

Report on the investigation of
the grounding of
mv Kathrin
Goodwin Sands
Dover Strait
12 February 2006

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Extract from
The United Kingdom Merchant Shipping
(Accident Reporting and Investigation)
Regulations 2005 – Regulation 5:

“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AB	-	Able Seaman
AIS	-	Automated Information System
CNIS	-	Channel Navigation Information Service
COLREGS	-	International Regulations for the Prevention of Collisions at Sea
CPA	-	Closest Point of Approach
CPP	-	Controllable Pitch Propeller
CROSS	-	Regional centre of operations for surveillance and marine rescue in France
DOC	-	Document of Compliance
EC	-	European Community
EU	-	European Union
DWT	-	Dead Weight Tonnage
GP	-	General Purpose
GPS	-	Global Positioning System
ILO	-	International Labour Organisation
IMO	-	International Maritime Organization
ISM Code	-	International Management Code for the Safe Operation of Ships and for Pollution Prevention
MCA	-	Maritime and Coastguard Agency
MRCC	-	Maritime Rescue Co-ordination Centre
OOW	-	Officer of the Watch
SMC	-	Safety Management Certificate
SMS	-	Safety Management System
SOLAS	-	International Convention for the Safety of Life at Sea
STCW	-	International Convention on Standards of Training, Certification and Watchkeeping incorporating the 1995 Amendments
TSS	-	Traffic Separation Scheme
UK	-	United Kingdom
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency

Photograph courtesy of FotoFlite



MV Kathrin

SYNOPSIS



At 2232 on 12 February 2006, the Switzerland registered combi freighter *Kathrin* ran aground on the Goodwin Sands in the Dover Strait. The vessel was re-floated 15 minutes later and continued on passage to New Holland, River Humber, where she arrived on 15 February. There were no injuries or damage to the vessel, and there was no pollution.

The grounding occurred when *Kathrin* was on passage from Aviles, Spain to New Holland. The ship was in ballast, and had crossed the south west traffic lane of the Dover Strait TSS when the master, who was the OOW, fell asleep. The ship ran aground about 18 minutes later.

The investigation highlighted several contributory factors, including:

- Although the master had been able to rest as required by ILO 180 and STCW 95, the quality of his rest had possibly been degraded during his 5½ months on board, and he felt tired.
- The master was under the influence of alcohol.
- The ship manager's alcohol policy lacked any means of enforcement.
- The master was alone on the bridge. Contrary to regulation, and company requirements, it was usual practice on board for an additional lookout not to be used during darkness.
- The bridge watch alarm was not in use, in contravention of company procedures; the master was not aware that one was fitted.
- A similar incident involving the master on 23 October 2005 had not been thoroughly investigated by the ship manager.
- Non-compliance with company written procedures with regard to lookout, watch alarms, and leaving the bridge unattended had not been detected during internal and external audits on board the vessel.

A recommendation has been made to the International Chamber of Shipping for the purpose of encouraging ship owners and managers to ensure that safety management systems have sufficient measures to verify that written procedures are complied with. The MAIB has produced a short summary of this investigation report to assist with this task.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF MV *KATHRIN* AND ACCIDENT

Vessel details

Manager	:	Enzian Shipping AG ¹
Port of registry	:	Basel
Flag	:	Switzerland
Type	:	Combi freighter
Built	:	1999, Damen Shipyard
Classification society	:	Lloyd's Register
Construction	:	Steel
Length overall	:	94.99m
Gross tonnage	:	2999
Engine power	:	2200kW
Service speed	:	12kts
Other relevant info	:	Draught 2.8m forward, 3.8m aft. Becker rudder

Accident details

Time and date	:	2232 UTC on 12 February 2006
Location of incident	:	51°14'0N 001°36'0E 150° North Foreland Lighthouse 9.75nm
Persons on board	:	10
Injuries/fatalities	:	None
Damage	:	None

¹ From 1 July 2006, ship management functions were transferred from Enzian Shipping AG to a new company, Enzian Ship Management AG

1.2 NARRATIVE

All times are UTC (Ship's time was UTC+1), and all courses are true.

1.2.1 Events prior to the grounding

During the evening of 12 February 2006, *Mv Kathrin* was transiting the north east traffic lane of the Dover Strait TSS, having sailed in ballast from Aviles, Spain, on 10 February. She was bound for New Holland, UK. At about 1853, the master arrived on the bridge to relieve the chief officer. Course was 019° in autopilot to follow the passage plan, and the speed over the ground was 11.5 kts. There was no traffic of concern. During the watch handover, the chief officer did not notice anything unusual about the master's behaviour. The vessel's navigation equipment was working correctly; the port radar was operating 'north up' in relative motion and was off-centred towards the south west. The starboard radar was on standby. Before leaving the bridge at 1905, the chief officer reminded the master to call Dover Coastguard by VHF radio before crossing the south west lane of the TSS later in the evening.

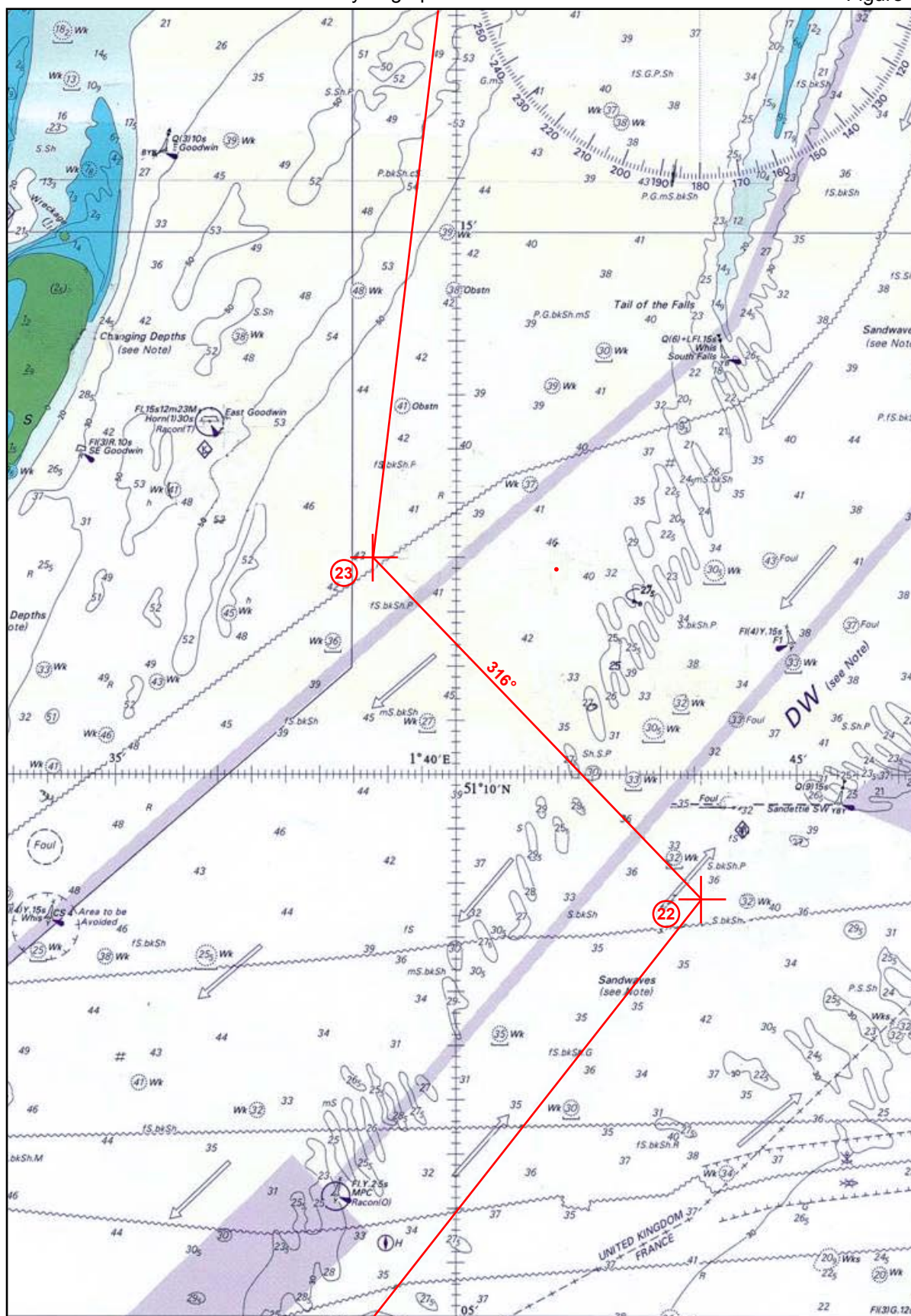
After the chief officer left the bridge, the master switched on the starboard radar. At 2007, as *Kathrin* passed through a navigational waypoint, he adjusted the course set on the autopilot to 038°, and at 2136, the master called Dover Coastguard on VHF channel 11. During the VHF radio exchange, the master passed details of *Kathrin* and her crew, and Dover Coastguard advised the master to cross the south west TSS in accordance with the COLREGS. At 2147, course was adjusted to the north west to cross the south west traffic lane in accordance with the voyage plan (**Figure 1**).

When *Kathrin* was clear of the south west bound vessels using the traffic lane, the nearest CPA of which was assessed by the master to be 1.5nm, the master went to his cabin on the deck below for about 30 seconds to collect some paperwork. When he returned to the bridge, he sat in the port chair and fell asleep. He was later woken by the chief officer and the chief engineer telling him that the ship had grounded.

1.2.2 Events following the grounding

The chief engineer was working in his cabin sited on the ship's port side when, several minutes after hearing a loud fog signal very close by, he felt the ship take the ground. He immediately ran to the bridge, where he saw the master standing in the starboard forward corner looking out of the window. The chief engineer shouted to the master that the ship was grounding, but the master did not respond. The chief engineer reduced the CPP control lever to 0, and then to 5° astern. He then ran to the engine room and changed the electrical supplies from the shaft generator to an auxiliary generator. The chief engineer then alerted the chief officer, who was asleep in his cabin, and both went to the bridge. When they arrived, the master was still standing in the starboard forward corner, and did not seem to understand what had happened.

At 2240, the chief officer plotted a fix on the paper chart which confirmed the ship was aground. The steering was then switched from automatic to manual, and the chief officer and the chief engineer then tried to refloat the vessel by manoeuvring the CPP astern and moving the rudder from side to side. No VHF radio call was made to Dover Coastguard, and the ship's general alarm was not sounded. The master did not say anything during this period.



The ship refloated at 2247 and was manoeuvred clear of the shoal water, stern first. Once the ship was in open water, the chief officer plotted her position on the paper chart before gathering headway and adjusting course to the north east. Meanwhile, the chief engineer went to the engine room to check for damage to the engines and propeller shaft, and to sound the bottom tanks. No problems were evident. The master left the bridge and went to his cabin soon after the vessel refloated. His breath smelled of alcohol, and he appeared to be drunk.

After calling the second officer to take the bridge watch, the chief officer went on deck to sound the vessel's tanks. He was accompanied by an AB, and priority was given to the forepeak, which was the only tank not to be pressed full in the ballast condition. At about 2315, the chief officer then called the ship's designated person by telephone to inform him of the grounding.

