Report on the investigation of

the collision between

Amenity and *Tor Dania*

South of Grimsby Middle, the River Humber, UK

23 January 2005

Marine Accident Investigation Branch
Carlton House
Carlton Place
Southampton
United Kingdom
SO15 2DZ

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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 purpose is to attribute or apportion liability or blame.

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AB	-	Able Seaman
ABP HES	-	Associated British Port Humber Estuary Services
AIS	-	Automatic Identification System
BPA	-	British Ports Association
CHA	-	Competent Harbour Authority
DGPS	-	Differential Global Positioning System
ECS	-	Electronic Chart System
GPS	-	Global Positioning System
IOT	-	Immingham Oil Terminal
PEC	-	Pilotage Exception Certificate
PMSC	-	Port Marine Safety Code
QCA	-	Qualifications and Curriculum Authority
SOG	-	Speed Over the Ground
UK	-	United Kingdom
ukc	-	underkeel clearance
UKMPG	-	United Kingdom Major Ports Group
UTC	-	Universal Co-ordinated Time
VLCC	-	Very Large Crude Carrier
VTMIS	-	Vessel Traffic Management and Information System
VTS	-	Vessel Traffic Services

SYNOPSIS

(All times are UTC)

At about 0408 on 23 January 2005, just south of Grimsby Middle in the River Humber, the UK registered 1696gt tanker *Amenity* collided with the Norwegian registered ro-ro cargo vessel *Tor Dania*. Both vessels suffered significant damage but there were no injuries or pollution and both vessels were able to continue to berth un-aided before being withdrawn from service for repairs. There was a north-westerly wind blowing force 4 to 5, visibility was good and there were moderate seas.

Both vessels were being piloted by their respective masters, who held Pilotage Exemption Certificates (PECs) for the Humber. *Amenity* was outbound from Immingham Oil Terminal (IOT) with a cargo of 815t petrol and 1435t diesel. *Tor Dania* was inbound from Cuxhaven with four passengers and a cargo of new cars.

As *Tor Dania* made her turn for the South Shoal buoy, south of Grimsby Middle, the master of *Amenity* incorrectly concluded that *Tor Dania* had turned onto a collision course. He decided that his only option was to put the engine of his vessel full astern and, in an attempt to counter the port swing that this would induce, he put the steering hard to starboard. However, *Amenity* turned to port and hit *Tor Dania* close to midships on the port side at a speed of about 7 knots.

There was no ship's machinery failure or influence from the prevailing conditions; the collision occurred as a result of the actions taken by *Amenity*'s master. He expected *Tor Dania* to display a green sidelight briefly, as she turned for the South Shoal buoy at Clee Ness. However, it is likely that he was either distracted or mentally overloaded, perhaps by completing the 0400 logbook entries, and when he looked back up he was not presented with the sight he was expecting. This might have led to him making a quick decision based on a perceived emergency situation. However, *Amenity* had sufficient depth of water to navigate safely outside the main channel, and ample space to manoeuvre out of the way without reducing speed.

ABP is restricted in the training and examination requirements it can impose on applicants for PECs; they may not be more onerous than those applied to pilots. The training the master of *Amenity* received to qualify for his PEC consisted of many voyages inbound under the supervision of both another PEC holder and authorised pilots, in addition to the study required for the examination. He had not completed any simulator training.

Under the Port Marine Safety Code (PMSC), each Competent Harbour Authority (CHA) is allowed to prescribe its own requirements for the authorisation of pilots and PEC holders. This leads to some CHAs requiring a practical stage to the PEC examination on board the vessel and/or in a vessel simulator, while others require only an examination of the theory, using table-top exercises.

The MAIB investigation identified the following safety issues:

- According to the local bye-laws, *Amenity* was the give way vessel as she was sailing against the tide.
- The master of *Amenity*:
  - Might have become overloaded in piloting the vessel.
  - Made a quick decision based on scanty information, and did not re-evaluate this decision as more information became apparent.
  - Took action that was contrary to rule 7c of the collision regulations.
  - Had no other officer present on the bridge to assist him and monitor the pilotage.
  - Did not use his lookout to best effect.
  - Did not have a formally assessed act of pilotage as part of his PEC training or examination.
  - Displayed poor practical pilotage abilities in an emergency situation that were not recognised during the training and examination for his PEC.
- There are no national standards for the examination and issuing of PECs to applicants. The PMSC requires CHAs to ensure best practice in addressing the risks identified in their waters.

Following this accident:

- Associated British Ports Humber Estuary Services (ABP HES) took a number of actions. These included altering their procedures so that each PEC candidate is either formally assessed by a senior pilot on his final qualifying trip, or the examination is conducted on passage.
- F.T. Everard has also taken a number of actions, including implementing a new bridge procedure throughout the fleet. The new procedure requires two qualified navigating officers to be present on the bridge at all times when in pilotage waters, except in the area immediately off the berth.

The MAIB has recommended that the Port Marine Safety Code Steering Group evaluate, then promulgate current industry, best practice to port operators on the issuance of PECs, in the form of guidelines. Such guidance should recognise the need for:

- Practical evaluation of the PEC candidate's local knowledge and ship-handling ability.
- Assessment of the candidate's ability to cope with foreseeable emergency and/or high density traffic scenarios.
- Verification of the relevant bridge team manning arrangement, to ensure appropriate levels of support for the PEC holder during port movements.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF VESSELS AND ACCIDENT

Vessel details		***Amenity* (Figure 1)**
Registered owner	:	Everard Shipping
Manager(s)	:	F.T.Everard & Sons Ltd.
Port of registry	:	London
Flag	:	UK
Type	:	Tanker
Built	:	10/1980
Classification society	:	Bureau Veritas
Length overall	:	79.23 m
Gross tonnage	:	1696gt
Engine power and/or type	:	Ruston 12 Cyl. 2000 HP reversing gearbox
Propulsion	:	Single fixed pitch propeller
Service speed	:	13.4 knots
Other relevant info	:	Bow thrusters

Vessel details		***Tor Dania* (Figure 2)**
Registered owner	:	Seaheron A/S
Manager(s)	:	Goliat Shipping A/S
Port of registry	:	Oslo
Flag	:	Norway
Type	:	Ro-Ro container
Built	:	1978
Classification society	:	Bureau Veritas
Length overall	:	193.25 m
Gross tonnage	:	21850
Engine power and/or type	:	Sulzer 12cyl 17400 HP
Propulsion	:	Single controllable pitch propeller
Service speed	:	19 knots
Other relevant info	:	2 bow and 1 stern thruster, Becker rudder.

