

Report on the investigation into the grounding of
ro-ro passenger ferry

Dieppe

on the approaches to Newhaven

5 December 2005

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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

BA	-	British Admiralty
CGSM	-	Conseil General de Seine Maritime
DfT	-	Department for Transport
DGPS	-	Differential Global Positioning System
DPA	-	Designated Person Ashore
ECS	-	Electronic Chart System
ETA	-	Estimated Time of Arrival
IMO	-	International Maritime Organization
m	-	metre
NPP	-	Newhaven Port and Properties Limited
OOW	-	Officer of the Watch
PEC	-	Pilotage Exemption Certificate
PMSC	-	Port Marine Safety Code
ro-ro	-	roll on - roll off
SEML	-	Les Societes d'Economie Mixte Locales
UKC	-	Under Keel Clearance
UTC	-	Universal co-ordinated time
VDR	-	Voyage Data Recorder
VHF	-	Very high frequency radio
Cable	-	Nautical measurement of distance equal to 200 yards

SYNOPSIS



Narrative

At 0652 UTC on 5 December 2005, the French registered ro-ro passenger ferry *Dieppe* ran aground in the approach channel to the port of Newhaven on the south coast of England. The grounding position was 15 metres east of the channel centreline where, according to the latest edition of the locally produced chart, the master should have been able to expect sufficient depth of water to safely navigate *Dieppe* through the approach channel. The vessel refloated 60 minutes later at 0752, with assistance provided from the local tug and the onset of the flood tide. There were no injuries or pollution, and the vessel did not sustain damage.

The accident occurred less than 3 months after the MAIB published its report on the *Sardinia Vera* grounding at Newhaven in January 2005. The report made recommendations to NPP, Transmanche Ferries, the MCA and the DfT to ensure that similar incidents were avoided. As a consequence, this report has taken the opportunity to examine the progress made by the various recipients towards fulfilling complete implementation of their individual recommendations.

Analysis

Dieppe's time of arrival at Newhaven was 50 minutes later than planned. This resulted in a reduction of the tidal height of 0.6 metres at the time *Dieppe* was navigating the approach channel. The master was fully aware of the tidal situation but, in order to avoid further delay to his vessel's schedule, was content for *Dieppe* to enter the port with a minimum UKC of 0.5m, even though the port had a stipulated minimum UKC of 1.0m.

In deciding to reduce *Dieppe's* UKC to 0.5m, the master ignored the possibility that the Newhaven approach channel had suffered additional silting in the recent bad weather. The silting problem was well documented, had been identified by the harbourmaster in his risk assessment, and a recent amendment had required UKC to be increased to 1.5 metres after bad weather until the channel could be re-surveyed. The master was unaware of this new requirement, but he had not considered applying his own additional allowance to help mitigate a known risk. Also, *Dieppe's* echo sounder was not in use at the time of the grounding.

Despite the lack of reporting procedures to confirm *Dieppe's* draught on arrival, prior to the grounding both the harbourmaster and the VTS operator were aware that she must have been entering harbour with a UKC of about 0.5m. However, no action was taken to delay the vessel's arrival as the harbourmaster did not consider himself to have been empowered to enforce the new UKC restrictions.

A joint risk assessment had recently been completed, which established revised arrival and departure criteria for both Transmanche ferries *Dieppe* and *Sardinia Vera*. However, *Dieppe's* master was unaware of the new requirements because the ship managers did not pass them to *Dieppe* until after this grounding.

Since March 2004, Newhaven has remained accredited as having achieved the standards required by the PMSC. During the investigation into the grounding of *Sardinia Vera* in January 2005, the MAIB identified that the NPP board had taken insufficient steps to implement an

adequate safety regime; many of the MAIB's findings were confirmed in the port's own safety audit in July 2005. However, the voluntary nature of the PMSC has made it impossible for the MCA to confirm the port's compliance by audit, and the MCA has had to rely on the port's assurances that it is meeting the requirements of the Code. After this grounding, the only power available to the MCA to improve safety was the issue of a prohibition notice, refusing *Dieppe* access to Newhaven until the port had implemented suitable control measures.

Several PMSC safety issues raised in the *Sardinia Vera* report remain outstanding. Had they been implemented before this grounding, it is possible that it could have been avoided. The accident again highlights NPP's reactive style of safety management and the recurrent need for outside influence to impose change.

Recommendations:

NPP is recommended to:

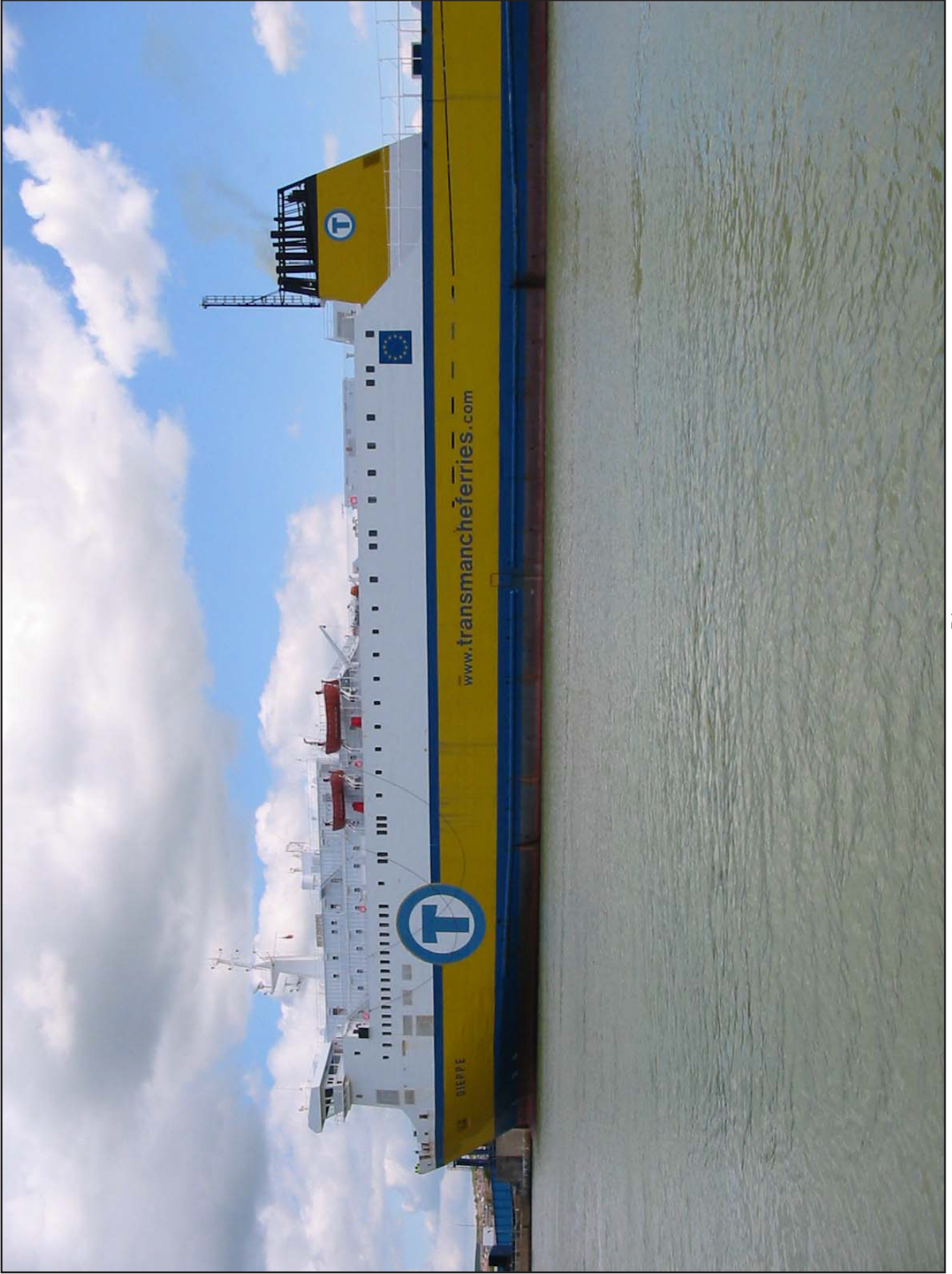
2006/184 Develop and submit to the MCA an action plan that:

- addresses the outstanding safety issues listed at Section 2.8;
- provides for future marine safety in the port;
- adheres to the tenets of the Port Marine Safety Code;
- is underpinned by the necessary resources.

2006/185 Review its procedures for re-qualifying and briefing PEC holders, to ensure their knowledge of local rules is current, and applied to a satisfactory standard.

The MCA is recommended to:

2006/186 Seek reassurance that the safety culture of NPP justifies continued accreditation to the PMSC.



