on 24 February, the relief master only worked for 2 hours. The relief master was ashore for most of the time while *Hoo Finch* was berthed in Teesport.

The February 2004 timesheet for the mate is shown at **(Figure 18)**. Between the date that the relief master joined *Hoo Finch* and the time of the near collision, the mate twice exceeded the maximum allowable working hours. On 23 February, there was a minor infringement when he worked for 15 hours, while undertaking cargo work in Teesport. On 19 February, there was a serious breach when he worked 20 hours continuously. This period of extended duty comprised a pilotage into Antwerp followed by supervising and helping with

cargo work, and then undertaking a pilotage out of Antwerp. The port visit was mentally taxing and the mate did not sleep well afterwards. He was back on duty 6 hours later. The mate generally worked for 77 days and then had 28 days leave, he joined the vessel on 16 January 2004 and so was 40 days into his work period.

The cook/seaman usually worked for about 8 hours during the day. He occasionally helped with cargo work, but his duties mainly comprised cooking, and cleaning the communal areas of the accommodation. The junior seaman could not speak any English and he was inexperienced, so the senior seaman had to work alongside him to show him what to do. The two seamen generally worked together for about 12 hours during the day, both in port and at sea.

Lapthorns have a policy that lay-overs at an anchorage or berth can be requested by the master if he thinks that his crew are fatigued and they need to rest. Prior to this incident, the master of *Hoo Finch* made no request to the company for a lay-over.