Photograph courtesy of FotoFlite

Figure 1

Amenity

Photograph courtesy of DFDS Group

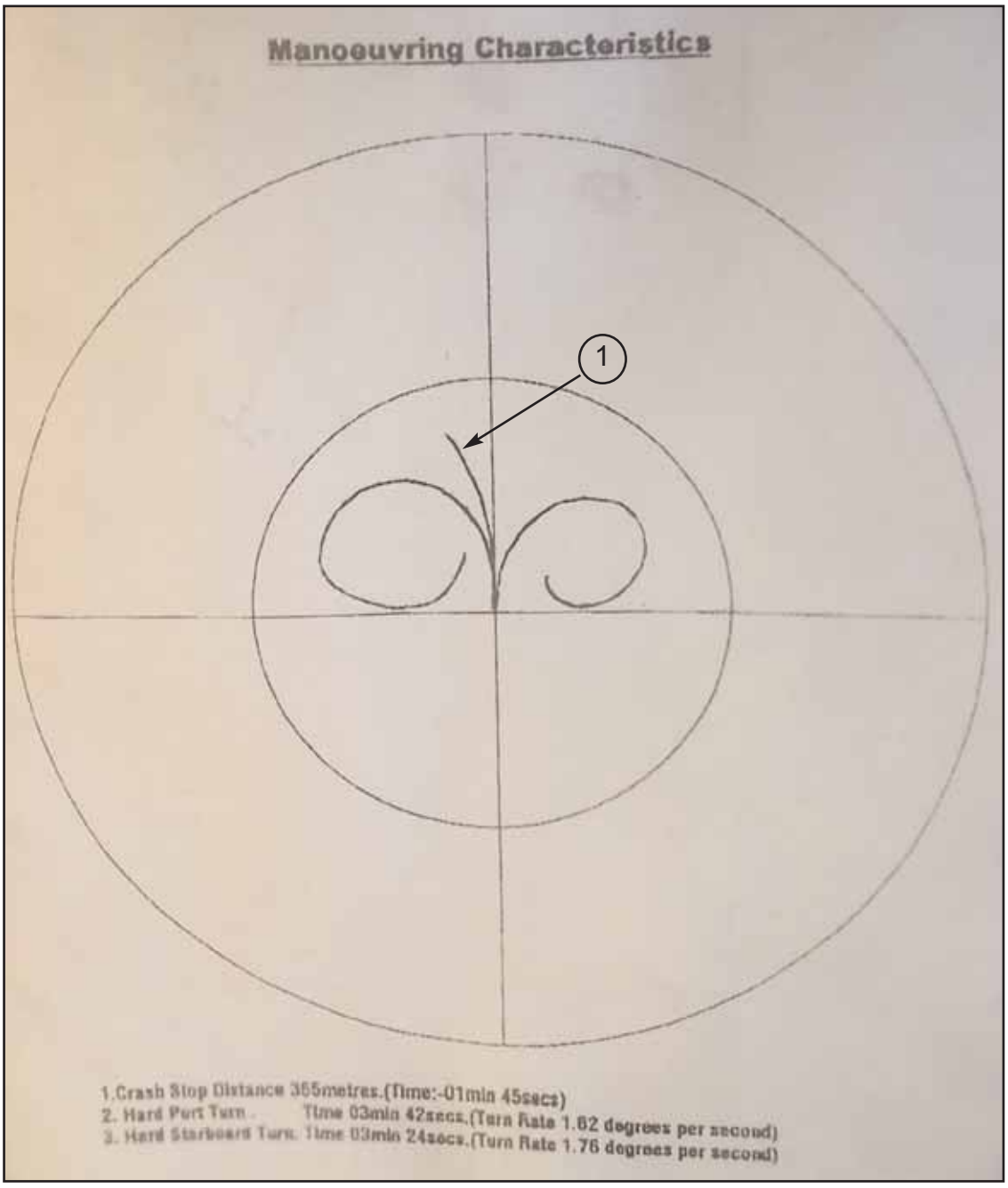
Figure 2

Tor Dania

Accident details

Time and date	:	0407 UTC 23 January 2005
Location of incident	:	53° 35.3'N 0° 0.2'E About 3 cables south of Grimsby Middle in the Humber.
Injuries/fatalities	:	None
Damage	:	Material damage to both vessels

Figure 3



(1) Crash stop, full ahead to full astern wheel midships

1.2 BACKGROUND

1.2.1 *Amenity*

Amenity **(Figure 1)**, was a 1696grt oil products tanker. Her home berth was Immingham Oil Terminal (IOT) in the Humber, and from there she sailed to UK ports.

Passages were between 12 and 30 hours, depending on the destination, and the vessel was normally alongside IOT for about 12 hours. She carried three bridge watchkeeping officers, including the master. The master would take the vessel in and out of port, while the chief officer was responsible for the discharge of cargoes and the second officer for loading cargoes. At sea, the watches were arranged to ensure that the officer required for cargo duties on arrival at the next port, was fully rested.

The vessel also carried three ABs, two remained on 6 on/6 off watches and were used on the bridge as lookouts during the hours of darkness.

Under normal conditions, *Amenity* had sufficient depth of water to enter IOT from 1 hour after low water.

The vessel could maintain steerage down to a speed of 2-3 knots. She had a left-handed fixed pitch propeller, meaning that the bow would swing to port when the propeller was going astern **(Figure 3)**.

The vessel's draught at the time of the accident was 5.6m. It was the master's practice to leave a minimum of 0.8m under keel clearance.

1.2.2 *Tor Dania*

Tor Dania **(Figure 2**) was a 21491grt ro-ro cargo vessel operating between Cuxhaven, Germany and Immingham Dock. Weather permitting, the vessel would complete three round trips every week.

Passages were normally about 21 hours at 17 knots, and the vessel was usually alongside for 6 to 7 hours at both ports. *Tor Dania* carried a master, chief officer and two second officers who worked 6 on/6 off watches at sea, with lookouts posted at all times.

At the time of the accident, the bulk of the cargo being carried was new cars being exported to the UK. These were loaded and discharged by the car's manufacturer.

Tor Dania was not tidally constrained for Immingham Dock.

The vessel's draught at the time of the accident was 7m. It was the master's practice to maintain at least 3m under the keel when *Tor Dania* was proceeding at speed greater than 12 knots.

1.2.3 Associated British Ports Humber Estuary Services (ABP HES)

The Pilotage Act 1987 made Associated British Ports (ABP) the Competent Harbour Authority for the Humber at the time of the accident. However, many of the duties and responsibilities of ABP were delegated to Associated British Ports Humber Estuary Services (ABP HES), whose remit was to provide an efficient pilotage service.

This was achieved through the issue, last revised in July 2004, of pilotage directions for ships to be navigated within the Humber pilotage area (available at **http://www.humber.com/statutory/index.asp**). One of the requirements of these directions was that all vessels of 60m and above, and all vessels carrying oil or hazardous cargoes in bulk, were to be in the charge of a pilot or a Pilotage Exemption Certificate (PEC) holder when in the pilotage area.

Where the PEC was used instead of taking a pilot, the dues paid to ABP were reduced to one quarter of those applicable if a pilot had been carried. Additionally, these fees were only due for the first 80 acts of pilotage per year, and thereafter the PEC holder would not be required to pay any pilotage dues.

Three classes of PEC were available, each with their own assessment requirements. Class A covered vessels over 100m, Class B vessels under 100m and Class C for river craft greater than 20m in length not passing to or from sea but carrying dangerous goods in bulk.

The pilotage directions also specified the experience and knowledge that was expected of applicants for PECs.

The practical experience required of masters or chief officers applying for a class A or B PEC, consisted of evidence of at least nine voyages in and out of the port, during the preceding 18 months, under the supervision of a PEC holder or a pilot. The qualifying passages had to be undertaken in the part of the river for which the PEC related on board a vessel of a substantially similar class.

The general and local knowledge required for each class of PEC was also specified in the pilotage directions. All applicants were assessed, interviewed and examined by ABP HES, and every PEC was reviewed annually. Additionally, any applicant for a PEC could be required to have their practical competencies examined on board their vessel during a river transit. However, the PEC examination was not permitted to be more onerous than the Pilotage examination.

1.3 ENVIRONMENTAL CONDITIONS

At the time and position of the accident, there was a north-westerly wind blowing force 4 to 5, visibility was good and there were moderate seas.

23 January was three days after neap tides. High water was 6.3m above chart datum at 0453 in Hull, 0440 in Immingham and 0431 in Grimsby. In the area of Grimsby Middle, the tide was setting to the north-west by ½ to ¾ knots.

1.4 NARRATIVE

All times are UTC, all courses true and all speeds are speed over the ground (SOG).

At 0301 on the morning of 23 January 2005, *Amenity* sailed from the Immingham Oil Terminal (IOT) for Portland, Dorset with the master and one AB lookout on the bridge. She had a draught of 5.6m and was loaded with unleaded petrol and diesel.

The master engaged the autopilot once clear of the berth. He was navigating visually, and observing the Electronic Chart System (ECS) and the radar, which was set to 3 miles range. He was following the previously drawn passage plan on the paper chart, marking the position as the vessel passed the buoys **(see Figure 4 - the chart in use on *Amenity*)**.

An AB was on the bridge as a lookout in accordance with company instructions. However he was not involved by the master in monitoring progress of *Amenity* or other vessels in the vicinity.

The master was acquiring radar targets ahead to monitor their speed and heading and the risk of collision. However, he was not overlaying radar targets on the ECS or making use of the available Automatic Identification System (AIS) information. The ECS displayed the planned track and waypoints as shown in **Figure 5**, a screenshot taken from *Amenity*'s ECS taken after the accident.

At 0329, *Amenity*'s master reported to Vessel Traffic Services (VTS) Humber as he passed No.9A buoy.

At 0336, *Tor Dania,* inbound from Cuxhaven with a draught of 7.0m, passed Alpha Buoy. The master reported in to VTS, as required, and VTS reported little traffic, enabling *Tor Dania* to proceed directly to Immingham lock.

