Report on the investigation of the

grounding of the passenger ro-ro ferry

Sardinia Vera

off Newhaven on

11 January 2005

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(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

		Page
GLOSSARY OF ABBREVIATIONS AND ACRONYMS		
SYNOPSIS		**1**
SECTION 1 - FACTUAL INFORMATION		**4**
1.1	Particulars of *Sardinia Vera*	4
1.2	Particulars of *Dieppe*	5
1.3	Background	6
1.3.1	Previous incidents	6
1.4	Narrative	6
1.4.1	Subsequent actions	8
1.4.2	Environmental conditions	9
1.4.3	Allowance for shallow water	9
1.4.4	Navigation equipment	10
1.4.5	The crew	12
1.4.6	Voyage Data Recorder	12
1.5	Navigational Data	12
1.5.1	Port passage plan	12
1.5.2	Pilotage Exemption Certificates (PECs)	13
1.5.3	Newhaven navigational aids	13
1.6	The Port of Newhaven	14
1.6.1	Overview	14
1.6.2	Background	14
1.6.3	Newhaven Port and Properties Limited (NPP)	14
1.6.4	Port manager	15
1.6.5	Harbourmaster	15
1.6.6	Pilotage committee	15
1.6.7	Risk management	16
1.6.8	Port Marine Safety Code (PMSC)	17
1.7	NPP - Operational safety	18
1.7.1	Dredging policy	18
1.7.2	Depth surveys and equipment	19
1.7.3	Navigable width of channel	21
1.7.4	Contacts and collisions	21
1.7.5	*Dieppe*	23
1.7.6	Ship management	24
1.7.7	New vessels	25
1.7.8	NPP Board involvement	25
SECTION 2 - ANALYSIS		**26**
2.1	Aim	26
2.2	Fatigue	26
2.3	Voyage Data Recorder	26
2.4	Groundings	26
2.4.1	Silting	26
2.4.2	Surveying	27
2.4.3	Safe operating criteria	27

2.4.4 Under keel clearance 27
2.4.5 Navigation aids 28
2.4.6 Approach 28
2.4.7 Summary 28
2.4.8 Dredging policy 29
2.5 *Dieppe* incidents 29
2.5.1 Size of *Dieppe* 29
2.5.2 Were the risks of operating *Dieppe* monitored? 30
2.5.3 *Dieppe* - operating criteria 30
2.5.4 Improving future safety 31
2.6 Harbour tug 31
2.7 Newhaven port safety management 32
2.7.1 NPP Management 32
2.7.2 PMSC status 33
2.7.3 Training 33
2.7.4 Risk management 34
2.7.5 Scheduling constraints 35
2.8 Previous incidents 35
2.8.1 Response by ship managers 35
2.8.2 Reporting of accidents 35

SECTION 3 - CONCLUSIONS 36

3.1 Safety issues 36

SECTION 4 - ACTION TAKEN 38

4.1 Dredging 38
4.2 Reporting of accidents 38

SECTION 5 - RECOMMENDATIONS 39

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

BA	-	British Admiralty
DfT	-	Department for Transport
ETA	-	Estimated time of arrival
GPS	-	Global positioning system
ISM	-	International safety management
ISPS	-	International code for the security of ships and port facilities
LNG/LPG	-	Liquid natural gas/Liquid petroleum gas
m	-	Metre
MAIB	-	Marine Accident Investigation Branch
MCA	-	Maritime and Coastguard Agency
NPP	-	Newhaven Port and Properties
OSGB	-	Ordnance Survey Great Britain
PEC	-	Pilotage exemption certificate
PMSC	-	Port marine safety code
ro-ro	-	roll-on roll-off
SEML	-	Les societies d’economie mixte locales
SOLAS	-	Safety of life at sea convention
UKC	-	Under keel clearance
UTC	-	Universal co-ordinated time
VDR	-	Voyage data recorder
VHF	-	Very high frequency radio

SYNOPSIS

Narrative

At 1946 UTC on 11 January 2005, the Italian registered ro-ro passenger ferry *Sardinia Vera* ran aground in the approach channel to the port of Newhaven on the south coast of England. The position of the grounding was in the charted deep water channel about 20 metres to starboard of the centreline, a position where the master should have been able to expect sufficient depth of water to navigate safely. The vessel re-floated at 2131 UTC with the rising tide and proceeded to sea stern first, where safety checks were completed before re-entering harbour to berth safely at 2223 UTC. There were no injuries or pollution, and the vessel did not sustain any damage.

The grounding on 11 January brought to 13 the number of reportable accidents involving the two Transmanche Ferries vessels in the port of Newhaven in less than 4 years. Ten of the accidents and incidents were groundings or near groundings, and three were collisions and contacts involving the other ferry, *Dieppe*. As a consequence, MAIB took the opportunity to probe more deeply the management of safety at Newhaven as it pertained to the Newhaven-Dieppe ferry operation.

Analysis

Newhaven channel is prone to heavy silting. On 11 January 2005, bad weather over the preceding week had caused a significant increase in the rate of silting, especially on the eastern side of the channel. The harbourmaster had been unable to carry out either the routine monthly, or post bad weather hydrographic surveys due to defective surveying equipment, and consequently accurate depths in the channel were not known. No control measures were implemented to mitigate the risk of unknown depth, save that the master attempted to navigate in what he assessed to be the deeper side of the channel. In this, he was hampered by a lack of suitable fixed navigation aids at Newhaven.

The MAIB had only been aware of five of the earlier groundings, investigating one fully and two to Preliminary Examination level. However, most of the other groundings appeared to have had similar causal factors. The MAIB had not been aware of the collisions and contact accidents involving *Dieppe*, but from data collected, the vessel's high windage and vulnerability to strong crosswinds in the approach channel appear to have been significant contributory factors.

Despite having been accredited with implementing the Port Marine Safety Code, the investigation found that Newhaven Ports and Properties (NPP) was apparently unable or unwilling to ensure an adequate level of safety was maintained, as it pertained to the Transmanche Ferry operation in the port. Specifically, the board of NPP appeared not to have assimilated its statutory responsibility for safety of navigation in the port,

and within the management structure the process for conducting risk assessments and implementing risk control measures was largely ineffective. Further, there was no evidence of an effective dialogue between Transmanche Ferries, the ship managers, and NPP, to assess the risks associated with operating a scheduled service of large ferries from the port. As a consequence, safe operating criteria had been defined piecemeal over the years, often following accidents and incidents.

A proper assessment of the risks involved in operating *Sardinia Vera* and *Dieppe* from Newhaven, before the vessels commenced operations, would have identified, and therefore possibly prevented, many issues that have emerged in accidents and incidents in the last 4 years. In addition, proper adherence to the tenets of the port marine safety code would have ensured that post incident analysis was effective, and that the necessary lessons were identified. Finally, an improved safety culture would have ensured that the lessons identified were acted upon effectively to prevent recurrence.

Of specific concern, is that the suitability of *Dieppe* to safely operate a scheduled service out of Newhaven is questionable.

Recommendations

Newhaven Port and Properties, Transmanche Ferries, and V Ships Leisure have been recommended to conduct a comprehensive joint risk assessment to assess the suitability of vessels present and future operating in and out of the port on a scheduled programme, and to formulate robust minimum operating criteria for the individual vessels involved.

Maritime and Coastguard Agency has been recommended to assist the operators, where appropriate, to determine that the planned two new build ferries for this route are suitable to be safely employed on a scheduled service into the port of Newhaven.

Newhaven Port and Properties has been recommended to improve the level of maritime safety within the port by fully implementing the requirements of the port marine safety code.

Department for Transport has been recommended to review the provision of powers necessary for the Maritime 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.

Sardinia Vera

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *SARDINIA VERA*

Vessel details

Registered owner	:	Forship S.p.A (Italy)
Manager	:	V.Ships Leisure S.A.M. (Italy)
Port of registry	:	Olbia
Flag	:	Italy
Type	:	ro-ro passenger ferry
Built	:	Bremerhaven, Germany 1975
Classification society	:	RINA
Length overall	:	120.8 metres
Gross tonnage	:	12107
Engine power and/or type	:	Two 5192kW MaK medium speed diesel engines driving controllable pitch propellers on two shafts.
Service speed	:	18.5 knots
Other relevant info	:	Single bow thruster and twin rudders.

Accident details

Time and date	:	1946 UTC 11 January 2005
Location of incident	:	50°46’65N 000°03’59E
Persons on board	:	100 (53 crew and 47 passengers)
Injuries/fatalities	:	None
Damage	:	None

1.2 PARTICULARS OF *DIEPPE*

Vessel details

Registered owner	:	Syndicat mixte de promotion de l'activite Transmanche
Manager	:	D'Orbigny Management
Port of registry	:	Rouen
Flag	:	France
Type	:	ro-ro passenger ferry
Built	:	1981 Goteborg Sweden
Classification society	:	Bureau Veritas
Construction	:	Steel
Length overall	:	147.00m
Gross tonnage	:	17,672
Engine power and/or type	:	15300 Kw
Service speed	:	20 knots
Other relevant info	:	Twin screw Controllable Pitch Propellers, twin rudders, bow thruster unit

1.3 BACKGROUND

Sardinia Vera is one of two ro-ro vessels operating a regular Dieppe to Newhaven ferry service for the French operator Transmanche Ferries based in Dieppe. *Sardinia Vera* and *Dieppe* each conducted two return crossings per day, dependent upon cargo availability, weather and tidal conditions. Managed by V Ships Leisure of Italy, *Sardinia Vera* had been on time charter to Transmanche Ferries for 4 years and, with the exception of annual dry docking periods, had operated continuously on the Dieppe-Newhaven route. The vessel was manned by an Italian crew of 53, the predominant language was Italian, but safety information broadcasts to passengers were in English.

