Report on the investigation of

the contact between

Pride of Provence

and

The Southern Breakwater,

Dover Harbour, eastern entrance

on

18 April 2003

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

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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 1999 is to determine its circumstances and the causes with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

NOTE

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

CONTENTS

GLOSSARY OF ABBREVIATIONS AND ACRONYMS

ARPA	-	Automatic Radar Plotting Aid
DGPS	-	Differential Global Positioning System (satellite navigator)
DHB	-	Dover Harbour Board
EDH	-	Efficient Deck Hand
GPS	-	Global Position System (satellite navigator)
knots	-	nautical miles per hour (speed)
kW	-	kilowatts (unit of power)
m	-	metre
PEC	-	Pilotage Exemption Certificate
UK	-	United Kingdom
UTC	-	Universal Co-ordinated Time
VDR	-	Voyage Data Recorder
VHF	-	Very High Frequency (radio)
VTS	-	Vessel Traffic Services
WGS 84	-	A standard datum for geographic positions

SYNOPSIS

Pride of Provence, a ro-ro passenger ferry with 641 persons on board, made heavy contact with the end of the southern breakwater at the eastern entrance to Dover Harbour on 18 April 2003 at 1724. It was daylight, the weather was good and the visibility clear. There was a strong north-easterly wind and a southerly flowing tidal stream across the entrance. Twenty-eight passengers and crew suffered minor injuries, and two suffered major injuries in the accident, and the vessel was extensively damaged above the waterline.

At the time of the accident, the ferry was approaching the port, having completed one of her regular cross-Channel passages from Calais. The vessel's master had the con and he was supported by a full team of officers and ratings. The master intended to turn his vessel as he passed between the breakwaters, and then to run down the inside of the eastern arm before swinging and securing stern-to on No 2 ro-ro berth. However, his heading at the end of his approach to the entrance, was such that, as he turned the vessel, her stern collided with the end of the southern breakwater. The sideways impact made furniture and fittings overturn, and it threw some passengers and crew to the deck. Their injuries were caused in falling or because of the movement of loose furniture or fittings.

The principal cause of the accident was poor communication and passage planning, and disorientation of the master. Although the master briefed his bridge team on his intended approach and pre-berthing manoeuvre, the briefing was rudimentary and did not give key team members the information they needed to monitor the approach. The master's approach was not planned in detail and was flawed: he did not show positive control of the navigation, and did not allow sufficiently for the effects of the tidal stream and wind.

As a result of their own internal investigations, both P&O Ferries and Dover Harbour Board have initiated actions to avoid similar accidents in the future. Recommendations arising from the MAIB investigation are aimed at improving the passage planning and communication on board P&O Ferries, and at improving port control procedures and infrastructure available to assist masters during the approach to the Port of Dover.

Photograph courtesy of P&O Ferries

Pride of Provence

Photograph 1

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *PRIDE OF PROVENCE* (Photograph 1) AND ACCIDENT

Vessel details

Manager(s)	:	P&O Ferries Ltd
Port of registry	:	London
Flag	:	UK
Type	:	Ro-ro cargo/passenger ferry
Built	:	Dunkerque 1983
Classification society	:	Lloyds
Length overall	:	154.89m
Breadth (moulded)	:	28.4m
Gross tonnage	:	28,559
Passenger/Cargo Capacity	:	2,036 passengers, 530 cars or 84 articulated lorries
Engine power and/or type	:	4 x V12 Sulzer diesels. Total power 25,612kW
Bow Thruster	:	2 x Lips each 2,000kW

Accident details

Details	:	Vessel made heavy contact with the southern breakwater
Time and date	:	1724 (UTC+1) 18 April 2003
Location of incident	:	Dover Harbour, eastern entrance
Persons on board	:	489 passengers and 152 crew
Injuries/fatalities	:	30 injured
Damage	:	Substantial above water level damage to vessel's port quarter and minor damage to southern breakwater

1.2 BACKGROUND

Pride of Provence

Pride of Provence is one of several cross-Channel ro-ro passenger ferries operated by P&O Ferries Limited out of Dover. The ferries operate between Dover and Calais on a continuous service throughout each day carrying passengers and their vehicles and freight. The crossing time is about 1.5 hours and the turn-round time is 45 minutes. P&O Ferries Limited also operates other ferry services in the North Sea and Western Channel.

Pride of Provence was formerly named *Stena Empereur* and, before that, *Stena Jutlandica*, and was operated on Scandinavian routes. She moved to the Dover/Calais service in 1994. In 1998, the vessel was renamed *P&OSL Provence* at the formation of the joint venture company, P&O Stena Line. She became *Pride of Provence* when P&O took full control of P&O Stena Line and renamed the company P&O Ferries.

The officers and deck crew on board *Pride of Provence* are salaried employees of P&O Ferries (Bermuda) Ltd and they work a one week on/one week off routine. There are two masters on board all the time, one of whom is on duty. The command passes between night- and day-masters at approximately 0600 and 1800 each day. A senior master is designated for each vessel in the fleet. Significant management responsibilities are delegated to the senior masters.

Photograph courtesy of Port of Dover Photograph 2

Dover Harbour showing a ferry departing the eastern entrance

Dover is a busy ferry port with over 130 ferry arrivals and departures through the eastern entrance each day. Fast craft including monohulls and catamarans also use the port, generally through the western entrance. Dover also has commercial dry cargo berths with vessels predominantly using the eastern and western entrances, and it is a popular destination for passenger cruise vessels. In summer it is a base and destination for yachtsmen and pleasure craft, which may use either entrance **(Photograph 2)**.

The Dover Harbour Board (DHB) has responsibility for the safety of navigation and the protection of the environment within the Port of Dover and its seaward limit of 1 mile from the harbour breakwaters.

The Marine Operations Department, in compliance with the Port Marine Safety Code, supervises all waterborne activity and operations within the port. The department regulates and monitors, via Dover Port Control (the Vessel Traffic Service (VTS) station), the movement of all vessels, including the ferries, small sailing dinghies, cargo vessels and cruise liners up to 100,000 tonnes. The VTS service offered at Dover is that of “Traffic Monitoring” which is the highest recognised standard of service.

Pilotage within the Port of Dover is compulsory for all vessels over 80m in length, in accordance with a direction made under Section 7 of the Pilotage Act of 1987. The Marine Operations Department has the responsibility to oversee the licensing of pilots and the issuance of pilotage exemption certificates (PECs).