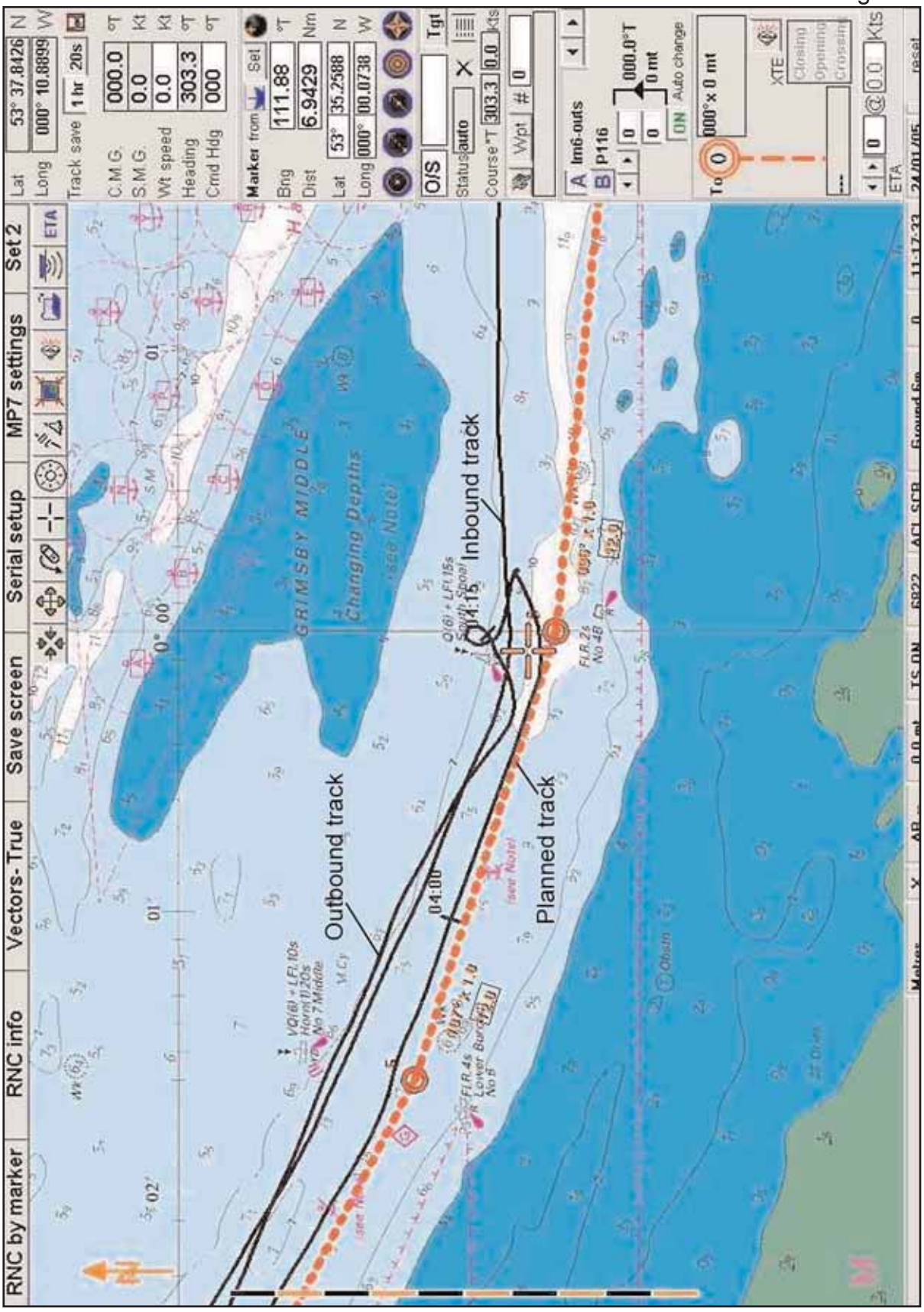
The officer of the watch (OOW), the master and an AB helmsman were on the bridge of *Tor Dania*. They were using two radars, one set to the 1.5 mile range and the other being switched between the 3 and 6 mile ranges by the OOW, to check the traffic ahead. The master was navigating visually, observing the radar set to the 1.5 mile range. He used its ARPA function to monitor the speed and courses of other vessels, and hence assess any risk of collision. The master was also referring to the ECS, but was judging *Tor Dania'*s position from visual references. The master did not make use of the ECS radar overlay function and he did not refer to the available AIS data.

At about 0355, *Tor Dania* was heading north-west in the Bull Channel when the master saw an outbound vessel at about 6 miles and acquired her with the ARPA. The outbound vessel was *Amenity,* 10° on his port bow and displaying a red navigational sidelight.

Figure 4

Chart in use on *Amenity*

Figure 5



Screenshot from *Amenity* ECS

Figures 6 to 10 show representations of the position and aspect of both vessels on a chartlet of the area. *Amenity* is shown in red and *Tor Dania* in blue.

At 0400 **(Figure 6)**, *Amenity'*s master saw an inbound vessel, displaying a red sidelight fine on the port bow at 3 miles. This was *Tor Dania*. At this time both vessels were navigating in approximately the centre of the buoyed channel.

*Tor Dania'*s master reported to VTS when the vessel was passing abeam of Clee Ness No.4A light float at 0403 **(Figure 7)**. At this time, he advised VTS that he was reducing speed to ensure his arrival at Immingham coincided with a break in the traffic there. He then reduced speed from 17 to 14 knots. *Amenity*'s master heard this and was, therefore, aware of the name of the inbound vessel.

At 0406 **(Figure 8***), Tor Dania'*s master altered course to port to clear South Shoal buoy. *Tor Dania* overshot the turn fractionally, coming round to about 264° before adjusting course a little to starboard to pass close to the south of the South Shoal buoy. The vessel was to the north side of the channel, making good 14 knots. A snapshot taken from the vessel's ECS display is shown in **Figure 11a**.

Amenity's master expected to see *Tor Dania*'s green sidelight as she made her turn for South Shoal buoy. However, when he saw *Tor Dania* make her turn at about 0406, he interpreted what he saw as the vessel altering course to between 220° and 240°. As a laden tanker, he considered *Amenity* to be restricted to navigating within the buoyed channel. Therefore, faced with what he perceived as a vessel coming round across his bow with a closing speed of about 25 knots, he put his propulsion full astern. Aware that *Amenity* had a left-hand propeller, and that this manoeuvre would push the bow to port, he steered hard to starboard to counter the effect. However, as soon as *Amenity*'s propeller started to turn astern, the bow began to swing to port.

At 0407 **(Figure 9)**, the master of *Tor Dania* noticed *Amenity* starting to alter course to port, and initially he thought that she was making her turn for the No.4B buoy. However, when the vessel continued to alter course, he realised that a collision was inevitable, and ordered the helm hard to starboard to reduce the angle of impact. The collision occurred about 30 seconds later **(Figure 10)**, and at 0407 50 *Tor Dania'*s master reported the collision to VTS.

*Amenity'*s master also reported the collision, some seconds later, initially referring to the other vessel as *Tor Hollandia*, before being corrected by *Tor Dania'*s master.

Despite a heavy impact, with *Amenity*'s bow making contact with the port side of *Tor Dania*, aft of midships, the vessels were able to continue, unaided, after having assessed the damage to both vessels.