1.3.1 Previous incidents

Although the grounding of *Sardinia Vera* on 11 January 2005 was resolved reasonably quickly and did not involve loss of life, injury or pollution, that ferries operating the Dieppe-Newhaven route were grounding relatively frequently at Newhaven had become a cause of concern to the MAIB. Since May 2001, five other groundings and one near grounding had been reported to MAIB, two of which had been subject to full investigation (the second was later concluded as a preliminary examination). This investigation has uncovered a further seven groundings, contacts and collisions by ferries in the port area of Newhaven, bringing to 13 the number of significant, reportable accidents involving the two ferries in less than 4 years. While investigating the cause of the most recent grounding of *Sardinia Vera*, the opportunity, therefore, was taken to probe more deeply the management of safety at Newhaven as it pertained to the Dieppe-Newhaven ferry operation. The table **(see Annex A)** shows a recent history of incidents in the port specifically related to ro-ro passenger ferry operations.

1.4 NARRATIVE

On 11 January 2005, *Sardinia Vera* was on a scheduled sailing from Dieppe to Newhaven carrying 47 passengers and 53 crew. She carried 100 tonnes of fuel oil, 60 tonnes of diesel oil, and 12 tonnes of lubricating oil onboard and was drawing 5.45 metres aft and 5.50 metres forward.

The master, in accordance with company and port operating instructions, planned for a 1 metre minimum under keel clearance when entering Newhaven and, because weather conditions were poor, added a further 1 metre to allow for the effect of pitch and roll. The latest locally produced chart of Newhaven showed that the channel had silted at part of its eastern extremity to 3.4 metres, with depth increasing to 4.3 metres some 20 metres inside the channel edge. However, most of the channel had a depth of around 5.8 metres, and the master calculated that by navigating in this part of the channel he would require a height of tide of 1.7 metres to achieve his required 2 metres under keel clearance and so make a safe entry.

At 1815 UTC, one hour before the programmed time of arrival, the master contacted Newhaven port control in accordance with the port's radio calling procedures. He obtained up to date information about the height of tide, and the wind strength and direction at the approach to the main channel and off the berth. Port control informed the master that the wind at the west breakwater was 38 to 43 knots from the north-west, and inside the harbour was 25 knots from between west and south-west. The tide gauge was reading 1 metre above chart datum. The vessel was steering a course of 344° speed 15 knots.

Twenty minutes before arrival, at 1855 UTC, again in accordance with port operating procedures, the master made a second call to Newhaven port control. During this, he expressed concern at the strength of the wind and informed the port that he might not enter harbour if the wind strength remained at 40 knots. Port control then informed the master that the wind strength was now 23 knots inside the harbour and up to 30 knots at the west breakwater. Shortly after this conversation, the master reduced speed to 7.5 knots and adjusted course to 280° in order to arrive at the channel entrance with the appropriate height of tide.

At 1922 UTC, *Sardinia Vera* increased speed to 11 knots and altered course to 035°. At 1934 UTC, 10 minutes before arrival, the master called Newhaven port control and was informed that the tide level had risen to 1.506 metres and the wind strength inside the harbour was between 20 and 25 knots. The master declared that the vessel was to be piloted under pilotage exemption certificate (PEC) number 49 (his own), that the vessel was at ISPS security level one, and requested the signal lights giving approval to enter the port. With the wind and tide from the south-west, the master commenced his approach steering 035°. The master was conning the vessel, the second officer was responsible for the conduct of navigation, and the third officer and a cadet were also on the bridge. Steering was in hand control, and a dedicated helmsman was positioned at the wheel. At 1936 UTC, speed was increased to 15 knots to assist the turn around the west breakwater, and at 1944 UTC an alteration of course to port to 005° was made. As the vessel came abeam of the west breakwater light at 1945.30 UTC, the master ordered 10 degrees of port wheel with the intention of altering course to 345°.

The master was acutely aware that with both a strong wind and tide from the south-west there was a risk, as the bow entered the shelter of the breakwater, that the elements acting on the port quarter could further turn the vessel to port. Potentially this could cause her to overshoot the channel to port and ground on the western side of the main channel. Thus, as the vessel approached the new course of 345° the master ordered the helm to be put hard to starboard to stop the swing. The ship's head swung back briefly to starboard, to 350°, but 30 seconds later the vessel was steady on 345°. The master recalled feeling the vessel 'surf' from the effects of the sea conditions astern.

At night, the two sets of fixed red lights on each end of the west pier form a transit that crosses the approach channel diagonally which can be used as a rough guide to a vessel's position in the channel. At the outer end of the channel the transit marks its eastern extremity, and the master, conscious of shallower water to the east, tried to ensure his vessel was always positioned to the west of the transit line at the end of the turn round the breakwater. On 11 January 2005, the master observed the transit lights were very slightly open to starboard and therefore *Sardinia Vera* had steadied a little to the right of the planned track. The line of the channel is 348°, and by steering 345° the master was content that the vessel would regain the planned track safely.

At 1946 UTC the bow was seen to veer to port and the stern to starboard, grounding the vessel's starboard quarter. *Sardinia Vera*'s position as fixed, at the master's request, by port control at 1947 UTC showed the vessel had grounded in position Lat 50°46'65N, Long 000°03'59E; some 20 metres to the right of the channel centreline.

1.4.1 Subsequent actions

On feeling the vessel take the ground, the master operated the bow thrusters at full power to port and ordered the helm to be placed hard to starboard in an attempt to break the stern clear of the ground and back into the main channel. However, the wind and tide prevailed, slewing the stern of the vessel further to the east and into shallower water. After several attempts to re-float the vessel using engines and bow thruster, the master called for the assistance of the local harbour tug *Nore Commodore* at 1954 UTC.

Solent coastguard was informed of the incident at 2002 UTC, and at 2010 UTC the *Nore Commodore*, with a bollard pull of 13 tonnes and a conventional twin screw propulsion arrangement, arrived on scene and took a line from the bow of *Sardinia Vera*. Attempts by the tug to free the vessel failed and, at 2014 UTC, the master ordered the tug to be released and to stand by. Once the tug was clear the master ordered the starboard anchor to be let go, followed some minutes later by the port anchor, to prevent *Sardinia Vera* being driven further ashore as the tide rose.

By 2123 UTC the tide had risen to 3.89 metres on the tide gauge, sufficient for the vessel to be re-floated. Both anchors were recovered, and the vessel was manoeuvred stern first out of the channel using own engines and bow thruster. Once clear of the channel, the master waited until he had received confirmation from the chief officer that all grounding checks in accordance with the vessel's ISM procedures had been completed, before at 2205 UTC requesting approval to enter Newhaven port. *Sardinia Vera* reported 'all secure' at Number 1 ro-ro berth at 2223 UTC, and shortly afterwards the tug *Nore Commodore* was stood down.

1.4.2 Environmental conditions

The analysis chart for 0600 UTC on 11 January showed a low pressure area of 956 mb to the west of Ireland moving north-east **(Annex B)**. The prevailing wind direction and strength at the time of the grounding were directly attributable to this system.

The predominant wind direction during *Sardinia Vera*'s approach to the port, and at the time of grounding, was from between the west and south south-west. Wind strength at the breakwater recorded by Newhaven port control decreased from a mean of 41 knots at 1815 UTC, to gusting 25-30 knots between 1855 UTC and the grounding at 1946 UTC. From then until the vessel re-floated, the wind had remained steady at 27 knots, gusting 30 knots, in the outer harbour and 20 knots inside the harbour.

Tidal information for Newhaven on the evening of 11 January:

Low water	11/1802	0.66 metres
High water	12/0008	6.80 metres
Grounding	11/1946	1.70 metres

The tidal stream was setting at 100 per cent of the spring rate, which at the time of the grounding equated to approximately 110° at 1.3 knots.

The climatic table for Newhaven **(Annex C)** shows that between 49 and 62 percent of the year the prevailing wind direction at Newhaven originates from between west through south west to south. The average wind speed is between 11 and 13 knots, and gale force winds are encountered 16 days per year.

1.4.3 Allowance for shallow water

The master of *Sardinia Vera* was familiar with the company instructions to allow a minimum under keel clearance of 1 metre. He was also aware that he required a greater under keel safety margin to accommodate the ship's motion in the prevailing weather conditions, and on this day had allowed an additional 1 metre of water for this.