1.2.3 Passage to New Holland

During the remainder of the passage to New Holland, the chief officer and second officer shared the bridge watchkeeping in six-hour watches. The ship's tanks and propulsion were routinely monitored, but there was no indication of any damage. The master went to the bridge during the morning of 13 February 2005 to relieve the chief officer, but the chief officer refused to be relieved because the master still appeared to be drunk. The chief officer told the master to stop drinking, and the master returned to his cabin.

The master returned to the bridge at about 1230, after being informed by the chief officer that the ship was approaching her intended anchorage off Spurn Head. As the ship neared the anchorage position, the master started to con the ship. He still appeared to be drunk, and when he gave the order to 'let go' the anchor, this instruction was ignored by the chief and second officers, who realised that the ship still had 5 knots headway. The master then remained quiet, and the chief officer anchored the ship at 1300.

The chief officer contacted Enzian Shipping, and it was agreed that he would take command as the vessel's safety required. During the early morning of 14 February 2005, *Kathrin* weighed anchor, embarked a pilot, and proceeded to New Holland. Other than brief visits to the bridge prior to weighing anchor and embarking the pilot, during which he asked the chief officer if he would take charge of the manoeuvring, the master remained in his cabin. The ship arrived alongside in New Holland at 0529 on 15 February 2005.

1.2.4 Prosecution of the master

Once in New Holland, a Port State Control Inspector from the MCA arrived on board *Kathrin* at about 0900, and immediately suspected that the master was drunk. Humberside Police was asked to attend and test the master's breath for alcohol. The test proved positive, and the master was arrested and taken to Scunthorpe Police Station where he provided a further sample of breath for analysis. The level of alcohol in his breath was 140 microgrammes per micro litre of breath². At a Magistrates Court in Scunthorpe on 28 February 2006, the master pleaded guilty to the drink/drive

² The maximum alcohol level permitted under the Railway and Transportation Safety Act 2003 is 35 microgrammes per micro litre of breath

provisions of the Railway and Transportation Safety Act 2003, and Section 58 of the Merchant Shipping Act 1955, as amended. He was sentenced at the Crown Court in Grimsby to 4 months imprisonment for the grounding of *mv Kathrin*, and 7 months imprisonment for the drinking related offence, with both sentences running concurrently. In summing up, the judge stated:

It is a serious dereliction of your duty to fall asleep whilst on the bridge of your ship, and you have pleaded guilty to failing to discharge your responsibilities. This is so serious only a custodial sentence is suitable. The safety of seafarers and shipping is of paramount consideration. Your rank as captain commands respect. Asleep on the bridge of your ship, you could have collided with other ships causing untold damages.[sic]

1.2.5 Subsequent action

During the visit of MAIB inspectors to *Kathrin* in New Holland, there was no visible damage to the ship, but a red paint streak approximately 2m in length was evident on the vessel's port bow (**Figure 2**). The East Goodwin Lightship (**Figure 3**) was checked by Trinity House, but no damage was evident. *Kathrin* was allowed to sail from New Holland for passage to Warrenpoint, Northern Ireland, after a relief master had joined the vessel, and a condition of Class had been imposed by Lloyd's Register requiring that the underwater portions of the vessel be examined by the end of March 2006.

1.3 CHANNEL NAVIGATION INFORMATION SERVICE (CNIS)

The Dover Strait is one of the busiest international seaways in the world, regularly used by over 400 commercial vessels daily. It became the first IMO approved Traffic Separation Scheme in the world in the early seventies and was the first to come under full radar surveillance. The Channel Navigation Information Service (CNIS) was introduced in 1972 and provides a 24 hour radio and radar safety service for all shipping in the Dover Strait. It is jointly operated by the UK and French Administrations from the Dover Maritime Rescue Co-ordination Centre (MRCC) and CROSS Gris Nez in France. The Dover Strait is a mandatory reporting area and vessels over 300 gross tonnes are required to make a report to either Dover MRCC (South West Lane) or CROSS Gris Nez (North East Lane) before proceeding through the service area.

The functions of CNIS are to keep the Dover Strait TSS under observation, to monitor the flow of traffic and to detect and report vessels which contravene the International Regulations for Preventing Collisions at Sea 1972, as amended (COLREGS). A diagram showing the Dover Strait TSS and the limits of CNIS radar coverage is at **Figure 4**.

During her passage through the Dover Strait TSS, *Kathrin* was automatically tracked by radar and AIS. This information was recorded, and extracts covering the period between 2147 and 2232 are at **Figures 5 to 14**. A reconstruction of the vessel's radar ground track plotted against her intended track is at **Figure 15**. Close examination of the radar information shows that there was a slight deflection in *Kathrin's* course made good, as she passed the East Goodwin Lightship. CNIS Dover was not aware that the vessel had grounded until informed by the ship manager during the morning of 13 February 2006.

Figure 2



Photograph of *Kathrin's* port bow

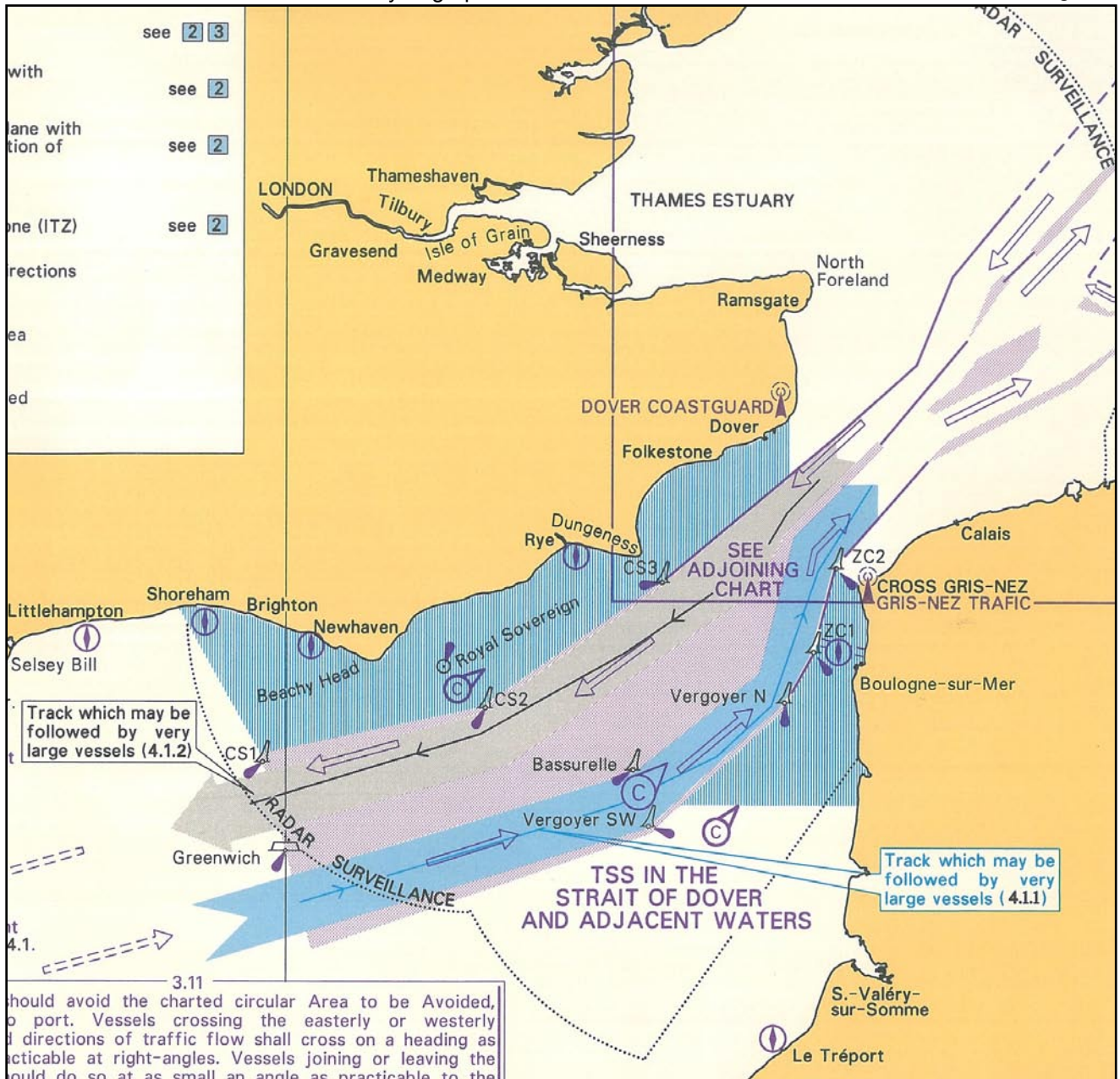
Figure 3



Photograph of East Goodwin Light Vessel

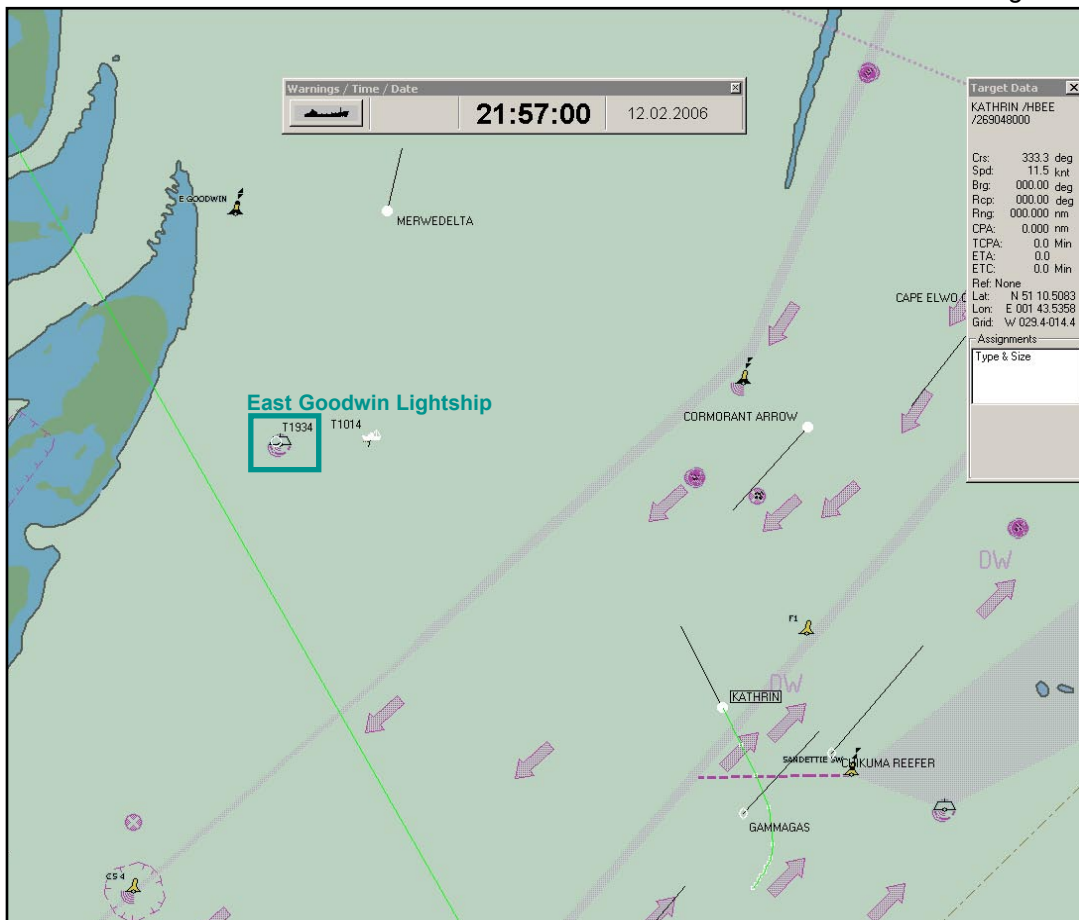
Reproduced from Admiralty Chart 5500 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 4