Chart extracts courtesy of ABP

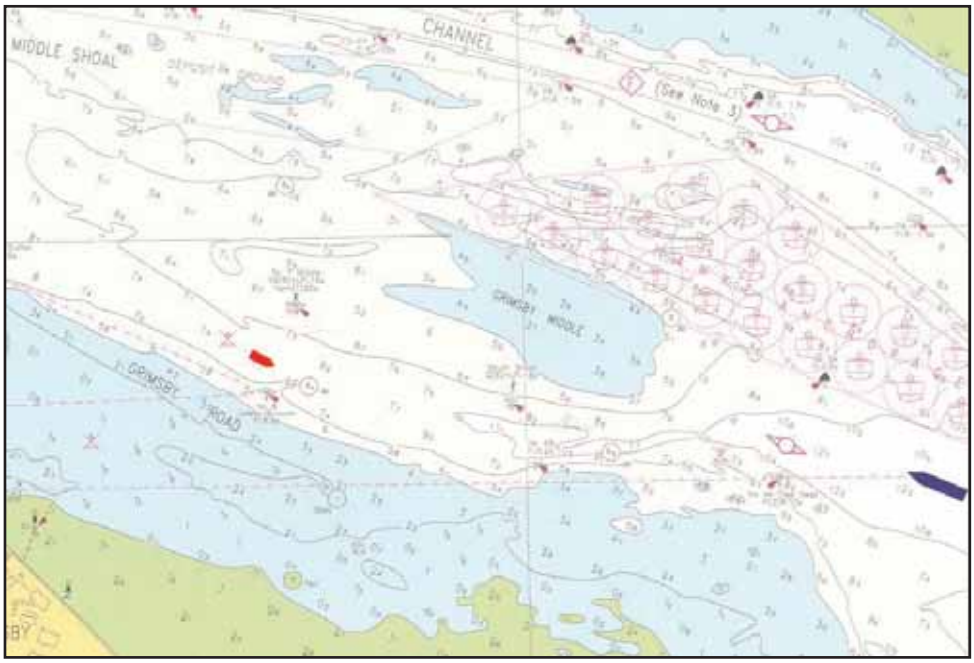


Figure 6 - 0400

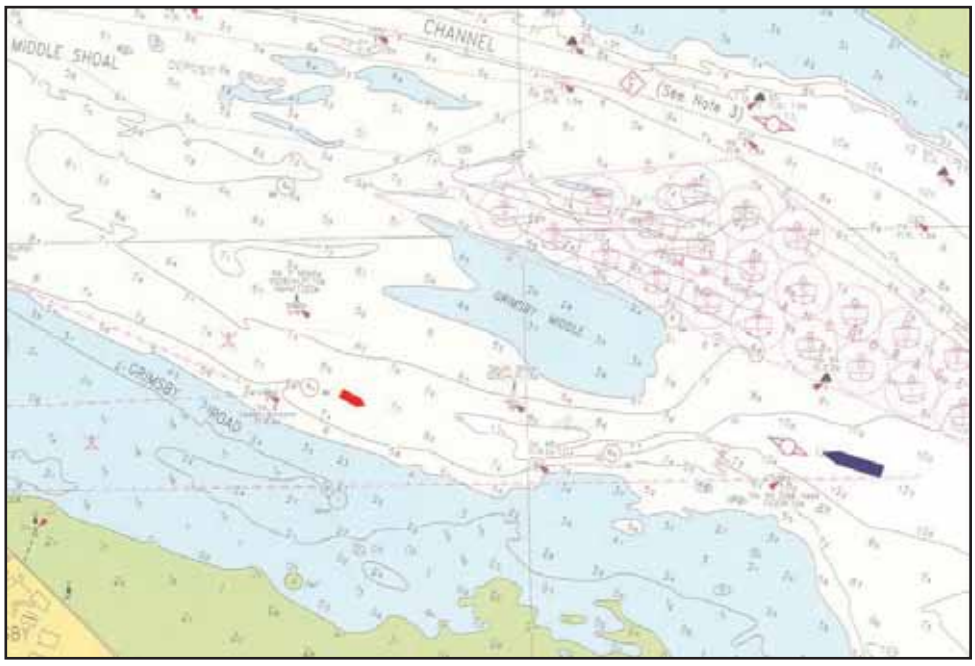


Figure 7 - 0403

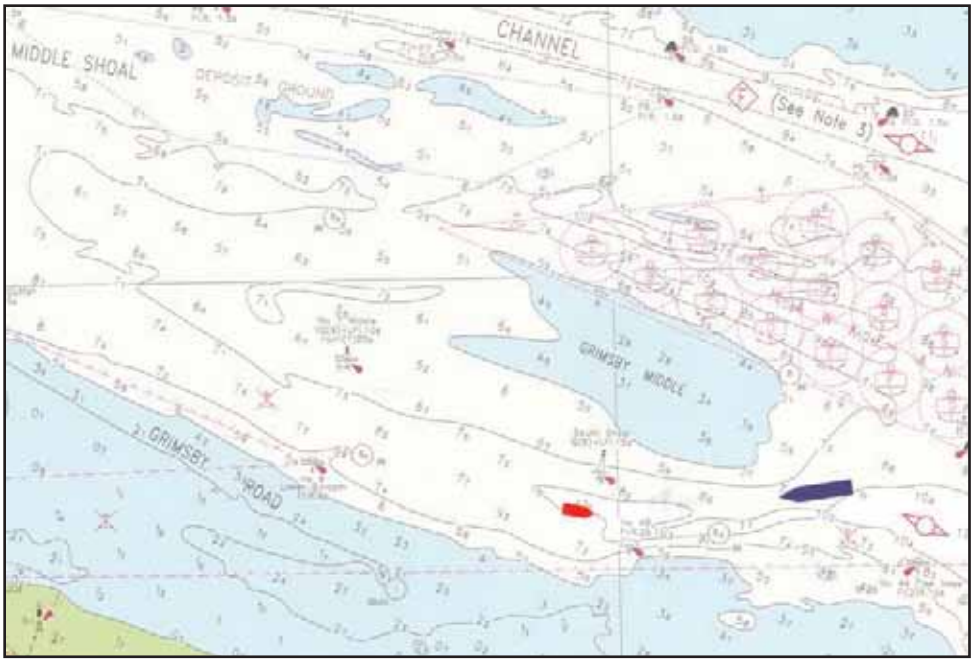


Figure 8 - 0406

Red = *Amenity*
Blue = *Tor Dania*

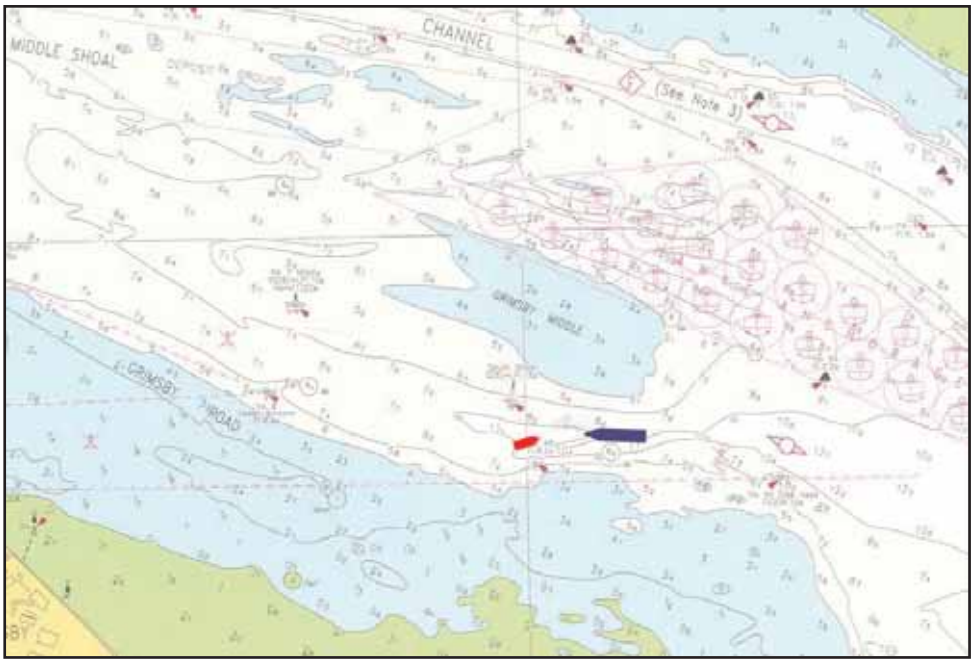


Figure 9 - 0407

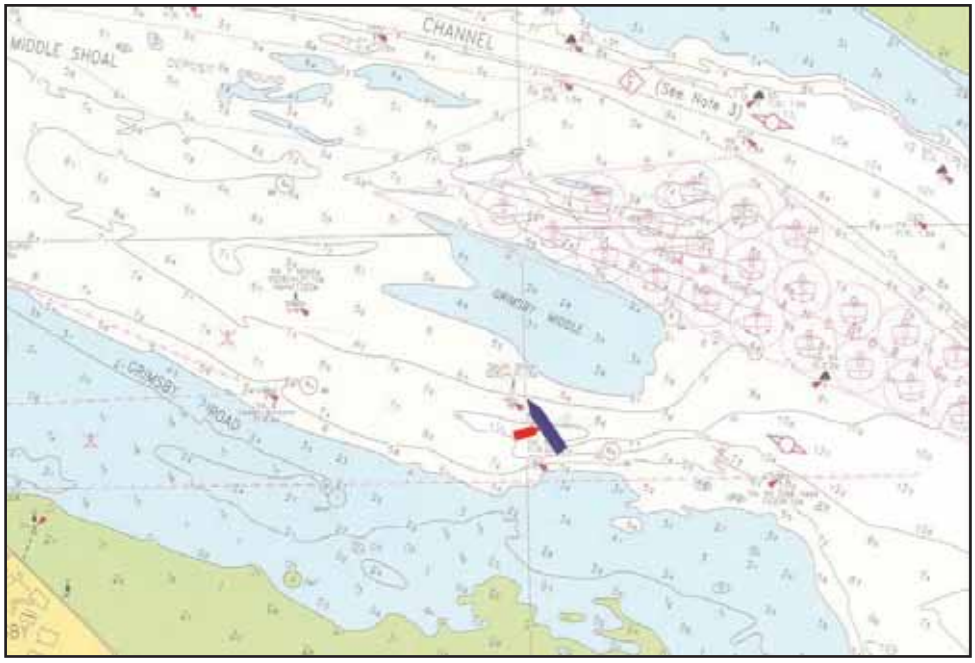


Figure 10 - 0407:50

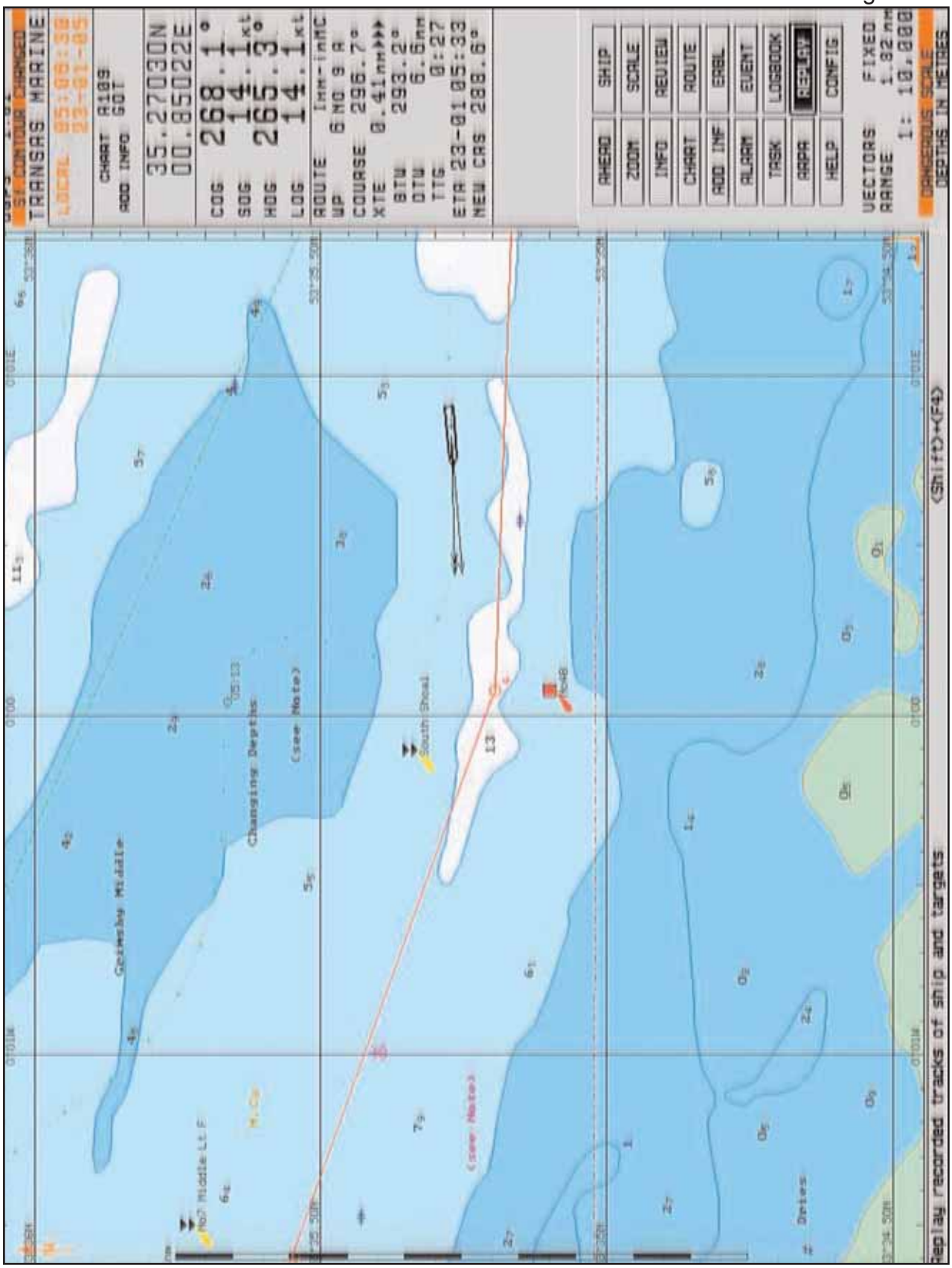
Red = *Amenity*
Blue = *Tor Dania*

Tor Dania pumped out ballast, increasing freeboard to reduce the risk of pollution and ingress of water, while on passage to her intended berth in Immingham Dock.

Amenity returned to IOT, where she unloaded before sailing to a lay-by berth on Albert Dock in Hull.

There was no pollution or injuries to the crew or passengers.

Figure 11a



Screenshot from *Tor Dania*'s ECS showing positon, course and speed at 0406

1.5 THE MASTER OF *AMENITY*

Amenity's master was a Bangladeshi, who gained his Class 1 Certificate of competency in Dublin, in 1996. In July of 1997, he joined Everard Shipping as chief officer and was promoted to master in December of 2000. Before that, he had sailed with Wallem Ship Management for 8 years, culminating in him serving as chief officer on VLCCs.

He had served as master of *Amenity* since October 2003, and joined the vessel for this particular tour of duty on 8 December 2004.

On 8 October 2004, ABP HES had granted the master a Class B PEC for IOT. This was a restricted PEC for sea-going vessels under 100m and allowed him to pilot seven vessels owned by Everard Shipping, including *Amenity*, to and from IOT.

It was the master's practice to pilot *Amenity* in and out of port with a lookout posted during the hours of darkness, but alone during daylight. In the past, he had used another navigating officer to assist him during pilotage, when in conditions of heavy traffic or reduced visibility. Since gaining his PEC, the master had entered or departed from IOT successfully 20 times, 11 of which were during the hours of darkness.

On 4 January 2004, while the same master was on watch, *Amenity* was involved in a near-miss incident with a fishing vessel off the east coast of the UK. The findings of the MAIB's examination of this incident were that the master was not maintaining an appropriate lookout and that he had made a collision avoidance decision based on scanty information. The owners took disciplinary action against the master, although on the basis of his earlier good record with the company, this consisted of discussing the matter with him at their head office. As a result of this incident, the owners also sent out a fleet letter informing masters of the incident and asking that they *"reinforce the need to maintain safe navigational watchkeeping practices, to avoid making assumptions on the basis of scanty information, and to prevent the onset of complacency*".

During the period between the incident on 4 January 2004, and the collision between *Amenity* and *Tor Dani*a, the master had a good operational record.

1.6 THE MASTER OF *TOR DANIA*