Dieppe

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *DIEPPE*

Vessel details

Registered owner	:	Syndicat mixte de promotion de l'activite Transmanche Ferries. Throughout this report, abbreviated to Transmanche Ferries.
Manager	:	D'Orbigny Ship Management
Port of registry	:	Rouen
Flag	:	France
Type	:	Ro-ro passenger ferry
Built	:	1981 Göteborg Sweden
Classification society	:	Bureau Veritas
Construction	:	Steel
Length overall	:	147.00m
Gross tonnage	:	17,672
Engine power and/or type	:	15300kW
Service speed	:	20 knots
Other relevant info	:	Twin screw controllable pitch propellers, twin rudders, bow thruster unit

Accident details

Time and date	:	0652 UTC 5 December 2005
Location of incident	:	50°46.'68N 000° 03.57E
Persons on board	:	75 passengers, 41 crew
Injuries/fatalities	:	None
Damage	:	None

1.2 BACKGROUND

Dieppe was one of two ro-ro passenger ferries operating on the Newhaven to Dieppe route. Owned by Transmanche Ferries and managed by D'Orbigny Ship Management, *Dieppe* had operated the route since 2001, and on average conducted 1.5 round trips every weekday and a total of two round trips at weekends. The second ferry, *Sardinia Vera*, operated the same route and was on time charter to Transmanche Ferries for 5 years. *Sardinia Vera* has been the subject of two MAIB full investigations following groundings in the Newhaven approach channel in February 2002, and January 2005, both of which occurred under similar circumstances to this grounding.

1.2.1 Previous incidents

Dieppe's grounding on 5 December 2005 was the 14th incident in the series of groundings, collisions and near misses that have occurred at Newhaven in the past 5 years (**Annex A**). The MAIB investigation into the grounding of *Sardinia Vera* in January 2005 took the opportunity to review the overall safety of the Transmanche Ferries' operation at Newhaven. A number of safety issues were identified and consequent recommendations made to the port, route managers and ship owners/managers. The synopsis, conclusions and recommendations of the *Sardinia Vera* report are reproduced at **Annex B**. All the recommendations were accepted by their recipients so, in the light of this further grounding, the MAIB took the opportunity to assess whether progress had been made towards improving the overall safety culture within Transmanche Ferries and Newhaven port.

The *Sardinia Vera* report was published on 21 September 2005, 11 weeks before this accident.

1.3 ENVIRONMENTAL CONDITIONS

1.3.1 Meteorological analysis

Weather conditions deteriorated over the United Kingdom the week preceding the accident. The 0600 UTC meteorological analysis chart for 3 December shows a low pressure system of 975 millibars positioned centrally over the United Kingdom. Further examination of the chart shows a prevailing south to south-westerly wind of 35 knots, predominating in the eastern half of the English Channel. Subsequent charts show the low pressure system slowly filling, and by 0600 UTC on 5 December, it had moved east over the Netherlands and filled to 992mb. At Newhaven, the wind direction had veered to the west and the speed reduced to 6 knots, visibility was good and the swell was negligible. The 3, 4 and 5 December meteorological charts can be seen at **Annex C**.

1.3.2 Recorded data

Wind speed and direction at Newhaven are digitally recorded by anemometers fitted at the West Breakwater, the traffic control station, and the ro-ro berth. Readouts are provided for VTS purposes and displayed within the port control office. A selection of the data recovered from the equipment is reproduced at **Annex D**, and shows wind speeds in excess of 35 knots between 1 and 3 December (inclusive).

1.3.3 Ephemeral data

- Predicted tidal information Newhaven 5 December 2005¹:
 - High water: 0058 – 6.3m 87% of the spring tide rate
 - Low water: 0722 – 0.9m
 - High water: 1314 - 6.2m
 - Low water: 1950 - 0.8m
 - At 0652 - the time of grounding – Predicted height of tide 1.1m.
- Sunrise 0745; Sunset 1556.

1.4 NARRATIVE

1.4.1 Events leading to the grounding

(All times UTC)

On Thursday 1 December 2005, the prevailing wind speed and direction had prevented *Sardinia Vera* leaving her berth in Newhaven for the scheduled service to Dieppe. Because *Dieppe* uses the same berth in Newhaven, it became necessary to divert her to Portsmouth in order that she could berth safely, continue with her commercial activities, and meet Transmanche Ferries' advertised sailing schedule.

Weather conditions abated slightly over the weekend of Saturday 3 and Sunday 4 December, decreasing on Monday 5 December to a west-south- west wind, Beaufort force 3. Sea conditions were recorded as slight with good visibility.

Dieppe made two visits to Newhaven over the weekend, arriving at 1300 on Saturday and 1200 on Sunday. Both arrivals were within 1 hour of high water. The vessel's scheduled sailing from Newhaven on Sunday was delayed by 15 minutes because of prolonged cargo operations. The delay subsequently impacted on the vessel's time of arrival and departure from the port of Dieppe on Monday. The planned 0200 departure occurred at 0245, and the planned 0600 ETA at Newhaven (1 hour and 22 minutes before low water) was delayed until 0650, 32 minutes before low water.

On this journey, the vessel sailed from Dieppe with 41 crew and 75 fare paying passengers on board.

At 0550, 1 hour before arrival, *Dieppe* called Newhaven port control in accordance with port regulations, and passed the vessel's name and her ETA. The call was acknowledged by the duty VTS operator.

At 0630, *Dieppe* gave the 20 minute call to port control and passed her ETA and the master's PEC number. The call was acknowledged, and port control informed the vessel that the height of tide was 1.6m.

¹ Source Admiralty tide tables 2005

At 0639, *Dieppe* made a final 10 minute call to port control, passing her ETA. Port control acknowledged, and passed the wind direction and speed: west-south-west at 6 knots, height of tide 1.5m, and then gave the light signal for the vessel to enter the port. The draught of the vessel was not passed to the port control operator at any of the reporting points, nor, by local regulation, was it required to be.

The master had assessed the entry conditions as good, and in so doing made the decision that a 0.5m UKC would be sufficient. The master was clear in his understanding that no minimum UKC requirement had been established in the Port of Newhaven. The only other restriction he was aware of, which impacted on port entry, was applied in conditions of bad weather and when another vessel was berthed at East Quay (there was no vessel berthed at East Quay on this occasion).

The vessel was navigating using a Transas ECS (**Figures 1 & 2**) and had BA chart 2154 (Newhaven Harbour) available for reference. The ECS was interfaced to a local DGPS system financed by the ship management company as a result of a previous grounding in 2002. It contained a passage plan with courses inserted for entry into Newhaven, but there was no evidence of passage planning on BA chart 2154.

A copy of the harbourmaster's locally produced chart, published and issued on 28 November 2005 and compiled on completion of a hydrographic survey carried out the same day, was also available on board (**Annex E**). This was the most recent edition of the harbourmaster's locally produced charts.

Dieppe's master made the standard approach towards the entrance of the main channel, in accordance with the port's pilotage plan. The bridge organisation consisted of: the master, who was conning the vessel; the second officer conducting the navigation; a dedicated helmsman; and the chief officer, who was available on the bridge as required.

At 0645, 5 cables off the West Breakwater Light, the vessel was steering 030 and making good 024 at a speed of 9.5 knots. It was the master's intention to proceed up the channel with pitch set for 4 knots to reduce the effect of squat over the shallow water. The master was monitoring the radar to obtain distance information from the West Breakwater; it was his intention to turn into the main channel at a distance from the West Breakwater light of between 0.3 and 0.4 cables.

At 0647½ the vessel began a slow turn to port.

At 0648½ the West Breakwater light was bearing due west. The bridge was on the centre line of the channel, however, the ship's heading was 020 and the vessel was making good 023. The master continued turning *Dieppe* to port, and at 0650 completed the turn to 348, making good a course over the ground of 349 – the same direction as the approach channel. Observation of the two red lights on west pier, with a slightly open aspect, gave the master an indication that he was right of his planned track, but not how far. Observation of the electronic chart showed that *Dieppe* was approximately 20m right of track. In an attempt to regain position in the centre of the channel, 15° of port helm was applied and a new course of 345 ordered. Speed over the ground had reduced to 3.8 knots. Because the master was unable to accurately monitor the vessel's position by visual means, he used the DGPS position displayed on the electronic chart system.

Figure 1



Transas ECS positioned on the centreline

Figure 2



Transas ECS bridge wing repeat

At 0652, while trying to regain position on the centre line of the channel, *Dieppe* took the ground in position Latitude 50 46.682N and Longitude 000 03.573 E, 15m to the east of the centreline. Prior to the grounding, the crew reported that there was no undue vibration caused by the effect of squat, the helm remained responsive and the bow did not take an uncontrolled sheer. *Dieppe* came to a gradual stop and maintained a heading of 345 both during and after the grounding.

Evidence retrieved from the VDR was able to confirm that the echo sounder had not been switched on for entry into Newhaven. Although this was not standard practice, it was not uncommon for *Dieppe*'s echo sounder to be switched off. The master believed that, by the time the echo sounder gave warning of depth reduction, it was probably too late for the vessel to respond.

By design, the echo sounder was not fitted with a pre-set depth alarm.

1.4.2 Subsequent actions

The master established contact with the port control at 0654, reported the grounding, and asked the port control operative to note down the position of his vessel. Port control responded by asking the master whether he required the services of the local tug. The master confirmed that the tug would be required. He also asked port control 'am I in the right position to enter? Port control responded 'yes you are', indicating that the vessel was within the limits of the designated navigable channel.