Figure 16

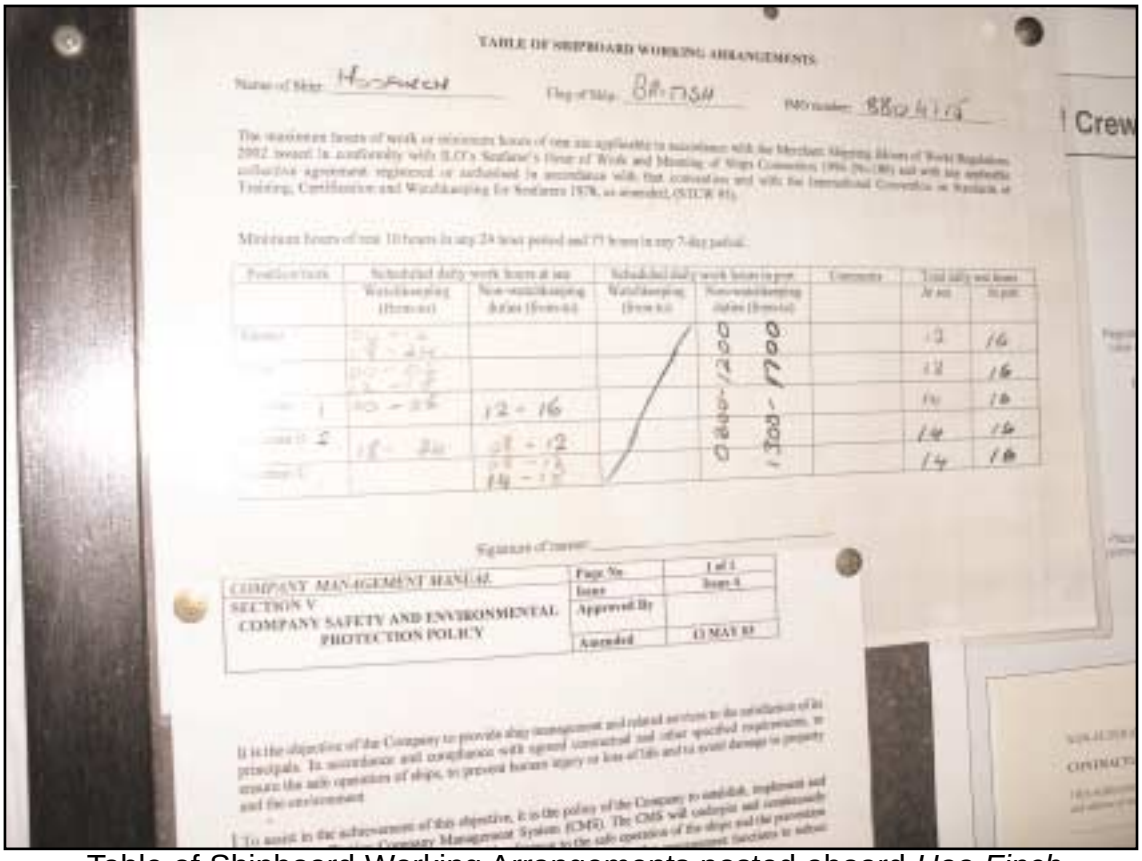
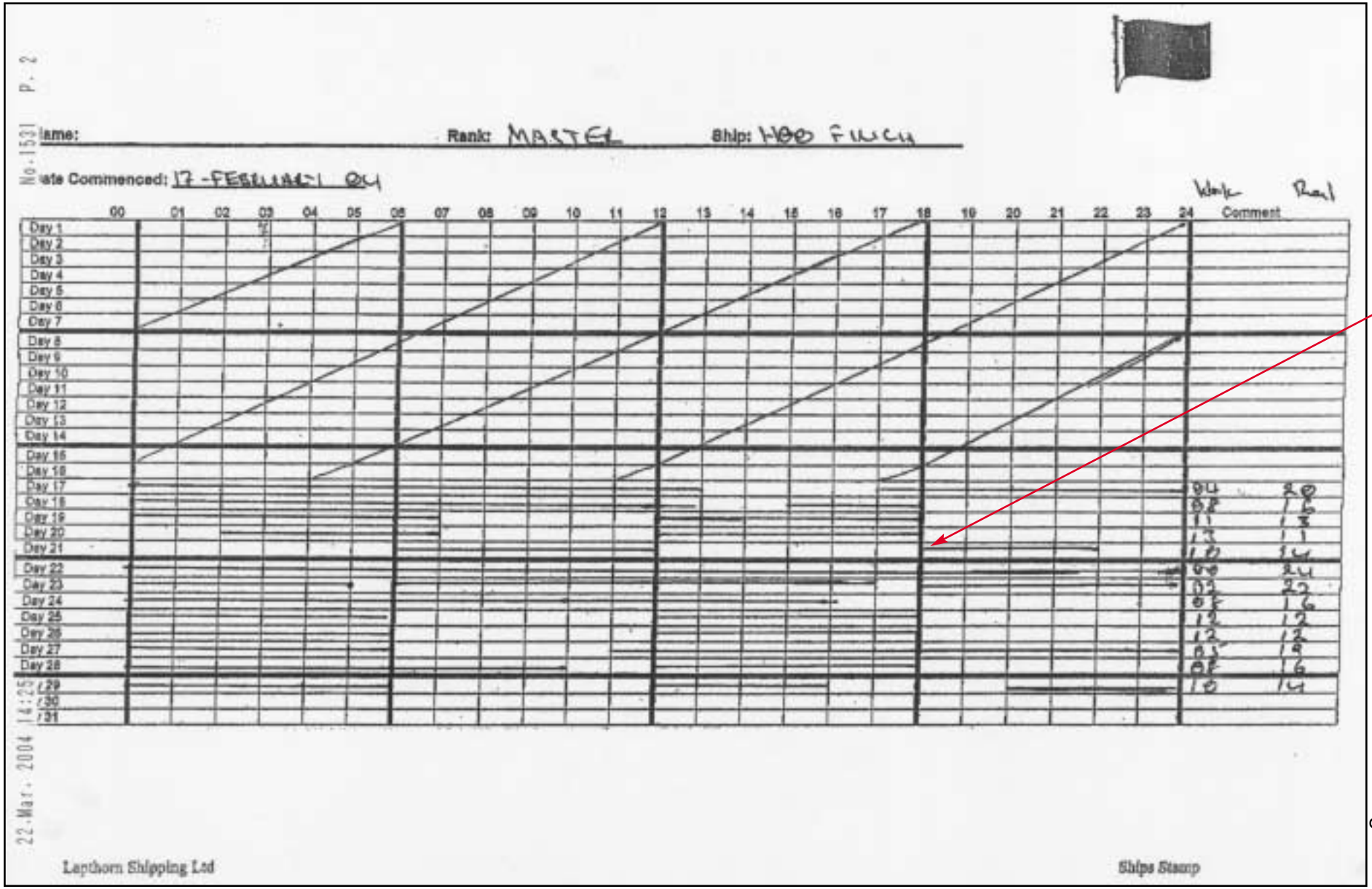