The dredged channel at Newhaven is 120 metres wide and, as discussed later, is subject to heavy silting, particularly after periods of bad weather. As a PEC holder, the master was aware of the risk of silting in the main channel, and was in possession of the latest edition of the local chart that was produced by the harbourmaster and dated 10 December 2004 **(Annex D)**.

This chart showed that most of the deep water section of the channel, originally dredged to 6.0 metres, had now silted to 5.8 metres. With a draught of 5.5 metres, the master entered the port with a height of tide of 1.7 metres giving 2.0 metres under keel clearance, aiming to keep *Sardinia Vera* in the deepest parts of the channel.

1.4.4 Navigation equipment

Sardinia Vera was fitted with the following navigation equipment **(see Figures 1, 2 and 3)**:

- 2 Consilium MM950 radars (1 X-Band and 1 S-Band)
- C-Plath 0735-03 gyro compass
- 1 JRC GPS Nav NQZ 4570 (complete with remote display)
- 1 Furuno GPS (complete with remote display)
- 1 Skanti KDU2100 AIS
- 1 Simrad Echo Sounder

Figure 1

ARPA radar and auto pilot

Figure 2

Bridge front layout

Figure 3

GPS (chart room repeaters)

1.4.5 The crew

The master was 44 years old, had been at sea for 24 years, and had previous experience of tanker and LNG/LPG carriers. He was one of the two regular masters appointed to *Sardinia Vera* for the previous 3 years, and before that had served onboard as the chief officer. He was in possession of a valid PEC for the port of Newhaven.

The chief officer's main responsibility was cargo operations. He was not a designated watchkeeping officer, but was able to stand in for the master if required.

Two second officers maintained a 6 hours on and 6 hours off watchkeeping routine, and a third officer was available to enhance the watchkeeping routine or support the chief officer with cargo operations as required. A deck cadet was also borne. All deck officers on board *Sardinia Vera* spoke good English.

1.4.6 Voyage Data Recorder

As a passenger vessel engaged on international voyages, *Sardinia Vera* was required to carry a Voyage Data Recorder (VDR). A Broadgate VER3000 was fitted, and its removable hard disk was recovered and interrogated. The crew satisfactorily performed all necessary actions to save the data recorded leading up to, during and after the grounding **(see Annex E)**.

Information obtained from the various sensors provided verification of the position of the grounding, and the course and speeds the vessel took leading up to it. However, the VDR recording contained no radar data, and none was available to investigators from other sources.

1.5 NAVIGATIONAL DATA

1.5.1 Port passage plan

A comprehensive port passage plan has been developed in accordance with the guidelines laid down in the Port Marine Safety Code (PMSC). The senior Newhaven pilot compiled the plan, incorporating general information, notices and warnings supplied by the harbourmaster. The plan was approved by the port's pilotage committee and issued in stages between January and February 2002.

The plan comprised three main sections that covered: general information, notices and warnings; pilotage information; and chart extracts with diagrams and photographs to accompany the text. Well laid out and easy to read, the chart extracts and photographs clearly showed the recommended method of entry into the port of Newhaven **(see Annex F)**. However, the plan did not provide similar information for a vessel's departure.

There have been no amendments or revisions to the plan since it was issued in 2002. The plan referred to a maintenance dredging programme being carried out 'usually twice per year' to achieve the dredged depths stated on BA chart 2154. For the approach channel the chart carried the following note:

> *Depths in Newhaven Harbour are subject to silting. Depths on the Eastern side of the outer dredged area (50 46.7N,00 03.6E approx) may be reduced to less than 6 metres. For the latest information, consult the Newhaven Harbour Master.*

The Newhaven Pilotage section of the Port Passage Plan also drew the reader's attention to the fact that:

> *'depths are taken immediately after dredging, but allowance must be made for siltation as these depths are seldom maintained'.*

The port required a minimum under keel clearance of 1 metre for all vessel movements.

1.5.2 Pilotage Exemption Certificates (PECs)

The conditions which had to be met for a master or mate to obtain a PEC, granted under the Pilotage Act, were contained in the port passage plan. To obtain a PEC, an individual had to undertake 25 acts of pilotage in the presence of a licensed pilot, 50 percent of which had to be carried out during darkness. The PEC was valid for one year, after which time the holder had to seek approval for renewal.

1.5.3 Newhaven navigational aids

The following navigational aids were provided to assist vessels navigating in the main channel and the narrows:

- West Breakwater Lighthouse - Oc(2) 10 seconds 17m 12M
- West Pier - 2F.R (vert) at each end of the pier
- East Pier Lattice Tower - Iso G 10s 12m 6M
- Northern extremity of East Pier 2F.G (vert)
- Southern extremity of east quay 2F.G (vert)

Additional lights were provided in the area of the turning basin and No.1 and No.2 ro-ro terminals. A tide gauge had been fitted at west quay, close to the vessel traffic signal station.

No buoys or piles marked the main channel edges, and there were no leading marks, transit marks, or lights to indicate the centreline.

In 2003 permission was sought from, and approved by, Trinity House to remove a fixed blue light with an 8-9 mile range and 8 degree spread, positioned above No.1 ro-ro berth linkspan.

1.6 THE PORT OF NEWHAVEN

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. At the time of this investigation, the largest vessels to use the port were the two ro-ro passenger ferries, *Sardinia Vera* and *Dieppe,* operated by Transmanche Ferries to service the Dieppe-Newhaven route.

1.6.2 Background

The port was owned and operated by Sea Containers Limited from 1984. In January 1999 P&O Stena Line withdrew its conventional ferry operation and, as a consequence, the port was closed for ferry operations between 1999 and 2000. Throughout this period, the north quay facility remained operational and was able to generate some income through the import of sea dredged materials and the export of scrap metal. Shortly after the conventional ferry operation ceased, Hoverspeed, a subsidiary of Sea Containers Limited, commenced operation of a seasonal fast ferry service in April 1999 between Newhaven and Dieppe.

In April 2001, Transmanche Ferries re-established the conventional ferry operation between Newhaven and Dieppe, and two months later, in June 2001, the majority of the port, including harbour authority rights, was sold to Newhaven Port and Properties Limited (NPP). Reduced income and investment over the intervening period led NPP to apply for, and secure, a financial contribution from both the EU and local authority.

1.6.3 Newhaven Port and Properties Limited (NPP)

NPP was a British registered company, owned by Conseil General de Seine Maritime -76 through an intermediary SEML (Les societes d'economie mixte locales) formed from five local French councils, three chambers of commerce and local town halls in the Dieppe region of northern France. The SEML's objective was to stimulate the local economy, and one of its vehicles for this was to reinvigorate the port of Dieppe by re-starting the Newhaven ferry service. To achieve this, it had purchased NPP and also owned Transmanche Ferries. The boards of directors of both companies were drawn from senior elected members from the local councils and chambers of commerce who comprised the SEML.

NPP was a statutory harbour authority that had implemented the PMSC, which explains that:

> *Each harbour authority is accountable for managing operations within the port safely and efficiently and its board members should hold themselves responsible for ensuring that it does so.*

1.6.4 Port manager

The head of the operating structure was the port manager, an experienced manager and former master, who reported directly to the board of directors and was also the secretary to the board. In accordance with the published operating structure **(see Annex G)**, the port manager also undertook the roles of company safety manager, and designated person (DP) within the context of the PMSC. The responsibilities associated with these roles were extensive and were defined in the NPP port safety management manual **(see Annex G)**. They included responsibility for ensuring port compliance with the PMSC, and ensuring senior management, including the harbourmaster, received suitable information and training to enable them to discharge their duties in a competent manner.

The port manager reported to the board of NPP in both his roles of port manager and DP. The PSMC defines the role of the DP as:

> *Every harbour authority must have a designated person to provide **independent assurance** about the operation of its marine safety management systems, who has direct access to the board.*

1.6.5 Harbourmaster

The harbourmaster had been employed within the operations department of the port for the last 32 years, but was not appointed harbourmaster until August 2001. His background was in cargo operations and port 'health and safety'. He did not hold any maritime qualifications, and though he had applied to the nautical institute to undertake appropriate training and gain a harbourmaster's certificate, this initiative was curtailed due to insufficient time available for study.

The harbourmaster's responsibilities were defined in the NPP port safety management manual **(see Annex G)**. Duties included responsibility for safe access and egress to the port, conservancy, approval of passage plans, ensuring navigational channels were monitored and dredged to charted depths, and the subsequent publication and distribution of local charts. The harbourmaster chaired the pilotage committee and was responsible, together with the senior pilot and an independent pilotage committee member, for examination and issue of PECs. The harbourmaster was also tasked with the responsibility of port health and safety manager **(see Annex G)**. Part of this responsibility included conducting the port risk assessments and ensuring control measures were in place. The harbourmaster had received no formal training in risk assessment.

1.6.6 Pilotage committee

The pilotage committee was chaired by the harbourmaster, and comprised the following permanent members: port manager, senior Newhaven pilot, representatives of the port users (Transmanche Ferries, Hoverspeed, etc) and one independent member (recently reduced from two).