On 10 March 2005, D'Orbigny Ship Management published, as part of its safety management system, an action plan which detailed how a vessel's crew should respond in the event of a grounding accident. The plan can be seen at **Annex F**. Nevertheless, on this occasion, the general alarm was not sounded and, consequently, passengers and crew were not mustered and fully accounted for.

At 0657, the tide gauge reading was 1.3m. At 0701 port control requested the quantity of fuel oil on board. Due to the impending delay in arrival alongside, passengers were advised over the public announcement system of the grounding.

The master attempted to use the vessel's bow thruster to force the bow to port while at the same time configuring the main engines, port ahead and starboard astern, to move the vessel sideways into the deeper water. The action was not effective, and by 0702 he stopped the engines and thruster. Accepting that the vessel was hard aground on an ebb tide, he was aware that only by waiting for the flood tide could refloating be achieved. Meanwhile, the chief officer and four seamen began sounding internal spaces around the vessel to check for water ingress.

At 0720, the harbour tug *Nore Commodore* arrived on scene. *Dieppe*'s master was aware that the tug had a bollard pull of only 13 tonnes, and therefore ordered her to 'push on the starboard shoulder'.

At 0725, *Dieppe*'s master responded to the port control's request for information, and advised that *Dieppe* had a total of 500 tonnes of fuel oil and 77 tonnes of diesel on board. He also asked to be informed when the tide was flooding.

At 0730, the master saved the VDR data, and felt confident that, with the tug pushing on the starboard side and the tide about to begin flooding, it would not be too long before the vessel refloated. At 0750, Newhaven port control reported a height of tide of 1.32m, the master then ordered the tug to move further aft on the starboard side and continue pushing on. Simultaneously, the bow thruster was operated full to port, and the engines once again configured port engine ahead and starboard engine astern to promote a sideways motion on the vessel toward the centreline of the channel. At 0752 the vessel refloated, and with tug assistance regained the centreline in the main approach channel. *Dieppe* proceeded inward to Newhaven and berthed bow-on to the ro-ro link span, starboard side alongside.

As a result of this and previous groundings, the MCA imposed a prohibition notice on *Dieppe* returning to Newhaven.

1.5 THE MASTER

At his own request, the master was employed by Transmanche Ferries on a seasonal basis. He recommenced employment on board *Dieppe* on 22 November for the 2005/2006 winter schedule. Already in possession of a valid PEC, No 50, issued by the Newhaven harbourmaster on 10 March 2002, the master had achieved the prerequisite ten acts of pilotage during the winter 2004/2005 season and, consequently, his PEC received annual revalidation by the harbourmaster. The PEC renewal pro forma was signed and dated on 24 October 2005.

1.6 NEWHAVEN - HISTORY

1.6.1 Overview

Situated at the mouth of the River Ouse in East Sussex, Newhaven is one of the smaller channel ports on the south-east coast. The port is used by a variety of mainly small vessels, including fishing vessels, pleasure craft and small coasters. By far the largest vessels to use the port were the two ro-ro passenger ferries *Dieppe* and *Sardinia Vera*, operated by Transmanche Ferries to service the Newhaven to Dieppe route.

1.6.2 Newhaven Port and Properties Limited (NPP)

NPP was a British registered company, owned by Conseil General de Seine Maritime (CGSM), through an intermediary SEML (Les sociétés d'économie mixte locales), itself formed from various local government organisations in the Dieppe region of northern France. The aim of the SEML was to stimulate trade within the port of Dieppe and the surrounding area. To do this, in 2001 the SEML purchased the port of Newhaven from Seacontainers Limited in order to restart the Newhaven to Dieppe ferry service.

The SEML was responsible for the provision of board members to NPP, its management and operations. The company combined public and private interests, the public sector forming an 80 percent majority. Of this public majority, the CGSM owned 96 percent of the interest, and the local chambers of commerce and councils the remaining 4 percent. The management board had five members; four elected from the CGSM, and a permanent managing director. It was the long term vision of NPP management that the port of Newhaven must become financially self sufficient.

Once the purchase of Newhaven was successfully completed, the ferry service, operated by Transmanche Ferries, began operations.

1.7 TRANSMANCHE FERRIES

Owned by the CGSM, the company was founded to maintain continuity of the Dieppe to Newhaven ferry route when the previous operator withdrew. The route was assessed as a viable proposition, and one which could generate income for the local economy.

Although also a publicly owned French company, Transmanche Ferries was totally separate to NPP. CGSM's long-term strategy required Transmanche Ferries to become privately owned, probably in 2007.

1.7.1 New vessels

As part of the company's strategy to secure long-term viability, two new vessels were under construction to replace the current vessels *Dieppe* and *Sardinia Vera*. The vessels were due for delivery in March and September 2006 (**Figure 3**). The advent of the new vessels would see Transmanche Ferries manage its own assets for the first time. The company was actively involved in producing a new safety management system, and had recently recruited a DPA.

Figure 3



Côte D'Albâtre

1.8 D'ORBIGNY SHIP MANAGEMENT

Based in Bordeaux, the company was responsible for the management of *Dieppe* since she was purchased by Transmanche Ferries in 2001. Management functions included responsibility for the ISM system, its procedures and its development, part of which was active involvement in developing the joint risk assessment for the arrival and departure of *Dieppe* to and from Newhaven.

1.9 THE NEWHAVEN APPROACH CHANNEL

1.9.1 Dredging policy

Silting of the main approach channel into Newhaven is an historic and well documented problem for the port.

Prior to 1984, when Seacontainers Ltd became the port's owners, depth was maintained in the channel using an on-station bucket dredger. This was replaced by a commercial biannual dredging campaign which, after periods of heavy silting, occasionally required an additional dredge to maintain a safe depth for vessels which regularly used the port. Even with three dredges per year, some harbour operators believed that more frequent dredging was required.

In 2001, the change of port owner and commencement of the Transmanche Ferry service, operating a vessel the size of *Dieppe*, required an increase in channel depth to 6.0m. This was achieved, however the frequency of dredging was maintained at one per annum.

The inner harbour and approach channel were dredged in February 2005 following the *Sardinia Vera* grounding, and in July 2005 a further 'top up' dredge was undertaken, specifically targeted at increasing depth in areas of the channel where there had been high build up of silt.

Scrutiny of NPP Board meeting minutes showed that concern had been expressed by the board over the cost of dredging at Newhaven, and that options for the provision of a dedicated dredger, stationed at Newhaven, were currently under consideration. However, both the managing director of NPP and the port manager provided reassurances that it was currently the intention of NPP to conduct two complete dredging campaigns per annum, probably undertaken in January and July.

1.9.2 Depth survey regime

Depth surveys at Newhaven are undertaken:

- October to March - Two per month
- April to September - One per month
- After periods of bad weather.

Scheduled surveys were carried out on 9 and 28 November 2005, the latter only 7 days before the grounding.

A dedicated survey launch fitted with portable survey equipment was available to the harbourmaster, and at the time of the accident, both the launch and the survey equipment were fully operational (**Figures 4 & 5**).

Figure 4



Refurbished survey launch

Figure 5



Portable surveying equipment

Surveying after periods of bad weather was difficult to achieve until the swell and wind strength had reduced. The harbourmaster had found that, generally, wind strengths in excess of 22 knots were accompanied by residual swell greater than 0.5 metre. This created uncomfortable conditions for the survey launch, which was unable to accurately navigate along a line of soundings. Over the weekend 3 /4 December, surveying operations were cancelled as the confused swell conditions would have made it difficult for the operator to input the swell characteristics used to 'smooth out' potential errors caused by the vertical motion of the transducer.

Experience had shown that after periods of bad weather it took between 2 and 3 days for the sea to subside sufficiently to allow a survey to be undertaken. It had been the harbourmaster's intention to survey the channel on 5 December, but this was delayed until late afternoon because of *Dieppe's* grounding. The results the 5 December survey can be seen at **Annex G**.

On completion of a survey, and production of the chart, the harbourmaster issued electronic and hard copies to NPP, Transmanche Ferries, ship managers, masters of the ferries and local pilots.

1.9.3 Operating criteria

Following *Sardinia Vera's* grounding in January 2005, the MAIB recommended that NPP examine its risk assessment:

'to formulate robust minimum operating criteria for individual vessels with specific consideration given to wind and depth limitations'

The joint risk assessment was completed in October 2005, from which NPP developed a wind speed and depth action chart (**Annex H**). This chart provided clear guidance for all stakeholders on the criteria to be met and the limitations to be imposed on a vessel's entry to, or departure from Newhaven. Given the conditions on the day of the grounding, the action chart required a minimum UKC of 1.0 metre. The risk assessment also required that following periods of bad weather, until the actual depth of the channel had been established by surveying, an additional 0.5m UKC should be applied. However, this additional requirement was not included on the action chart and had not been promulgated separately.

The NPP action chart, however, was not issued by D'Orbigny Ship Management to *Dieppe* until shortly after the grounding. The master was using the latest information available to him (**Annex I**), which was a table of operational requirements developed by D'Orbigny Ship management for arrival and departure at Dieppe and Newhaven. This table accounted for wind speed and direction, but the only guidance provided for UKC was a requirement not to enter Newhaven with less than 1.0m height of tide.

The master's own standing orders stated that allowance should be made for:

"Uncertainties in charted depths... and possible alterations in depths since the last survey..."