Tor Dania's master was a Norwegian, who gained his Class 1 Certificate of Competency, issued by the Norwegian Maritime Directorate, in 1970. This was most recently revalidated in 2001. He joined Tor Line in 1999, and had been on the Cuxhaven to Immingham run for some years. Before that, he had been at sea since 1961, serving on a variety of vessel types including refrigerated cargo, chemical tankers and ro-ros.

He had been master of *Tor Dania* since October 2004, and had joined the vessel for this particular tour of duty just before Christmas 2004.

On 28 February 2002, ABP Humber Estuary Services had granted him a Class A PEC for Immingham Dock. This was a PEC for sea-going vessels over 100m, to and from Immingham Dock, and initially allowed him to pilot 19 vessels operated by Tor Line DFDS, including *Tor Dania*. In July 2004, this was extended to cover a further 4 vessels.

The master would pilot the vessel in and out of the port, assisted by a lookout and the OOW. The role of the OOW was to monitor the track of the vessel and maintain a plot of other vessels in the vicinity. Since gaining his PEC, the master had entered or departed from Immingham Dock in excess of 250 times.

1.7 PORT MARINE SAFETY CODE (PMSC)

The Port Marine Safety Code (PMSC) was developed by the Department for Transport in consultation with a wide range of industry bodies. It was published in March 2000, for implementation by December 2001. The Code introduced the principle of a national standard for every aspect of port marine safety, and although it was not mandatory, the Department for Transport expected every CHA to comply with its requirements. These included the completion of formal risk assessments of marine operations in their harbours and approaches, and the management of the risks identified through a safety management system.

Among the principal aims of the Code was the establishment of a management system in each UK port covering all marine operations, to ensure that all risks are both tolerable and as low as reasonably practical, and the creation of occupational standards for key port personnel, including harbourmasters, pilots, and VTS operators.

In its review of the Port Marine Safety Code titled *'Port Marine Safety Code, Sea Change for Port Safety*, published in November 2004, the Department for Transport concluded that, although the main issues had been addressed in relation to national occupational standards for VTS operators, the work undertaken on standards for pilots and harbourmasters had progressed to varying degrees. The review stated:

> *MCA should continue to engage with the industry on occupational standards until it is generally established that these underpin the recruitment and statutory authorisation of those key positions – this needs to include the promotion of formal training in assessment.*

National occupational standards for pilots have been agreed and accredited with the Qualifications and Curriculum Authority (QCA). However, the assessment criteria for their implementation have yet to be agreed.

The Port Marine Safety Code Steering Group, which is chaired by the MCA and contains representatives of a significant cross section of the port industry, meets regularly to provide a forum for discussion on safety management and best working practices in ports.