The independent members were both ex-Newhaven pilots whose role was to advise the committee on all matters relating to navigational safety. The independent member now dropped from the pilotage committee was an active pilot in another district and so provided advice on best practice in another pilotage authority's area. The harbourmaster encouraged other port users to attend meetings, particularly those who might be affected by the decisions and actions of the committee.

With no recognised nautical qualifications himself, the harbourmaster drew on the expertise and advice of the pilotage committee to formulate navigational policy. For example, the committee was responsible for developing the safe operating criteria applied to the entry and departure of *Dieppe* in strong wind conditions **(see Annex H)**. The committee also provided a forum from which the harbourmaster and other members could express their concerns to the port manager. Minutes from the meetings showed that several critical safety related issues discussed at the meetings had remained unresolved or recurred on a frequent basis.

The port manager reported that all safety issues discussed at the pilotage committee were raised with the board of NPP in an attempt to secure the necessary funding.

1.6.7 Risk management

The harbourmaster was responsible for conducting risk assessments within the port of Newhaven, the last formal risk assessment of maritime operations having been conducted in January 2003. Previous risk assessments conducted by the same assessor were saved electronically and, unfortunately, had been overwritten so were not available for review.

The January 2003 risk assessment showed risk number two "Less than charted depths appearing in any part of the pilotage area" **(see Annex I)** as of medium likelihood and medium potential, combining to form a medium (moderate) risk[1]. The risk assessment identified the following 'control measures' required to mitigate the risk, and noted that all were in place:

- *Ensure hard copy depth surveys are carried out at regular intervals.*
- *Ensure that any potential shallow patches encountered by inward and outward vessels are reported promptly and investigated soonest[2].*
- *Port control to advise all inward and outward ships regarding any reductions in depth from chart datum.*
- *Have criteria in place to give early warning of the need for dredging.*
- *Maintain records of all depth surveys carried out.*
- *Pilots and PEC holders to be supplied with copy of soundings.*

[1] On a three-point scale: Low risk (acceptable), Medium risk (moderate), High risk (significant).

NPP had undergone one audit of the Port Safety Management System, conducted by external auditors on 14 January 2003. While this audit highlighted several areas for improvement, it only examined two areas of pilotage and navigation, finding:

- *Evidence of a structured system that ensures competency of pilots and PEC holders.*
- *Evidence of a system that demonstrates the all round effectiveness of navigational marks/aids and that they are monitored and corrective action is taken to rectify deficiencies.*

In awarding both areas the maximum possible scoring, the auditing team were guided by evidence of continuous improvement and development. They noted,

> *'..safety culture is integrated through all activities and a holistic approach to safety management has been adopted (excellent)'.*

The audit also examined the actions taken by NPP in response to MAIB's recommendations following the *Sardinia Vera* grounding on 1 February 2002. The audit reported that:

> *'Rather than accepting this as an issue that there was not much that could be achieved to prevent a future incident, the Port of Newhaven has accepted the challenge and taken many positive steps to help alleviate the problem in the future. Such steps include the purchase and use of hydrographic equipment, dredging programme, imminent purchase and installation of up to date anemometer and radar equipment. Risk assessments have been reviewed to take into account this particular hazard with the result that new tug procedures have been introduced'.*

Notwithstanding the risk assessment control measures listed above and the finding of the external audit, there have been four further groundings since January 2003. None of these triggered a formal review of the risk assessment.

1.6.8 Port Marine Safety Code (PMSC)

Since assuming responsibility for operations at Newhaven in 2001, NPP was keen to become accredited as an authority that had fully implemented the provisions laid down in the PMSC.

However, NPP's response to MAIB recommendations following the groundings of *Sardinia Vera* in 2002 had raised concerns in both DfT Ports Division and the MCA about NPP's ability to comply with the PMSC. Their main concerns centred round NPP's monitoring of channel depth, and the ongoing risk assessment process which should ensure a vessel's safe entry or departure from Newhaven.

[2] The harbourmaster has received only one report of a shallow patch – on 17 January 2005, six days after the most recent grounding.

Early correspondence in 2003 between the MCA and NPP, highlighted areas requiring rectification before such accreditation could be approved. During a visit to Newhaven on 14 November 2003, the MCA examined several aspects of the port's safety management system, and concluded that, although the management system was slim, it did provide the necessary information to meet the standards required by the code. Critical to this opinion was the need for the Port Authority to continue to allocate adequate funds to address the various safety issues that had arisen, and report to the MCA within 3 months the results of various initiatives put in place.

In February 2004, NPP wrote giving the MCA assurance that hydrographic surveys were being undertaken in-house on a regular basis and copies of the resultant charts were being passed to all necessary parties; dredging of the turning basin had been completed; and construction works to extend the turning plate were to begin shortly. Based on these assurances, the MCA wrote to NPP in March 2004 confirming they were satisfied that NPP had demonstrated the necessary commitment required to fully implement the code, and confirmed that the Newhaven Port Authority would be included among those recognised by the DfT as having implemented the PMSC.

1.7 NPP - OPERATIONAL SAFETY

1.7.1 Dredging policy

Silting of the main channel is an historical problem at Newhaven. Tide and wind from the south-west create a circulatory movement of silt from the centre of Seaford Bay, which is deposited in the eastern side of the main channel. Sediment from the River Ouse is also deposited into the main channel, and a smaller amount of silt is deposited by the flood tide rounding the west breakwater. The rate of silting increases in poor weather and following heavy rain.

Frequent dredging was historically required to ensure the depth of the 120 metre-wide main channel remained safe for ferry operations. Pre-1984, a bucket dredger was kept permanently on station to maintain the channel to a depth of 5.5 metres. Post 1984, under the ownership of Seacontainers Ltd, the bucket dredger was removed and dredging was undertaken on a biannual basis by a commercial contractor. Occasionally an additional dredge was required after periods of heavy silting. Evidence obtained from pilotage committee minutes for 1995 clearly shows that silting of the channel was a major concern to all stakeholders, with one operator calling for surveys of the channel to be undertaken more frequently.

In January 1999 the conventional ferry service was withdrawn and in April 1999 a shallower draught fast ferry introduced. As a consequence, it was deemed appropriate to reduce the dredging frequency to once per year.

In 2001, on the sale of the port, a conventional ferry operation resumed, run by Transmanche Ferries. The dredging cycle, however, remained at one dredge per annum. The arrival on the route of the ferry *Dieppe*, required a deeper main channel and so the annual dredge was amended to achieve a dredged depth of 6 metres.

On completion of each dredging operation, NPP aimed to achieve a depth of 6 metres inside the main approach channel. From the eastern extremity of the channel, additional dredging created a sloping gradient extending 50 metres to the east outside of the channel to create an 'in fill' area that would absorb the early silt deposits.

NPP relied to some extent on the presence of *Dieppe*, with her 6 metre draught, to disturb bottom sediment when departing the harbour stern first. The flushing out of this disturbed sediment slightly reduced the natural rate of silting. However, at the time of *Sardinia Vera*'s grounding in January 2005, *Dieppe* was undergoing a planned refit period and had been absent from the port since 19 December 2004.

1.7.2 Depth surveys and equipment

In February 2002, *Sardinia Vera* was entering the port of Newhaven and had a pilot embarked for PEC training. The vessel altered course around the end of the west breakwater, but failed to turn as planned and grounded just inside the eastern side of the Newhaven approach channel, in a position close to that of the latest grounding. The event was subject to a full investigation by the MAIB, and the following recommendations with respect to the Newhaven approach channel were made to NPP:

- *Take further steps to reduce the silting of the eastern side of the approach channel.*
- *Carry out a formal risk assessment with regard to vessels entering Newhaven approach channel in a variety of wind and tidal conditions.*

In November of the same year, *Sardinia Vera* grounded again. This incident resulted in a preliminary examination from which the Chief Inspector of Marine Accidents made the following recommendations to NPP:

- *The introduction of procedures to ensure that depths in the approach channel, and other areas prone to silting, are frequently monitored.*
- *Increasing the frequency of dredging operations in the approach channel.*
- *The adoption of measures to reduce silting.*
- *The prompt dissemination of depth information.*
- *The production of written operational procedures.*

As the depositing of silt was considered to be neither linear nor seasonal, NPP's subsequent risk assessment determined that surveying should be conducted monthly and following periods of bad weather. To this end, following *Sardinia Vera*'s first grounding on 1 February 2002, NPP procured its own surveying equipment consisting of a Garmin GPS, to obtain position, and a Garmin fishfinder, to establish depth, both being interfaced to a laptop computer and printer for local chart production. Completed charts were to be reproduced in OSGB 36 datum, and distributed to the master of each vessel, the Transmanche Ferries operations manager, and the Newhaven senior pilot, tug master and port manager.

The surveying equipment was delivered in late September 2002 but, as neither the harbourmaster nor crew had received any training in its use, it had not been put into operation at the time of *Sardinia Vera*'s second grounding on 20 November 2002. On 24 September 2002, the harbourmaster had informed the pilotage committee that the second pilot boat needed to be returned to service to mitigate poor serviceability of the No.1 pilot boat and to provide an additional platform from which to operate the surveying equipment. The pilotage committee agreed. The second pilot boat was expected to return to service in July 2003, however, at the time of this investigation it had still not returned to service.