1.9.4 Available water and UKC

The latest depth information available to the master was from the 28 November 2005 local survey, prior to the period of bad weather. Given the vessel's draught of 6.0m, and a height of tide on arrival of 1.3m, the minimum charted depth required for entry utilising the port's 1.0m UKC requirement was 5.7m. The 28 November survey (**Annex E**) showed progressive silting of the channel in close proximity to the grounding had reduced soundings to 5.5m. This reduction extended for 35 percent of the channel width, extending inwards from the eastern boundary, and 15 percent of the channel width from the western boundary. Had he attempted to achieve a 1.0m UKC, in places the master would have had only 50 percent of the channel width available for safe navigation.

By using a minimum height of tide of 1.0m, and accepting a UKC of 0.5m, the master effectively increased the width of the navigable channel by nearly 30 percent. However, in doing so, he had made no allowance for the effects of the recent bad weather, and was unaware that due to further silting, the navigable channel, even with the reduction in UKC, had in places been reduced in width by up to 60 percent.

It remained the accepted practice on the part of the ship's master, Transmanche Ferries and NPP that, in order to obtain the necessary depth of water, the vessel was required to bias its approach to the western side of the channel which is less prone to silting. Acceptable reductions in the navigable width of the channel had not been addressed by risk assessment.

1.10 PORT CONTROL OPERATIONS

1.10.1 Responsibilities of the Newhaven harbourmaster

The harbourmaster's duties and responsibilities were defined in the port safety management manual, and included safe access and egress from the port, conservancy, approval of passage plans, and ensuring navigational channels were surveyed and dredged to charted depths. He was also the chairman of the pilotage committee, which comprised the following permanent members: port manager, a Newhaven pilot, an independent member, and representatives from Transmanche Ferries, although other harbour users attended meetings when necessary.

The harbourmaster had been employed in the port operations department for 33 years, predominantly in cargo operations and port 'health and safety'. He was appointed harbourmaster in August 2001, but did not possess any maritime qualifications.

Because the harbourmaster lacked maritime experience and qualifications, it was necessary for a third party to provide this expertise, assisting where necessary in the daily operation of the port. The pilotage committee fulfilled this role and acted as an unofficial advisor on maritime operations, enabling the harbourmaster to formulate policy, instructions and guidance, in the knowledge that these had been validated by maritime professionals. This was particularly relevant when defining the port pilotage plan, examining PEC candidates, establishing minimum/maximum operating criteria, and conducting the maritime aspects of the port's risk assessment.

The harbourmaster's powers are defined in the bye-laws relating to Newhaven harbour, dated 23 May 1967. These state that:

' No person shall take, or attempt to take, any vessel into or out of the harbour, or into or out of any dock, lock or basin therein, in disobedience of such signals as may be prescribed from time to time to indicate that entry or departure is forbidden, or in disobedience of any directions of the Harbourmaster as to time of entry or exit, or as to proper order or succession, or in disobedience of any reasonable directions of the Harbourmaster, nor shall he take, or attempt to take, any vessel alongside any quay, or into any pier or berth, without the authority of the Harbourmaster'

At the time of *Dieppe's* grounding, the duty operations supervisor was the harbourmaster.

1.10.2 VTS operator

Newhaven port control was manned by a VTS operator who had been employed within the port for 15 years. He had transferred from the job of shore supervisor, to that of VTS operator in 2001 when the port was owned by Seacontainers Limited. The duty operator had not received any formal training in his VTS role.

1.10.3 VTS service

Newhaven operated a VTS information service² to all vessels, ensuring that essential information was provided for onboard navigational decision-making. The information provided to *Dieppe* consisted of the height of tide taken from the remote tide gauge readout, and the wind direction and strength taken from the West Breakwater anemometer. Radar was available to the operator, and was used to gain an early indication of the vessel's position and an approximate ETA. A logbook compiled by the operator recorded all VHF conversations.

The port safety management manual required the VTS operator to provide users of the port with up to date information relating to depth of the approach channel. On the morning of 5 December 2005, the operator calculated the depth of water available to *Dieppe* using the latest information he had available, and concluded that within the deeper part of the channel the vessel would have no more than 0.5m under the keel. The harbourmaster was informed and confirmed the calculation; *Dieppe* was allowed to enter the port 20 minutes later and grounded at 0652.

1.11 FERRY SCHEDULES

Historically, the operations manager of Transmanche Ferries had produced an annual schedule of sailings; the schedule being based upon tidal data extracted from the Admiralty Tide Tables. For commercial reasons, the company endeavoured to maintain programmed sailing times at the same time every day.

Because silting within the Newhaven approach channel was disrupting the schedule and leading to groundings, the harbourmaster provided the Transmanche Ferries operations manager with the latest available hydrographic survey information. The

² As defined by IMO Resolution A.857(20)

operations manager reported that, using this, he calculated arrival times based on an approach channel depth of 5.5m below chart datum, a draught of 6.0m and a minimum UKC of 1.0m. To achieve the UKC conditions, a minimum height of tide of 1.5m was necessary, and sailing times were adjusted to achieve this. Six weeks before this grounding, NPP had reported to Transmanche Ferries that the guaranteed depths necessary to maintain schedules were not available. No adjustments were made to the schedules, however, and it remained the master's decision whether or not to enter the port.

1.12 IMPLEMENTATION OF PREVIOUS MAIB RECOMMENDATIONS

1.12.1 Recommendations

Given Transmanche Ferries' vessels' history of groundings, contacts and collisions at Newhaven, the MAIB investigation into *Sardinia Vera*'s grounding on 11 January 2005 explored all aspects of ferry operations in the port. This included a review of the roles and activities of NPP, the ship managers, and operators, and it assessed the contribution the MCA and DfT Ports Division could play in improving safety at Newhaven, particularly within the scope of the PMSC.

The *Sardinia Vera* report was issued 11 weeks prior to *Dieppe*'s grounding on 5 December. The report's recommendations, and the various recipients' responses to them at the time of the grounding on 5 December 2005, are reproduced below.

1.12.2 Operating criteria

Newhaven Port and Properties, Transmanche Ferries, V Ships Leisure and D'Orbigny Ship Management were recommended to:

2005/193 *Conduct a joint risk assessment to assess the suitability of all Transmanche Ferries' vessels to operate from the port on a scheduled programme. Part of the risk assessment should be to formulate robust minimum operating criteria for individual vessels, with specific consideration given to wind and depth limitations. The operating criteria should take into consideration the effect of weather conditions on the channel and the change in operating schedule and under keel clearance that will be required.*

Response to recommendation 2005/193:

Following publication of the report, the Newhaven harbourmaster convened a series of joint risk assessment meetings with all stakeholders to identify the control criteria that would allow Transmanche Ferries to operate from the port on a scheduled basis. The resultant action chart, which was agreed by all stakeholders in November 2005, identified for both *Dieppe* and *Sardinia Vera*, minimum UKC requirements and wind speed constraints for entering or departing on an ebb and flood tide (**Annex H**). The risk assessment also identified the need for an additional allowance of 0.5m UKC to be applied after periods of bad weather, to counter the known effect of silting in the main channel until a new survey could confirm the available depth.

At the time of *Dieppe*'s grounding, the control criteria identified by the risk assessment had not been communicated to the vessel by D'Orbigny Ship Management, and consequently the master, recently returned to the company, was unaware of their existence.

1.12.3 New ferries

The Maritime and Coastguard Agency was recommended to:

2005/194 *Assist the operators where appropriate, to determine that the planned two new build ferries are suitable to be safely employed on a scheduled service into the port of Newhaven.*

Response to recommendation 2005/194:

In order that an initial assessment of the new vessels' suitability for scheduled operations could be made, the MCA had made several requests to Transmanche Ferries for provision of technical drawings. At the time of this grounding – 3 months before the introduction into service of the first vessel – the MCA had been unable to obtain relevant drawings and so had been unable to assist the operator to determine the suitability of the vessels to operate from Newhaven.

1.12.4 Port safety

Newhaven Port and Properties was recommended to:

2005/195 *Improve the level of maritime safety within the port of Newhaven by fully implementing the requirements of the port marine safety code. Such improvements should, as a minimum:*

- *Generate a source of independent advice to the board on the effectiveness of the port's safety management system.*
- *Ensure the training requirement for staff is identified and the necessary training achieved.*
- *Ensure the safety management system is effective, and empower the port manager³ to implement such safety measures as he considers necessary to ensure that safety of navigation at Newhaven is maintained.*

Response to recommendation 2005/195:

The recommendation sought full compliance by the port with the requirements of the PMSC.

Independent Advice

Provision of independent advice to the board of NPP remained outstanding. The managing director of NPP understood the benefits of such advice, but was still attempting to identify a suitable person to carry out the function.

Training

No evidence was available to indicate that a training regime for maritime staff had been identified and implemented as part of the safety management system. The harbourmaster, responsible for developing the joint risk assessment together with the port's other risk assessments, remained unqualified and untrained. Training of VTS and hydrographic operatives remained outstanding.

³ This does not countermand the harbourmaster's operational responsibilities outlined in the PMSC paragraph 1.5.14.