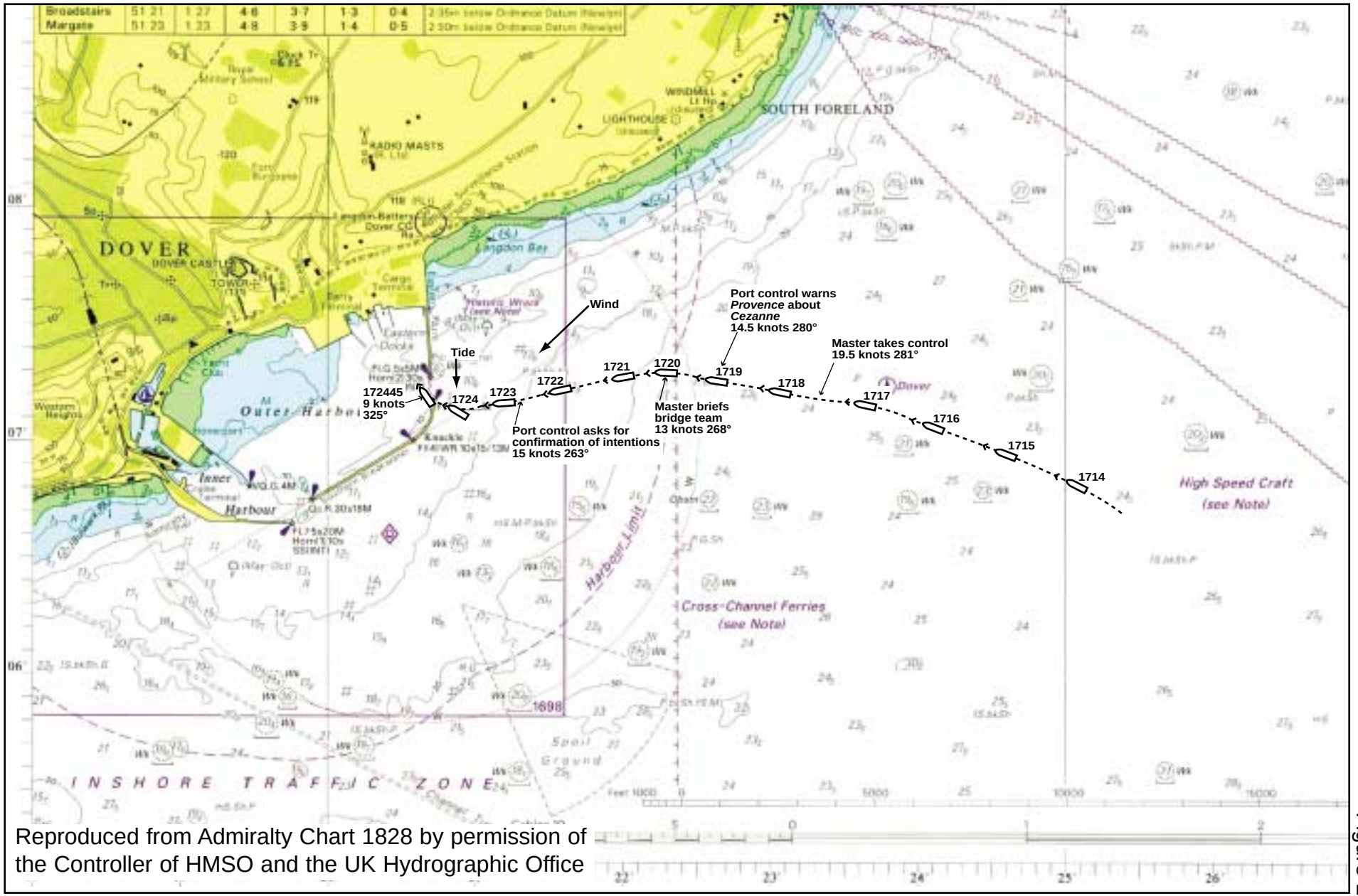
1.3 NARRATIVE

All times are UTC +1

Pride of Provence left Calais for a regular Channel crossing to Dover at 1558 on 18 April. She cleared the harbour and was full away on passage at 1617. The chief officer had the con during the crossing and two quartermasters were present on the bridge to assist him.

The crossing was uneventful and the weather was fine. The master came to the bridge in preparation for arrival and, at 1713, the vessel reached Point Alpha (the designated reporting range of 3 miles from Dover Harbour entrance). In accordance with port procedures, the chief officer informed Dover Port Control of *Pride of Provence*’s approach.

Port Control gave *Pride of Provence* permission to close to 1 mile and told the vessel that *Seafrance Cezanne* still had to berth and *Pride of Aquitaine* would be leaving. *Pride of Provence* was told that her berth would be No 2 and that Port Control would call back. Her speed at this time was about 19.5 knots **(see Figure 1)**.



Reproduced from Admiralty Chart 1828 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 1

At 1715, the chief officer informed the master that they were closing to 1 mile but had to wait because of other vessel movements and that he was expecting Port Control to call back with more information.

At about 1718, when the vessel was due east of, and about 2 miles from, the harbour entrance, the master took the con from the chief officer. The vessel was heading about 280° and making about 19 knots over the ground. The master reduced the pitch of the propellers to reduce the vessel's speed.

At about 1719, Port Control called *Pride of Provence* and told the vessel "*I've got Cezanne in the bay swinging through east for No 6. If you would like to run into the bay now and* [then] *carry on to No 2 when you see your way clear from the Cezanne"*. The master told the chief officer to reply to the effect that they would wait for *Seafrance Cezanne* and then run down the arm. Port Control acknowledged the fact that they would wait for *Seafrance Cezanne.* The vessel's speed was reducing and she was still heading about 280°.

At 1720, the master gave a briefing to the bridge team which, by this time, consisted of the chief officer, a second officer, a cadet and two quartermasters (one steering and one keeping a lookout). Additionally, a supernumerary master was on the bridge to observe the ship-handling manoeuvre. The master told his team that it was 4½ hours after high water, that it was slack water where they were but that the tidal stream would be flowing to the south across the harbour entrance. His intention was to go through the middle between the breakwaters and to not get closer than 30m (100 ft) from either one. He then said that his intention, once inside, was to run down the arm (down the inside of the eastern breakwater) and turn through west for No 2 berth. He instructed the second officer to take the stabiliser fins in when they were ½ mile off. By that time the speed had reduced to about 13 knots over the ground.

One of the quartermasters took up a lookout position on the port bridge wing, the chief officer was standing on the port side of the central control console immediately behind one of the two ARPA radars. The other quartermaster was steering from the wheel position. The second officer was completing the pre-arrival checklist and, in his place, the cadet took up a lookout position on the starboard bridge wing overseen by the second officer. The supernumerary master stood behind the master who was, himself, standing immediately behind the starboard ARPA radar at the central control console. The master was giving helm orders to the quartermaster in the form of landmarks/features to steer towards. Just after 1720, he ordered the helmsman to steer towards the middle of the entrance and then, a bit later, towards the end of the southern breakwater. At about 1721, he increased the pitch of the propellers.

At 1722, the chief officer told the master that they were ½ mile from the entrance and making 17 knots **(Figure 1A)**. At this time *Seafrance Cezanne* was still manoeuvring off Nos 3/4/5 berths in preparation to berth in No 6. *Pride of Provence* was still on a heading towards the end of the southern breakwater of about 260°. The master reduced the propeller pitch.

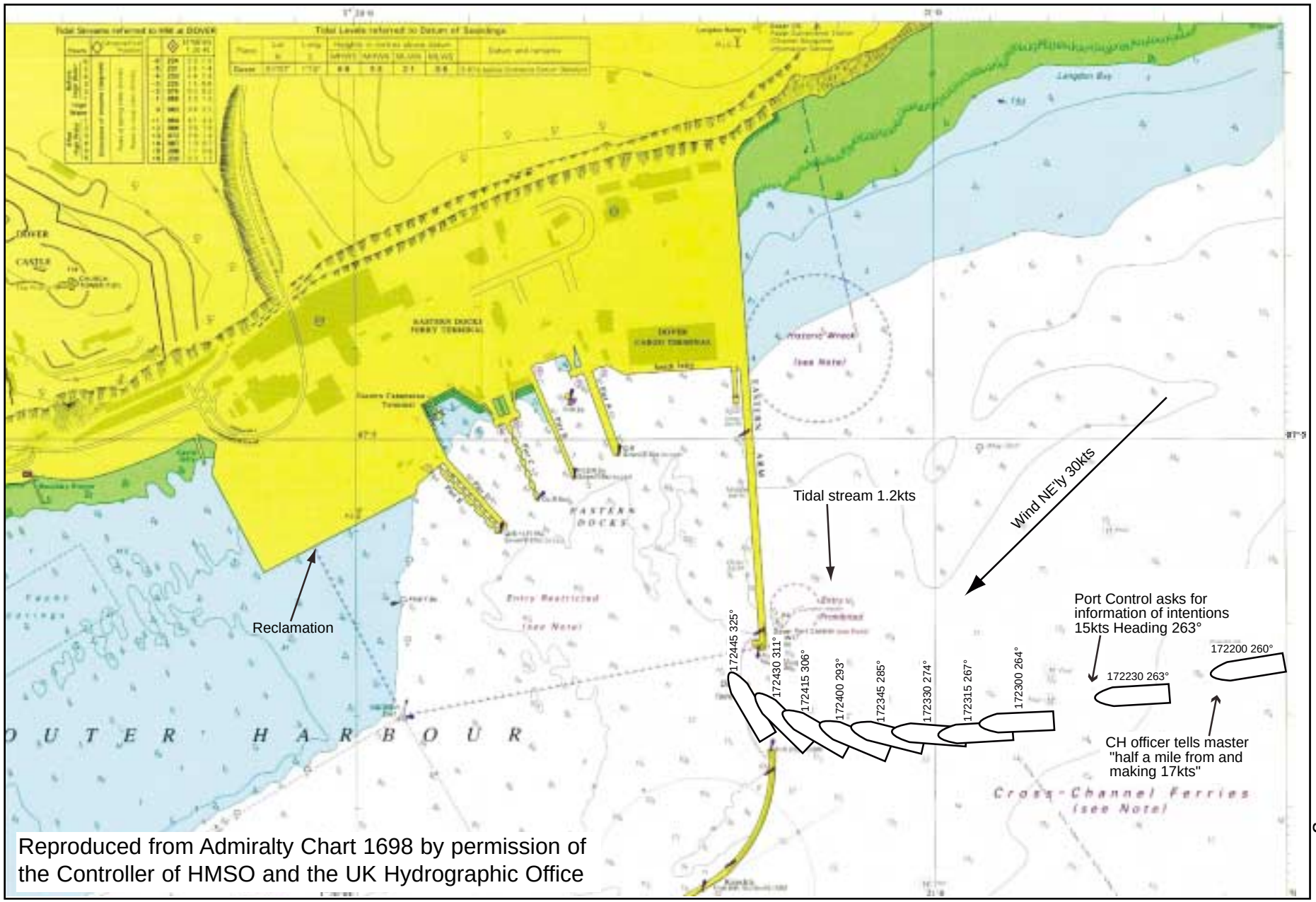

Tidal stream 1.2kts
Wind NE'ly 30kts
Reclamation
Port Control asks for information of intentions 15kts Heading 263°
172445 325°
172430 311°
172415 306°
172400 293°
172345 285°
172330 274°
172315 267°
172300 264°
172230 263°
172200 260°
CH officer tells master "half a mile from and making 17kts"
OUTER HARBOUR
Cross-Channel Ferries (see Note)
Reproduced from Admiralty Chart 1698 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 1A

A little later, Port Control called *Pride of Provence* and asked her to confirm her intentions. The master confirmed that it was his intention to run down the arm and turn through west. Port Control then reminded *Pride of Provence* that *Seafrance Cezanne* had only just started to move astern into her berth.