Since 2002, both the pilot boat and surveying equipment suffered regular defects which reduced the frequency of surveys. In 2004, of the required 12 monthly surveys plus any following poor weather, a total of only seven surveys complete with chart reproduction were conducted. This figure included both the pre and post dredge surveys carried out by the dredging contractor.

The latest chart produced by the port authority prior to *Sardinia Vera*'s grounding was dated 10 December 2004. Weather conditions deteriorated in early January 2005 with strong winds from the south through to west direction. In accordance with the NPP risk assessment criteria for surveying, the harbourmaster intended to conduct a survey in early January to establish the extent of silting in the main channel. However, before the survey began, it became apparent that the GPS aerial feeding the survey equipment had been damaged. The equipment was sent for repair and, as a consequence, the intended hydrographic survey was not completed before *Sardinia Vera* ran aground on 11 January 2005.

Following repair to the survey equipment, a survey was conducted on 18 January 2005 which showed extensive silting of the channel **(see Annex J)**. Shortly after this survey, the equipment was again found to be defective and, at the time of this investigation, was still awaiting repair.

1.7.3 Navigable width of channel

Depths stated in this paragraph refer to chart datum.

The navigable channel is charted as 120 metres wide and dredged to 6 metres. A cross-section of the channel at the point where *Sardinia Vera* grounded, taken from the 18 January 2005 survey (7 days after the grounding) showed that at no point did a depth of 6 metres exist. Fifty percent of the width of the channel was 5 metres or less, with 40 percent less than 4.3 metres. The maximum depth was 5.6 metres, and the depth at the position of grounding was 4.0 metres.

The latest information available to the master was from the 10 December 2004 survey which, from the same cross-section, showed the depth at the point of grounding to be 5.6 metres. This survey showed only 25 percent of the channel to have a depth of 5 metres or less, and the maximum available depth was 5.8 metres.

The position of grounding (20 metres to the right of the centreline), had 1.6 metres less water than charted and was 2.0 metres less than the declared dredged depth. With a beam of 19.5 metres and a draught of 5.5 metres, the width of channel available to *Sardinia Vera* at low states of tide had been reduced to three beam widths **(see Figure 4)**.

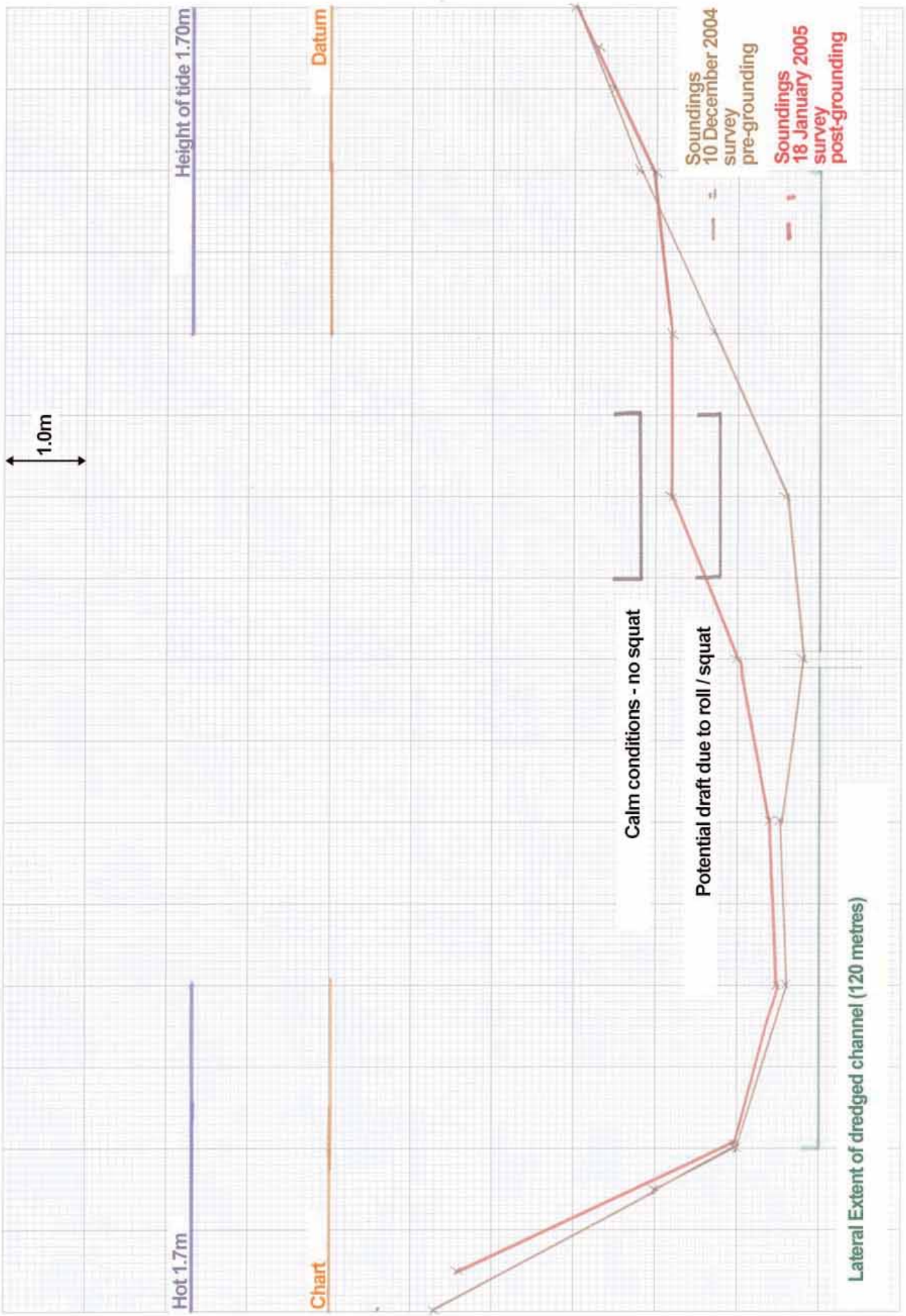
1.7.4 Contacts and collisions

Of the two Transmanche Ferries vessels, *Dieppe* is the only one to have suffered contacts and collisions within the port of Newhaven. These occurred on:

Date	**Event**	**Wind Speed**
25.04.2002	Vessel made contact with 'cut-out' marker piles and east pier knuckle causing material damage (helmsman error).	8-10
14.11.2003	Vessel made contact with east quay.	33-40
19.08.2004	Vessel collided with mv *Uphusan*.	25

A tabulated history of groundings, collisions, and contacts can be found at **Annex A**.

Figure 4


Height of tide 1.70m
Datum
1.0m
Soundings
10 December 2004
survey
pre-grounding
Soundings
18 January 2005
survey
post-grounding
Calm conditions - no squat
Potential draft due to roll / squat
Lateral Extent of dredged channel (120 metres)
Hot 1.7m
Chart

1.7.5 *Dieppe*

The problems *Dieppe* encountered can be summarised as follows:

Entry:

Due to her large above-water area and the narrow channel width, in strong crosswinds *Dieppe* needed to maintain her speed in the main channel to Newhaven in order to minimise her leeway. This required her to reduce speed significantly on approaching east quay, where the speed limit is 5 knots. The strength and direction of the prevailing wind dictated the point at which speed needed to be reduced. Reducing speed too early could result in *Dieppe* being set onto the east quay area of the harbour. Not reducing speed sufficiently could cause interaction between *Dieppe* and vessels moored at east quay. This was determined to be the underlying cause of her collision on 19 August 2004 with the mv *Uphusen*.

Departure:

Before *Dieppe* began operations from Newhaven in early 2002, Transmanche Ferries had been assured that the turning basin between the ro-ro berth and the marina would be increased to allow *Dieppe* to turn round prior to departure. This plan required NPP to purchase additional harbour area in the marina from Seacontainers Ltd. At the time of this investigation, this plan had not been fully realised. Although the 2005 dredging campaign provided the necessary depth of turning basin required, a lack of funds to purchase sea room from the marina had meant that the turning basin was still not large enough to turn *Dieppe*.

The consequence of this has been that since joining the route *Dieppe* has departed from the port stern first until clear of the west breakwater. In strong winds it was necessary for the vessel to conduct a high speed departure to counter the effects of the wind and tide. She grounded on 22 October 2002, and in an attempt to make her exit safer, trials were undertaken using the harbour tug, *Nore Commodore*, to assist *Dieppe*'s departure. The trials were unsuccessful due to the low bollard pull of the tug, and its inability to push on, or act as an anchor when *Dieppe* was travelling at speed.

Minimum Operating Criteria

On 22 October 2003, at a special meeting of the pilotage committee, it was agreed that at wind speeds above 22 knots, *Dieppe* would be required to have the harbour tug standing-by, and that in crosswinds of 30 knots or above she would be prohibited from sailing.