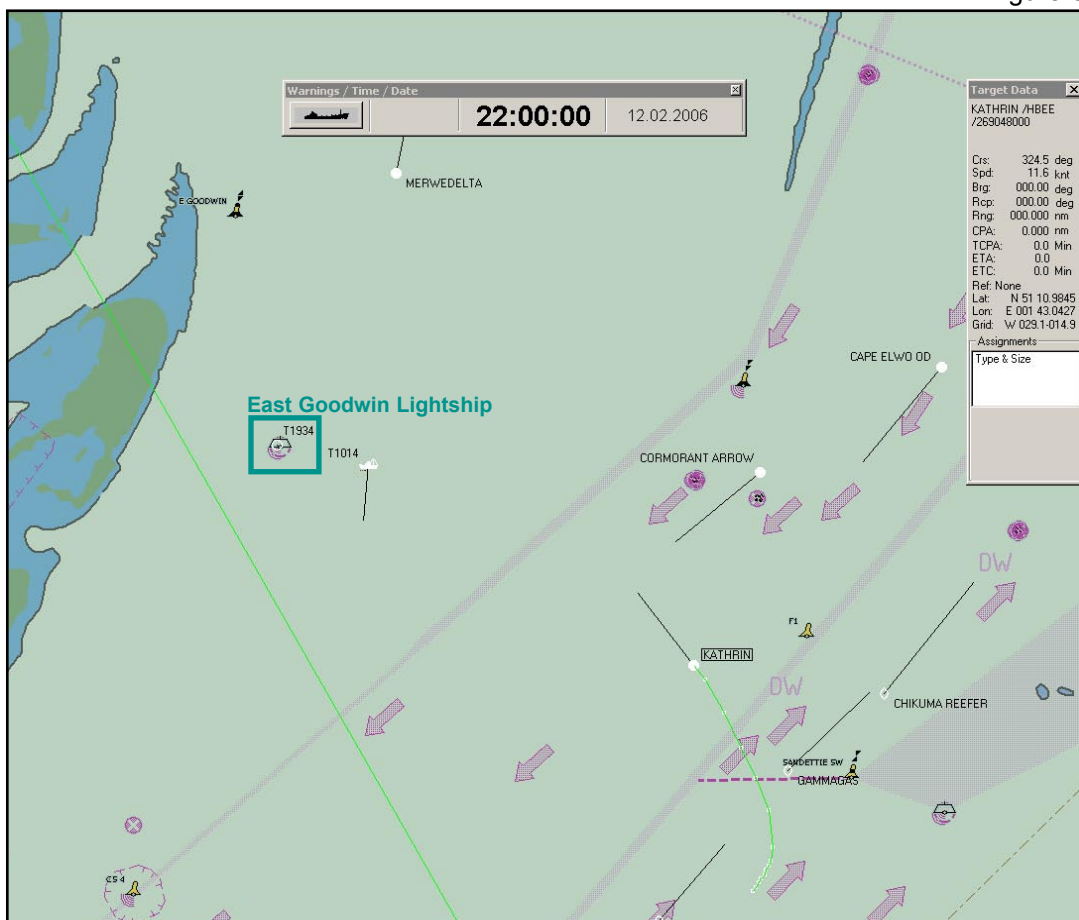
CNIS - area of coverage

Figure 5



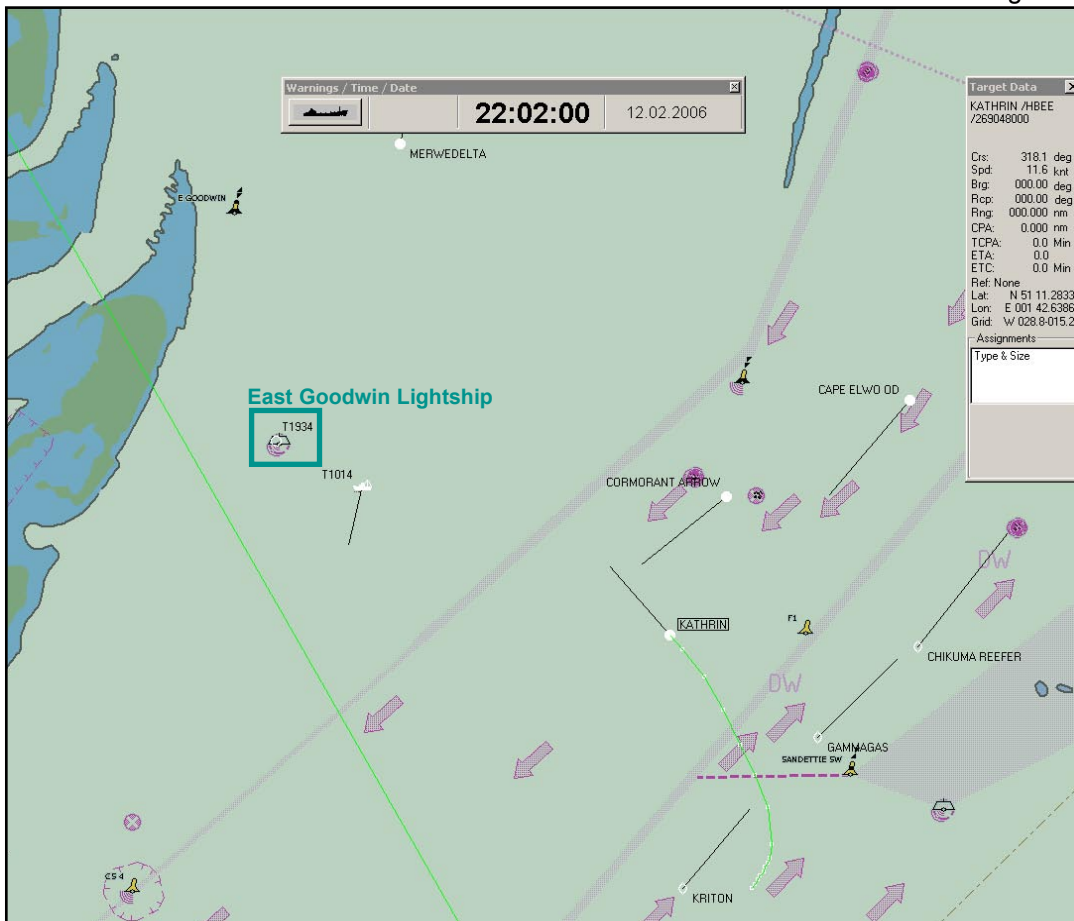
CNIS radar plot 2157:00

Figure 6



CNIS radar plot 2200:00

Figure 7



CNIS radar plot 2202:00

Figure 8

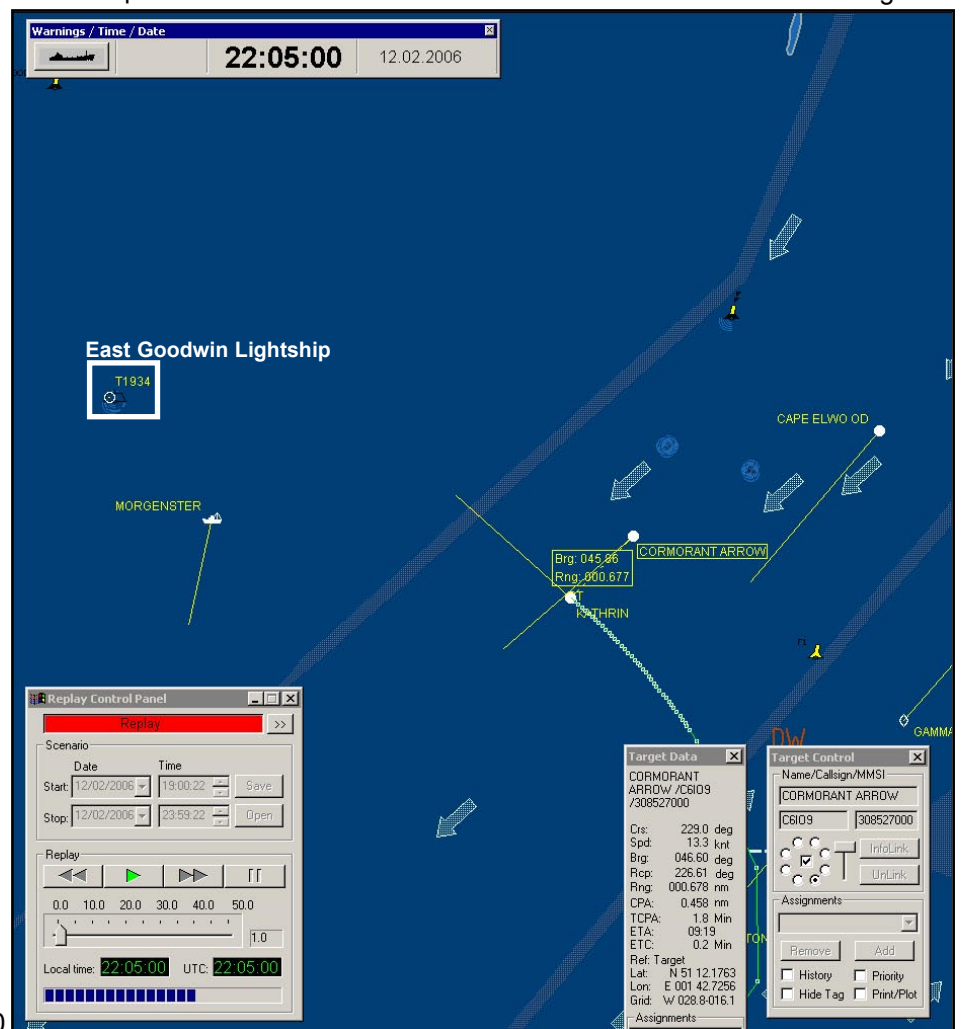
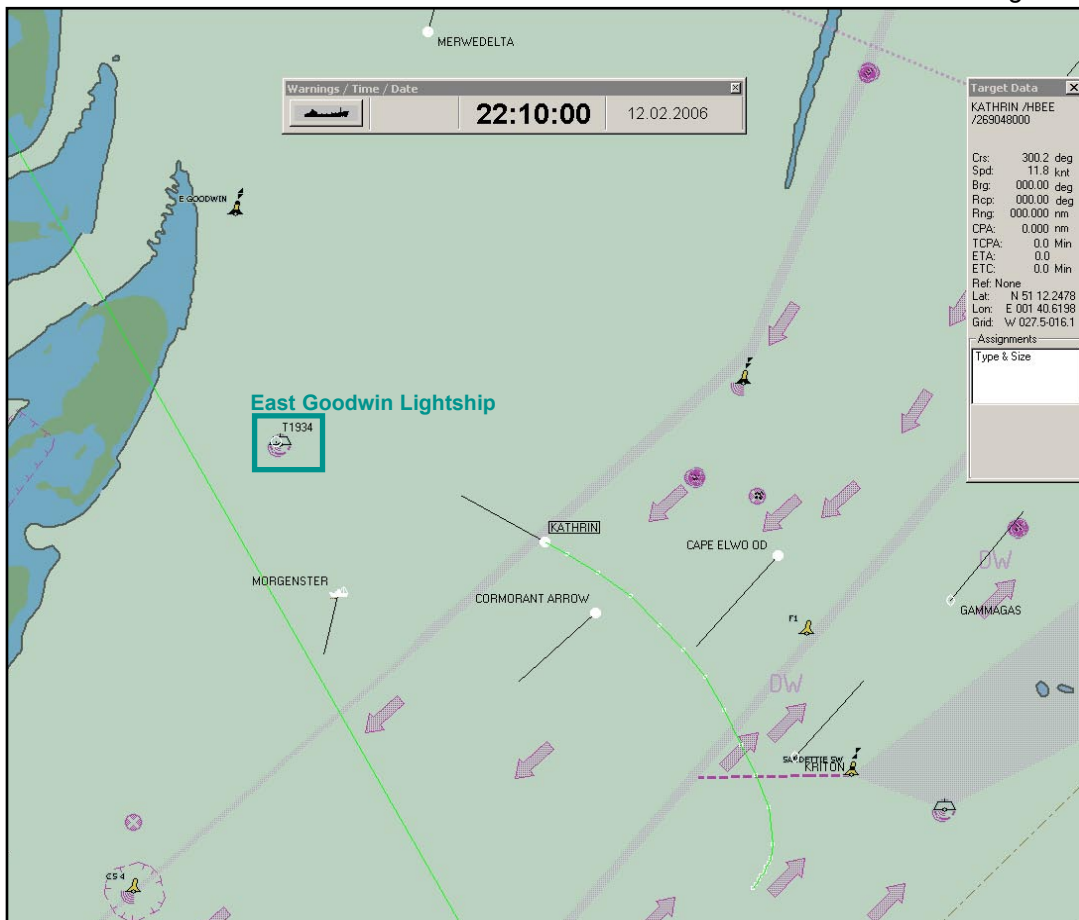
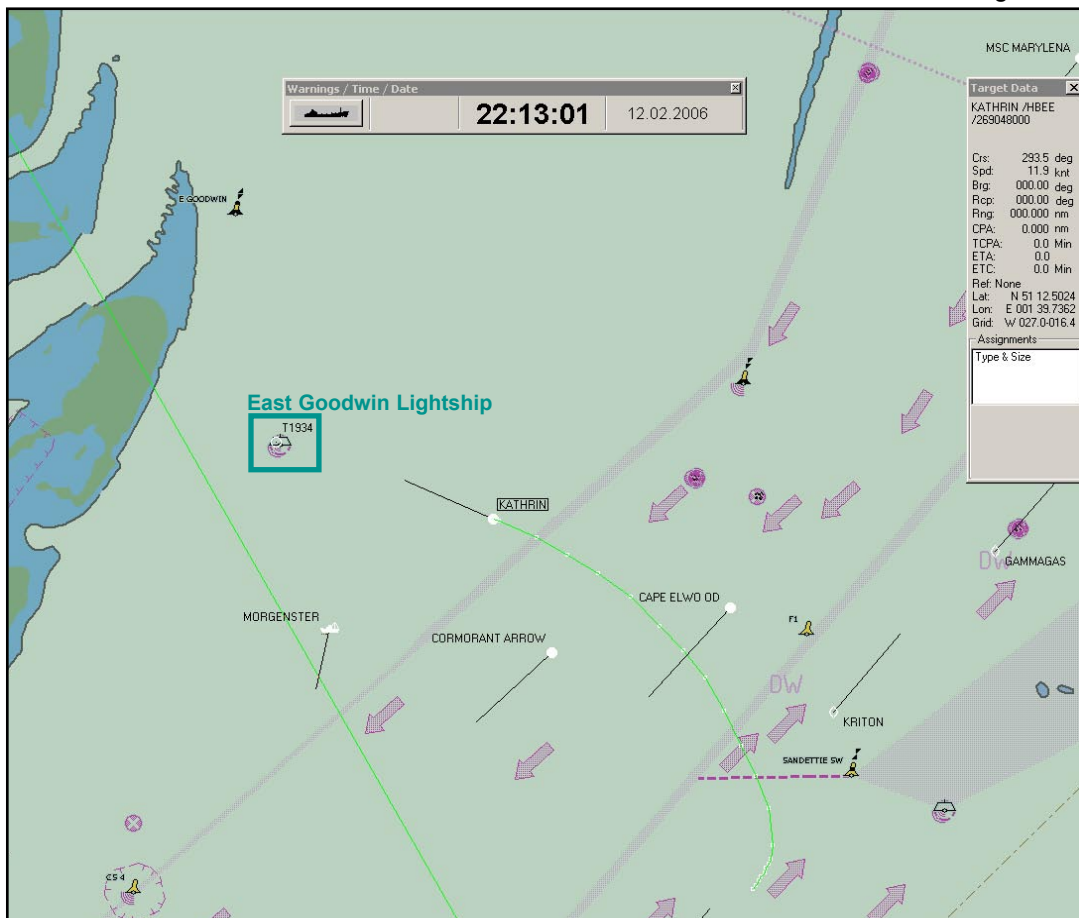