At 1723, the master started a swing to starboard as *Pride of Provence* neared the entrance. The vessel was making about 13 knots over the ground. He told the helmsman to steer towards the end of the reclamation and then, a few moments later, to steer half way along the reclamation and then towards Pier Delta.

At 1724, the vessel was swinging to starboard with 20° of starboard rudder applied. Her approximate heading was 293° and her bridge was about 150 m due east of the end of the southern breakwater **(Photograph 3)**. The master appeared frustrated by the slow progress being made by *Seafrance Cezanne* but did not change his plan - he decided to continue to "*cut inside and come round*". He ordered the helmsman to steer towards Pier Charlie (further to starboard).

Photograph 3

The end of the Southern Breakwater

About 15 seconds later, the master increased the propeller pitch and increased the turn by telling the helmsman to steer to Pier Alpha and then "*on the funnel of the freight ship*". By this time the vessel's bridge was through the line of the breakwaters, having passed through the entrance close to mid- way and heading to the north-west. The stern was swinging rapidly towards the end of the southern breakwater under the influence of 30° of starboard rudder. The quartermaster, who was posted on the port bridge wing, told the master a number of times that the port side was clear or "*running clear*".

At 1724:30 the master asked again for clearance information from the port wing and was told "*we are starting to close a bit"*. He immediately asked for confirmation and was told *"we're closing on the end"*.

The master ordered hard-to-port but the rudder only had time to reach 5° to port before there was a heavy contact between the vessel's port quarter and the end of the southern breakwater. The time was 1724:45 and the heading at that moment was about 325°. The vessel's heading had still been swinging rapidly to starboard.

A number of passengers and crew were thrown to the deck; chairs and tables were overturned and stock was thrown from the displays in the duty paid shopping area **(Photographs 4 & 5)**. At least 30 passengers and crew were injured.

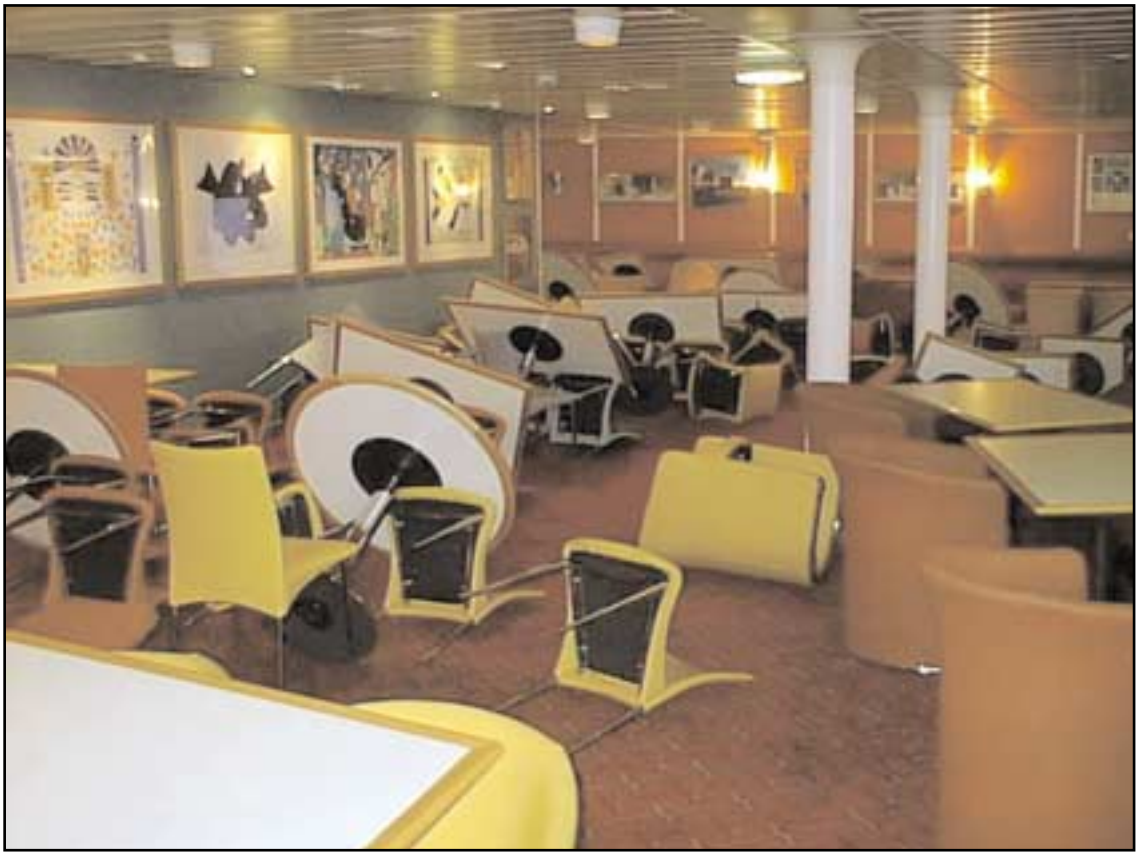
The master requested a damage report from the after mooring team and Port Control was told of the incident. The purser started the ship's purser's contingency plan which deals with injured passengers and passenger control in an unusual situation, and crew first-aiders were asked to go to the information desk. Soon afterwards, first-aid trained crew members started circulating in the passenger areas to assess the passenger injuries and tend those needing assistance.

The vessel had been substantially damaged above the waterline **(Photograph 6)**. She was manoeuvred into the bay and she subsequently berthed safely under her own power. Tugs were needed to keep the stern alongside as the collision had damaged the hydraulic motors which served the after mooring winches. The vessel was met on the quayside by paramedics and nine of the injured were taken to hospital for further treatment and observation.

1.4 ENVIRONMENTAL CONDITIONS

At the time of the accident it was daylight, the visibility was good and the sea state moderate in sheltered conditions. The wind was north-north-easterly 24 knots gusting to 33 knots. High water at Dover had been at 1257. It was a time of spring tides and the ebb tidal stream, running south across the harbour entrance, was measured at 1.6 knots at 2m depth and 1.2 knots at 4m depth **(see Figure 2)**.