Table of Shipboard Working Arrangements posted aboard *Hoo Finch*

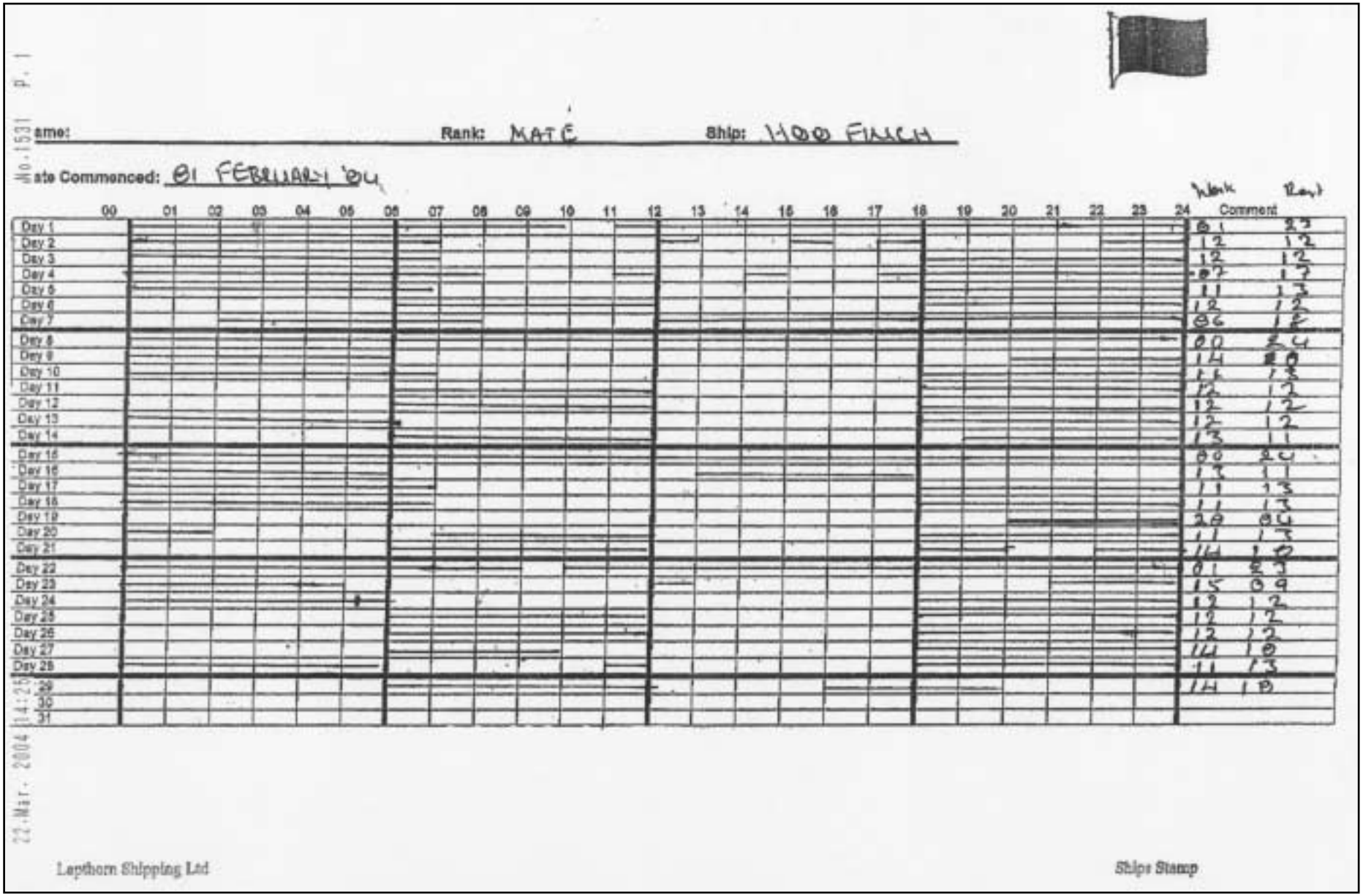


Marked incorrectly

Figure 17

February 2004 timesheet for *Hoo Finch*'s relief master

Note: For day 21, the hours worked should be 0600-1200 and 1800-2200 (marked incorrectly). Hours of rest are marked with a line.