Dieppe collided with mv *Uphusen* on 19 August 2004 while entering harbour with a 25 knot crosswind. The MCA and DfT ports division expressed concerns about the number of incidents in Newhaven involving *Dieppe,* and the harbourmaster subsequently chaired a special meeting on 18 September 2004 to address the issue. The meeting was attended by representatives from the

MCA, the ship manager, the master, and a local pilot, but not by Transmanche Ferries. The aim of the meeting was to examine and agree parameters for the safe entry and departure of *Dieppe* in high wind conditions, and any consequent constraints on vessels berthed at east quay. The limits agreed **(see Annex H)** were proposed by *Dieppe*'s master based on his experience of the port, but no formal assessment was made using windage calculations for the vessel's size. Although ferry movements would be more affected by crosswinds than by head or stern winds, the meeting agreed that the application of variable limits would overly complicate their practical application.

The meeting did not impose limits on *Sardinia Vera* as due to her smaller size she was less affected by the wind and was also able to use the turning basin. However, at interview, *Sardinia Vera*'s master did emphasise that he would not enter Newhaven if the wind speed was above 40 knots.

The port duty supervisor was given responsibility for identifying when the wind strength had reached one of the agreed operating limits. He would then seek approval to impose restrictions from the harbourmaster, who would, in turn, consult the port manager. At the time of this investigation, the agreed minimum operating criteria had been imposed twice on *Dieppe.*

1.7.6 Ship management

Following the preliminary examination into *Sardinia Vera*'s grounding on 20 November 2002, the following recommendations were made to the ship manager:

- *To conduct navigational risk assessments of all ports visited by its ships.*
- *Raising the awareness of the fact that the approach channel to Newhaven is prone to silting.*
- *The provision of operational procedures to ensure an appropriate under keel clearance at all times.*
- *The provision of guidance on the use of voyage data recorders.*
- *The need for periodic confirmation of the accuracy of GPS receivers fitted.*

In response, the ship's manager assessed a minimum height of tide of 1.70 metres was required for *Sardinia Vera* to enter Newhaven. Guidance was promulgated around the fleet instructing on the GPS datum required and the procedures to follow regarding recovery and custody of voyage data recorder information. An analysis of the hydrography of the port was also considered.

1.7.7 New vessels

Transmanche Ferries has two new ferries under construction which are due to begin operating on the Newhaven to Dieppe route in 2006, as replacements for *Dieppe* and *Sardinia Vera*. NPP has not been consulted on the design or dimensions of the new vessels, nor have drawings of the vessels been made available. To date, no risk assessments have been conducted by either NPP or Transmanche Ferries to assess whether the new vessels will be able to operate safely in and out of the port of Newhaven.

1.7.8 NPP Board involvement

NPP Board has responsibility for ensuring safe operations within the port of Newhaven. A representative of the Board was invited to participate in the MAIB's investigation, by attending the recommendations debrief. The date of the debrief was delayed significantly to accommodate the schedule of the representative. On the day, without explanation, the representative failed to attend the meeting.

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

With respect to the grounding on 11 January 2005, *Sardinia Vera* undertook two return crossings daily from Dieppe to Newhaven, and three return crossings over a weekend period. The scheduled programme allowed 2 hours in port for the vessel to complete cargo operations. The manning structure was adequate for the operation, and the qualification levels of the key personnel provided spare capacity to ensure all navigational roles could always be filled.

Fatigue is not considered a contributory factor in the grounding on 11 January 2005, and is not reconsidered here for the other accidents addressed in this report.

2.3 VOYAGE DATA RECORDER

During analysis of the VDR data recovered from *Sardinia Vera,* it was discovered that no radar images had been captured by the VDR for the entirety of the recording on the disk. On further investigation it was discovered that this was caused by a cable not having been properly reinserted following radar maintenance a month earlier.

As the VDR alarm system did not check for such faults, and without the relevant hardware and software to implement a checking regime, both crew and management were unaware the VDR was not recording radar data.

2.4 GROUNDINGS

2.4.1 Silting

That the approach channel to Newhaven was prone to silting, was a well-known problem, the consequences of which were re-affirmed to NPP by the grounding of *Sardinia Vera* on 1 February 2002, and again on 20 November 2002. The MAIB report on the first grounding, and the Chief Inspector's letter following the second grounding, gave recommendations to NPP of the measures to be taken to reduce the risk of further incidents. Consequent to these, NPP conducted a risk assessment **(see Annex I)**, that identified the measures they needed to take. However, beyond the first annual review of the risk assessments in January 2003, there is no evidence that they were formally reviewed following any of the subsequent grounding incidents.

2.4.2 Surveying

The survey routine at Newhaven was developed following MAIB's recommendation that NPP introduce procedures to ensure that depths in the approach channel, and other areas prone to silting, were frequently monitored. The plan involved monthly surveys, with additional surveys after poor weather, from which local charts were produced and distributed to all concerned.

It took 12 months from the first MAIB recommendation for NPP to procure and make operational the survey equipment, during which time a further grounding and one near grounding occurred. Even then, the local charts were produced to OSGB 36 datum, limiting their usefulness for navigation. Thereafter, that there was only one, unreliable set of surveying equipment whose availability was further reduced by poor pilot boat serviceability, resulted in significant gaps between monthly surveys and no recorded additional surveys following poor weather. Further, no evidence was found of commercial surveyors being contracted to cover these gaps, or of any urgency to restore the second pilot boat to service.

On 11 January 2005, had the master of *Sardinia Vera* been in possession of either the monthly survey for January, or one conducted following bad weather (as the harbourmaster intended), he would almost certainly have increased his required height of tide, and this grounding could have been avoided.

The surveying regime was introduced by NPP specifically to monitor the 'unsafe condition' of the approach channel depth reducing to an unknown extent due to silting. The importance of this monitoring measure was identified in NPP's risk assessment but, ultimately, despite 9 ferry groundings in less than 4 years, NPP failed to make their risk management measures effective.

2.4.3 Safe operating criteria

Had all concerned acknowledged that the actual depth in the Newhaven approach channel was unknown, measures could have been taken that would have increased safety margins. These measures should have been applied until either the charted depth was restored by dredging, or the actual depth established and promulgated by surveying and charting.

In the *Sardinia Vera* grounding incident on 11 January 2005, the master took action to avoid what he assessed to be the high risk area, but this was ineffective.

2.4.4 Under keel clearance

On 11 January 2005, *Sardinia Vera*'s master timed his approach to achieve a height of tide that would result in approximately 2 metres UKC, on the assumption that he could keep to the west side of the channel and, in doing so, avoid the area most likely to silt. This 2 metre clearance consisted of a 1 metre

allowance for ship-roll due to weather, plus the standard port and company requirement for a 1 metre UKC. No additional allowance was made to mitigate the effect of possible silting following the recent bad weather.

2.4.5 Navigation aids

Neither the centreline, nor the limits of the approach channel to Newhaven, are marked by dedicated navigation aids, and the pilots and PEC holders rely on local knowledge of ad hoc transits to assess their position in the channel. During interview, *Sardinia Vera*'s master acknowledged that it was difficult to monitor the ship's position in the channel relative to the intended track. Both he and the harbourmaster opined that navigation safety could be improved by provision of additional navigational marks or aids, though they had different views as to what these should be. Given the paucity of navigation marks marking the approach channel, an issue recognised by the master, the decision to base *Sardinia Vera*'s UKC on his ability to accurately navigate by visual methods in one part of the channel appears unsound.

2.4.6 Approach

The approved Newhaven passage plan recommends that the southern end of the main channel is approached on a heading between 020° and 040°; passing the west breakwater light at 0.4 cables; and then turning port to steady in the main channel on a heading of 348°. The initial 020°-040° heading varies dependent upon the prevailing wind and tide conditions.

Sardinia Vera was not fitted with an electronic chart display, and was navigating using conventional techniques. Thus, due to the absence of fixed navigational aids within the channel boundaries, it was difficult for the master to monitor and adjust *Sardinia Vera*'s progress through the turn. Steadying on the centreline of the channel was further hampered by the effect of the tide and wind catching the quarter as the bow entered the shelter of the breakwater, and the consequent need to counter the induced swing.

2.4.7 Summary

In this incident, it is assessed that the master, allowing insufficient UKC, contributed more to the grounding of *Sardinia Vera* than did her positioning in the channel. Nonetheless, an approach to the main channel that allowed a vessel to be steady on the centreline of the channel before entering restricted waters, with fixed navigation aids[3] that allowed her to accurately monitor her position relative to the centre of the channel, would markedly improve the safety of the approach to Newhaven.

In this event, despite the extensive history of silting and consequent groundings at Newhaven, and the recent bad weather, none of NPP, Transmanche Ferries, or V.Ships Leisure imposed operating restrictions that mitigated the risk to the ferries on 11 January 2005 of unknown, but possibly reduced channel depth.

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[3] Improvements could include: the use of a centreline transit and / or sectored head marks, piles marking the relatively stable western side of the channel, and shore transits marking the channel extremities.

2.4.8 Dredging policy

Notwithstanding that provision of accurate depth information provides for safety, frequency of dredging remains the single most important factor in ensuring that a safe navigable channel is maintained in Newhaven and that the ferries are able to keep to schedule.