1.8 NOTICE TO PILOTS

ABP Humber issue safety notices to pilots and PEC holders in the form of General Notices to Pilots. General Notice to Pilots No.16/2004 **(see Annex A)**, also issued as General Notice to PECs No 5/2004, gave advice to large vessels passing in the vicinity of the South Shoal buoy. Although this notice was not relevant in this instance, since *Amenity* was neither a large vessel nor high-sided, it did highlight the fact that the buoyed channel narrows to less than three cables in this vicinity, and instructs pilots and PEC holders to plan ahead and take positive action. It also reinforces the need for direct communication, where any doubt exists, to agree a course of action.

1.9 ELECTRONIC EVIDENCE

During the investigation of this accident, the MAIB recovered a large amount of computer data evidence. This was used extensively in reconstruction the events leading to the collision. It is described below.

1.9.1 *Amenity*

Amenity was equipped with a Microplot 7 Mariner ECS supplied by Sea Information Systems Ltd. This had recorded positional data over the preceding 24 hours. However, it was not possible to replay this data dynamically, although a static screen shot was available. This showed the vessel's planned and actual track, both at the time of the accident and on her inbound passage to IOT. It is shown in **Figure 5**.

1.9.2 *Tor Dania*

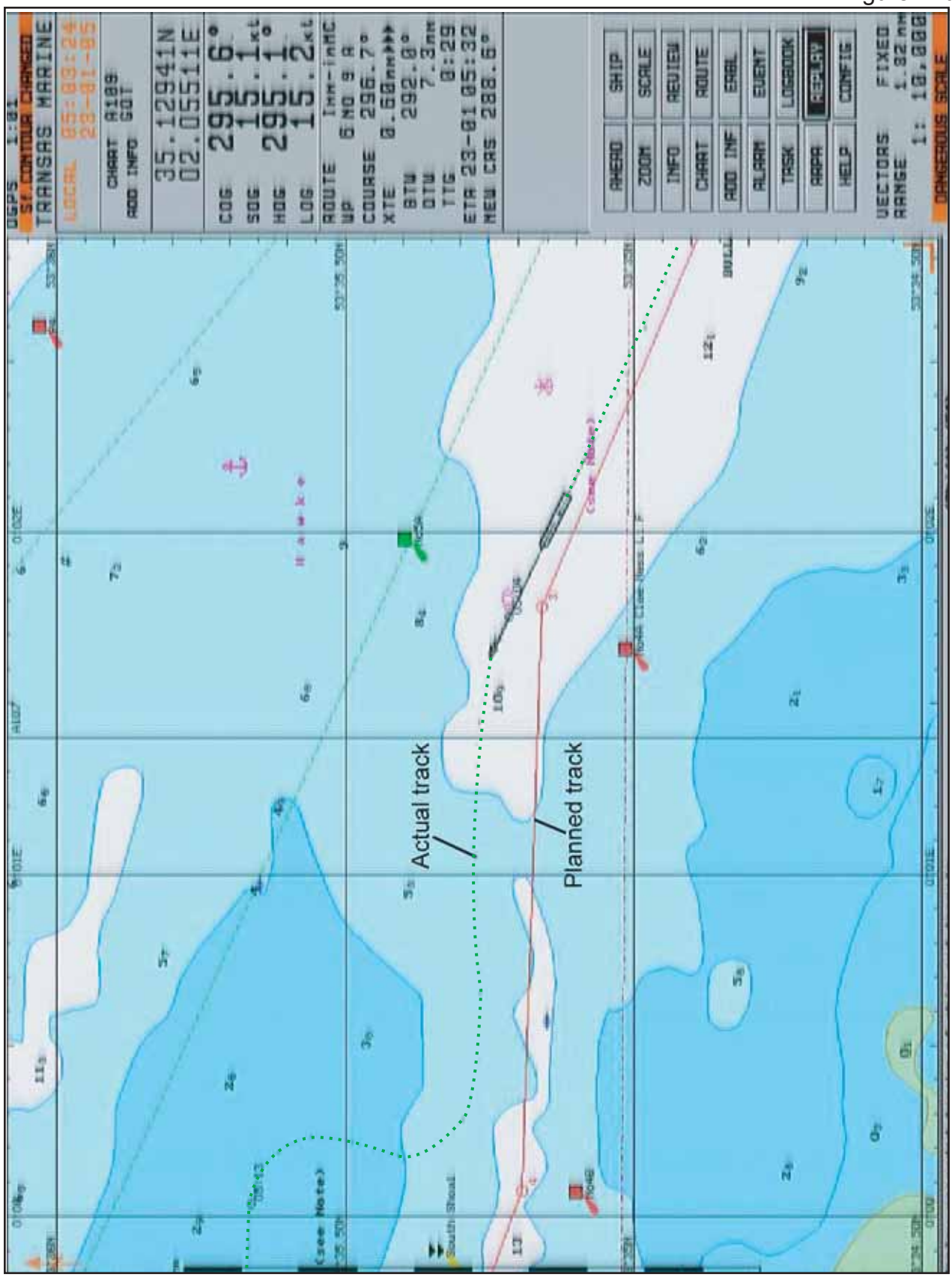
Tor Dania was equipped with a Navi-Sailor Electronic Chart System (ECS) supplied by Transas Marine. This had recorded the following information over the preceding 24 hours:

- GPS position (DGPS where available)
- GPS ground track
- Heading
- GPS speed over the ground
- Log speed
- The passage plan and the waypoints.

The above information was available on board *Tor Dania* as a real time playback, superimposed over the Transas vector charts. The MAIB was able to take a copy of this playback for further analysis. A snapshot is shown in **Figure 11b**.

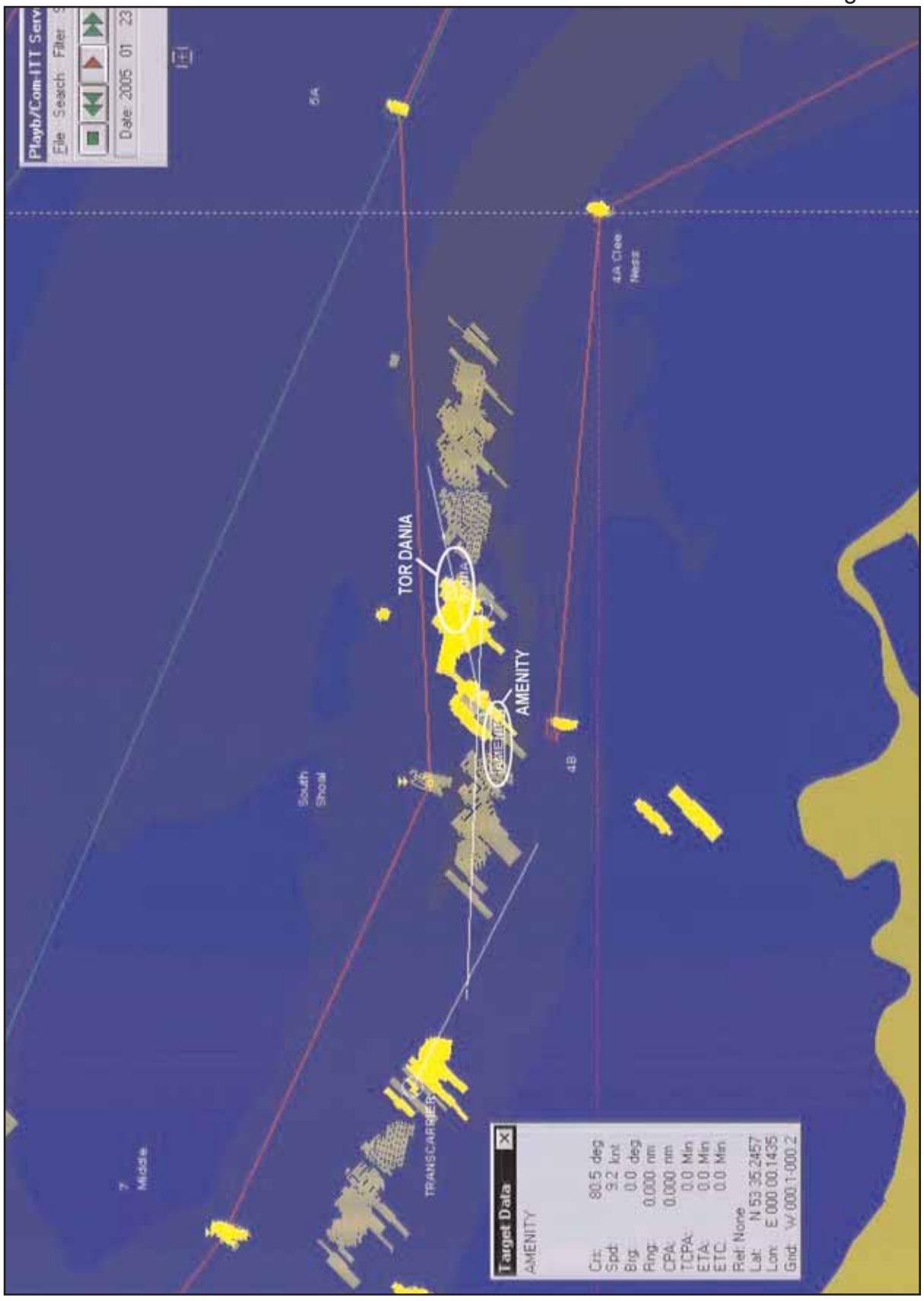
The position shown by this system is taken using GPS (DGPS where available) and is updated every 10 seconds.