Channel depth

The port manager was able to provide confirmation that two complete dredging campaigns of the main approach channel and the inner harbour would be undertaken annually.

Newhaven approach – leading marks

The port manager was initially confident of receiving financial approval from the NPP board for the construction of main channel transit lights, but this approval was later rejected. As a consequence of advice received from the pilotage committee meeting in December 2005, the port manager was hopeful that the port could manage to erect alternative marks using their own assets. However, no dedicated channel marks were available at the time of the grounding.

Port control

Exactly who had authority to apply restrictions on vessel movements was unclear, with the harbourmaster believing that final authority laid with the port manager.

Harbour tug

The MAIB's *Sardinia Vera* report identified that the harbour tug, *Nore Commodore*, did not have enough power to perform some of the tasks allocated to it in the port's risk assessment. On 5 December 2005, the tug remained on station, a decision on its future having been deferred due to cost considerations.

Turning basin

As part of the port purchase agreement in 2001, NPP required and obtained a turning basin 150m in length, to allow *Dieppe* turning space prior to departure. The previous owner retained ownership of the yacht marina on the western side of the turning basin, and subsequently erected steel piles at the 150m boundary to provide the structure for additional yacht moorings.

Early turning trials showed that it was unsafe to operate *Dieppe* close to the steel piling, so she was required to depart from Newhaven navigating stern first from the berth to the West Breakwater.

Critical to the continued safe operation of *Dieppe* was the need to enlarge the turning basin. Documentation provided by NPP shows several attempts were made by the company in 2005 to negotiate the additional turning ground from Seacontainers Limited, without success. Three weeks after this grounding, the yacht marina was sold, and it was the intention of NPP to begin negotiations with the new owners to secure the additional turning ground.

As part of the joint risk assessment, NPP recognised both the potential dangers of turning a vessel the size of *Dieppe* in a restricted area, and of navigating stern first from the berth. NPP commissioned Abbott Risk Consulting to conduct an assessment of the risks involved berthing *Dieppe*, turning, and navigating stern first. The study was commissioned 3 weeks prior to this grounding, and in February 2006 was expanded to include the two new ferries.

Enlargement of the turning basin remains an outstanding issue, restricting *Dieppe* from turning prior to departure (**Figure 6**).



Dieppe turning trail. Closest point of approach

1.12.5 Port Marine Safety Code (PMSC)

*The **Department for Transport** was recommended to:*

2005/196 Review the provision of powers necessary for the Maritime and Coastguard Agency to effectively monitor implementation of the port marine safety code and provide direction, where necessary, to ensure necessary levels of safety are maintained.

Numerous previous groundings, contacts and collisions had occurred at Newhaven since 2001; and given NPP's response to previous MAIB recommendations, both DfT Ports Division and the MCA were concerned that the pre-conditions necessary to grant Newhaven PMSC accreditation had not been met. Of particular concern was the provision of adequate funding necessary to address various safety issues, including dredging, regular hydrographic surveying and enlargement of the turning basin.

In February 2004, the MCA received the necessary assurances from NPP that its previous concerns had been addressed, and that suitable measures had been, or were shortly to be, put in place. These assurances were taken by the MCA as evidence of NPP's commitment to the PMSC, and resulted in Newhaven receiving PMSC accreditation. The subsequent investigation by the MAIB, into the *Sardinia Vera* grounding which occurred in January 2005, verified that suitable measures had not been put in place, but more importantly, that the MCA did not have the powers to effectively monitor the port's implementation of the PMSC, and was therefore not able to confirm for itself that suitable measures were in place.

The recommendation was accepted by the DfT, but at the time of *Dieppe's* grounding there had been no response by the department explaining its current status, and Newhaven remained accredited to the PMSC.

1.13 INDEPENDENT AUDIT

As recommended by the PMSC, NPP commissioned an independent audit which was undertaken in May/June 2005. The audit was thorough, but recognised that it represented only a snapshot of operations at Newhaven, based upon the information received and observations made at the time.

The audit concluded that:

“the standard of management within marine operations is generally satisfactory and that attention to the recommendations made within the body of the report will secure a high overall standard of management within marine operations, and a significant degree of protection from financial and legislative risk.”

Key areas that required improvements included, but were not limited to:

- *Risk assessment required to be more robust and the process better understood.*
- *Ensure that policies and procedures detailed in the SMS were followed.*
- *Carry out formal risk assessment of all PMSC related requirements.*
- *Managers and staff to receive formal risk assessment training.*
- *NPPL to make available adequate resources, training, and manager's time to ensure compliance with the PMSC.*
- *Comply with MCA requirements and International Standards with regard to Hydrographic surveying.*
- *Avoid conflicts of interest with regard to Harbourmaster – Supervisor / Safety Manager roles.*

A copy of the independent audit was made available to the MAIB for the purpose of this investigation. During this investigation, and particularly at the time of the grounding, there was no evidence to suggest that any reasonable action had been instigated by NPP to help mitigate the findings contained within the audit's recommendations.

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 CAUSE OF THE ACCIDENT

The grounding of *Dieppe* occurred because the master failed to apply an appropriate UKC allowance, given the recent poor weather and the likelihood that silting of the Newhaven approach channel had occurred. Specifically:

- The master was not aware of NPP's revised UKC criteria for entering Newhaven, nor of the additional UKC allowance to be applied after periods of bad weather.
- The master did not apply his own additional allowance for possible silting of the channel, despite being aware of the recent bad weather and the possibility that silting had occurred.
- The VTS operator and harbourmaster calculated that *Dieppe* would be entering harbour with insufficient UKC, but neither took action to delay her approach.

The subsequent survey of the approach channel showed a reduction in depths of up to 1.3m had occurred since the previous survey 7 days earlier.

2.3 FATIGUE

Dieppe had undertaken two return crossings over the weekend of 3/4 December. The schedule on the weekend sailings allowed for periods in port of between 6 and 8 hours, interspaced with voyage lengths of approximately 4 hours. Manning scales were adequate, the officers were appropriately qualified, and sufficient flexibility existed within the bridge organisation to cope with a variety of navigational roles. Hours of rest records confirmed that the bridge watchkeeping officers, the mate, and the master had all received rest in excess of the statutory minimum requirement.

Fatigue is not, therefore, considered a contributory factor in this accident.

2.4 THE GROUNDING

2.4.1 Under keel clearance requirement

Dieppe's delay of 45 minutes in sailing from France, and her subsequent late arrival at Newhaven, meant that the predicted height of tide on arrival had fallen from 1.7m to 1.1m (although the tide gauge reading on grounding was 1.3m). The master was unaware of the new UKC requirements in NPP's action chart, and considered the prevailing limitation on arrival to be a minimum height of tide of 1.0m in accordance with D'Orbigny Ship Management's SMS criteria. However, as a valid PEC holder, the master should have been aware of the port passage plan's requirement for vessels to enter Newhaven with a minimum UKC of 1.0m, and so delayed his approach until there was sufficient water.

Had D'Orbigny Ship Management passed the NPP action plan to *Dieppe's* master when it was agreed in November 2005, this would have refreshed his memory about the minimum UKC required by the port, and thus increased the chance that he would have delayed his approach until the tide had risen.

2.4.2 The master's considerations of depth

On 5 December 2005, *Dieppe's* draught was 6.0m. The harbourmaster's local chart of 28 November showed that 5.5m was available over about 50 percent of the width of the channel – mainly on the west as silting had occurred on the eastern side. The master calculated that by staying in the deeper part of the channel where the depth was charted as 5.5m, and by accepting a UKC of 0.5m, he could get his vessel into harbour. In attempting to navigate in the deeper parts of the channel and reducing his UKC, the master was bowing to real or imagined pressure not to fall further behind schedule.

As a PEC holder, the master was well aware of the history of silting at Newhaven after periods of bad weather. Although he had entered harbour twice since the weather abated, this was to be his first approach at a spring-tide low water. Had he paused to consider these facts, he might have made an additional allowance for the possibility of silting, and accepted that a further slip in the schedule was an acceptable price to pay for safety.

2.4.3 Inaction by VTS staff

Had *Dieppe's* master waited for the tide to increase sufficiently to apply the NPP minimum UKC of 1.0m, his vessel would still have grounded. However, had the port enforced the additional 0.5 m safety margin, to be applied after bad weather and until a survey was able to confirm the available depth of water, his vessel would have been safe.

Notwithstanding the authority granted to the harbourmaster by statute, neither he nor the VTS operatives felt empowered to impose such restrictions. There had been previous incidents involving ferries where the harbourmaster was aware that the stated minimum UKC requirements in the port passage plan had not been complied with and, when he had suggested imposing them, he had been overruled by higher management. At the time of this incident, although there is conflicting evidence from higher management, it was evident that the harbourmaster considered he had yet to be empowered to enforce the port's procedures.

2.4.4 Execution of the pilotage

There were no headmarks or transits to mark the centreline of the approach to Newhaven, although the two red lights situated on West Pier, when in line, marked the starboard side of the channel. Their visual aspect could, therefore, be used to indicate when a vessel was approaching the starboard limit of the channel, but not to indicate how far the vessel was left or right of the centreline of the channel.