Photograph 4



Overturned tables

Photograph 5

One of the shops after the accident

Photograph 6

Damage to port quarter

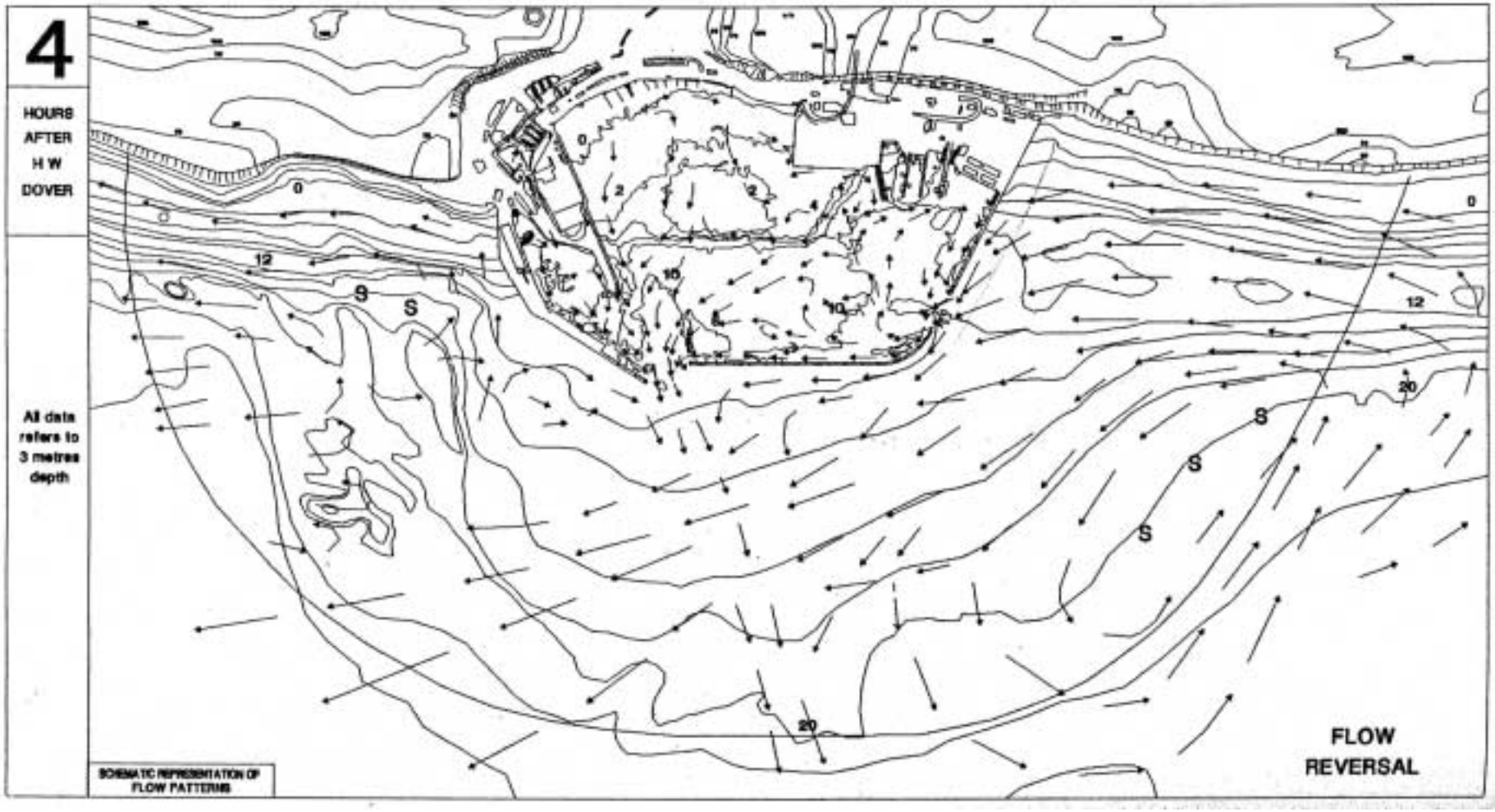


Figure 2

The tidal streams at about 1700

1.5 THE BRIDGE TEAM

The bridge team consisted of the master, chief officer, second officer and two quartermasters. In addition, there was a cadet and a supernumerary master on the bridge at the time of the accident.

The master held a Class 1 certificate of competency. He had served on cross-Channel ferries since 1975 and had first gained command in 1989. He had been a permanent master on *Pride of Provence* for 3 years. He held a valid PEC for *Pride of Provence* in the Port of Dover. He had completed Bridge Resource Management training a few years previously and had had his bridge operation assessed by P&O Ferries' management under its Command Assessment Scheme some time before the accident. At the time of the accident he had the con, which he had taken from the chief officer at 1717:30. He had been conning the vessel standing at the centre control console by the starboard ARPA radar.

The chief officer held a Class 1 certificate of competency. He had worked for P&O/Stena Sealink since 1994. Before this he had been a chief officer with Sally Line ferries for 10 years. He had worked aboard *Pride of Provence* since December 2002. He held valid PECs for *Pride of Provence/Dover/Calais* and had been doing much of the ship handling during the day of the accident. He had been relief master of one of P&O's ro-ro freight ferries before joining *Pride of Provence*. As officer of the watch (OOW), his role on the bridge during pilotage operations included monitoring the master's actions and handling communications.

The second officer held a Class 3 certificate of competency, which he had obtained in 2000. He had started his career in the Royal Navy before transferring to the merchant service as a deck rating in 1998. He had started work with P&O Ferries in 2000 as a third officer, and had been promoted to second officer a year later. He was on duty between 0600 and 1800 on the day of the accident. During that time, his duties varied in that he was: in charge of the loading during two of the crossings; in charge on the bridge for two crossings; and carrying out administration duties for one crossing. On the crossing in question, he had come to the bridge when the vessel was about 6 miles from Dover, to start to carry out the pre-arrival checks. Additionally, his duties included maintaining the lookout on the starboard bridge wing as the vessel approached and passed through the entrance, and also ensuring the stabiliser fins were retracted as instructed. During the approach to the harbour entrance, he had delegated the starboard lookout duties to the cadet.

The quartermaster helmsman was an experienced seaman who had been quartermaster on *Pride of Provence* since 1996. At the time of the accident he was steering from the wheel position carrying out orders given by the master. Steering instructions were usually given as courses to steer until approaching the harbour entrance when landmarks or other features were used.

The quartermaster lookout had worked at sea on Stena Line Ferries since 1991. He had started in the catering department and was working as a chef before he transferred to the deck department about 2 years before the accident. He had obtained an efficient deckhand's (EDH) certificate about a year before the accident. He was a relief quartermaster, having asked to carry out quartermaster's duties to get more bridge experience. He was undertaking an NVQ level 3 distance learning course towards gaining a Class 3 certificate of competency. He had been posted to monitor clearances on the port side of the vessel as she entered the harbour. He had carried out this role a number of times previously.

Neither the cadet nor the supernumerary master had an official role in the bridge team but, for a time, the cadet was delegated the responsibility of starboard lookout while the second officer was busy with his other duties. The supernumerary master was on the bridge specifically to observe the manoeuvring of the vessel. He had been on board since early in the morning, with a view to gaining some experience of the vessel's handling characteristics over a two or three day period. He had been master of other ferries in P&O's fleet. He had a valid PEC for Dover and was to take over as a permanent master on *Pride of Provence* later in the month.

1.6 FATIGUE, DRUGS AND ALCOHOL

The Dover Harbour Board police tested the master's breath for alcohol, with his agreement, soon after the accident. The test proved negative. There is a strict no-alcohol policy for the officers and crew on board P&O Ferries.

There is no evidence to suggest that drugs, either illicit or medicinal, paid any part in this accident.

The master had joined the vessel 2 days before the accident, having been on leave for a week. His duty hours had been between 0600 and 1800 each day. During the day, he was, generally, able to take sporadic periods of rest. At 1800, he handed the command to the night master and, therefore, had no responsibility for the vessel during his off-duty hours. The weather had been good and there had been no undue disturbance during his off duty hours. He had slept well on the night before the accident. Although he had been on duty for 11½ hours at the time of the accident it is not thought that he was unduly fatigued. Fatigue was not, therefore, a factor in this accident.

1.7 THE BRIDGE

The large, totally enclosed bridge on *Pride of Provence* was situated 21m from the bow of the vessel. The bridge was well equipped with instrumentation and controls. There were two manoeuvring consoles, one on each bridge wing, as well as a navigation console, an engineering console and a large central control console **(Photograph 7)**. The bridge equipment included two Decca Bridgemaster ARPA radars; a Robertson adaptive autopilot; a Leica Differential Global Position System (DGPS) navigator; and a Raymarine Global Position System (GPS) navigator. A Broadgate voyage data recorder (VDR) was fitted and working at the time of the accident. The Raymarine GPS and the starboard radar were interfaced with the VDR. The Raymarine GPS was set to operate using WGS 84 as the datum.

Photograph 7

The central console

At the time of the accident, the master was conning the vessel from a position by the starboard radar at the central control console; the chief officer was next to him by the port radar. A quartermaster was steering from the wheel position and another quartermaster was acting as lookout on the port bridge wing. The second mate had joined the cadet on the starboard bridge wing and the supernumerary master was standing behind the master.

The master had limited peripheral vision from his position and he had no view astern. He therefore relied on radar and information from the lookouts concerning anything close to the vessel on either side and anything abaft the beam. It was difficult to get a clear perception of the rate of turn from the central control position because it was so far forward and had no view astern.

1.8 FLEET REGULATIONS

P&O Ferries provided comprehensive Fleet Regulations which, among other things, contained guidance relevant to aspects of the bridge team management involved in this accident. Additionally, Ship's Standing Orders, which are aligned to the Fleet Regulations, amplified the regulations in a number of relevant areas.

The Fleet Regulations most relevant to bridge resource management and navigational routines for port arrivals are included as an annex to this report **(Annex 1)**.

These orders:

- Effectively ensure that the master is present on the bridge in good time before arrival, to enable him to fully assess the traffic, tide and weather situation and to take in any other relevant factors.

- Indicate that the master must make use of this information when planning the manoeuvre he intends to use for his approach.

- Lay down the form of a briefing which the master must give to the bridge team before arrival. The instructions indicate, in particular, that the briefing must allocate specific duties to the bridge officers, taking into account their relative levels of experience. It should include a discussion of the passage plan, predicted tidal conditions, traffic situation and other relevant factors as well as containing definitive instructions to the helmsman and lookouts.

- Are also directed at the officer who is to assist the master, telling him to closely monitor the navigation and safety of the ship during manoeuvring and, in particular, to support and assist the master by ensuring that:

    - relevant information is given about the ship's situation and performance in relation to her immediate environment; and,

    - the orders given, and use of the engines/steering/thrusts/anchors, are appropriate to the situation and consistent with the pre-manoeuvre briefing. Where there is doubt, clarification should be sought immediately.