Figure 11b



Screenshot from *Tor Dania*'s ECS showing intended and actual track

Figure 12



Screenshot from APB HES VTS VTMIS

1.9.3 Shore-based radar data

ABP HES were able to provide recordings and transcripts of VHF radio channels 12 and 14 for the morning of 23 January 2005.

Additionally, ABP HES VTS was equipped with a Vessel Traffic Management and Information System (VTMIS) supplied by Kongsberg Nor Control IT. This recorded the radar data for the morning of 23 January 2005. This data was replayed for the MAIB in a variety of modes to obtain the greatest possible accuracy from the information displayed. These replays were recorded by the MAIB for further analysis. A snapshot taken from one of them is shown in **Figure 12**.

The position, course and speed of all the vessels in the vicinity of the accident, including *Tor Dania* and *Amenity*, were also recorded by the VTMIS, and a printout of these details for every 20 seconds between 0350 and 0423 on 23 January 2005 was taken for further analysis.

1.10 DAMAGE

Amenity's bow collided with *Tor Dania* about amidships on her port side.

Both vessels sustained significant damage as a result of the collision, although there was no pollution.

Figure 13

Damage to *Amenity*

The damage to *Amenity* was limited to her bow, as shown in **Figure 13**, and she was able to return to IOT under her own power. The forward collision bulkhead was not penetrated.

Tor Dania was holed in way of a bunker tank as shown in **Figures 14 and 15**. Fortunately, the hole was about 1 metre above both the waterline and the level of the bunkers in the tank. There was no pollution.

Figure 14

Damage to *Tor Dania*

Figure 15

Close-up of damage to *Tor Dania*

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 FATIGUE

Fatigue is not considered a contributory factor in this accident. Both masters had had ample opportunity to rest in the hours and days preceding the accident, and both claimed to have been fully rested.

2.3 THE COLLISION

There was no ship's machinery failure, or influence from the prevailing conditions. The collision occurred as a result of the actions taken by the master of *Amenity* when he incorrectly concluded that *Tor Dania* had turned onto a collision course. The possible reasons for this incorrect interpretation of *Tor Dania*'s aspect, and the actions taken as a result, are discussed below.

2.3.1 *Tor Dania*

Tor Dania was generally being piloted near the centre of the channel, however, as the vessel approached the South Shoal buoy, she was positioned to the starboard side of the channel. There was therefore sufficient room available in the buoyed channel for *Amenity* to pass *Tor Dania* port to port.

Once the master saw that a collision was inevitable, he took appropriate evasive action. This action might have been taken earlier when he saw *Amenity* alter course to port and towards his own vessel. However, the alteration coincided with *Amenity*'s expected navigational alteration to port around the South Shoal buoy, and the master had no reason to suspect that *Amenity* would not stop her swing to port and continue along the channel. It was only in the few seconds before impact, that it became apparent that *Amenity* was not going to stop the swing, and that impact was inevitable. Before taking evasive action, the master was aware that he had sufficient height of tide to clear Grimsby Middle bank.

In accordance with the recommendations contained in ABP Humber's General Notice to Pilots No 16/2004, the master of *Tor Dania* could have contacted the master of *Amenity* by VHF in order to confirm the other vessel's intentions. However, *Amenity* was not a large vessel, and *Tor Dania'*s master saw no reason to be concerned at the prospect of passing a small vessel in the vicinity of the South Shoal buoy, as this was a situation he had encountered many times before.

2.3.2 *Amenity*

Leading up to the collision, *Amenity* was positioned towards the wrong side of the channel. The vessel had sailed up the channel on the starboard side, when inbound the previous day. However, outbound, the master kept the vessel to port of mid-channel. Pilots and PEC holders are instructed to keep to the starboard side of the channel unless agreement has been made to the contrary, although it is not uncommon for vessels to navigate towards mid-channel when clear of other traffic and to move over to the starboard side as required to leave sufficient space for other vessels to pass.

The relevant local bye-law's paragraph 15 (1) states:-

> *Subject to the provisions of paragraph (b) of this Byelaw, where a power-driven vessel is navigating against the tidal stream the master of the vessel shall, on approaching bends in the Humber or fairways or bridges, reduce speed or stop the vessel as necessary so as to allow any other vessel navigating with the tidal stream to pass clear of the vessel.*

Therefore, *Amenity* was the give way vessel as she was sailing against the tide.

*Amenity'*s master could give no explanation for his misinterpretation of the aspect of *Tor Dania*. He expected *Tor Dania* to show him a green sidelight briefly, as she turned for the South Shoal buoy at Clee Ness. However, he might have been momentarily distracted, perhaps by completing the 0400 logbook entries, and when he looked back up he was not presented with the aspect of the other vessel he was expecting. This might have led to him making a quick decision based on what he thought he saw.

Because he was the only officer on the bridge, *Amenity*'s master was unable to verify his perception of the other vessel's intentions with another competent navigating officer. The presence of another officer might also have reduced the load placed on the master at this time, by removing the need for him to complete more routine tasks such as the completion of the log or making reports to VTS. It might also have allowed the master more time to maintain visual watch on the approaching vessel and to consider whether to contact *Tor Dania* in compliance with ABP Humber's General Notice to Pilots No 16.2004. *Amenity'*s master claims to have checked the radar, and that this also indicated that *Tor Dania* was on a course of 220°-230°. Since *Tor Dania* had recently altered course and was now quite close, the ARPA vector on the radar would not have settled down to give reliable information, and could well have supported his mistaken visual impression of the vessel's aspect. Had the master referred to the available AIS information, he would have known *Tor Dania*'s heading, as well as the direction and rate of turn. This information would have been updated at 2 second intervals, and could have corrected the mistaken visual impression.

In this perceived emergency situation, *Amenity*'s master's decision to go astern is questionable. The decision was based on the fact that he thought that *Tor Dania* was now on a collision course and crossing his bows from port to starboard. His chart **(see Figure 4)** shows that he had hatched off all charted depths less than 5m, from the contour lines on both sides of the channel.

At the time of the accident, *Amenity*'s draught was 5.6m aft. Company instructions required a minimum 10% underkeel clearance (ukc). In practice, the master stated that he would have maintained a ukc of 0.8m. However, he considered his vessel to be a fully laden tanker and, in his opinion, this meant that he had no option other than to stay within the buoyed channel as marked on his chart **(see Figure 4)**. In reality, he had sufficient water at the time to safely navigate in charted depths close to datum, since the height of tide was estimated to be about 6m, and his draught was 5.6m. So if he was in a position where the charted depth was chart datum, 0m, he would have an under keel clearance of 0.4m. The charted depth at the point of the collision was about 8m, so the actual depth of the water at the point of the collision was about 14m. Just either side of the channel in that area, the charted depth was 7m. Therefore he had ample water to leave the buoyed channel.

The master was aware that, by putting *Amenity's* engine astern, her bow would swing to port **(see Figure 3)**, and he attempted to counter this by applying full starboard helm. Having decided on this course of action, he did not feel that he could usefully do anything else, even when it became clear that *Tor Dania* was not on the course he had thought. However, it is clear from the electronic evidence, that he could only have seen a green sidelight on *Tor Dania* briefly, and would have seen the red sidelight again, at least 2 minutes before the collision. This should have given him sufficient time to put the engine ahead, and allow the vessel to turn to starboard, probably avoiding *Tor Dania* entirely.

The action taken by *Amenity's* master was based on a glance at the visual aspect of *Tor Dania,* possibly combined with the instantaneous information shown on the ARPA. The momentary visual aspect might have been observed as *Tor Dania* steadied on her new course after having slightly overshot the turn to clear South Shoal buoy. *The International Regulations for Preventing Collision at Sea*, rule 7c, state that *assumptions shall not be made on the basis of scanty information, especially scanty radar information*. This rule was not complied with since his actions were based on scanty information.