February 2004 timesheet for *Hoo Finch*'s mate

Figure 18

1.11 BRIDGE WATCHKEEPING

The IMO STCW Code, dated 1995, states in Section A-VIII/2 paragraph 15 that: *The officer in charge of the navigational watch may be the sole lookout in daylight*. The implication of the statement is that the officer in charge of the navigational watch may not be the sole watchkeeper at night.

To further clarify this, in the UK, the MCA reminds masters, owners, and operators in paragraph 21.2 of Merchant Shipping Notice MSN 1767 (M), that *the UK does not consider it safe for the officer of the navigational watch to act as sole look-out during periods of darkness*.

The STCW Code goes on, in the same paragraph, to explain under which circumstances a dedicated lookout need not be posted in daylight. The circumstances include: *When full account has been taken of all relevant factors, including, but not limited to, state of the weather, visibility, traffic density, proximity of dangers to navigation, the attention necessary when navigating in or near traffic separation schemes.*

The requirement to provide a designated lookout at night was not usually adhered to when *Hoo Finch* was at sea. There was no lookout on duty between 0000 and 0600 on 25 February 2004. Among other things, this meant that the officer had to leave the bridge to call his relief.

A watch alarm was fitted on the bridge, and was programmed to activate after 20 minutes if not reset. The IMO Resolution: Recommendation on Performance Standards for a Bridge Navigational Watch Alarm System, MSC.128(75), was adopted on 20 May 2002. This document states in paragraph 4.1.2.1 that "*Once operational, the alarm system should remain dormant for a period between 3 and 12 minutes*".

SECTION 2 - ANALYSIS

2.1 AIM

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

2.2 WARNING SIGNALS

2.2.1 Sound signals

Sound signals were made by *Front Viewer*, in accordance with Rule 34 of the Collision Regulations, to warn *Hoo Finch* that she was taking insufficient action to avoid a close quarters situation. The mate did not hear these signals. The Humber VTS radar recordings indicate that *Hoo Finch* altered course and slowed down at about this time, and so it is apparent that the mate was present on the bridge. The ambient noise levels on the bridge of *Hoo Finch,* when under full power, are high and this could have masked the sound of *Front Viewer'*s whistle.

2.2.2 Light signals

The Aldis light on *Front Viewer* and the searchlight on the pilot launch, which were shone through *Hoo Finch'*s bridge windows, were not seen by the mate. It is possible that he may have not noticed these when he was facing aft trying to make sense of the situation from the chart. Once again, as the vessel can be seen to alter course and slow down at about this time, it is apparent that the mate was on the bridge.

2.2.3 VHF radio calls

As he approached the other vessel, the mate tried to make two calls using the lower radio. It is possible that these calls were not transmitted due to the intermittent fault with the press to transmit switch on this radio. There is conflicting evidence as to whether the lower set was tuned to channel 16 or channel 12. Channel 12 and channel 16 transmissions were recorded by Humber VTS. The MAIB has checked the recordings, but no calls were received from *Hoo Finch* on either frequency around the time of the incident. The calls were not heard by those on *Front Viewer*.

During his watch on the morning of 25 February 2004, the mate does not remember hearing any calls on either radio. Although the mate does not remember checking the volume and squelch controls, the relief master has confirmed that they were set correctly. For a period, the mate left the bridge to call the master, and he would not have heard any calls during this time. However, the reason why he did not hear any of the calls from *Front Viewer* to *Hoo Finch,* and the calls relating to *Hoo Finch* made between *Front Viewer* and Humber VTS, cannot be adequately explained, despite intensive investigation.

The reason why the relief master did not hear the call from *Front Viewer* to *Hoo Finch* made at 0603, cannot be explained either. The relief master recalls that the radios were working satisfactorily later in the morning of 25 February 2004.

There is a possibility that there were significant problems with the VHF radios on *Hoo Finch* in the early morning of 25 February 2004. A reliable bridge VHF radio is a prerequisite for safe ship operations. Faults, or suspected faults, with radios should be investigated and rectified as a priority. The proper working and settings of the bridge VHF radio(s) should be checked frequently by the watchkeeping officers. The coastal waters between the Tees and the Humber is a busy area and the VHF working channels are normally in constant use. The mate should therefore have been suspicious when no VHF traffic was heard during the first part of his watch, and checked that the VHF radios were working properly.