Although the master attempted to regain the channel centreline, using port helm, when the ECS showed the vessel to be right of track, his earlier reduction in speed to 4.0 knots, necessary to help negate the effect of squat, decreased *Dieppe's* manoeuvrability and increased the effect of leeway. This caused the vessel to drift further to starboard. Once the master recognised he was right of track, the effect of the "Port 20" helm order proved insufficient to regain track before grounding.

Had the master been able to monitor a fixed navigational head or transit mark, he would have been better placed to complete the turn on to track and, if necessary, take earlier corrective action to regain the track. Similarly, the provision of a dedicated head or transit mark would have provided confidence to the master while navigating the approach channel, enabling him to constantly monitor the vessel's position relative to the centreline, and allow him to take immediate action to maintain the intended track.

2.4.5 Use of the echo sounder

D'Orbigny Ship Management's own pilotage directions recognised that to reduce the risks when entering Newhaven, frequent monitoring of depth was required. Further, *Dieppe's* master's standing orders to the bridge watchkeepers were specific in their requirement for the vessel to operate the echo sounder when approaching a port, identifying that such an action would allow the bridge team to obtain reliable depth information.

Given the previous period of bad weather, and *Dieppe's* arrival at low water with a substantially reduced UKC, the need to monitor the depth of water under the keel was critical. Better utilisation of the bridge team could have provided the master with a running commentary on depth information, allowing him to compile a picture of the available water under the vessel's keel, which in turn would have allowed him to take earlier action as the depth reduced. Had proper and effective use been made of the echo sounder, it is possible that the grounding could have been avoided.

Furthermore, best practice would suggest that had the echo sounder been operated routinely, monitoring of the soundings in the channel might have identified less than charted spot depths. The information could, in turn, have assisted the harbourmaster in his survey operation, and allowed him to promulgate the information to other harbour users.

2.5 OTHER OBSERVATIONS

2.5.1 Passage planning

Dieppe was equipped with an ECS complete with GPS and DGPS interface, providing the bridge team with good electronic charting facilities which allowed them to accurately plot and monitor the vessel's position. The ECS passage plan followed the guidance provided in the port passage plan.

The standard procedure on board *Dieppe* was to rely solely on the electronic passage plan. However, an ECS does not have the status of an ECDIS, and therefore paper charts were the vessel's primary form of navigation. Had the ECS become unavailable, there was no equivalent paper chart passage plan capable of being used at short notice to safely navigate the vessel, particularly in the pilotage waters of Newhaven.

2.5.2 Actions on grounding

A comprehensive checklist specifying the actions to be taken on grounding was included within the ISM system, but the response by the crew fell significantly short of the guidance contained on the checklist (**Annex F**). Indeed, their view was that this was just another grounding at Newhaven on a relatively soft seabed, and by waiting for the tide to flood, the vessel would shortly float free.

2.5.3 Voyage data recorder

Analysis of the VDR data recovered from *Dieppe* provided confirmation of the evidence gathered from other sources. While interrogating the data, it was discovered that a crucial function of the VDR, voice recording, was inoperative and therefore unavailable to investigators.

As the VDR alarm system did not check for such faults, and both ship and management were similarly unaware, diagnosis of the defect remained undetected. A VDR that is unable to self-check and alert the operator to system defects unnecessarily risks the loss of valuable investigative data.

2.6 PORT OPERATIONS

2.6.1 Survey regime

NPP's risk assessment in 2003 identified the need for surveying to regularly monitor depths in the approach channel, but the subsequent surveying regime was sporadic. After *Sardinia Vera*'s grounding in January 2005, and the subsequent MAIB investigation, NPP started to recognise the importance of regular and frequent hydrographic surveying. Thus, in July 2005, a dedicated, fully refurbished survey launch, complete with one set of portable surveying equipment, was introduced into service. While this equipment had proved effective at the time of *Dieppe*'s grounding, it lacked redundancy, and a duplicate set of equipment, or a contract to maintain the current fit in the event of failure, was still awaited.

The equipment allowed the harbourmaster to conduct the surveys required in the port's risk assessment, which included the need to survey following periods of bad weather due to the likelihood of increased silting within the approach channel. However, the launch and equipment were only capable of carrying out accurate surveys once sea and weather conditions had subsided. This meant that vessels had to navigate the approach channel for up to 2 or 3 days without an up to date survey, during the period of maximum risk.

Although the risk assessment recognised this constraint, and recommended adding an additional 0.5m UKC to compensate, this increment was arbitrarily derived from the known effects of south westerly winds. The bad weather prior to the grounding had, unusually, been predominantly south easterly, and had significantly increased the mass movement of silt into the approach channel. Had the 0.5m increment been applied on this occasion, *Dieppe* would have had only 0.2m clear water under her keel, minus any effect of squat.

Had more regular surveying been undertaken since 2001, the port would have been better able to assess the effect on silting of south easterly winds, and applied a more appropriate increment.

2.6.2 Port control

While the harbourmaster recognised that following periods of bad weather, an increase in the normal UKC allowance was necessary, neither he nor his staff felt empowered to enforce the requirement. Although *Dieppe* passed her intended ETA to VTS, there was neither a requirement for her to pass any other details, including arrival draught, nor any instructions for the VTS operator to demand such information. The operator made an assessment based on his own interpretation of the likely worst case scenario, and judged that a UKC of 1.0m was probably satisfactory.

2.6.3 Post survey action 5 December

Only after the survey was completed on 5 December was the extent of silting fully recognised, with reduction in depths of up to 1.3m identified. The substantial depth reduction did not instigate an immediate assessment of the new risk, and neither the harbourmaster nor the port manager grasped the potential consequences for the safety of navigation.

Although NPP management had been on the joint risk assessment committee, and contributed to the assessment, the harbourmaster did not promulgate the resultant criteria to VTS personnel because he did not feel empowered to implement them. He understood that board approval was required and that the port manager was responsible for authorising any constraints on operations. The port manager, however, was unable to explain why the newly developed criteria had not been implemented.

No individual within NPP took responsibility to issue a directive to stakeholders that the newly developed limitations were in force, and the new criteria were only passed round unofficially at operator level. Ultimately, responsibility for *Dieppe's* safe arrival fell solely to the master of the vessel, who himself was unaware of the new operational limitations.

Only when the MCA imposed a prohibition notice on *Dieppe*, prohibiting her from arriving or departing Newhaven 1.5 hours either side of low water, did the seriousness of the situation become apparent to the management of NPP. However, the harbourmaster still did not consider himself to have been empowered to enforce the restrictions until the managing director of NPP subsequently wrote to the MCA confirming that the harbourmaster was, and had been, authorised to enforce such restrictions as he deemed necessary. This development resolved any remaining dispute over the powers granted by NPP to the harbourmaster, or his understanding of the powers granted to him by statute.

2.6.4 Dredging

The fact that the Newhaven approach channel is prone to silting is well documented, and is confirmed by the number of groundings suffered by *Dieppe*, and *Sardinia Vera* over the last 5 years. The guide to good practice on port marine operations, written to provide support and advice on the implementation of the PMSC, recommends that a harbour authority conducts maintenance dredging to ensure safe access and egress for vessels using the port. In the case of Newhaven, the surveying regime was used to inform port managers and operators when a depth in the main channel reduced to less than 5.5m below chart datum and thus trigger restorative dredging.

On 11 November 2005, the port manager informed NPP management and the Transmanche Ferries' operations manager that soundings of 5.0m had been found, and that ferry arrival and departure schedules should be adjusted accordingly. This, though, was the only control measure put in place, and there was no immediate response from NPP's management to trigger a remedial dredging operation or from Transmanche Ferries to amend the schedule. The port did not possess its own dredging capability, nor was a contractual dredge imminent.

Nearly 1 month after the 5.0m warning was issued by the port manager, *Dieppe* was programmed by Transmanche Ferries to arrive at Newhaven 1.5 hours before low water with a 1.7m height of tide. Ignoring any further silting, the resultant UKC was 0.3m less than the prescribed minimum.

Dredging remains a high cost operation for the port. Nevertheless, silting is a major contributory factor to the frequency of groundings at Newhaven. Clearly defined criteria, to prompt the need for contractual dredging campaigns, were lacking.

2.7 SCHEDULED SERVICE

Prior to the joint risk assessment meeting in October 2005, the Transmanche Ferries' operating schedule, produced by the operations manager, attempted to keep the arrival and departure times the same for each day. This allowed customers to plan ahead, and the workforce to be employed on a routine basis; it was the preferred method of operating. However, this form of scheduling allowed for a minimum height of tide, and did not recognise the need for a required minimum UKC.

Since the joint risk assessment meeting in October 2005, criteria have been established for minimum UKC, and schedules have been adjusted accordingly. The Transmanche Ferries operations manager, who is in receipt of the harbourmaster's locally produced charts, used a minimum depth of 5.5m for planning schedules, which was accurate for the centre of the channel. However, it took no account of the shallower water at the extremities and the consequent reduction in navigable width.

Had *Dieppe* arrived at Newhaven on time at 0600, the information shows that a UKC in excess of the minimum was achievable. Had there been communication between the master and Transmanche Ferries' operations manager, once the delay in *Dieppe*'s arrival became evident, it is possible they would have discussed UKC requirements and agreed a revised arrival time.