Figure 9



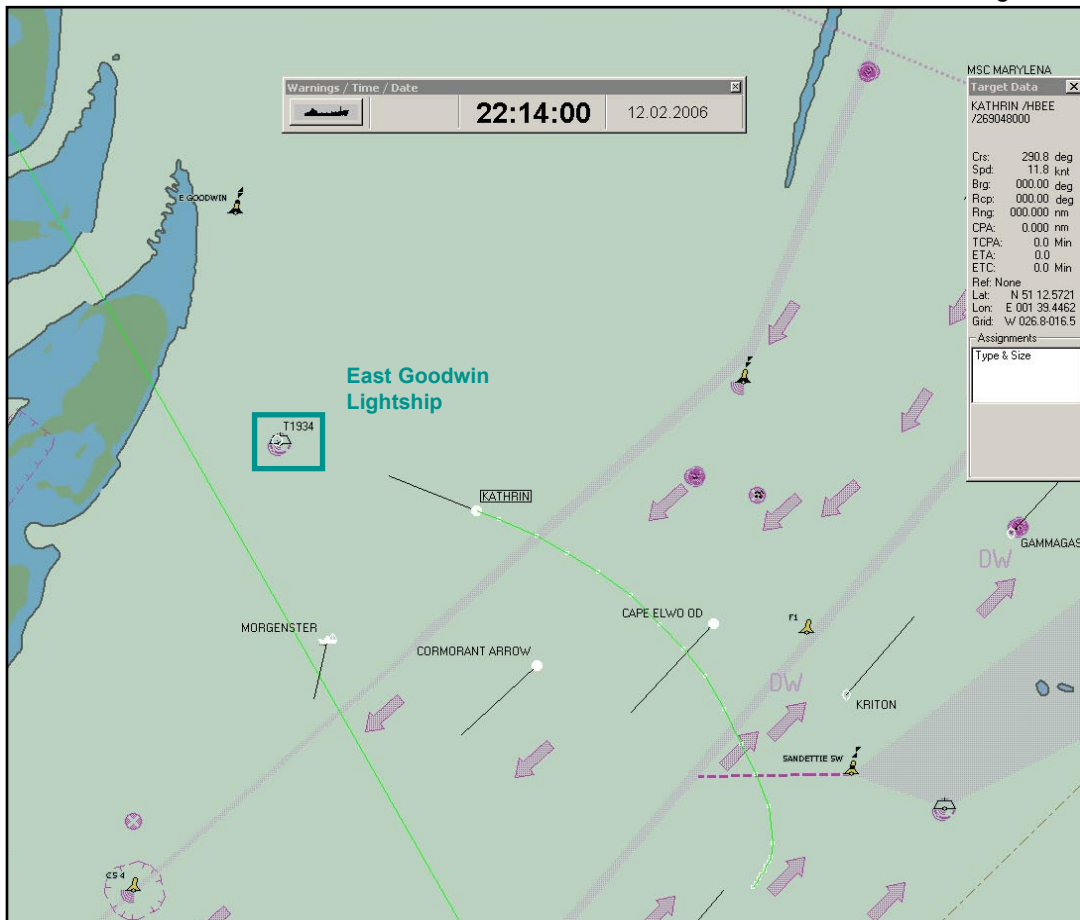
CNIS radar plot 2210:00

Figure 10



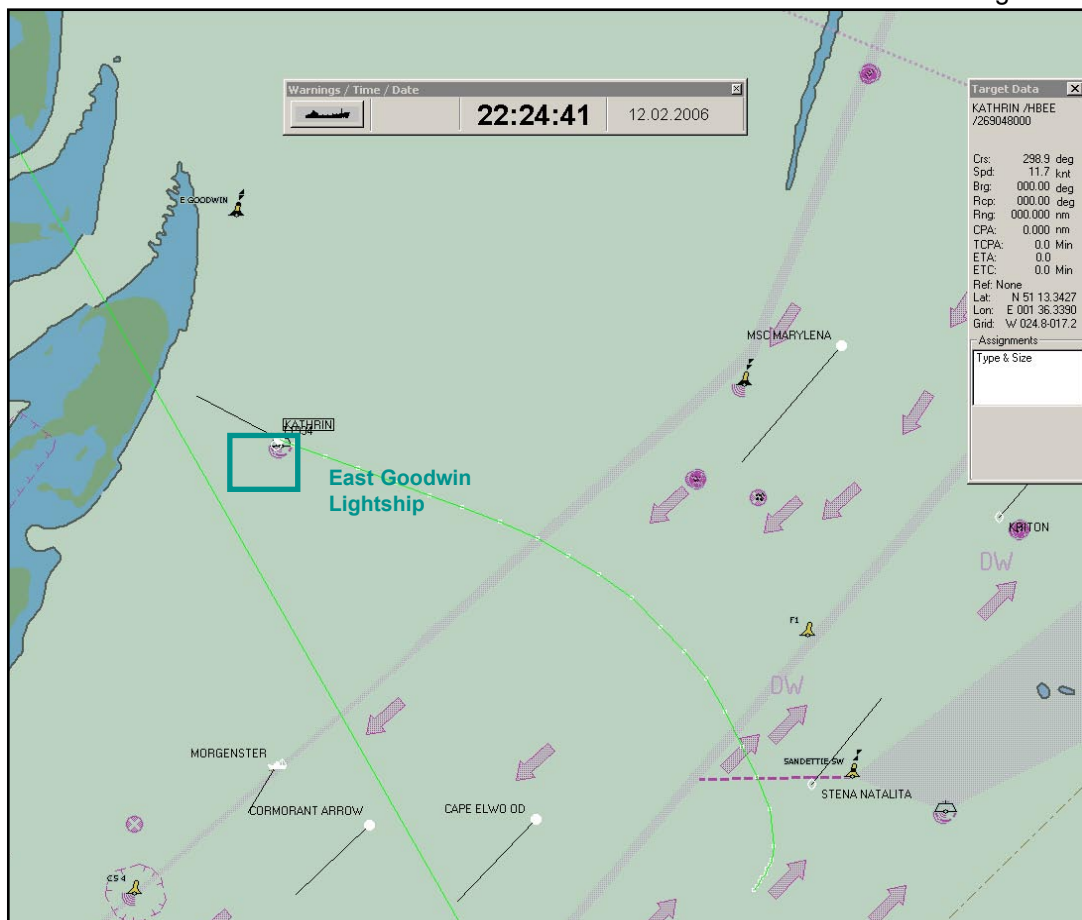
CNIS radar plot 2213:01

Figure 11



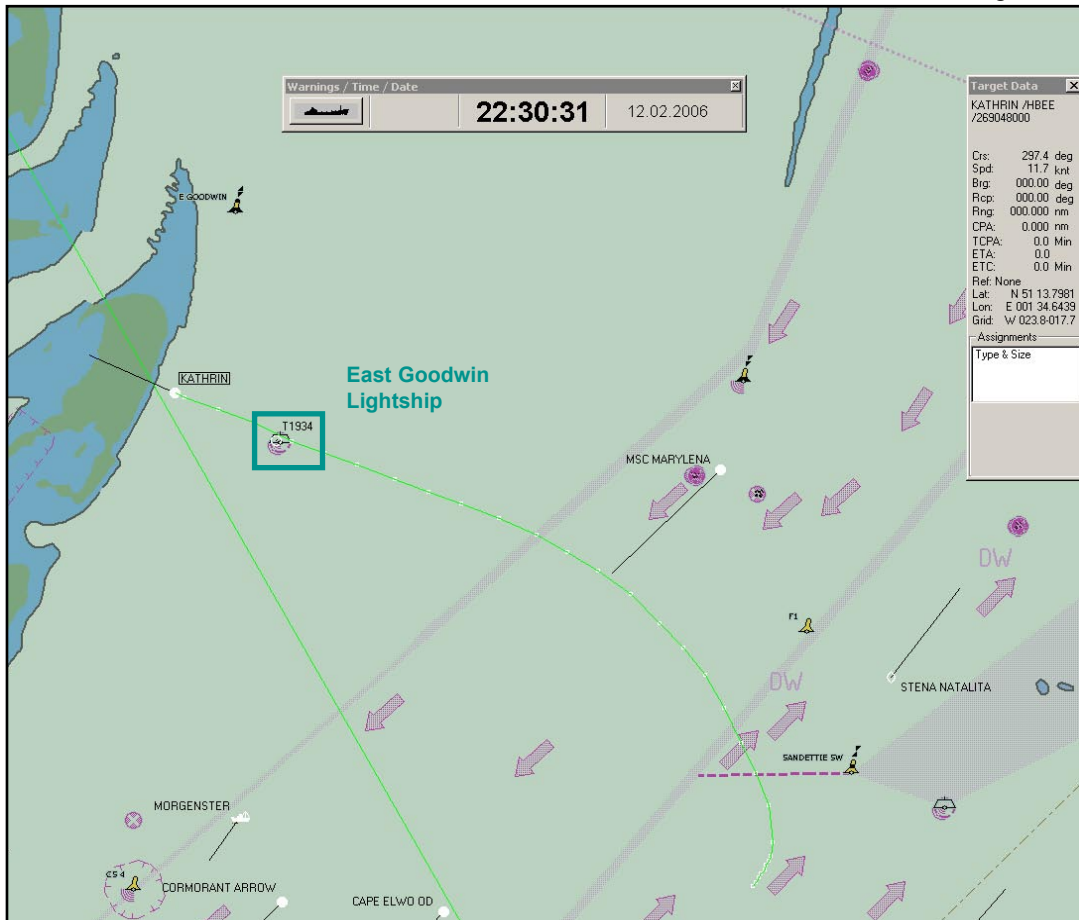
CNIS radar plot 2214:00

Figure 12



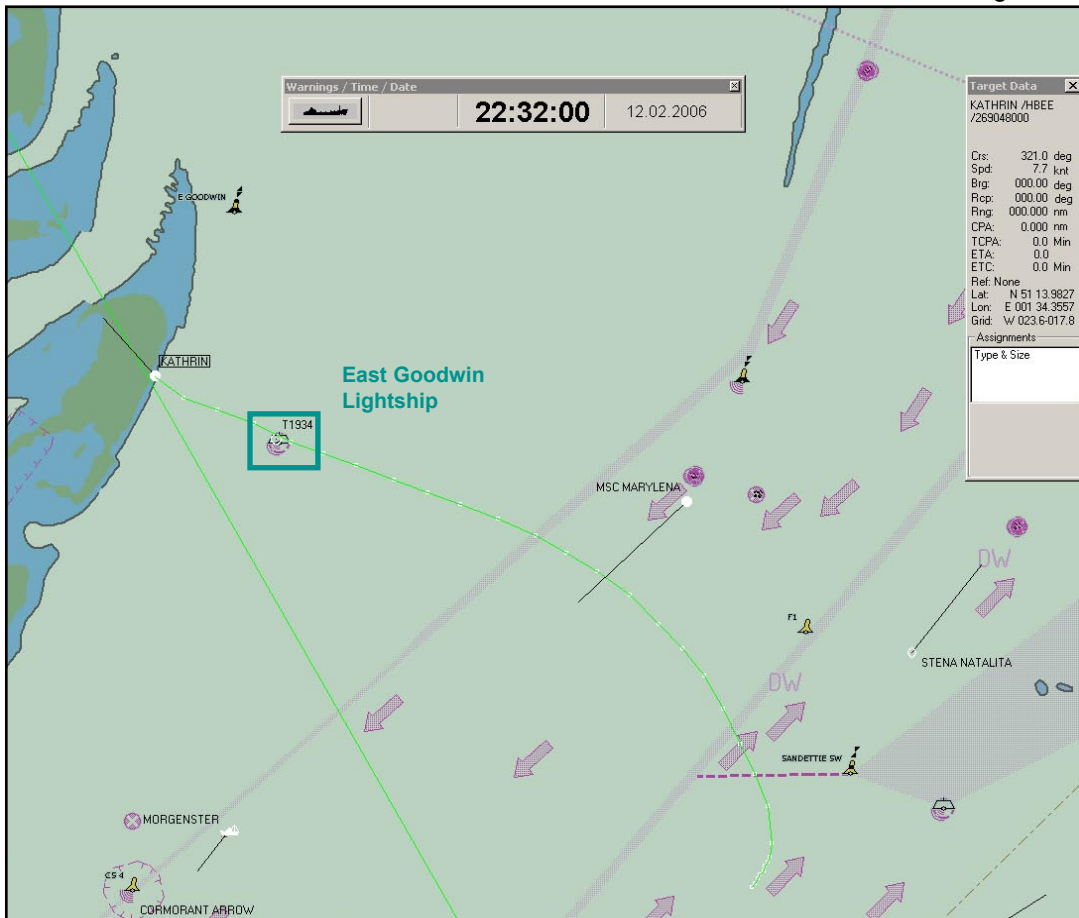
CNIS radar plot 2224:41

Figure 13

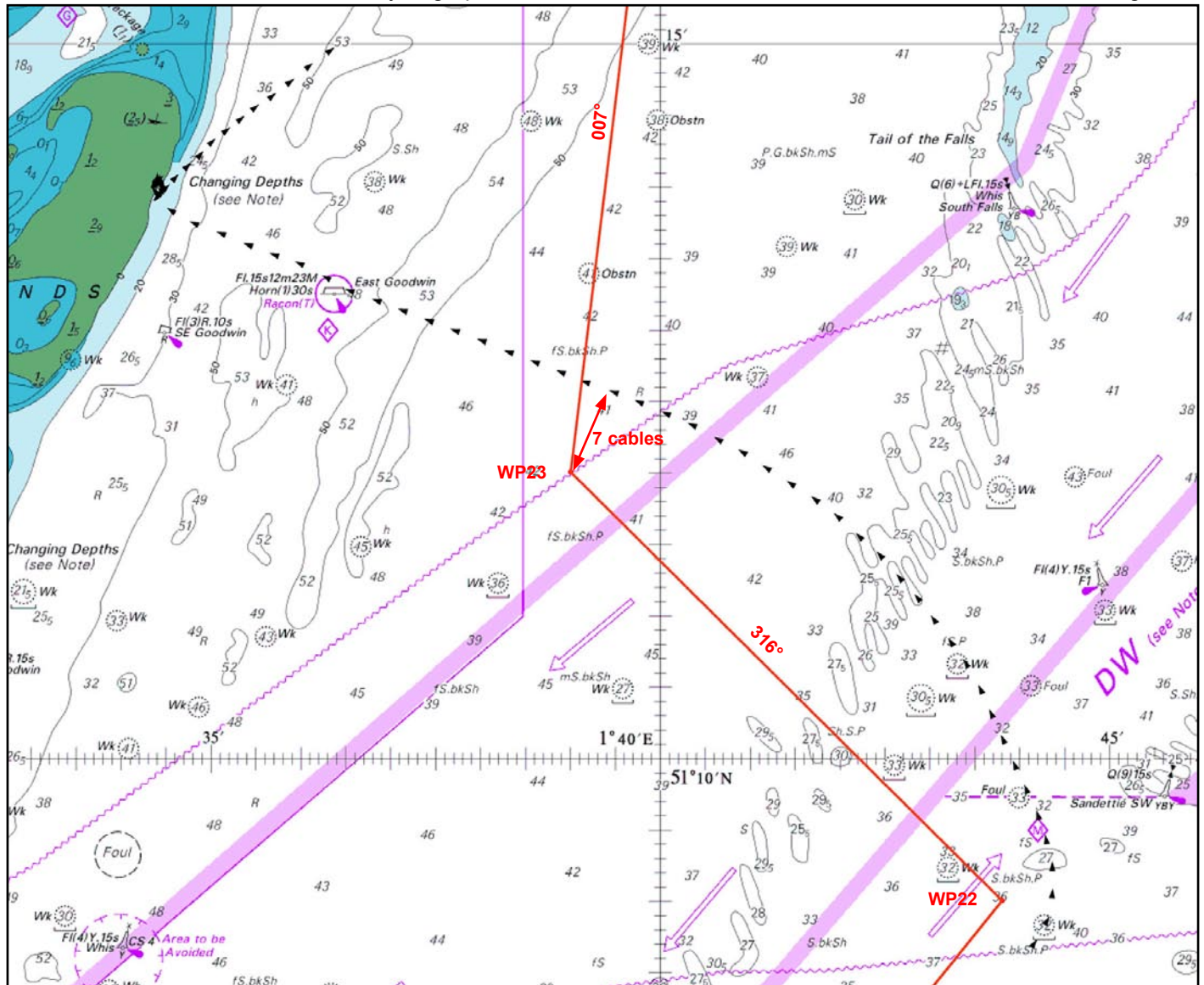


CNIS radar plot 2230:31

Figure 14



CNIS radar plot 2232:00



Extract of Chart BA 323 showing ground track

1.4 ENVIRONMENTAL CONDITIONS

The wind was south west force 5, and the sea was rough. Visibility was 5 miles when the master relieved the chief officer at 1900, but was reported to have decreased to a few hundred metres when the chief officer returned to the bridge immediately after the ship grounded. High water at Dover was at 2318 on 12 February, and the predicted tidal stream at 2218 was slack, increasing to a 1 kn to 1.5 kn north east stream by 2318.

1.5 BRIDGE EQUIPMENT, LAYOUT AND RECORDED INFORMATION

Kathrin was equipped with two Furuno radars. It is not known at what range scales the radars were operating at the time of the grounding. Two GPS receivers were fitted; one was sited on the chart table, and the other to the left of the port radar display. Each receiver had the ship's passage plan entered as waypoints, and an audible alarm was set to activate when the ship approached within 4 cables of these waypoints. A blue circle, indicating the position of the waypoint triggering the alert, was also shown on the radar displays.