In addition, a Fleet Directive issued on 29 November 2001 **(Annex 2)** explained that the master's briefing, given on departure or arrival, must include the clearing distance he intends to maintain between the vessel and the pier(s) during the vessel's pier head transits. The same directive also reinforced the instructions to the officer monitoring the master's actions, saying that he must report to the master any deviation from the planned track.

As stated earlier, in addition to the Fleet Regulations, Standing Orders, which are specific to the ship, reinforced many of these instructions.

1.9 PASSAGE PLANNING

A voluntary separation scheme is operated by the ferries on the Dover/Calais/Dunkerque routes, such that Dover-bound ferries take a more easterly route across the main shipping lanes, and a clear separation zone of 1 mile is maintained between Calais- and Dover-bound ferries. To avoid end-on conflict with Dunkerque-bound ferries from Dover, P&O also include in its Ship's Standing Orders a requirement to apply a separation line 1.5 miles to the north of the separation zone **(see Figure 3:** The chart in use).

Courses to be followed, which comply with the voluntary separation scheme, are included in a pre-prepared passage plan which was in use on *Pride of Provence* on the day of the accident **(see Figure 4)**. It can be seen from the passage plan that after a position 358° and 2.3 miles from South-West Goodwin light float, the courses constituting the approach to the harbour entrance are not prescribed and are left to the master's discretion. No account is taken in the passage plan of the requirement to apply the extension separation line.

Dover-bound P&O ferries, having crossed from Calais using the voluntary separation scheme including the additional 1.5 mile separation line, will arrive at Point Alpha (3 miles off the harbour entrance) in a direction just to the south-of-east from the eastern entrance. Thereafter, the approach to the harbour entrance will vary according to the wishes of the particular master, pilot, or PEC holder, bearing in mind the tide and wind conditions, the destination berth, other traffic movements and the required pre-berthing manoeuvre. Some of the information, particularly the destination berth, may not be known to the master until communication is established with Port Control at Point Alpha.

A requirement for masters to communicate their passage plan for the approach and berthing manoeuvre to the rest of the bridge team during the pre-arrival briefing is included in Fleet Regulations and Ship's Standing orders. The master made no reference to his intended track and the direction of approach during his pre-arrival briefing to the bridge team.

The chart in use on *Pride of Provence* at the time of the accident **(Figure 3)** shows a course of 265° for the final approach to the entrance. No positions were marked on the chart and it is not known whether this course was relevant to the particular voyage in question.

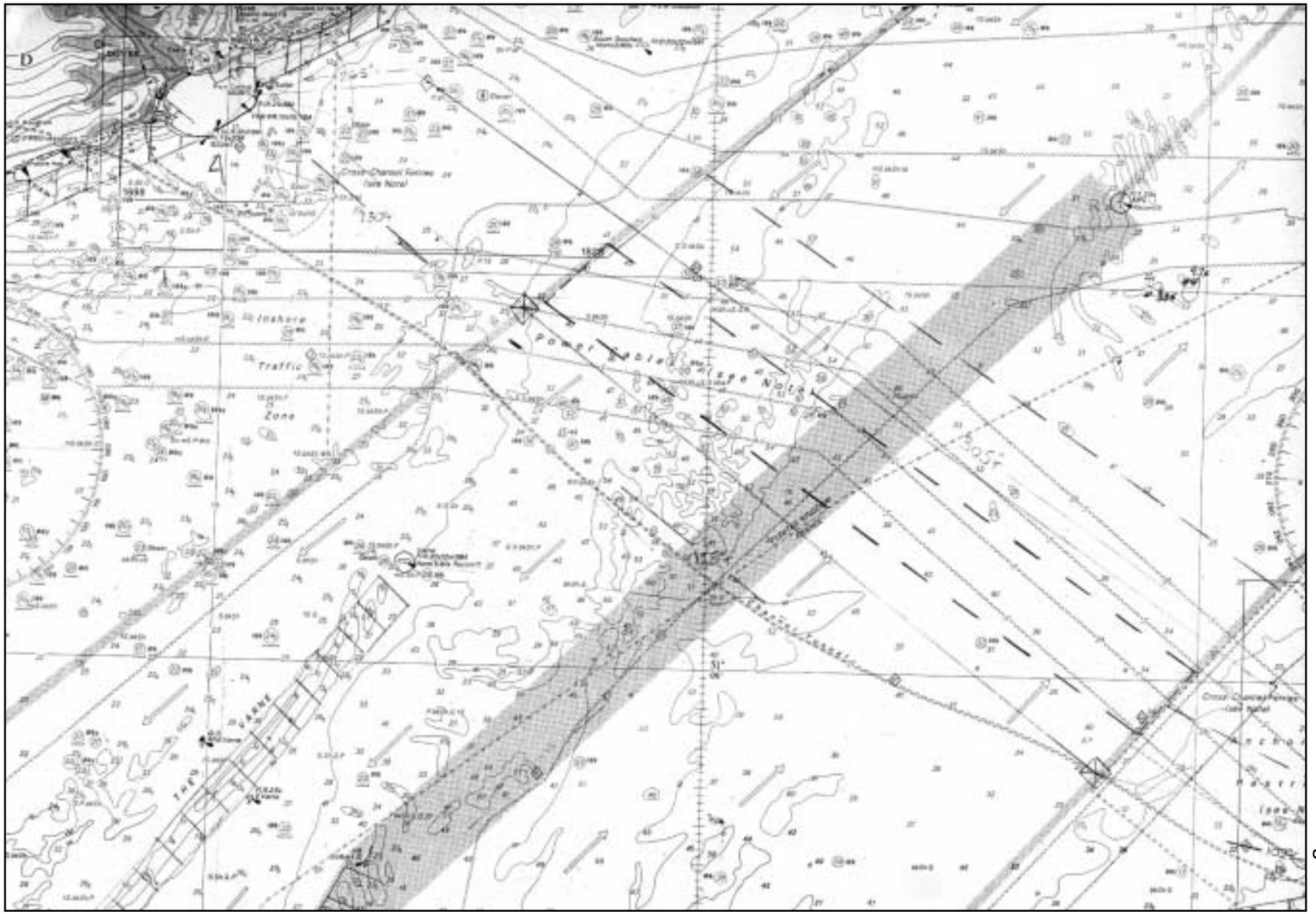
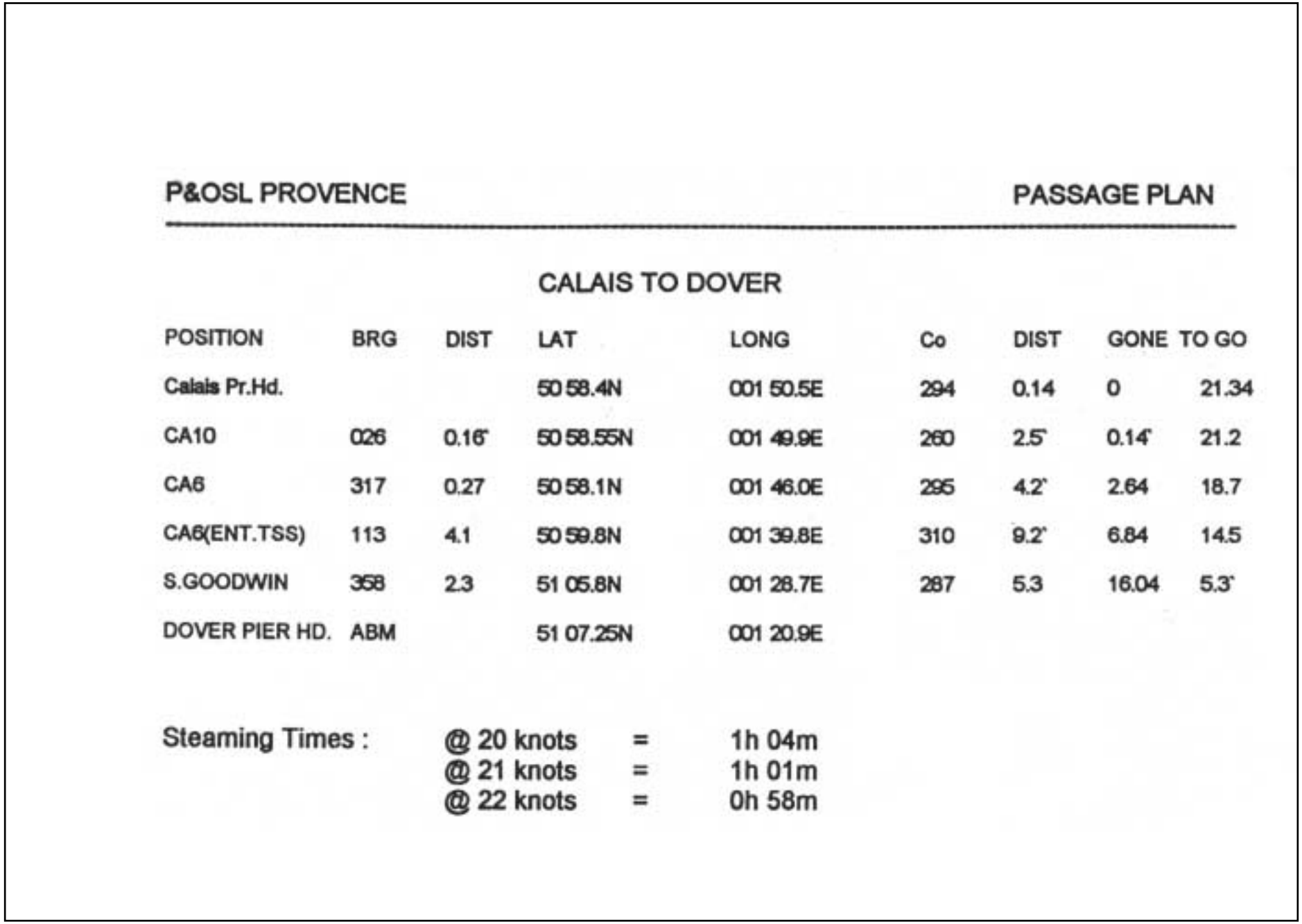