If the radios had been working properly before this incident it is very likely that the near collision would have been avoided.

2.2.4 Navigation lights

The mate failed to notice the navigation lights shown by *Front Viewer*. *Front Viewer* was showing her steaming lights, and three red lights in a vertical line to indicate that she was constrained by her draught. The latter signal is a requirement for vessels like *Front Viewer* during her passage in the river. In the opinion of the MAIB, the signal could not be justified in the area of the deep water anchorage and should not have been shown. A more appropriate signal would have been red, white, red lights to indicate that she was restricted in her ability to manoeuvre while picking up the pilot. However, in the event, the signal played no part in the cause of the incident, as it was not seen. It is difficult to understand why the mate failed to notice *Front Viewer's* navigation lights, however, they could have been obscured or partially obscured by the bright deck lights being shown by the two vessels at anchor. At the critical point in *Hoo Finch's* approach, *Front Viewer* was directly in line and in front of the two anchored vessels *Rangrid* and *Dorsch*.

2.3 PASSAGE PLANNING

Hoo Finch's passage between Teesport and Teignmouth had been planned and approved before the vessel's departure. Way points marking the alteration of course positions for the planned track were already entered into the GPS navigator's memory. The same plan had been used many times previously over a number of years. The plan included a course of about 153° between Flamborough Head and a gap in the Race Bank off The Wash which would take the vessel through the deep water anchorage off the River Humber and close to a pilotage boarding area.

Over the last few years, the River Humber has got steadily busier and is now the busiest port in the UK. Most vessels that intend entering the river use the Bull Anchorage in the entrance to the river, and only deep draught vessels use the deep water anchorage which is further out. A new Traffic Separation Scheme was set up in the approaches to the Humber on 1 June 2001 to handle the extra traffic. The deep water anchorage abutted the northern limits of this Traffic Separation scheme and a pilot boarding area was positioned just north of it.

Passage plans, which are regularly used, should be re-evaluated periodically to assess new dangers. Despite the fact that only about two or three movements occur into and out of the deep water anchorage on each day, it would have been wise for the officers of *Hoo Finch* to use a passage plan which took the vessel clear of this area and the pilot boarding ground. When deep draught vessels are manoeuvring, to anchor or to pick up a pilot, they need to be given space. A track outside the deep water anchorage would have made *Hoo Finch*'s passage very slightly longer. Any consequent increase in the overall passage time would have been very small.

2.4 COMPETENCE AND FATIGUE

2.4.1 Competence

The mate was appropriately qualified and experienced for his role on *Hoo Finch*. However, the obvious shortfalls in his performance in the time immediately preceding the incident, indicated either a lack of competence or fatigue. The mate was interviewed by MAIB inspectors in the course of the investigation, and they formed the view that he was competent and conscientious. This view was reinforced by reports from masters with whom he had sailed.

2.4.2 Fatigue

The master's standing orders **(Figure 19)**, authorised by the regular master, state, in item 9, that the master should be called, "If you feel tired..." The mate's employment history included a period when he struggled to find suitable employment at sea. He knew he was becoming tired but he said nothing about it for fear of losing his job.

Fatigue is an insidious problem. Its symptoms can seriously affect performance and prevent the sufferer from taking decisive action. Seafarers should be able to recognise and acknowledge when they are seriously fatigued, especially if they find it very difficult to stay awake. Crew members should be encouraged by masters and shipowners to speak up about issues relating to safety, especially fatigue.

Figure 19

Revised 19/5/03

MV. HOO FINCH

MASTER'S STANDING ORDERS

THE MASTER IS AVAILABLE, ON CALL, AT ALL TIMES.

Call master:

1. If visibility falls below two nautical miles. Initiate Col. Regs. 19,35.
2. If you suspect M/E, Bridge, Steering, Or Navaid Equipment Problems or failure. Monitor bridge gear regularly, magnetic compass deviations to be checked daily when practicable and recorded in the compass error book.
3. Of any adverse WX. Reports which may effect sail plan.
4. Proximity of any distress, pan, security or dangerous navigational warning which may necessitate a departure from vessels course to assist. Keep a good radio watch.
5. Of any need to deviate drastically from the vessels course.
6. Of high density traffic separation schemes.
7. Urgent company or ukmersig message.
8. Approaching pilot stations or anchorages.
9. If you feel tired or unwell.