2.8 SAFETY AT NEWHAVEN

The MAIB report into the grounding of *Sardinia Vera*, published 11 weeks before this accident, concluded that:

'the board of NPP has taken insufficient steps to implement a safety regime sufficient for the safe operation of the current scheduled ferry service'

The investigation into this grounding, 11 months after *Sardinia Vera*'s grounding, has discovered that many of the same pre-conditions and practices are still readily apparent. The independent audit undertaken in June 2005⁴ also identified many of the same safety deficiencies and management issues raised in the MAIB's *Sardinia Vera* report.

Actions taken to address the recommendations made in the *Sardinia Vera* report at the time of this grounding have been detailed at Section 1.12. Actions taken since this grounding are listed in Section 4. However, this investigation has found that many of the safety related issues identified in the *Sardinia Vera* report still remain. Outstanding safety issues include:

- a. The provision of independent advice to the board of NPP still remains the responsibility of the port manager and, as such, it is not independent and does not provide the board with a source of advice necessary to fulfil their statutory obligations. Although NPP considered employing external auditors to fulfil the independent advice function, to date there has been no recognised appointment. The post of assistant port manager remains vacant.

⁴ The previous independent audit carried out in 2004 (conducted by a different organisation and auditor) did not thoroughly examine and comment on maritime safety policy, and therefore a comparison is not possible.

- b. Training of key personnel, particularly in maritime vocational activities, including the roles of harbourmaster, risk assessor, and VTS operations remains outstanding. These are all key areas directly related to port safety.
- c. The anemometer fitted at the end of the West Breakwater, and used by VTS to pass wind speed information to vessels, has a 45 knot maximum reading. The new operating criteria require the port to be closed to all vessel traffic at a wind speed of 50 knots. The VTS operators therefore have to ask other vessels in the vicinity, or use the internet to gauge wind strengths in excess of 45 knots. This shortfall was identified by risk assessment in 2004 and remains outstanding.
- d. The need to provide navigation marks was identified in the harbourmaster's risk assessment review in 2004. Reassurances given by the port manager that funds would be made available, and that measures were in hand to erect such marks, have not been carried through. Contrary to initial assurances of main channel day and night transit marks, recent innovations, due to cost implications, have included adapting the two red lights at West Pier to form a line of bearing transit.
- e. Full dredging operations were carried out in February 2005. In July 2005 a further 'top up' dredge was carried out to maintain the 6.0m required depth, but only 5 months later the reduction in approach channel depth has accounted for a further grounding. Only a rapid response to depth reduction, identified during bi-monthly surveys, will ensure that appropriate risk mitigation measures are restored.
- f. Hydrographic surveying is the principal method of identifying reduction in depth, and the reliability and availability of the port's surveying equipment is key to maintaining this risk monitoring capability. No duplicate set of equipment exists, and NPP has no contract in place to either repair defective equipment or bring in alternative equipment.
- g. Although the results of the joint risk assessment had not been issued to the master of *Dieppe*, there was clear evidence of their implementation when the master of *Sardinia Vera* requested he delay sailing on 1 December, due to high wind speeds. As a result, *Dieppe* was diverted to Portsmouth. In the longer term, potential exists to further refine the risk assessment by considering not only wind speed, but also the prevailing wind direction and its effects on manoeuvring.

2.9 MONITORING IMPLEMENTATION OF THE PMSC AT NEWHAVEN

The *Sardinia Vera* report identified that the voluntary nature of the PMSC makes it difficult for regulatory bodies to accurately assess compliance with the Code. As a result, shortfalls in safety may not be identified in sufficient time to prevent further incidents.

Although Newhaven had attempted to work closely with the MCA, by providing regular survey information and an invitation to attend the joint risk assessment meeting, the MCA was still relying to a great extent on the port's assurances of compliance with the PMSC, rather than confirmation by formal audit and inspection.

Following *Dieppe*'s grounding, the only power available to the MCA was the issue of a prohibition notice refusing the vessel access to Newhaven until NPP had implemented suitable control measures. Only at this stage was the MCA able to become instrumental in ensuring that safety concerns within the port were properly addressed, effectively using commercial pressure to instigate improvement.

2.10 SUMMARY

MAIB considers that, at the time of *Dieppe*'s grounding on 5 December 2005, NPP and their fellow operators of the Transmanche Ferries service were not proactively addressing safety, but were still reacting to accidents and external stimuli before making safety improvements. Section 4 of this report shows that, since the grounding, the pace of safety improvements has quickened and, through small incremental steps, a better level of safety has now been achieved in some areas. Safety standards should further improve when *Dieppe* is retired from the route and replaced with a vessel able to turn in the harbour and depart Newhaven bow-first. These gains in safety have, however, been slow to materialise, and the safety issues still unaddressed, listed at Section 2.8, give rise to doubts that NPP has fully embraced the tenets of the PMSC.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

The following safety issues have been identified by the investigation. They are not listed in any order of priority:

Navigation:

- The practice on board *Dieppe* was to rely solely on the ECS passage plan. There was no equivalent paper chart passage plan capable of being used at short notice. [2.5.1]
- Had proper and effective use been made of the echo sounder, it is possible that the grounding could have been avoided. [2.4.5]

Navigation marks:

- The West Pier navigation lights were the only visual marks available to the master, and were unable to provide any indication of how far the vessel was left or right of the intended track. [2.4.4]
- The provision of a dedicated head or transit mark would have provided confidence and security to the master while navigating the approach channel. [2.4.4]

UKC:

- The master was unaware of the new UKC requirements in NPP's action chart, and considered his limitation to be a minimum height of tide of 1.0m in accordance with D'Orbigny Ship Management's SMS criteria. As a result, he accepted a reduced UKC. [2.4.1]
- In attempting to navigate in the deeper parts of the channel and reducing his UKC, the master was bowing to real or imagined pressure not to fall further behind schedule, and furthermore, he failed to apply an allowance for further decreases in depth due to the recent bad weather. [2.4.2]
- Compliance with the port's minimum UKC requirement was an elementary procedure which the master, as a PEC holder, should have adhered to. [2.4.1]

VDR manufacturers:

- A VDR that is unable to self-check, and alert the operator to system defects, unnecessarily risks the loss of valuable investigative data. [2.5.3]

VTS:

- Although the harbourmaster had recognised the necessity for a post bad weather UKC allowance, neither he nor his staff felt empowered to impose such restrictions. [2.5.1]
- Reporting procedures did not require that a vessel pass its draught to VTS on arrival, to assist calculation of UKC. [2.6.2]

PMSC

- Training of key personnel, including the role of the harbourmaster, risk assessor, and VTS operations remains outstanding. [2.8.b]
- The provision of navigation marks was identified by the harbourmaster's risk assessment review in 2004. However, it has currently been rejected on the grounds of cost. [2.8.d]
- The provision of independent safety advice to the board of NPP still remains the responsibility of the port manager and, as such, it is not independent. [2.8.a]
- The MCA was relying to a greater extent on the port's assurances of compliance with the PMSC, rather than confirmation by formal audit and inspection. [2.9]
- Clearly defined criteria that identify and instigate the requirement for contractual dredging campaigns were absent. [2.6.4]
- Contrary to its own risk assessment, NPP did not have a duplicate set of surveying equipment, nor, as an alternative, did they have a contract in place to repair defective surveying equipment. [2.8.f]

Risk assessment:

- The joint risk assessment recognised an increased risk of silting after periods of bad weather and recommended an additional 0.5m UKC to compensate. This figure was not derived empirically from historical survey data. [2.6.1]
- Neither the harbourmaster, nor his staff felt empowered to enforce their own control measures. [2.6.2]
- The substantial depth reduction in the channel did not instigate an immediate assessment of the new risk, and neither the harbourmaster nor the port manager grasped the potential consequences for the safety of navigation. [2.6.3]

SECTION 4 - ACTION TAKEN

Since *Dieppe's* grounding the following actions have been taken:

4.1 NPP

4.1.1 Dredging

Since 5 December 2005, NPP has contracted Westminster Dredging to carry out a complete dredging operation of the main approach channel and inner harbour. This was completed by mid January 2006. Bad weather in February caused a reduction in soundings below 5.5m in parts of the main channel; Westminster Dredging was contracted to carry out immediate spot dredging, and the channel regained its 6.0m charted depth. In early March 2006, a survey of the harbour entrance showed depths below 5.5m. Westminster Dredging returned, and dredged the harbour entrance back to the 6.0m charted depth.

It remains the responsibility of the harbourmaster to notify management when a dredging campaign will be required, and management to approve and provide the necessary finance. Assurances from NPP's managing director and the port manager have acknowledged the requirement for, and confirmed the implementation of, two complete dredges of the approach channel and inner harbour per year.

4.1.2 Control measures

The absence of suitable control measures to identify limiting depths, and trigger dredging operations, has contributed to the 14 incidents recorded at Newhaven since 2001. A complete revision of control measures prompted by the joint risk assessment and the MCA prohibition notice has now established such criteria. The measures are now fully operational, but have not yet been incorporated into the safety management system or been promulgated by local notice.