A watch alarm was sited to the left of the port radar display (**Figure 16**), next to the forward GPS. The alarm interval was capable of being set between intervals of 1 and 15 minutes. If not accepted within 1 minute by personnel on the bridge, an alarm sounded in the master and chief officer's accommodation. Both the chief officer and second officer were aware of the watch alarm but had never used it during their time onboard. The master was not aware that a watch alarm was fitted. A photograph showing the general layout of the bridge is at **Figure 17**.

The vessel's Shipboard Operations Manual included instructions regarding bridge equipment, namely:

It is the Company's policy that all existing and applicable equipment shall be used during a passage and when assessing vessel's position [sic].

The only onboard record of the ship's position during the period from 2000 to the time of grounding was contained in the deck log (**Annex A**). The entries in the log for 2108, 2300, and 2400 were reportedly inserted by the master after the grounding. The position of the ship was not fixed on the paper chart in use until the chief officer established the vessel's position after the grounding.

1.6 BRIDGE WATCHKEEPERS AND ROUTINES

1.6.1 General

The bridge watchkeeping duties were shared between the master (0800 to 1200 and 2000 to 0000), the chief officer (1600 to 2000 and 0400 to 0800), and the second officer (1200 to 1600 and 0000 to 0400). The ship's crew included two ABs and a GP rating, which were allocated by name for particular watches on the posted bridge watch schedule (**Annex B**). The watchkeeping officers were aware of the requirement to maintain an additional lookout on the bridge during darkness, but none routinely used the designated rating for this purpose. This was apparently a practice followed on other company ships on which they had served. The reasons given for not using ratings as bridge lookouts included: the need to employ them on maintenance and husbandry; a preference to remain on watch alone, and; a perception that the watchkeeping rating served no practical function. The rating who was designated to be on the bridge with the master during his watch on the evening of 12 February was in bed when the vessel grounded. The hours of work and rest for the three deck ratings for the period 9 to 12 February are at **Annex C**.

1.6.2 The master

The master was Romanian and was 45 years old. He first went to sea as an AB when he was 22 years old, and served as a third and second officer between 1989 and 1996. After qualifying as a chief officer in 1997, he returned to sea in bulk and general cargo ships up to 25000grt. He qualified as a master in 2002 and joined Enzian Shipping in 2004, initially serving as a chief officer on board *Marie Jeanne*, a sister ship of *Kathrin*, and *Sabina*. He was highly recommended for promotion by the master of *Sabina* and the ship manager's technical director. He joined *Kathrin* on 28 August 2005 and was due to leave the vessel in New Holland on 15 February.

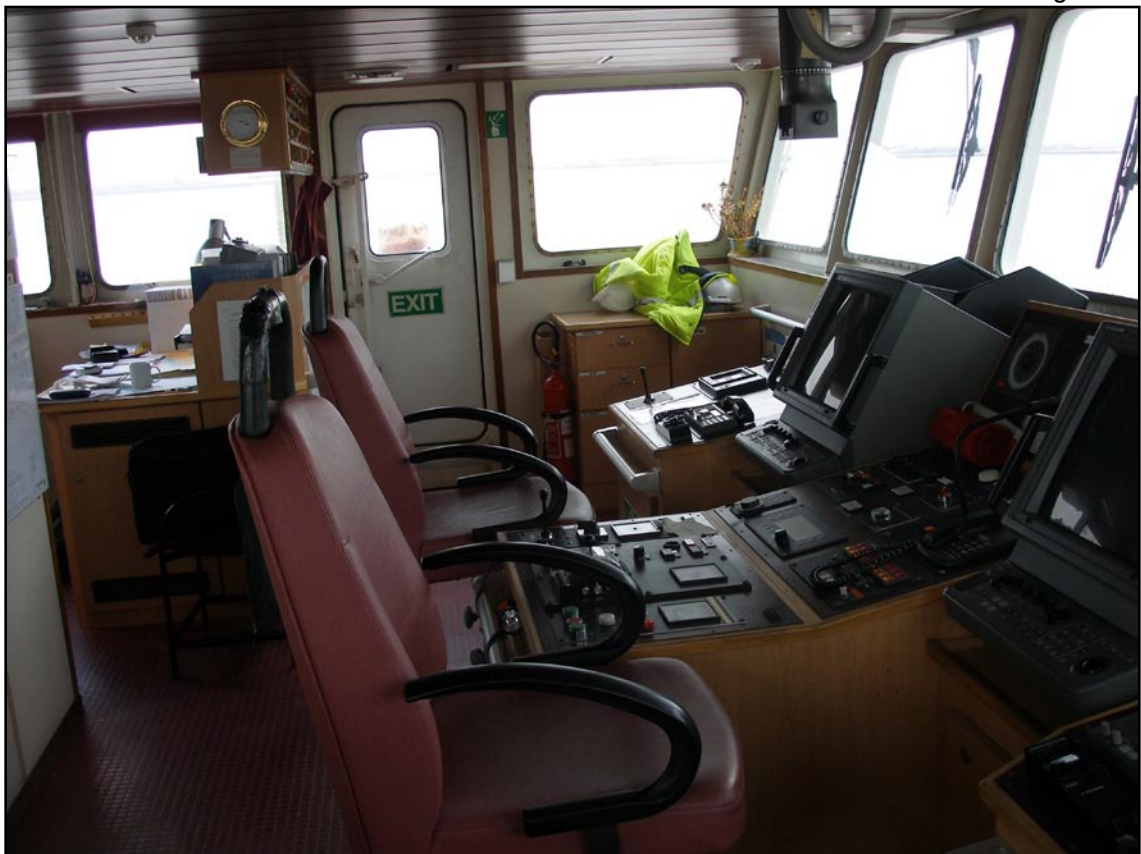
The master had managed only about 4 hours sleep on the night of 9 February when discharging in Aviles, but had managed to sleep for about 6 hours during the night of 10 February, after the ship had sailed from Aviles, and for about 7 hours during the

Figure 16



Photograph of bridge watch alarm

Figure 17



Photograph of Kathrin port bridge

night of 11 February. He also managed to sleep for between 1 and 2 hours during the afternoons of 11 and 12 February. The master's cabin was comfortable, quiet and was maintained at a reasonable temperature. He normally slept well and was not taking any medication, but he felt tired when on watch on the night of 12 February. The chief officer compiled the master's records of hours of work and rest, but none were available for February 2006. The master's hours of rest for January 2006 are at **Annex D**.

It is thought that the master's normal alcohol consumption was between 10 and 12 bottles of beer per week, and that he also occasionally drank whisky when on board. It would appear that he had been seen drinking whisky on 11 February. On sailing from Aviles, the master had three, litre bottles of whisky onboard, which he had purchased ostensibly with the intention of taking them back to Romania when he left the vessel.

1.6.3 The chief officer

The chief officer was 38 years old and was Lithuanian. He had been at sea since the age of 26, when he graduated from the nautical college in Odessa, Russia, and had been employed as a chief officer since 1997. The chief officer gained his professional qualifications to sail as master in 2002, and joined *Kathrin* on 5 February 2006. This was his first contract with Enzian Shipping, having been recruited via a crewing agency.

1.6.4 The second officer

The second officer was 40 years old and was Hungarian. He had been at sea since 1989, and had been a second officer for about 11 years, mainly on large bulk carriers. He had been on board *Kathrin* for 2.5 months. The second officer had been recruited via a crewing agency, and had previously held contracts on board *Claudia* and *Alessia*, both sister vessels of *Kathrin*.

1.7 DRUG AND ALCOHOL POLICY

It was company policy that all of its crew be screened for drugs and alcohol use before starting a contract. Before joining *Kathrin*, the master was screened on 8 August 2005 in Constanta, Romania. The results of this test, which was based on blood screening, were negative. The ship manager's "Drug and Alcohol Abuse Policy" (**Annex E**), restricted the consumption of alcohol to within prescribed limits.

1.8 INCIDENT IN OCTOBER 2005

On 23 October 2005, *Kathrin* was on passage in the Dardanelles TSS off Turkey, with the master on watch. Before relieving the chief officer at 2000, the master had been upset by a telephone call from his wife, during which she had informed him of the death of a close relative. This was the third close relative to die within a 2 month period. During the watch, the master left the bridge, and went to his cabin where he drank about 0.5 litre of vodka in the hope that it would make him feel better. At about 2200, a cadet who was on board at the time, visited the bridge and found that it was not manned. He immediately alerted the chief officer and chief engineer in their cabins two decks below. The chief officer and chief engineer went directly to the bridge, where they found the ship to be sailing in the wrong direction in a traffic lane, and was being called on VHF radio by the Turkish authorities ashore. The chief officer followed the subsequent instructions given by the Turkish authorities, which directed the ship to an anchorage. The master was later found intoxicated in his cabin. Turkish authorities boarded the vessel on 24 October 2005, and the ship was fined US\$3500 for violation of the rules regarding navigation and collision avoidance in a TSS.

Enzian Shipping was notified of the fine during the afternoon of 24 October 2005, and the company's operations manager requested the master to provide details of the incident. After an exchange of e-mails, in which the master explained that the situation had arisen following a failure with the vessel's VHF radios, the operations manager telephoned the master. The master then admitted that the incident occurred when he had been under the influence of alcohol, and explained about the deaths of his relatives. Although the operations manager asked the master if he wanted to leave the ship, the master declined. In view of the master's time and good performance with the company, his agreement that he would not drink any more alcohol while on board, and after also talking about the situation with the chief officer on board *Kathrin*, the operations manager agreed that the master could stay on board. The violation of the COLREGs, and the fine, were discussed at the company's weekly management meeting on 25 October 2005, but the chief executive officer, and other senior managers, were not made aware of the master's consumption of alcohol. Following the meeting, an e-mail was sent to all company vessels, stating:

For reasons we have to alert and remind you and your navigating officers to strictly obey and navigate you vessel in line with the COLREG Rule 10 'Traffic Separation Schemes'.....It happened recently that one of our vessels did not navigate as per this rule and the corresp. Traffic Control Centre got alerted. An inspection on board followed and managers/Owners have now been advised that the case will be further investigated and the vessel / owners will be fined incl. reporting to the Flag State.[sic]

During the discussions between the operations manager and the chief officer, the chief officer agreed to monitor the master to ensure that he did not consume any more alcohol on board. To achieve this, the chief officer removed the remaining alcohol from the master's cabin. The chief officer, who had left the ship on 5 February 2006, had been very supportive to the master following the incident in the Dardanelles.

1.9 SHIP MANAGEMENT

1.9.1 General

Founded in 1999, and based in Schlieren in Switzerland, Enzian Shipping operates a fleet of ten vessels. *Kathrin* is one of four similar ships fully managed by Enzian Shipping since September 2002, and mainly employed in the European short-sea bulk and steel trade. The company's fleet also includes two 9000t DWT, and four 12500t DWT vessels operating worldwide. The company plans to increase the size of its fleet with the addition of eight 12000t DWT vessels, which are under construction in the Far East.