BEWARE Strong tidal streams, currents and wind effect the vessel's position considerably. Plot position frequently to ascertain ship's true track. Monitor tidal stream publications.

BEWARE During bad weather, rain, or snow squalls, that small targets i.e. yachts, F/V's. buoys etc. may not be detected by radar, so exercise extreme caution and keep a good look out.

WATCH ALARM To be kept on at all times under way.

BE ADVISED Alcohol consumption either before or during watch-keeping duties, is forbidden. Company Management Procedures CMP 08.

C. M. P. Company Management Procedures CMP 14.

M. G. N. It is recommended that you read the relevant M Notices in relation to the above standing orders.

Master..... Mate .....

Date 30-3-04 Date 30-03-04

The mate had served aboard *Hoo Finch* for 40 days prior to the incident. Apart from the 8 days preceding the incident, all of this time had been with the regular master. The mate was content working with the regular master who ensured that he did not work excessive hours and who shared the workload equitably. With a crew of only five, the mate had to work long hours, but the regular master did his fair share of the work and the mate was able to cope without becoming unduly fatigued.

The relief master joined *Hoo Finch* 8 days before the near collision. During this time, he only kept his sea watches, alternating 6 hours on and 6 hours off with the mate. The cargo work in port was left to the mate. *Hoo Finch* had discharged and then loaded at Teesport before the incident. While they were at Teesport, the relief master spent the time ashore, and only returned to the vessel for 2 hours in over 2½ days. The mate had become progressively more fatigued since the relief master joined the vessel.

The mate's work/rest schedule, and other relevant evidence for the period leading up to the near collision, have been closely analysed. The errors that caused the incident have also been examined to judge whether fatigue was a causal factor.

The mate's standard work pattern was 6 hours on followed by 6 hours off, giving 12 hours work and 12 hours rest in every 24 hours. He usually worked for 77 days before taking 28 days leave. He had been working for 40 days at the time of the incident. The mate normally took the 0000 to 0600 and 1200 to 1800 watches when on passage. On a constant schedule, the mate should have achieved a degree of adaptation to night working.

A 6 on/6 off work schedule is challenging, but should be manageable for a short period provided appropriate rest is achieved in the time available. However, the trading pattern followed by *Hoo Finch*, with regular port visits for loading/discharging, made management of this shift pattern very difficult. The mate's timesheet **(Figure 18)** shows that in the 7 days before the incident, he twice failed to achieve the minimum 10 hours rest, on one occasion working 20 hours in 24.

At the time of the incident, which was a Wednesday, the mate had been on duty for 18 of the preceding 24 hours. He had been in bed between 1900 and 2330 on Tuesday evening. During this time, he could have achieved 4½ hours sleep, but since this time of day is not favourable for sleeping it is likely to have been considerably less. It is notable that in the days leading up to this period of night work, the mate had slept at night on Sunday and Monday, therefore he was unlikely to have been night adjusted. The mate reported feeling very tired during his watch and having to walk around to avoid falling asleep. Since he was probably day adjusted, it is likely that the incident came at a time very close to his body's physiological circadian low point, which is also associated with the lowest levels of subjective alertness.

Analysis of his February timesheet raises questions relating to the management of the mate's work schedule. It is notable that his difficult work pattern in the 2 days preceding the incident was not unique. On 19 February 2004 he undertook a 20-hour duty period between 0000 and 2000, rested between 2000 and 0200 on 20 February, and then undertook a 5-hour watch until 0700. At 0700 on 20 February, the mate had worked 25 hours in the preceding 31, and was on duty at a time when he was unlikely to have been adjusted to night working. This work period caused a substantial sleep debt.