2.4 *AMENITY*'S MANNING

The MAIB considered cultural issues with regard to the interaction between the master and the crew. However, there was no evidence of any issues in this regard.

ABs were always used as lookouts during the hours of darkness, and this was the case at the time of the accident. However, the AB on watch at the time of the accident was of limited value to the master because he was unaware of the vessel's position, so could not be expected to monitor or comment on the master's actions. In the absence of a second deck officer, the AB could have been better utilised to assist the master.

Amenity had sufficient complement to allow two deck officers to be on the bridge in pilotage waters. This would be dependent on compliance with the hours of work regulations, but based on *Amenity*'s movements over the days preceding the accident, this could have been arranged. In fact, the master had previously used another deck officer in pilotage waters, in conditions of heavy traffic or reduced visibility. However, this was neither the company's nor the master's standard practice, and the provision of an additional deck officer on the bridge had only been utilised on an ad-hoc basis.

In contrast to this, when a pilot is engaged on a vessel, he is in addition to the vessel's normal complement, and increases the bridge team by one. The other members of the bridge team are available to monitor the actions of the pilot and assist him as necessary.

Had there been another officer on *Amenity'*s bridge, monitoring the pilotage, it is possible that he would have been able to provide the master with a more considered assessment on the track of *Tor Dania*.

2.5 THE PILOTAGE EXEMPTION CERTIFICATE

In the PEC examination of *Amenity'*s master, carried out by ABP Humber, no onboard test or simulation training was required or undertaken. The examination was carried out by ABP Humber's Pilotage Operations Manager in October 2004. The Pilotage Operations manager was an experienced pilot and examiner, and his comments from this examination read as follows:

> *Captain [deleted] had a satisfactory knowledge of the river and its operation. He had obviously spent a good deal of time learning the buoys, currents and depths. Had a good explanation for all scenarios put to him.*

However, following the accident, the Pilotage Operations manager could not explain or understand the master of *Amenity*'s actions as he approached *Tor Dania*.

Before the accident on 23 January 2005, *Amenity'*s master had made five previous departures in the dark as a PEC holder. Prior to examination, he had completed 38 qualifying trips with authorised pilots, none of whom had reported adversely on his competence, nor had they formally assessed him. The master had not completed any simulator training, although this was available through his shipping company.

ABP is restricted in the training and examination requirements it can impose on applicants for PECs; they may not be more onerous than those applied to pilots. Since all pilots were not required to undergo simulator training, ABP could not insist that this be done by PEC applicants. However, ABP could require PEC applicants to have their practical competencies examined on board their vessel during a river transit, in addition to the existing requirement to attend the examination centre.

Although pilotage examination includes discussion of emergencies, had the master's PEC assessment included an assessed act of pilotage, any weakness he might have had when dealing with emergency scenarios might well have been recognised. Additionally, it is likely that the way the master prepared his passage plan could have alerted the assessor to the fact that he was not making suitable use of the information available to him.

2.6 PORT MARINE SAFETY CODE

It is a requirement under the PMSC that the CHA keeps the need for pilotage services under review. This consideration should be part of the authority's hazard and formal risk assessment, and this should be formally re-assessed at no fewer than 3 yearly intervals.

The provision of a pilotage service is not discharged simply by authorising one or more pilots. It includes the management of the service to allow controls to ensure that the pilot assigned to a vessel is fit or appropriately qualified. It is for the CHA to determine the qualifications required of a pilot to become authorised for certain ship types and parts of the harbour.

The authorisation of PEC holders is included in the requirement for risk assessment, since they will form part of the pilotage service. Controls put in place to reduce the risks associated with PEC holders, could include a requirement for supervised acts of pilotage, limitation of the number of different ships authorised and the testing of local knowledge at an examination ashore.

Each CHA is allowed to prescribe its own requirements for the authorisation of pilots and PEC holders. This leads to some CHAs requiring a practical examination of the PEC candidate's capabilities on board the vessel and/or in a vessel simulator, while others require only to probe the candidate's competence in theory, using table-top exercises.

The PMSC has no national standards for qualifying trips/training of PEC holders and relies on the CHA to ensure best practice in addressing the risks identified in their waters.

The MAIB has made a recommendation to the Port Marine Safety Code Steering Group to evaluate and promulgate to CHAs current industry best practice on the issuance of PECs in the form of guidelines. These guidelines should recognise the need for assessment of a candidate's ability to cope with foreseeable emergency and/or high density traffic scenarios.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

The following are the safety issues which have been identified as a result of the MAIB's investigation. They are not listed in order of priority, but in the order in which they appear in Section 2.

1. According to the local bye-laws, *Amenity* was the give way vessel as she was sailing against the tide. [2.3.2]

2. The master of *Amenity* might have become overloaded while piloting the vessel. [2.3.2]

3. *Amenity*'s master made a quick decision based on scanty information, and did not re-evaluate this decision as more information became apparent. [2.3.2]

4. The action taken by *Amenity*'s master was contrary to rule 7c of the collision regulations. [2.3.2]

5. The master of *Amenity* had no other officer present on the bridge to assist him and monitor the pilotage. [2.4]

6. The master of *Amenity* did not use his lookout to best effect.

7. *Amenity*'s master's PEC training and examination did not include a formally assessed act of pilotage. [2.5]

8. *Amenity*'s master's poor practical pilotage abilities, in an emergency situation, went unrecognised during the qualifying trips and examination for his PEC. [2.5]

9. The PMSC has no national standards for qualifying trips/training of PEC holders, and relies on the CHA to ensure best practice in addressing the risks identified in their waters. [2.6]

SECTION 4 - ACTION TAKEN

4.1 ASSOCIATED BRITISH PORTS HUMBER ESTUARY SERVICES (ABP HES)

Following this accident, ABP HES altered its procedures so that each PEC candidate is either formally assessed by a senior pilot on his final qualifying trip, or the examination is conducted on passage.

ABP HES suspended the PEC of *Amenity*'s master as a result of this accident.

Due to migration of the Grimsby Shoal, the South Shoal buoy has been moved, widening the channel in this vicinity from 3 to 4 cables.

4.2 F.T. EVERARD AND SONS LTD

As a direct result of its own investigation of this accident, the vessel's operators introduced the following measures:

1. A new bridge procedure was implemented throughout the fleet, requiring that two qualified navigating officers are present on the bridge at all times when in pilotage waters, except in the area immediately off the berth.
2. Fleet procedures were altered to ensure that the bow thruster is ready for immediate use until the vessel is clear of port.

F.T. Everard also have a training plan, which includes the following:

1. All deck officers within its fleet are to receive Bridge Team Management training by 2009, and 5-yearly refresher training thereafter.
2. Simulator training for ship-handling for all masters within its fleet by 2008, and 5 yearly refresher training thereafter. This will also be provided in the future for chief officers as part of their preparation for promotion.

SECTION 5 - RECOMMENDATION

The Port Marine Safety Code Steering Group is recommended to:

2005/209 Evaluate, then promulgate to CHAs, current industry best practice on the issuance of PECs, in the form of guidelines. Such guidance should recognise the need for:

- Practical evaluation of the PEC candidate's local knowledge and ship-handling ability.
- Assessment of the candidate's ability to cope with foreseeable emergency and /or high density traffic scenarios.
- Verification of the relevant bridge team manning arrangement, so as to ensure appropriate levels of support for the PEC holder during port movements.

Marine Accident Investigation Branch
November 2005

ANNEX A

ABP General Notice to Pilots No.16/2004

GENERAL NOTICE TO PILOTS
NO. 16/2004

Gentlemen

LARGE VESSELS PASSING AT SOUTH SHOAL

During the current round of PEC renewal interviews the topic of large vessels passing in the vicinity of the South Shoal Buoy has been raised.

As you will be well aware, the buoyed channel is less than 3 cables wide in this area and extreme caution is required if two large ferry-type vessels are likely to meet and pass at this point, especially in windy conditions when leeway is a considerable factor for high sided ferries, coupled with the tide setting somewhat across the channel.

Pilots and PEC holders aboard such vessels are therefore required to be very cautious and proactive in ascertaining when they are likely to encounter other such vessels at South Shoal. They must think ahead and take positive action. If any doubt exists they should communicate directly with each other and agree a course of action which will result in a safe passing.

Full consideration should be given to the vessel navigating against the tide giving way (as prescribed in Humber Navigation Byelaw No. 15) if deemed necessary.

Caution is also required when overtaking in this area.

Capt P J Cowing
PILOTAGE OPERATIONS MANAGER

23 June 2004

Faxed to: AHMs - 01964 650164
Also issued as General Notice to PECs No. 05-2004