1.9.2 Crewing policy

After Enzian Shipping assumed full management of *Kathrin* and her sister vessels in 2002, the company inherited the crews employed by the previous ship manager, and continued to recruit its crews via the same manning agencies. Other, newly appointed manning agencies were also used. The agencies used were located in Romania, Poland, Hungary, Bulgaria, and Lithuania. A manning agency in Sri Lanka is now also used. Some difficulty had been experienced in sourcing suitably qualified and experienced personnel for its ships engaged on the short-sea coastal trade. Wherever possible, Enzian Shipping preferred to promote its masters from within its existing cadre of officers, based on recommendation and performance rather than by external

recruitment. Contracts with its masters range in length between 3 and 6 months, depending on the geographical area and type of trade a particular ship is engaged in. The personal circumstances of each master are also taken into consideration whenever possible.

In 2005, the company increased the number of crew on board *Kathrin* and her sister ships by the addition of a GP rating. This action was taken to assist with maintenance and husbandry, to allow better control of rest periods and also to facilitate the provision of a rating during each of the bridge watches during darkness. Enzian Shipping also employs Swiss and Polish officer cadets and apprentices on its ships.

1.9.3 Safety management system

Enzian Shipping had a Document of Compliance issued by Lloyd's Register of Shipping. The company's Safety and Quality Department was headed by the safety and quality co-ordinator, who was also the designated person for the company's fleet. He had been in post since 2 October 2005. Prior to this date the company's chief executive officer had undertaken these responsibilities. The safety and quality co-ordinator, and the operations manager were qualified masters; their responsibilities and job descriptions are at **Annex F**. The company's chief executive officer was also a qualified master and had been working as a ship manager since 1975, initially as a marine superintendent, and then as a managing director until joining Enzian in 2002.

The company's last internal safety management audit was conducted between 9 and 16 November 2005. An internal annual review of its security and safety management system was also completed on 12 December 2005, which concluded:

- *All vessels have been inspected by the company's Marine and Technical Superintendents at regular intervals of approximately 4 months. During the inspection, security, safety and quality topics have been addressed and internal ISM & ISPS audits were conducted on all vessels*
- *Results from internal audits (on its ships) confirm that company's S+QMS works well, some minor observations had all been rectified [sic]*
- *The company's S+QMS manuals were completely reviewed and modified in November, new company structure was established, few procedures were revised, new forms were introduced [sic]*
- *The company has arranged briefing in the office with masters in order to improve co-operation between vessels and company. Masters received from Company a lot of information re. company's requirements, co-operation with charterers, operations, safety on board, maintenance, proper reporting etc. [sic]*

Following the internal audit and management review, a DOC audit was conducted by Lloyd's Register of Shipping on 9 February 2006, which noted:

The Safety Management System is very well maintained and is undergoing continuous improvement. The whole company is subject to a well planned growing process and therefore the position of a DPA/Manager has been reconsidered and a new full time DPA with direct access to the management has been employed, as well as all other departments stocked up with well trained staff. [sic]

The audit report concluded:

THE ELEMENT OF GOOD CREW HAS BEEN ANALYSED AS THE KEY OF SAFE OPERATION OF THE COMPANY SHIPS AND MANY EFFORTS ARE UNDERTAKEN TO TARGET THIS GOAL.[Sic]

The last internal audit on board *Kathrin* was conducted on 20 October 2005 in Bari, Italy, by the company's technical director. During this audit no non-conformities were raised. The summary of the audit report stated:

The S+QMS system is good working on this vessel. Master, Officers and Crew are familiar with the system and use it as a daily working tool. Planned maintenance is sufficient for this vessel, however for professional maintenance planning and control the manual system has to be changed to computerized planned maintenance system. [sic]

The internal audit was followed by an external audit on 13 January 2006. This audit was conducted by Lloyd's Register of Shipping, and only raised one observation, which was with regard to the control of records. The ship manager maintained a record of all accidents and near accidents occurring in its fleet. In 2005, 18 accidents or near accidents were recorded, but the only accident relating to bridge watchkeeping practices concerned a watchkeeper reading a book while on watch. Although the incident involving *Kathrin* on 23 October 2005 resulted in the ship being fined and the ship manager issuing a fleet - wide memorandum, this was not included in the company's record of accidents or near accidents because the company did not receive a formal report from the ship in accordance with written procedures.

1.10 THE ISM CODE

a. Background

The International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) provides an international standard for the safe management and operation of ships, and for pollution prevention. It was adopted by the IMO in 1993, and came into force on 1 July 1998 via SOLAS Chapter IX, 'Management and Safe Operation of Ships'. It did not apply to dry cargo ships over 500gt making international voyages until 1 July 2002.

b. Objectives

The objectives of the Code are to ensure safety at sea, prevention of loss of life and injury, and prevention of damage to the environment. It requires owners and operators to set in place a Safety Management System (SMS), through which management procedures for all activities affecting safety and environmental protection are conducted in accordance with legislative and company requirements. An SMS should allow companies to measure performance against documented procedures and enable them to identify areas for improvement in safe practices and pollution prevention measures. The Code states:

1.2.2. Safety–management objectives of the Company should, *inter alia*:

- .1 provide for safe practices in ship operation and safe working environment;*
- .2 establish safeguards against all identified risks; and*

.3 continuously improve safety management skills of personnel ashore and aboard ships, including preparing for emergencies related both to safety and environmental protection.

c. Certification

Certification under the ISM Code is conducted by flag states, but can be delegated to recognised organisations such as classification societies. Two elements of certification exist:

- The Document of Compliance (DOC), which is issued to companies whose shore-based aspects of the SMS comply with the requirements of the ISM Code. The DOC is specific to the ship type for which the SMS is implemented.
- The Safety Management Certificate (SMC), which is issued to a ship when her company has completed a satisfactory assessment for a DOC, and her onboard management operates in accordance with the SMS.

d. Designated person

The ISM Code states:

To ensure the safe operation of each ship and to provide a link between the company and those on board, every company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution prevention aspects of the operation of each ship and ensuring adequate resources and shore based support are applied as required.

The Code does not state who or how qualified the designated person should be, other than that they should be well experienced in the operation of ships both at sea and in port.

1.11 LOOKOUT

The provisions of STCW 95 address watchkeeping at sea and set out certain principles to be observed in keeping a navigational watch, including the keeping of a lookout. Relevant parts of the text read as follows:

Section A-VIII/2.Part 3

1. *The duties of the lookout and helmsperson are separate and the helmsperson shall not be considered to be the lookout while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no impairment of night vision or other impediment to the keeping of a proper lookout. The officer in charge of the navigational watch may be the sole lookout in daylight provided that on each such occasion:*
 - a. *the situation has been carefully assessed and it has been established without doubt that it is safe to do so;*
 - b. *full account has been taken of all relevant factors, including, but not limited to:*
 - *state of weather,*
 - *visibility*

- *traffic density*
 - *proximity of dangers to navigation*
 - *the attention necessary when navigating in or near traffic separation schemes; and*
- c. *assistance is immediately available to be summoned to the bridge when any change in the situation so requires.*

1.12 HOURS OF WORK AND REST

In accordance with the requirements of EC Directive 1999/95/EC, all ships trading in EU waters must comply with ILO convention 180 with regard to hours of work and rest for all seafarers. Article 5 of the convention includes:

1. *The limits on hours of work and rest shall be as follows:*

(a) *maximum hours of work shall not exceed:*

- (i) *14 hours in any 24 hour period; and*
- (ii) *72 hours in any seven-day period;*

or

(b) *minimum hours of rest shall not be less than:*

- (i) *10 hours in any 24-hour period; and*
- (ii) *77 hours in any seven-day period.*

2. *Hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length, and the interval between consecutive periods of rest shall not exceed 14 hours.*

Similar, but less stringent requirements regarding minimum hours of rest are also contained in Section A-VIII/1 of STCW 95.

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 ACTIONS BEFORE AND IMMEDIATELY FOLLOWING THE GROUNDING

Until about 2210 on the evening of the grounding, the actions taken by *Kathrin's* master had been in accordance with the voyage plan. Although he had not plotted any positions on the paper chart, he had altered course at 2007, he had called Dover Coastguard at 2136, and had altered course at 2147.

Figures 5 to 15 show that the course made good on board *Kathrin* gradually altered from 333° at 2157 (**Figure 5**) to 291° by 2214 (**Figure 11**). They also show that the vessel passed ahead of two vessels, the closest CPA of which was 6 cables on *Cormorant Arrow* (**Figure 8**). Given the slack tidal stream, the gradual change in the ground track is not consistent with the master setting a single course on the autopilot. Course must have been adjusted either via the course set, or by manual steering. As the master also assessed that the closest CPA of any south west bound vessel was 1.5 miles, the accuracy of the master's recollections during this period is questionable.

It was only from 2114 until the ship started to take the ground at about 2230 that a steady course made good was evident. Therefore, this was probably the period during which the master was incapacitated. As the ship passed 7 cables from the navigational waypoint Number 23 (**Figure 15**) at 2214, the GPS alarm would not have sounded as this was outside the 4 cable guard zone set.

Figure 12 shows that *Kathrin* passed very close to the East Goodwin Lightship (**Figure 3**), which was painted red. However, although **Figure 2** indicates that the vessel had been in contact with a red object, and there was a deflection in her course made good as she passed the lightship, it cannot be certain that *Kathrin* made contact as no damage could be found during a subsequent inspection of the lightship.

Although the radar recordings show that the grounding occurred within the radar coverage of CNIS, it is likely that the grounding was not detected because the ship was aground for only 15 minutes. Also, because the ship was not entering an inshore traffic zone after she cleared the south west traffic lane at 2212, *Kathrin* was no longer in CNIS' main area of interest (**Figure 4**).

The chief officer was placed in a very unfortunate position when he arrived on the bridge. The ship was aground, and the master was not taking any action. The chief officer took positive measures to ensure the vessel's safety, but, importantly, he did not inform CNIS of the grounding. This was contrary to international maritime rules and regulations which require masters to immediately inform the nearest coastal state when a vessel grounds. The requirement to inform immediately gives the coastal state maximum time to arrange any assistance required by the vessel and to begin to put in place plans if required to protect the environment. Delays in informing the coastal state may have serious consequences and all mariners should be fully aware of their obligations to inform without delay. On this occasion, it was fortunate that the ship was still seaworthy and did not require assistance.

2.3 FATIGUE AND ALCOHOL

2.3.1 Fatigue

The master felt tired during his watch, and stated that he fell asleep. Unlike many similar ships operating in the short-sea trade, *Kathrin* was manned with three, rather than two, bridge watchkeepers. Consequently, the master, chief officer, and second officer were only occupied with a bridge watch for four in every 12 hours while at sea. Under such a regime, although it is acknowledged that other duties and interruptions can occupy much of the time away from the bridge, officers have greater opportunities to rest than their contemporaries working in a 6 hours on, 6 hours off watch routine. This is supported by the record of hours of work and rest for the master for January (**Annex D**). The record reflects that the master was able to take rest in accordance with the ILO convention 180 every day apart from 3 January 2006.

However, measures taken to allow watchkeepers to rest for a minimum number of hours, such as increased manning levels, can only provide opportunities to rest. They cannot guarantee the quality of rest, which is influenced by a number of factors. These include an individual's state of mind through worry or excitement, physiological influences such as alcohol, drugs and medication, medical problems such as insomnia, and the environment. Although the master probably had ample opportunity to rest during his time on board *Kathrin*, including the days at sea immediately prior to the grounding, and he had a quiet and comfortable cabin, it is possible that the quality of his sleep during his time on board was degraded by concern over the bereavement of close relatives, the consumption of alcohol, anxiety over the incident in the Dardanelles, and anticipation of his imminent departure from the ship in New Holland.