The mate believes that at the time of the incident, he had not fully recovered from the intense period of work on 19 and 20 February. He was off duty on the nights of 21/22 and 22/23 of February, however on the second of these he got up at 0430 ready to start work at 0500; these two nights rest would not have been enough for him to recuperate fully. It is therefore reasonable to conclude that the mate would not have been able to recover completely from this period of heavy work. It is likely that at 0556 on 25 February, the mate's state of alertness was undermined by a cumulative sleep debt built up over the preceding days, that he was not night adjusted, and was working during his circadian low.

The errors that the mate made, which led to the near collision, including his inability to adequately interpret the situation and take prompt and decisive avoiding action, are consistent with fatigue. Fatigue induced by cumulative sleep loss and disrupted circadian rhythms, has detrimental effects on a variety of cognitive functions, for example vigilance, concentration, attention, judgment and decision-making.

2.5 MANNING

Hoo Finch had a minimum safe manning certificate, issued by the MCA, which indicated that a crew of five was required. The MAIB questions whether this was sufficient. Even so, when minimum manning is applied, it can only be safe and effective if all the personnel are appropriately qualified and experienced and if they share the tasks equitably. That was patently not the case on *Hoo Finch* in the days preceding the incident. In particular, the relief master did not share the mate's heavy workload, and one of the seamen was unable to communicate and was unqualified. In fact, the relief master exacerbated the situation by effectively adding to the mate's workload by staying ashore while in port. The carriage of only two watchkeeping officers, a master and a mate, on vessels in the coasting and near continental trade, will inevitably lead on occasions to the officers becoming fatigued. It is necessary, first to recognise when this happens, and then, to adjust the vessel's programme to allow the officers to gain sufficient rest before putting to sea.

The MAIB has recently published a Bridge Watchkeeping Safety Study in which safe manning is discussed. Some of the conclusions of the study are relevant to this incident, in particular the MAIB believes that vessels with trading patterns like *Hoo Finch*, that is, short periods at sea and frequent labour intensive port visits, require a greater number of qualified bridge watchkeeping officers.

The two seamen on *Hoo Finch* were Cape Verde nationals. The most junior seaman had only been working at sea for a maximum of a few months, and possibly as few as 9 days, and didn't speak English. For this reason, the senior seaman had to work with him and show him what to do. This restricted the flexibility of the crew and the ability of the officers to choose how to deploy them appropriately. The senior seaman had been working on *Hoo Finch* since July 2002 without a break; he was probably not at peak efficiency after working for this length of time.

2.6 BRIDGE WATCHKEEPING

The majority of collisions and groundings investigated by the MAIB over the five years preceding this incident can be attributed, in part, to single-handed bridge watchkeeping.

It was only on rare occasions that there was a designated lookout posted at night on *Hoo Finch*. Unfortunately, in the MAIB's experience, posting a designated lookout at night appears to be the exception rather than the rule on small, under 3,000gt vessels employed in the coastal and near continental trading area. There was no lookout on duty on *Hoo Finch* between 0000 and 0600 on 25 February 2004. A designated seaman lookout might have helped the mate distinguish the lights of the moving vessel against the backdrop of the lights of the vessels at anchor. There would have been no need for the mate to leave the bridge unattended, and conversations and general interaction with the lookout could have provided some stimulus to help the mate remain alert.

Under the STCW Convention, a separate lookout is required at night in all cases and during the day when, in reduced visibility, in an area of high traffic density, or in close proximity to land or navigational hazards. The MAIB believes that, around the UK coast, a designated lookout should only be dispensed with in exceptional circumstances, even during the day. In this case the incident might well have been avoided if a seaman had assisted with the watch.

Bridge watch alarms on Lapthorn ships should be programmed in accordance with the IMO recommendation, ie once operational, they need to be reset after a period not exceeding 12 minutes.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

The following safety issues have been identified from the foregoing analysis. They are not listed in any order of priority.

1. The warning sound signals made by *Front Viewer* were not heard, possibly due to the ambient noise on the bridge of *Hoo Finch* (2.2).

2. The warning light signals made by *Front Viewer* and the pilot launch were not seen on *Hoo Finch,* possibly because the mate was working at the chart table (2.2).

3. There was an intermittent problem with one of the VHF radios on *Hoo Finch*, which might have prevented warning calls being transmitted (2.2).

4. The mate left the bridge unmanned whilst he went to call the master (2.2).

5. For an unknown reason, warning VHF radio calls were not received on *Hoo Finch* around the time of the near collision (2.2).