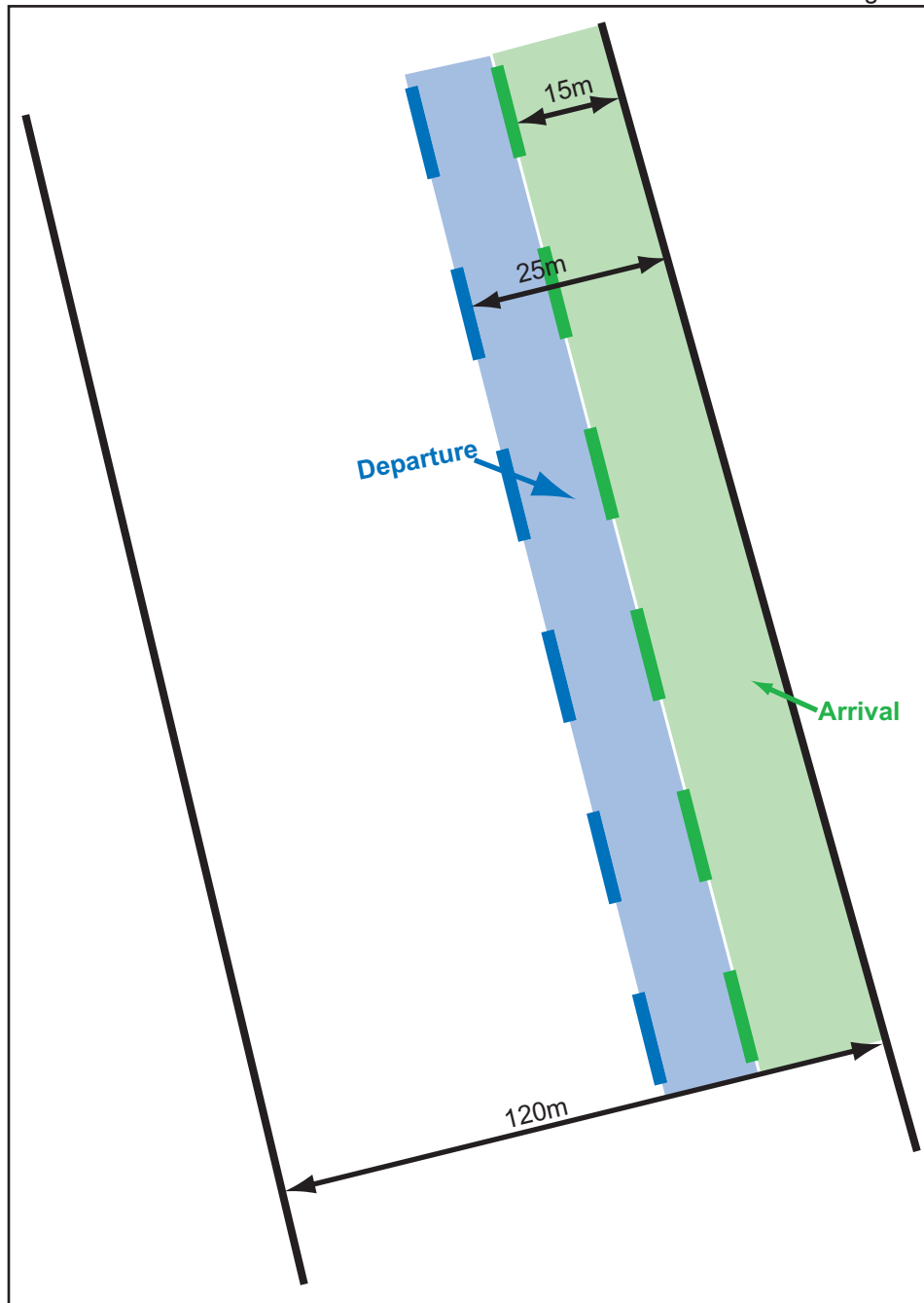
- The minimum permissible depth in the main approach channel is 5.5m. Depths of less than 5.5m require the harbourmaster to inform NPP that dredging is required, and Transmanche Ferries that schedules should be adjusted to achieve the minimum 1.0m UKC. Within the present extremities of the approach channel, two bands on the eastern side have been established for the purpose of establishing minimum depth. The first band extends 15m into the channel and forms the limiting line for a vessel's arrival. The minimum sounding to the west of this line is used for establishing UKC. A similar band extending 25m into the channel is used for vessels departing (**Figure 7**).
- VTS employees have been trained to calculate UKC. Draughts are reported by vessels on arrival and departure, and the harbourmaster notifies all parties of the minimum expected depth to be used for calculating UKC. If the vessel does not meet the required minimum UKC, entry to the port is forbidden. Authority to make the decision has been delegated to the operations supervisors.
- On completion of a local survey, copies of the locally produced charts, together with a minimum depth statement, are sent electronically to all stakeholders, ensuring all parties work with the same figures. If necessary, schedules are adjusted by Transmanche Ferries and double checked by the Newhaven harbourmaster to achieve the minimum UKC.

- NPP has decided to arrange for the provision of a rapid response repair service for its Hydrographic survey equipment.
- To satisfy the MCA that the new measures would be enforced, the managing director of NPP provided them with written confirmation that the harbourmaster:

'had the authority to forbid the entrance of the port to any ship in case of all type of risk (bad weather or depths...).'

The control measures were used effectively on 28 February 2006 to prevent *Dieppe* entering with less than the minimum UKC.

Figure 7



Newhaven approach channel - minimum permissible depth diagram

4.1.3 Safety study

That *Dieppe* cannot use the turning basin due to her length, and has no option available other than to exit Newhaven navigating stern-first, is acknowledged by risk assessment. To enhance that risk assessment, a safety study commissioned by NPP is currently examining the berthing, arrival, departure, and turning operation of *Dieppe* in Newhaven. Modelling to incorporate the vessel's manoeuvring characteristics is being undertaken, and the study is examining the potential environmental impacts of enlarging the turning basin.

The imminent introduction into service of the two new ferries destined to replace *Dieppe* and *Sardinia Vera* prompted NPP to extend the study to incorporate the new ferries. Similar in concept, the study would cross reference data used for *Dieppe* and conduct modelling based on ships' drawings.

The results of the study for *Dieppe* were due in late February 2006, but delays in placing the second contract, and obtaining drawings of the new vessels, have produced a corresponding delay in publication of the findings. The first of the new ferries, *Cote D'Albatre*, was operating from Newhaven before the study results were published.

4.2 TRANSMANCHE FERRIES

4.2.1 Scheduling

Scheduling of *Dieppe* is undertaken by the operations manager of Transmanche Ferries. The general timetable promulgated for passengers up to 6 months in advance is now, when necessary, amended on a fortnightly basis to reflect tide and depth constraints, taking into account the necessity for vessels to enter Newhaven with a minimum UKC of 1.0m (**Annex J**).

4.2.2 New vessels

The first of two new ferries began operating on the Newhaven to Dieppe route in March 2006. Designed for turning in the existing basin, the vessels are 6.5m shorter than *Dieppe*, and operate with a draught of 5.7m. A simple risk assessment was undertaken onboard the first vessel before a turning trial was successfully completed on 5 March 2006. The new vessels' masters are currently undergoing training for PECs which, when successfully completed, will result in a further update to the risk assessment using knowledge gathered in the intervening period.

4.3 D'ORBIGNY SHIP MANAGEMENT

That the joint risk assessment had not been issued to *Dieppe* as part of the safety management system, resulted in the master's lack of awareness of the UKC requirements, and ultimately the grounding. The joint risk assessment was issued to *Dieppe* on 5 December 2005, shortly after the grounding.

4.4 MARITIME AND COASTGUARD AGENCY

In response to the grounding, and the inability to take direct action against the port, the MCA imposed a prohibition notice on *Dieppe* after the grounding. The notice was withdrawn when the MCA received evidence that NPP had put in place effective control measures to prevent a similar occurrence.

4.5 DEPARTMENT FOR TRANSPORT

The recommendation for DfT to review the provision of powers granted to the MCA to enable them to monitor implementation of the PMCS has been accepted in principle by the department. While no new statutory powers are possible due to the voluntary nature of the PMSC, discussions with the MCA and industry representatives have taken place to agree appropriate arrangements for the MCA to monitor compliance.

A harbour authority declaring its compliance with the code would in future be required to accept that the MCA may, at its discretion, verify compliance with the code and provide direction, if required, to ensure necessary levels of safety are maintained.

The MCA commenced a PMSC compliance programme in July 2005, the results of which have now been analysed. Newhaven is one of a small number of harbour authorities that have failed to respond to the MCA's request for a statement of compliance and are now, therefore considered to be PMSC non-compliant.

SECTION 5 - RECOMMENDATIONS

NPP is recommended to:

2006/184 Develop and submit to the MCA an action plan that:

- addresses the outstanding safety issues listed at Section 2.8;
- provides for future marine safety in the port;
- adheres to the tenets of the Port Marine Safety Code;
- is underpinned by the necessary resources.

2006/185 Review its procedures for re-qualifying and briefing PEC holders, to ensure their knowledge of local rules is current, and applied to a satisfactory standard.

The MCA is recommended to:

2006/186 Seek reassurance that the safety culture of NPP justifies continued accreditation to the PMSC.

**Marine Accident Investigation Branch
July 2006**

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