2.3.2 Alcohol

The master's behaviour when relieving the chief officer appeared normal, and his decision to turn on the starboard radar was a sensible precaution given the vessel's location. The alterations of course at 2007 and at 2147, and the VHF call to Dover Coastguard were also in accordance with the voyage plan. However, the master was seen drinking some of the whisky he had purchased in Spain after sailing from Aviles, and although the master might not have been under the influence of alcohol when he came to the bridge at 1853, the discrepancies between his recollections and the recorded radar information, and his behaviour and the smell of alcohol on his breath after the vessel grounded, indicate that he had probably drunk alcohol while on watch. In the previous incident, in the Dardanelles, the vessel had been fined by the Turkish Authorities after the master had left the bridge unattended to consume alcohol in his cabin while *Kathrin* transited in the wrong traffic separation lane. There is also no doubt that the master consumed alcohol to excess during the passage to New Holland following the grounding. This was evident by his behaviour between 13 and 15 February, and from the level of alcohol on his breath on arrival.

Alcohol is known to affect performance in several ways, including: the impairment of awareness, judgment and decision-making, the reduction in co-ordination ability, and, in the extreme, the inducement of coma. In this case, it is likely that alcohol influenced the master's behaviour and decision-making, leading finally to his decision to sit down when he knew he was alone on the bridge and feeling tired. The effects of the master's consumption of alcohol must therefore be viewed as a major contributory factor to his falling asleep, and the vessel's grounding.

2.4 SIMILAR ACCIDENTS

Since 2003, the MAIB has investigated three other merchant vessel accidents in which alcohol was considered to be a major contributory factor. These were: the contact of *Donald Redford* with Hythe Pier in Southampton Water in November 2003; the grounding of *Jackie Moon* off Dunoon, Scotland, in September 2004; and the grounding of *Anglian Sovereign* off Oxna, Shetland Islands, in September 2005. In all three accidents, the bridge watchkeeper was alone on the bridge during darkness.

2.5 THE USE OF ADDITIONAL LOOKOUTS AND WATCH ALARM

Kathrin grounded as a result of her master's incapacitation due to fatigue, alcohol, or both. Regardless of the nature of his incapacitation, which could also have been caused by loss of consciousness through illness as well as sleep, the grounding could have been prevented had an additional lookout been employed as required by both STCW and company procedures. It could also have been avoided had the watch alarm been utilised.

If a rating had been on the bridge, as nominated, the master would have probably been less inclined to consume alcohol during his watch, and also less likely to fall asleep. In any event, the presence of a lookout would have provided an opportunity for the master to be woken in sufficient time to allow corrective action to be taken. Similarly, with the watch alarm in operation, even had the master not been woken by its initial alarm, its follow up alarm would have alerted the chief officer in his cabin. Given that the master was probably incapacitated from 2214, this would have allowed sufficient time for the chief officer to respond effectively, particularly with the alarm set to activate at an interval of less than 15 minutes.

2.6 ENFORCEMENT OF DRUG AND ALCOHOL POLICY

The master's consumption of alcohol on 23 October 2005, and during the period 12 to 15 February, was in excess of the limit prescribed in the ship manager's alcohol policy. The policy also stated that all crew would be subject to random alcohol testing, and that alcohol testing equipment was carried on board. However, neither of these measures had been implemented, and the policy lacked any means of deterrence or enforcement. Consequently, although the operations manager was aware that the incident in the Dardanelles had occurred as a result of the master being under the influence of alcohol, reliance was placed on the chief officer to monitor the master's behaviour on board. Within days of the chief officer leaving the vessel, the master again drank alcohol in excess of the prescribed limit.

The enforcement of an alcohol policy, regardless of whether the consumption of alcohol is not allowed or is restricted, is inevitably problematic due to issues including: the authority of the master, tightly-knit crews, cultural habits, the custody and use of on board test equipment, and the possibility of individuals feeling discriminated against when selected for random testing. However, had test equipment been carried on board *Kathrin*, and a programme of random testing been undertaken, the ship manager's commitment to its policy would have at least been clear, and more of a deterrent.

2.7 EFFECTIVENESS OF SAFETY MANAGEMENT SYSTEM

At the heart of any safety management system lies the procedures documented by a company in its operations or management manuals. In this case, Enzian Shipping was a relatively new and expanding company, which had demonstrated a commitment to its

safety management system by the appointment of a safety and quality co-ordinator in 2005. He had reviewed the company's safety management system documentation, and as a consequence the company's shipboard operations manual was comprehensive. However, *Kathrin's* bridge watchkeeping officers ignored several key instructions in the manual, which undoubtedly jeopardised the safe operation of the vessel. These included: the master's alcohol consumption and his decision to leave the bridge unattended; the failure to use additional lookouts on the bridge both on board *Kathrin* and her sister vessels; the failure to use the watch alarm, and; the failure to notify the coastguard at the time of the grounding. Such shortcomings indicate that the company's safety management system had not been embraced by the crew on board *Kathrin*. Indeed, it is difficult to reconcile the master's actions when transiting the Dardanelles TSS and the Dover Strait TSS, given these are two of the busiest waterways in the world. The failure of the bridge watchkeepers to use additional lookouts as required when serving on board other ships of the same company also indicated that non-compliance with the company's written procedures was occurring on other vessels across the Enzian Shipping Fleet.

The views of the watchkeeping officers on board *Kathrin*, regarding the usefulness of lookouts, are not uncommon. The presence of a lookout on the bridge is often seen as a token gesture aimed at meeting regulatory requirements, at the expense of deck maintenance and other tasks. Consequently, they are frequently not used. Likewise, watch alarms are also frequently not used because they are not required by regulation, and are viewed by many watchkeepers as a source of annoyance, rather than a benefit. Notwithstanding the personal reservations of many watchkeepers regarding the use of lookouts and watch alarms, if a safety management system is to be effective, it is essential that it is embraced by ships' masters and crews, and that all of its requirements are adhered to. To that end, the onus lies with ship owners and ship managers to convey to their masters and crews that all written requirements are indeed actual requirements, and that their safety management system is not simply a means of complying with regulation. This can be a difficult task, but a company's safety ethos, and the benefits of a safety management system, can be achieved through a variety of measures, including: visits to company offices by senior officers; seminars for senior officers; inspections; audits; the scrutiny of records such as hours of work and rest; the encouragement for all personnel to report non-compliances; and, importantly, the thorough investigation of all accidents and hazardous incidents. All such measures can be used to demonstrate and promote a company's commitment to safety.

To be effective, a safety management system must be an 'organic' or 'living system', which is constantly modified and updated as lessons are learned from accidents, hazardous incidents, and other operational situations. In this case, although the ship manager kept a record of accidents and near accidents on board its vessels, it did not include the incident involving *Kathrin* on 23 October 2005, which resulted in the ship being fined. Also, while the ship manager determined that alcohol was a major contributory factor in this case, this information was not immediately shared among the company's senior management and no further investigation was undertaken. As a result, the potentially dangerous circumstances of the ship proceeding in the wrong direction of a traffic lane in a TSS with the bridge unattended, and the master intoxicated in his cabin, were not accurately determined. A thorough investigation of the incident would have not only highlighted the actions of the master, but it would also have revealed a general lack of on board compliance with company procedures regarding additional lookouts, and watch alarms, neither of which had been detected during previous internal and external audits.

SECTION 3 - CONCLUSIONS

3.1 FINDINGS

The following safety issues are identified as a result of the MAIB investigation. They are not presented in any order of priority:

1. The master's recollection of events preceding the grounding contains several discrepancies when compared against the radar information recorded by CNIS.[2.2]
2. It was probable that the master was incapacitated from 2214 until the ship started to take the ground at about 2230. [2.2]
3. The grounding was not reported to CNIS [2.2]
4. The grounding was probably not detected by CNIS because the ship was aground for only 15 minutes, and the grounding was not in the inshore traffic zone. [2.2]
5. Although the master was able to take rest in accordance with the ILO convention 180 every day apart from 3 January 2006, he felt tired on the evening of 12 February 2006, and fell asleep. [2.3.1]
6. It is possible that the quality of the master's sleep during his time on board was degraded by a number of factors. [2.3.1]
7. Although the master might not have been under the influence of alcohol when he came to the bridge at 1853, his behaviour and the smell of alcohol on his breath after the vessel grounded, indicate that he had probably drunk alcohol while on watch. [2.3.2]
8. The effects of the master's consumption of alcohol must be viewed as a major contributory factor to his falling asleep, and the vessel's grounding. [2.3.2]
9. The grounding could have been prevented had an additional lookout been employed as required by both STCW and company procedures, and/or the watch alarm been utilised. [2.5]
10. As no arrangements had been made for random testing, and no on board test equipment was carried, the ship manager's alcohol policy lacked any means of deterrence or enforcement. [2.6]
11. The operations manager was aware that a previous incident had occurred as a result of the master being under the influence of alcohol, and reliance was placed on the support of the chief officer to prevent re-occurrence. [2.6]
12. *Kathrin's* bridge watchkeeping officers ignored several key instructions in the ship manager's operations manual, which undoubtedly jeopardised the safe operation of the vessel. [2.7]
13. The master's actions when transiting the Dardanelles TSS and the Dover Strait TSS, which are two of the busiest waterways in the world, demonstrated a total disregard of safe practice. [2.7]

14. Notwithstanding the personal reservations of many watchkeepers regarding the use of lookouts and watch alarms, if a safety management system is to be effective, it is essential that it is embraced by ships' masters and crews, and that all of its requirements are adhered to. [2.7]
15. A thorough investigation by the ship manager of the incident on 23 October 2005 would have not only highlighted the actions of the master, but it would also have revealed a general lack of on board compliance with company procedures regarding additional lookouts and watch alarms, neither of which had been detected during previous internal and external audits. [2.7]

SECTION 4 - ACTION TAKEN

The Marine Accident Investigation Branch has:

- Published a summary of this report to assist in the dissemination of the lessons learned (**Annex G - MAIB ‘flyer’**).

Enzian Shipping has taken the following measures to incorporate the lessons learned from this accident as part of the continuing development of its safety management system:

- Prohibited the consumption of alcohol on all its vessels.
- Arranged a contract with a drug and alcohol screening company to conduct random testing of its ships' crews.
- Supplied alcohol testing equipment on board its ships.
- Amended its shipboard procedures to provide more detailed and specific instructions regarding bridge manning and the use of watch alarms.
- Introduced a more stringent crew recruitment procedure, including visits to the crewing agencies at least annually.
- Instructed its senior employees, under the chairmanship of its safety and quality co-ordinator, to discuss the shortcomings highlighted by this accident, and to propose improvements to the company's safety management system.
- Arranged for audits and inspections of its fleet to be conducted during short sea passages, using revised check-lists, to ensure its vessels' operation and management is in accordance with specified procedures.

SECTION 5 - RECOMMENDATIONS

The International Chamber of Shipping is recommended to:

2006/208 Through its association membership, distribute the MAIB 'flyer' regarding this grounding to all shipping companies, and encourage them to examine their safety management systems to ensure that procedures are being adhered to on board their vessels, and that audit processes are sufficiently robust to detect any non-conformance.

**Marine Accidents Investigation Branch
September 2006**

Safety recommendations shall in no case create a presumption of blame or liability