6. The radios on *Hoo Finch* should have been checked during the first watch on 25 February 2004 (2.2).

7. The mate failed to notice *Front Viewer's* navigation lights; they could have been obscured by the bright deck lights being shown by two vessels at anchor (2.2).

8. *Hoo Finch* was following a planned passage, which needlessly took the vessel though the Humber deep water anchorage and close to a pilot boarding area. Transiting vessels should keep clear of such areas if possible (2.3).

9. The mate was aware that he was becoming progressively fatigued but he did not let this be known (2.4).

10. It is likely that at 0556 on 25 February, the mate's state of alertness was undermined by a cumulative sleep debt built up over the preceding days, that he was not night adjusted, and was working during his circadian low. The errors that the mate made, which led to the near collision, including his inability to adequately interpret the situation and take prompt and decisive avoiding action, are consistent with fatigue (2.4).

11. *Hoo Finch* was manned in accordance with her minimum safe manning certificate. When minimum manning is applied, it can only be safe and effective if all the personnel are appropriately qualified and experienced and if they share the tasks equitably. This was not the case on *Hoo Finch* (2.5).

12. Operating with just two watchkeeping officers, a master and a mate, in the coasting and near continental trade, will inevitably lead, on occasions, to the officers becoming fatigued. It is necessary, first to recognise when this happens, and then, to adjust the vessel's programme to allow the officers to gain sufficient rest before putting to sea (2.5).

13. It was only on rare occasions that there was a designated lookout posted at night on *Hoo Finch*. Unfortunately, in the MAIB's experience, posting a designated lookout at night appears to be the exception rather than the rule on small, under 3,000gt vessels employed in the coasting and near continental trading area (2.6).

14. The incident might have been avoided if a seaman had assisted with the watch (2.6).

15. Bridge watch alarms on Lapthorn ships should be reset after a period not exceeding 12 minutes (2.6).

SECTION 4 - ACTION TAKEN

Lapthorn Shipping Ltd has:

1. Written to all its ships, instructing crews that when passing the Humber entrance, passage plans must be to the east of the Humber deep water anchorage and pilot boarding grounds.

2. Placed detailed guidance on all its ships concerning the causes and effects of fatigue, how to recognise it and how to combat it.

3. Written to all its ships, reminding crews that the hours of work regulations must be complied with, and it has provided advice on how this can be achieved for ships operating on the short sea trade.

4. Written to all its ships, reminding crews that a lookout must always be provided, in addition to the officer of the navigational watch, during the hours of darkness. Advice as to when a lookout is required during the day has also been included.

5. Introduced a policy that no crew member should serve continuously for a period exceeding 12 months.

6. Written to the crewing agent which supplied the junior seaman, and to all company masters, reminding them that crew must be competent in spoken English. If they are not, they are considered unacceptable and are rejected.

7. The bridge alarms on all ships in the Lapthorn fleet have been adjusted so that they need to be reset after 12 minutes.

SECTION 5 - RECOMMENDATIONS

The UK and International Chambers of Shipping and **The International Shipping Federation**, are recommended to:

2004/209 Remind their members of the importance of good passage planning.
210 Regularly used passage plans should be re-evaluated periodically to
211 take into account new developments. Vessels transiting port approaches should avoid areas of high traffic density, pilot boarding grounds, and designated anchorages, if possible.

2004/212 Draw members' attention to the cumulative effects of fatigue and,
213 in particular, the importance of strict compliance with regulations and
214 guidance concerning maximum hours of work. Contingencies should be in place, so that corrective action can be taken, such as lay overs at an anchorage or berth until the crew are properly rested.

2004/215 Draw the attention of their members to the need for effective crew
216 management, to ensure that the workload is shared where minimum
217 crew are carried.

2004/218 Remind members that a separate lookout is needed at night in all
219 cases and during the day when: in reduced visibility, in an area of high
220 traffic density, or, in close proximity to land or navigational hazards. While in coastal waters, it should only be in exceptional cases that the lookout is stood down during the day.

Lapthorn Shipping is recommended to:

2004/221 Ensure the proper functioning of the VHF radios on its vessels is frequently checked by their officers. Any faults with the equipment should be quickly rectified.

Marine Accident Investigation Branch
August 2004