Figure 3

Copy of the chart in use at the time - showing voluntary separation scheme and some courses



P&OSL PROVENCE PASSAGE PLAN

CALAIS TO DOVER

POSITION	BRG	DIST	LAT	LONG	Co	DIST	GONE	TO GO
Calais Pr.Hd.			50 58.4N	001 50.5E	294	0.14	0	21.34
CA10	026	0.16'	50 58.55N	001 49.9E	260	2.5'	0.14'	21.2
CA6	317	0.27	50 58.1N	001 46.0E	295	4.2'	2.64	18.7
CA6(ENT.TSS)	113	4.1	50 59.8N	001 39.8E	310	9.2'	6.84	14.5
S.GOODWIN	358	2.3	51 05.8N	001 28.7E	287	5.3	16.04	5.3'
DOVER PIER HD.	ABM		51 07.25N	001 20.9E				

Steaming Times :

@ 20 knots	=	1h 04m
@ 21 knots	=	1h 01m
@ 22 knots	=	0h 58m

Figure 4

Passage plan Calais to Dover

The actual track of the vessel as it approached the eastern entrance, derived from the VDR recording, can be seen on the plots **(Figures 1 & 1A)**. It can be seen that the track makes a gentle "S" shape as the vessel approaches the entrance.

Neither P&O nor Dover Harbour Board give guidelines to ferry masters on a recommended approach in good visibility. However, the company has issued a blind pilotage plan for use in poor visibility, which involves an approach to the entrance following a track of 270°. This is based on guidance given by Dover Harbour Board. The ship's Standing Orders include instructions to practice the blind pilotage plan in good conditions.

1.10 PORT CONTROL

The Port of Dover, through the VTS Station (Port Control), manages all traffic movements in and around the port out to a seaward limit of 1 mile from the harbour entrances. In managing the traffic movements, Port Control gives advice and directions to masters, pilots and PEC holders concerning the intentions of other traffic, the environmental conditions, the allotted destination berth and any other geographical information that may be relevant. Arriving vessels must have permission from Port Control to proceed closer than 1 mile from the entrance. Except in the case of an emergency, Port Control officers do not advise on how a particular direction should be carried out. The responsibility for the safe manoeuvre of a vessel and her control always rests with the vessel's master, who must continue to handle the vessel in accordance with good seamanship. Relevant directions include a speed limit of 12 knots while passing through the eastern entrance.

Dover Harbour Board promotes the use of passage planning, and general plan guidance has been established covering simple port entry. This is also elaborated for particular berths, ship sizes, cargoes, conditions, tidal constraints, tug allocation etc. The passage plans and port guidance is supplied to ship's agents and, via them, made available to visiting ships' masters. In general, the ferry operators are excluded from this practice because of the extensive experience of their masters and PEC holders.

Port Control requires arriving vessels, including ferries, to report when 3 miles from the entrance. At this time the ferry will be advised about which berth has been allocated, given relevant information as described above and may be given permission to proceed into the harbour. In most circumstances they will be given permission to close to 1 mile and to await a further call from Port Control. The subsequent call from Port Control will usually give permission to enter the harbour and the pre-berthing manoeuvre will be agreed. The Navigational Information and Port Procedures provided by Dover Harbour Board clearly state that ferries must not encroach closer than 1 mile unless permission to continue to close has been given. Even so, no vessel must close to less than 0.5 mile without permission to enter the harbour.

1.11 SHIPBOARD EMERGENCY HANDLING

1.11.1 Initial response

Pride of Provence was carrying 489 passengers and 152 crew members on the crossing to Dover. At the time of the accident the passengers were dispersed over the two passenger decks.

Immediately after the vessel had struck the breakwater, and before an announcement was made from the bridge, the vessel's purser started the emergency action plan **(Annex 4:** Purser's Contingency Plan**)**. A call was made over the public address system from the information desk for crew first-aiders to gather at the information desk. Six on-duty first-aiders, of the thirteen on board *Pride of Provence,* were then despatched around the vessel to determine numbers of injured and the seriousness of injuries.

A brief announcement was made by the master requesting passengers not to panic and that first-aiders were circulating in the passenger areas to assist those who were injured.

Further announcements were made by the purser requesting department managers to report to the information desk to ensure that all vessel areas had been checked and reported clear of injured passengers or crew; those on the bridge were then given the updated information. One doctor responded to the request for a medical professional's help.

Initially about five passengers were found to have injuries, but, as passenger areas were checked, more injured passengers were located and the final total became 19. The effect of the collision was felt most at the after end of the vessel. The passengers in this area were more prone to suffer panic and shock. In general, the injuries suffered by crew members were more serious than those of the passengers. Many of these were caused by being thrown against ship's unyielding equipment, such as machinery and galley fittings. There were nine injured crew members.

For many of the passengers and crew, this was a traumatic and distressing experience.

1.11.2 Evacuation of the injured

Pride of Provence berthed at 1740 and was met by paramedics who had been notified of the accident when the emergency action plan was started. Within 6 minutes, three ambulances had arrived on scene, and 20 minutes later an air ambulance had arrived.

The most seriously injured were taken to hospital by ambulance, while those less affected travelled ashore by bus or using their own transport.

1.11.3 Injuries

Most of the injuries among passengers and crew occurred at the aft end of the vessel, between the bureau-de-change and the shop, where the impact of the collision was greatest.

Injuries to passengers ranged from concussion and shock, to sprains and bruising. The injuries occurred when the passengers were thrown to the deck, against a bulkhead/partition or when ship's equipment, in one instance a door, was thrown against them. One passenger was taken to hospital and stayed overnight.

Injuries to crew members included one with broken ribs, one with a broken wrist, blows to the head, lacerations and bruising. Eight crew members were taken to hospital, none stayed overnight.

1.11.4 Passenger feedback

Two forms of questionnaire were developed, one for the injured passengers and one for the crew. A blank copy of each questionnaire is included at **Annex 3**.

The MAIB has used questionnaires on many occasions, and in this case, 14 questionnaires from a total of 30 injured passengers and crew were completed and returned to the MAIB, giving a response rate of 46.6%. Of the 19 passengers injured, 8 replies were received, and 6 replies were received from the 11 injured crew members.

Of the passengers who returned questionnaires, six were female and two were male. Three vacated the vessel using a bus supplied by P&O, two by their own cars, two on coaches, one on foot and one by ambulance. One passenger stayed in hospital overnight for observation. Five said they heard the passenger announcements clearly after the accident, two said it was not clear, and one did not hear it at all.

Passenger comments included the following:

"Took a few minutes to say that boat was safe and that we were not in any immediate danger. If it helps, the ship's crew were fantastic. It seems that their training was 100% efficient and valuable and they knew exactly what to do".

"After impact, chaos reigned and the crew seemed to be running around like headless chickens asking if people were all right and when told "No" nothing happened. No medically trained personnel aboard ….. there had been no training of the crew in the event of a disaster".

"I think everything possible was done to assist those who were injured. Chairs and cold drinks were brought forward to those fallen, the area cordoned off and deck mopped up from broken wine bottles. We were assisted to an area for details to be taken. I would like to thank staff for their prompt action and attention".

"Felt 'dumped' by P&O. No staff to meet on arrival. Felt very uneasy on stairs going to car deck".

Of the crew members who returned questionnaires, five were taken to hospital by ambulance.

Crew comments included the following:

"Why was there no tannoy [warning call before the collision] *for a collision, considering we were in great visibility and good sea conditions"?*

"If the crew had gone to Muster (General Emergency), I would have been found a lot sooner than I was".

"Our stores is only manned by one man on the night shift. If an accident like this happened again and he was injured, how long would it be until he was found"?