Dredging at Newhaven is expensive, currently in excess of £250,000 per dredge, and over the past decade the frequency of dredging has been kept to the minimum necessary to keep the port operational. On the re-introduction of a scheduled ferry operation in 2001, the cycle consisted of one dredge per annum and it was only after the groundings in 2002 that a depth-monitoring regime was implemented.

The ability of Transmanche Ferries to maintain a competitive and cost effective sailing schedule was directly related to the depth and width of the main channel at Newhaven. Only when the schedule became untenable because of unacceptable arrival and departure times for the ferry operating company, did NPP consider instigating a dredging campaign. In essence, dredging was driven more by financial constraints than the need to maintain safe navigation.

This policy is difficult to justify following a risk-based assessment, and appears contrary to the philosophy and the requirements contained within the PMSC, especially when the number of grounding incidents since 2002 is considered.

2.5 *DIEPPE* INCIDENTS

2.5.1 Size of *Dieppe*

From the ferry operator's perspective, a larger, faster ferry which increases route capacity is commercially desirable. However, during interview none of NPP staff could recall being consulted prior to the introduction of *Dieppe* to the Newhaven-Dieppe route, nor of any risk assessment being conducted before she began operations.

That *Dieppe* drew more water than *Sardinia Vera,* was acknowledged, and to allow her to operate from Newhaven at all states of tide the channel depth was increased to 6 metres during the next dredge.

Evidence from Transmanche Ferries indicates recognition of the fact that the 'turning basin' in Newhaven was too small for *Dieppe*, and was therefore identified as a constraint. However, they had confirmation from NPP that it would be enlarged before the ship commenced operations. In the event, the turning basin was not extended and *Dieppe* commenced operations, departing the harbour stern first. Finally, no-one recalled consideration being given to *Dieppe*'s greater windage, and therefore her increased vulnerability to crosswinds compared to *Sardinia Vera*.

Most of her groundings aside, three types of incident have befallen *Dieppe* in Newhaven:

- Insufficient room in the turning basin to turn *Dieppe* for departure has resulted in her leaving the port stern first. In high crosswinds, this has proved hazardous and, on one occasion, while slowing to release the tug, she was blown sideways out of the channel and grounded.
- On one occasion, *Dieppe* entered Newhaven during high crosswinds from the south-west and, on slowing to approach the berth, was blown sideways, making contact with the eastern side of the harbour.
- On one occasion, *Dieppe* entered Newhaven in a high crosswind, maintaining a high speed to counteract the effect of the wind. The interaction of her passing east quay caused another vessel to be sucked away from her berth into a collision with *Dieppe*.

2.5.2 Were the risks of operating *Dieppe* monitored?

That *Dieppe* was to be the largest vessel to operate out of Newhaven for some years appears not to have triggered any pre-emptive risk assessment. Instead, issues were addressed incrementally following each incident. Where risk management measures were implemented, these usually followed discussions by the pilotage committee. However, the formal safety management system risk assessments did not appear to have been amended or updated, nor is there any evidence that *Dieppe*'s operations at Newhaven have been systematically monitored.

2.5.3 *Dieppe* - operating criteria

On 22 October 2002, *Dieppe* grounded, having exited Newhaven stern first and slowed to release the tug, the accident being caused by strong crosswinds. However, it was not until a year later, on 22 October 2003, that a special pilotage committee meeting was convened to agree the imposition of operating restrictions for the port.

That meeting decided that the harbour should be closed at wind speeds in excess of 50 knots and that, when departing in wind speeds greater than 22 knots, *Dieppe* would have the harbour tug standing-by. Trials were commenced with *Nore Commodore* to establish whether she could run with *Dieppe* during departures, ready to assist as necessary, but were stopped when it was determined that the tug had not the speed, power or manoeuvrability to assist effectively. At that point, no further attempts were made to enhance the safety of *Dieppe* exiting the port, and NPP's attention turned back to enlarging the turning basin.

Dieppe contacted with east quay on 14 November 2003, and subsequently collided with mv *Uphusen* on 19 August 2004, following which her master, the harbourmaster and MCA all voiced concerns about her entering Newhaven in poor weather conditions. A special meeting was held on 18 September 2004, at which additional wind and tide limits were agreed to constrain *Dieppe*'s movements in and out of Newhaven. Responsibility for applying these criteria was vested in the port duty supervisor, however, a subsequent requirement, not mentioned at the meeting, required him to consult the port manager through the harbourmaster, before imposing any restrictions on *Dieppe*.

Summary

It took three accidents, over a period of 22 months, for NPP to finally define wind and tide criteria to restrict *Dieppe*'s entry to and departure from Newhaven. During this time, no efforts had been made to improve the utility of the harbour tug, and the turning basin had still not been made available to *Dieppe*. The suitability of the vessel to safely operate a scheduled programme from the port is therefore questionable.

2.5.4 Improving future safety

At interview, the port manager, harbourmaster and senior pilot all expressed the view that *Dieppe* was too large to operate into Newhaven. That, at the time of this report, Transmanche Ferries was in the process of procuring two new vessels, reportedly of similar size to *Dieppe*, to start operations on the Dieppe-Newhaven route, is of concern. Further, there has been no consultation of NPP by Transmanche Ferries over the size, power, propulsion or operating patterns of the new vessels; nor any risk assessment of their operations conducted by the port.

2.6 HARBOUR TUG

The harbour tug, *Nore Commodore*, has been called out to assist on several grounding incidents involving Transmanche Ferries' vessels. On nearly every occasion, the tug has proved ineffective in assisting the vessel aground. Constrained by the prevailing weather conditions and an effective bollard pull of only 13 tonnes, the tug is of little practical use to the ferries. As already discussed, trials of the tug assisting *Dieppe*'s departure from the port proved unsuccessful, due to lack of sea room and the tug's limited manoeuvrability.

In accordance with PSMC guidance, NPP has considered tug requirements and their use in mitigating risk as part of their risk assessment process. However, the ability of *Nore Commodore* to fulfil the requirements specified in NPP's port safety management manual is questionable.

2.7 NEWHAVEN PORT SAFETY MANAGEMENT

2.7.1 NPP Management

The PMSC is explicit on the duties of a port, and also that these duties are the responsibility of the duty holder – in this case, the board of NPP - each of whom is:

> *"..individually and collectively responsible for the proper exercise of their authority's legal duties"*.

The board of NPP is entitled to delegate the running of the port to the port manager, but

> *"..may not abdicate accountability on the grounds that they do not have particular skills".*

The NPP Port Safety Management Manual Section 1.2 **(see Annex G)** articulates these responsibilities as they pertained to the NPP board. Despite this, the port manager has difficulty engaging board members in discussion of major safety and operational issues. He encounters similar difficulties seeking support and financial resources to progress the port maintenance programme. It is notable that a key position in NPP's management structure, the assistant port manager, has remained vacant for a considerable period of time.

Some of these difficulties are almost certainly a consequence of SEML's motives for purchasing NPP in the first instance, compounded by the possible hurdle of persuading local French councils to invest significantly in a foreign port. However, in devising a management structure in which the roles of port manager, company safety manager and designated person (independent safety advisor to the board) were combined, the board of NPP deprived itself of a source of advice crucial to the effective discharge of their statutory duties.

The PMSC is specific in specifying that the function of the designated person is to provide

> *"..independent assurance to the 'duty holder' that the safety management system is working effectively".*

The port manager does not fulfil this requirement, as he is not independent. However, in a small company with insufficient staff for the role of designated person to be discharged internally, the PMSC offers alternative ways of achieving the same effect. One such alternative is to employ external auditors to fulfil the same function.

The one external safety audit of the PMSC, conducted by consultants in January 2003, examined only those issues in the code relating to the safety implications of the Port Safety Management System (PSMS). Although the audit commented on the port's responses to the MAIB report into the *Sardinia Vera* grounding 01

February 2002, it did not thoroughly examine, and comment on, the maritime safety policy of the port or review the detail of the procedures in place.

From the frequency of incidents affecting Transmanche Ferries at Newhaven, and the port's slow and incomplete actions to prevent further incidents, the MAIB has 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.

It is perhaps indicative of the Board's failure to understand its responsibilities for safe operations, that the Board representative has failed to participate in the MAIB investigation.

2.7.2 PMSC status

It was an early aspiration of NPP to be accredited with having implemented the PMSC. However, the groundings of *Sardinia Vera* in 2002, and the port's reaction to the consequent MAIB recommendations, had raised concerns in both DfT Ports Division and the MCA over the port's ability to achieve the required standards. Throughout 2003 and into early 2004, the MCA provided advice to NPP, mainly by correspondence but including one key meeting on 14 November 2003, and received assurances from NPP in return that appropriate action was being taken. It was on the basis of these assurances that the MCA was required to determine whether NPP was demonstrating the necessary commitment to ensure conformity with the code; and in its letter to NPP of 3 March 2004, the MCA confirmed that NPP had been recognised as having fully implemented the PMSC.