"Not enough first-aiders in my opinion".

It should be borne in mind that these replies have been received from a very small proportion of the total passengers and crew carried. Further, these persons were those most affected by the collision. Their strong views should be read in this context and not be taken as representative.

1.12 THE DAMAGE SUSTAINED

The collision with the southern breakwater of the eastern entrance to Dover harbour caused considerable damage to the port quarter of *Pride of Provence.* The impact left damage in a perpendicular line, indicating a direct blow rather than a glancing one. The hull and superstructure between frames 1 and -11 from deck 2 to deck 8 were most severely affected **(Photograph 6)**.

Specific damage included:

- an emergency escape hatch and access ladder crushed and impassable;
- hydraulic pump and pipework damage with hydraulic oil loss which prevented the after mooring winches from being used;
- damage to a fire door and its frame;

- buckling of deck plates at several levels;
- dents and tears to the shell plating and belting.

Additionally, in the public rooms and crew spaces, various display cabinets, refrigerated units, loose equipment such as tables and chairs, and a considerable amount of goods in the duty paid shop were dislodged. These items caused injuries to crew members and passengers, and provided hazards from broken glass.

On the vehicle deck, cargoes had shifted within lorries causing an uneven weight distribution. The lorries needed to be restowed once ashore.

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 THE ROLE OF PORT CONTROL

At 1713, when 3 miles off, *Pride of Provence* was told by Port Control that her berth was to be No 2 and she was asked to close to 1 mile because both *Seafrance Cezanne* and *Pride of Aquitaine* were still manoeuvring in the harbour **(Figure 5)**.

When Port Control called back at 1718, *Pride of Provence* was given permission to *"run into the bay"* and wait for *Seafrance Cezanne*. The "bay" as used in this expression, is the area within the harbour to the north-west of the southern breakwater. If *Pride of Provence* had run into the bay, the normal manoeuvre would have been for her to have stopped, waited for *Seafrance Cezanne* to berth, and then have turned through east before berthing herself. The master considered Port Control's message and decided to wait for *Seafrance Cezanne* to berth before entering and running down the arm and turning through west. This manoeuvre entails turning to the north while passing through the entrance, and then following the line of the eastern arm just inside the harbour. It is a common manoeuvre for either *Pride of Provence* or *Pride of Aquitaine* to perform if they are required to berth at No 2 or 3 berths. Port Control confirmed its understanding that *Pride of Provence* preferred to wait for *Seafrance Cezanne* to berth.

The situation regarding the vessel's permission to enter is complicated at this stage. She had clearly been given permission to enter and run into the bay to wait for *Seafrance Cezanne* but had chosen to wait outside. The Navigational Information and Port Procedures provided by Dover Harbour Board clearly state that ferries must not encroach closer than 1 mile unless permission to continue to close has been given. Even so, no vessel must close to less than 0.5 mile.

Pride of Provence continued to close the harbour entrance while *Seafrance Cezanne* was having difficulty manoeuvring in the strong north-easterly winds. Port Control asked *Pride of Provence* to confirm her manoeuvre at 1722, when the vessel was about 0.5 mile from the entrance. When the master confirmed his intention to run down the arm, Port Control warned him that *Seafrance Cezanne* had only just started to run astern into her berth. *Pride of Provence* replied that she would continue to close slowly. The master had just reduced the pitch of the propellers and the vessel was slowing at this time.

TRANSCRIPT OF PORT CONTROL AUDIOTAPE NO: 16 RELATING TO "PROVENCE" INCIDENT AT 1724hrs ON 18th APRIL 2003.

TIME	P.C./SHIP	MESSAGE
1701hrs	"Cezanne"	"Cezanne" Point Alpha, Captain No: 33.
	P.C.	"Dawn Merchant" leaving now and "Aquitaine to sail in 10minutes, close to 1 mile and call me back.
1706hrs	P.C.	"Cezanne" Port Control.
	"Cezanne"	Port Control "Cezanne".
	P.C.	Would you like to run into the Southern Part of the Bay, possible "Aquitaine" to sail before you berth.
	"Cezanne"	Thank you I run into the Bay.
	P.C.	I'll call you back, how do you intend to swing for No 6.
	"Cezanne"	I intend to swing off the berth through East for No 6.
	P.C.	Understood through East, just run into the Bay for the moment and I'll call you back.
	"Cezanne"	O.K.
1708hrs	"Aquitaine"	5 minutes, Masters No: 199.
	P.C.	"Aquitaine" 5 minutes.
1711hrs	"Cezanne"	P.Control ,SeaFrance "Cezanne".
	P.C.	"Cezanne", Port Control.
	"Cezanne"	Is the "Aquitaine" ready to leave.
	P.C.	Standby Sir, "Aquitaine" Port Control.
	"Aquitaine"	"Aquitaine" are you calling Sir.
	P.C.	Yes affirmative, situation Sir.
	"Aquitaine"	We are just coming on top line.
	P.C.	Top line now Sir, is that correct.
	"Aquitaine"	Ramp clear, mooring party in attendance we are top line.
	P.C.	"Cezanne" running into the Southern part of the Bay, when you see your way clear you may proceed Eastern.
	"Aquitaine"	We may proceed when "Cezanne" clear.
	P.C.	"Cezanne" Port Control.
	"Cezanne"	Copy, I will run into the Southern part of the Bay.
	P.C.	When the "Aquitaine" is clear proceed to No 6.
	"Cezanne"	Acknowledged.
1713hrs	"Provence"	Port Control "Provence".
	P.C.	"Provence" Port Control.
	"Provence"	Point Alpha, PEC No: 163.
	P.C.	Close to 1 mile for the moment, got the "Cezanne" in the Bay to berth and the "Aquitaine" leaving, call you back.
	"Provence"	We will close up to 1 mile.

	P.C.	You will be for No 2.
	"Provence"	We will be for No 2.
1714hrs	"Aquitaine"	"Aquitaine" leaving the berth.
1718hrs	P.C.	"Provence" Port Control.
	"Provence"	Port Control "Provence".
	P.C.	I've got the "Cezanne" in the Bay swinging through East for No 6. If you would like to run into the Bay now and carry on to No 2 when you see your way clear from the "Cezanne".
	P.C.	"Provence" did you copy.
	"Provence"	Yes we will wait "Cezanne" to berth and we will enter go round to near the arm and berth in No 2 after.
	P.C.	O.K. you would rather wait for "Cezanne" to berth No 6.
1722hrs	P.C.	"Provence" Port Control.
	"Provence"	Port Control "Provence".
	P.C.	Just confirm your intended manoeuvre.
	"Provence"	Running down the arm and swinging through West.
	P.C.	Down the arm through West, understood. I've got the "Cezanne", well she's only just started to run astern for No 6 now.
	"Provence"	O.K. we will close slowly.
1724hrs	"Provence"	Port Control "Provence".
	P.C.	"Provence" Port Control.
	"Provence"	We come round hard to port and we contact the South Pier Head.

It appears that, at this time, the master was taking the responsibility for ensuring his entry was safe with respect to the other traffic movements and that Port Control's role was to keep the master informed. That the master chose to carry on with his intention to run down the arm, despite *Seafrance Cezanne* not being clear, concerned Port Control, but they took no action. It is clear that had *Pride of Provence* not contacted the harbour entrance a potentially dangerous situation would have arisen with *Seafrance Cezanne*. Port Control procedures should have prevented such a situation arising.

It is apparent from this accident that the ferry's intended manoeuvre is critical information when deciding whether to grant permission to enter the harbour. To provide greater clarity in future it is recommended that this be clearly established before permission is granted.

2.3 THE APPROACH

It can be seen from **Figure 1** (plot of the approach) that the track taken by the vessel during the approach formed a gentle "S" shaped curve from about 2 miles off the entrance. It appears that the master intended the vessel to start the passage through the eastern entrance on a heading to the north-of-west and to turn the vessel further to the north to "*run up the arm*" as she passed through. He was expecting to be taken to the south by the tidal stream which flows strongly across the eastern entrance, and had probably positioned the vessel to the north of the entrance during the approach when 1 mile off to allow for this. However, using the VDR records, and comparing the vessel's heading with course over the ground, it can be seen that the tidal stream did not have much effect during the approach. The master ordered the helmsman to steer to the south of the entrance and he increased speed at just before1721, presumably to get the vessel in position for the final approach he required. This is hard to understand because he knew that as the vessel closed the entrance, the tidal stream would become progressively stronger. At 1723, the vessel was making good a course of 261° on a heading of 264° at a speed of 13.4 knots, she was about 2.5 cables off and due east of the northern end of the southern breakwater, and the master slowed the vessel and started the turn to the north.