This investigation has found that with respect to both the control and monitoring of the approach channel depth, and the operating restrictions imposed on Transmanche Ferries' vessels using the port, the risk control measures achieved fell well short of the requirements articulated in the port's risk assessments and affirmed to the MCA. The voluntary nature of the PMSC constrained the MCA to relying on the port's assurances when judging compliance with and implementation of the PMSC, and consequently a number of serious safety shortcomings in the port were not addressed.

Had the MCA been able to more closely monitor the application and implementation of the PMSC at Newhaven, these shortfalls could have been identified early, and appropriate rectification measures introduced to maintain standards of safety.

2.7.3 Training

The Port Safety Management Manual lays specific responsibilities on the port manager to ensure that

> *"..risk assessments are completed, control measures established and updated"*;

and, on the company safety manager (in NPP, the same person) to ensure the

> *"..harbour master receive(s) suitable information and training to allow (him) to discharge (his) duties in a competent manner"*.

In evidence, it became apparent that the harbourmaster had received no training in his role as harbourmaster, or in carrying out and reviewing risk assessments in his dual role as port safety manager.

The one formal NPP maritime risk assessment, dated January 2003, available to MAIB, identified the following risks central to this report:

- *Less than charted depths appearing in any part of the pilotage area.*
- *Navigating in a mixed depth pilotage area, narrow channels and strong tidal streams.*
- *Ship movement during adverse weather conditions.*

All risks were identified as moderate, and the control measures required were specified.

That the risk assessment was not updated annually or after each incident, nor amended to show the further control measures discussed and approved by the pilotage committee, implies that the risk assessment process was not adequately understood or applied at Newhaven.

2.7.4 Risk management

From the minutes of the pilotage committee meetings passed to MAIB, there is evidence that the committee did, albeit often belatedly, discuss and address many of the incidents uncovered during this investigation and identify appropriate control measures.

However, the MAIB has identified an extensive list of late, failed, or partially implemented risk management / risk control measures, specifically:

- Delay in purchasing surveying equipment and lack of training for operators – 1 year delay
- Unreliable surveying equipment – ongoing problem
- Lack of a second survey launch (No.2 pilot boat) – 3.5 year delay and still unavailable.
- Turning basin not large enough for *Dieppe* – 3.5 year delay and still unavailable.

The list indicates that the pilotage committee had limited effectiveness as a safety forum.

2.7.5 Scheduling constraints

General cargo vessels operating in and out of the port routinely plan their times of arrival and departure to coincide with high water. Consequently, with less draught than the ferries, and deeper water available, the risk of their grounding within the channel is considerably smaller. Conversely, the two ro-ro passenger ferries *Sardinia Vera* and *Dieppe,* with considerably deeper draughts, greater windage areas, and fixed operating schedules to maintain, could be considered to be at increased risk of grounding.

2.8 PREVIOUS INCIDENTS

2.8.1 Response by ship managers

In November 2001 during a routine inspection, the MCA found several deficiencies onboard *Sardinia Vera* and, as a consequence, the vessel was restricted to a cargo only service. The MCA lifted the restriction in December 2001.

The analysis carried out by the ship managers of *Sardinia Vera* after the grounding on 20 November 2002 stated that:

> *'in their opinion the depth below chart datum on the eastern half of the channel is inadequate to ensure the regular passage of Sardinia Vera at all times as the 4 metre contour is well into the boundaries of the eastern half of the channel.'*

And concluded that:

> *'to ensure a safe passage into Newhaven the vessel required a minimum height of tide of 1.70 metres, or to reduce the timing between maintenance dredging operations in order to provide a channel depth close to that quoted on BA Chart 2154.'*

Although the ship managers promulgated revised operating guidelines, and *Sardinia Vera* subsequently operated with a minimum height of tide constraint, they did not communicate with the port to fully assess the risks that the vessel was encountering and having to manage. Furthermore, the ship managers had not questioned the port's procedures for maintaining a safe navigable channel for their vessel, and had apparently accepted that her five groundings in 4 years were a necessary consequence of the operating pattern.

2.8.2 Reporting of accidents

It is extremely disappointing to note that 2 ferries operating a regular service to a UK port have failed to report 6 accidents to MAIB as required by the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999. Under the new Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, there is now an obligation on the owner of the ferry and the harbour authorities also to report any accidents.

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:

Grounding:

- Beyond the first annual review of the risk assessments in January 2003, there is no evidence that the assessments were formally reviewed following any of the subsequent grounding incidents. [2.4.1]

- It took 12 months from the first MAIB recommendation for NPP to procure and make operational the survey equipment, during which time a further grounding and one near grounding occurred. [2.4.2]

- Due to having only one set of surveying equipment and a single surveying launch, both of which were frequently defective, the surveying regime identified in NPP's risk assessment was ineffective, resulting in significant gaps between surveys. [2.4.2]

- The importance of the surveying regime was identified in NPP's risk assessment yet, despite 9 ferry groundings in less than 4 years, NPP did not take steps to make the surveying regime effective. [2.4.2]

- The lack of fixed navigation aids made it difficult for vessels to monitor, and so adjust, their turn into the Newhaven approach channel [2.4.6], and to navigate accurately within it [2.4.5]. Improving the fixed aids to navigation would likely, therefore, improve the safety of the approach to Newhaven. [2.4.7]

- Once it was clear the channel depth was unknown, additional control measures should have been applied to the Transmanche Ferries' vessels until either the charted depth was restored by dredging, or the actual depth established and promulgated by surveying and charting. [2.4.3]

- Frequent dredging remains the most effective way of ensuring that a safe navigable channel is maintained in Newhaven and that the ferries are able to keep to schedule. The current dredging policy, therefore, is difficult to justify from a risk-based approach, and appears contrary to the philosophy and the requirements of the PMSC. [2.4.8]

Operation of *Dieppe*:

- No risk assessment was conducted before *Dieppe* began operations from Newhaven. [2.5.1]

- That the turning basin was not made available to *Dieppe*, has avoidably increased the risk to the vessel when departing Newhaven. [2.5.1, 2.5.3]

- Transmanche Ferries has not consulted NPP over the size, power, propulsion or operating patterns of the new vessels; nor has any risk assessment of their operations been conducted by the port. [2.5.4]

- The harbour tug appears inadequate to support *Dieppe*'s current pattern of operation. [2.6]

- The suitability of *Dieppe* to safely operate a scheduled programme from the port of Newhaven is questionable. [2.5.3]

Port management:

- The management structure does not allow for a source of independent safety advice to the board of NPP, which is therefore deprived of a source of information crucial to the effective discharge of their statutory duties. [2.7.1]

- The board of NPP has taken insufficient steps to implement a safety regime sufficient for the safe operation of the current scheduled ferry service. [2.7.1]

- Had the MCA been able to monitor more closely the application and implementation of the PMSC at Newhaven, many safety shortfalls could have been identified early, and appropriate rectification measures introduced. [2.7.2]

Risk assessment and management:

- That the risk assessment was not updated annually or after each incident, nor amended to show the further control measures discussed and approved by the pilotage committee, implies that the risk assessment process was not adequately understood or applied at Newhaven. [2.7.3]

- The pilotage committee had limited effectiveness as a safety forum. [2.7.4]

Previous incidents:

- The ship managers have not questioned the port's procedures for maintaining a safe navigable channel for their vessel, and have apparently accepted that the five groundings were a necessary consequence of the vessel's operating pattern. [2.8.1]

- Two ferries operating a regular service to a UK port have failed to report six accidents to MAIB as required by the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999. [2.8.2]

VDR manufacturers:

- The VDR alarm system did not alert the operator to the system's failure to record radar data. [2.4]

SECTION 4 - ACTION TAKEN

4.1 DREDGING

Subsequent to the grounding on 11 January 2005, NPP awarded a contract to Westminster Dredging for dredging the main approach channel and the inner harbour. The operation was undertaken in March 2005 and took 2 weeks to complete. A survey undertaken by the contractor on completion of the dredging operation, to confirm the depth of the approach channel, showed that the area on the eastern side, which is particularly prone to heavy silting, had a depth slightly less than the 6.0 metres requested. The remainder of the channel had been increased to a minimum of 6.0 metres throughout.

4.2 REPORTING OF ACCIDENTS

The chief inspector has written to NPP and to the owners of both ferries informing them of the requirement under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 for them to report all accidents to the MAIB.

4.3 INVESTIGATION BY BEAMer

The Bureau d'enquêtes sur les évènements de mer (BEAMer), the French counterpart to the MAIB, has been conducting a parallel investigation into three other accidents involving *Dieppe*. In accordance with the IMO Code, BEAMer and MAIB have kept in close touch during their investigations. BEAMer intends to publish its report later in the autumn; however it has been consulted on the findings of this report, and fully supports the MAIB recommendations at Section 5, which are consistent with its own emerging recommendations.

SECTION 5 - RECOMMENDATIONS

Newhaven Port and Properties, Transmanche Ferries, V Ships Leisure and **D'Orbigny Ship Management** are 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.

The Maritime and Coastguard Agency is 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.

Newhaven Port and Properties is 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 manager[4] to implement such safety measures as he considers necessary to ensure that safety of navigation at Newhaven is maintained.

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

The **Department for Transport** is 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.

Marine Accident Investigation Branch
September 2005