Before this time, it is felt that the master could have aborted his intended manoeuvre and either run straight into the bay and stopped to await *Seafrance Cezanne* to clear the area off the berths, or, latterly, to have turned hard-to-port, remaining outside the harbour. However, at 1723, when he started the turn to the north just outside the entrance, the master was committed to the intended manoeuvre. The vessel was not in the correct position for the manoeuvre. She was being affected to an unknown extent by both the strong tidal stream and the strong north-easterly wind. She was too far south and too close to the southern breakwater and, though slowing, still travelling at about 13 knots. With the pivot point being well forward on the vessel, the accelerating swing that he initiated had the effect of propelling the stern rapidly towards the end of the

breakwater. He had no view of the stern from his position in the centre of the wheelhouse, and he was not in a position to fully appreciate the movement of the stern. Having started that swing with the vessel to the south of the centre of the entrance, there was considerable risk of contact. There is little doubt that the master was disorientated at this stage, and did not recognise the dangerous position the vessel was in.

The vessel's navigation had not been positively controlled during the approach. Although aware of the direction and varying rate of the tidal stream during the approach, the master did not allow correctly for its effect. He underestimated the effect of the north-east wind.

The master appeared determined to turn through the entrance and run down the arm, although prudence dictated an early change of plan to run into the bay and wait in comparative safety for *Seafrance Cezanne* to complete her manoeuvre. It is possible that he wanted to demonstrate this manoeuvre, which is more common for just two vessels of the fleet, to the supernumerary master, although he was under no pressure to do so.

2.4 THE PASSAGE PLAN

The vessel's written passage plan was rudimentary and of no value for the approach to Dover and the pre-berthing manoeuvre **(Figure 4)**. The chart in use at the time on *Pride of Provence* had danger areas and intended courses marked, but these were not consistent with the written plan. No positions were plotted during the approach. Additionally, on neither the written plan nor the chart was there any indication of the 1.5 mile extension to the voluntary separation zone.

With no predefined plan for the approach and preberthing manoeuvre, the master needed to make that decision and communicate the plan clearly to his bridge team. In the briefing he gave to his team at 1719, he accurately described the expected tidal stream and he described his intended manoeuvre within the harbour, however, he did not describe his intended approach. His only reference to his intentions in this respect was that he planned to take the vessel through the middle of the entrance and that he wanted a clearance of at least 100 feet (30m) on either side.

The intention of communicating the plan to the bridge team, as required by the Fleet Regulations, is to give the team members the necessary information to enable them to carry out their prescribed individual roles. The plan as described did not do this. In fact, the briefing, the written plan and the chart, appeared to pay lip service to the sensible requirement to plan the passage carefully and to communicate that plan to the bridge team.

The continually changing track adopted by the master of *Pride of Provence* was not communicated to the chief officer and, in any case, could not be efficiently monitored.

For an approach to the eastern entrance to be capable of being efficiently monitored, it is necessary to steady on a predetermined track for some time before reaching the entrance. A plan which includes a steady approach can be monitored using radar parallel indexing and/or target trails. Additionally or alternatively, transits ashore can be identified and held in line. Such a well-defined and monitored approach can be maintained in the varying strengths of tidal stream and can cater for the effects of a strong wind. The vessel could also slow down during the approach without the master and bridge team losing control.

2.5 BRIDGE TEAM MANAGEMENT

The bridge was manned by sufficient number of competent and suitably experienced personnel for the approach to Dover Harbour. There appeared to be no difficulty in communication between the team members, and all were aware of the part they had to play and where they should position themselves to carry out their role. This was a familiar and frequently practised routine.

The briefing by the master is a key element in the efficient operation of the bridge team during the approach to Dover. During the briefing, the master should tell the team, as a whole, the particular plan that will be followed on this occasion, he should indicate the environmental factors that will affect the plan, and he should give each of the team members the particular information and instructions that they require to be able to perform their respective roles. As has been explained earlier, the briefing given by the master on the 18 April was lacking in many respects.

Apart from the master, two other members of the bridge team had key roles which could, and ideally should, have prevented the accident.

1. The chief officer's role was to monitor the vessel's track during the approach and let the master know if the vessel was deviating from the plan. He was required to use parallel indexing or other radar techniques to carry out this function. In addition, he was to check that helm and engine orders were correctly interpreted. He should be proactive in advising the master if he is unsure about the safety of the vessel or any of the master's orders or intentions.

   The briefing did not give the chief officer what he needed to fulfil his function. He was unaware of the planned approach track, knowing only that the master intended the vessel to go through the middle of the entrance. With only this information, he could not use parallel indexing or target trails to monitor the approach. Additionally, without knowing precisely what was intended, he could not assess whether helm or engine orders were appropriate. He could, and perhaps should, have pointed this out to the master. However, he was in an invidious position. He was fairly new to the vessel and the master was very experienced. Additionally another

experienced master was on the bridge. At 1722, when *Seafrance Cezanne* was still struggling to manoeuvre into position off the ro-ro berths, the chief officer did let the master know that the vessel was 0.5 mile from the entrance and making 17 knots. The fact that the master acknowledged this, and very soon afterwards confirmed his intentions to Port Control, may have reassured the chief officer that the master, at least, had the situation under control.

2. The quartermaster who was posted to lookout on the port bridge wing had a crucial role to play as, with the tide and wind from the north, it was on his side that the main danger lay. He was not given specific instructions concerning his role. The briefing only told him that a clearance of at least 100 feet (30m) was required from the breakwater. He was not told that the vessel would be swinging as she passed through the entrance, for instance, or that he should pay particular attention that the stern cleared the breakwater. As explained earlier, the master had very poor peripheral vision from the central conning position and it is difficult to appreciate fully the rate of turn and its effect on the stern of the vessel from the centre of the bridge.

   The quartermaster posted to the bridge wing was relatively inexperienced. He had only been 2 years in the deck department. He had obtained an Efficient Deck Hand (EDH) certificate and was performing the role of relief quartermaster to gain bridge watchkeeping experience. He was undertaking a distance learning course towards eventually gaining a certificate of competency as a watchkeeping officer.

   During the final approach, the quartermaster informed the master a number of times that the port side was passing clear. It was only in the last 15 or 20 seconds before the impact that the quartermaster said first *"starting to close a bit"* and then "*closing on the end*". By that time, the vessel had 30° of starboard helm on as she swung on to the required heading to run down the arm. With the pivot point on the ship being well forward, the stern was swinging dramatically at this stage. For the quartermaster to have been able to predict the danger successfully, he needed to have known the master's intentions. Even if he had known that the master intended to swing as the vessel passed through, he would then have needed to have monitored the helm position and predicted the effect on the stern. This would have been a complex task and was too much to have been expected from the person appointed to the role.

   The clearance of the stern would have been better monitored from the stern mooring position and communicated to the bridge by VHF radio. The swing to starboard should not have been started until the stern was reported clear and through the breakwaters.

2.6 COMPANY AUDIT OF BRIDGE TEAM PERFORMANCE

P&O Ferries Ltd operates a system of periodically proactively auditing the performance of masters and bridge team members under its Command Assessment procedures. The MAIB believes that this measure, which few other companies employ, is highly laudable. However, the master's performance had been assessed before the accident and nothing untoward was noted. It is concluded from this that the procedures in place at that time were not fully effective.

2.7 NAVIGATIONAL INFRASTRUCTURE

The transit through the eastern entrance of the harbour arguably provides the greatest risk to a ferry arriving at Dover. The risks are increased by the strong cross-flowing tidal stream, the narrowness of the entrance and the perceived need to maintain a speed of between 10 and 12 knots to accomplish the manoeuvre successfully. Although contact with jetties, or perhaps with other vessels, while manoeuvring within the harbour, will occur more frequently, such contact will be at slow speed and is less likely to have catastrophic consequences.

On average, there are over 25,000 ferry movements in Dover Harbour every year. This incident is the fourth occasion since 1995 where an inbound vessel has made contact with the breakwater at the eastern entrance. Although the number of accidents is low, there remains the possibility of a serious accident, with potentially major consequences, from this cause.

Although both the breakwaters are marked at the entrance with light beacons, no navigational infrastructure is provided to help a vessel maintain a steady track up to, and through, the entrance. The MAIB finds this surprising and considers that leading marks/lights provided for this purpose would greatly assist vessels and, consequently, would reduce the risk of a serious accident. The provision of leading marks/lights should, therefore, be properly investigated by the Port Authority utilising formal risk assessment methodology and simulation technology, and seeking the views and experiences from both Dover port users and those of other ports where leading marks are used in similar circumstances. The possible provision of leading marks/lights would have to be on an agreed approach track which should also be the subject of full consultation with, and evaluation by, navigational experts from Dover and elsewhere.

In recommending the provision of leading marks/lights it is not intended to take away from the master, pilot or PEC holder the ability to choose the most appropriate approach track to meet the prevailing conditions and current circumstances. But, in the MAIB's view, the leading marks/lights would be a valuable asset to masters and bridge officers to use to visually check their orientation during the approach.

2.8 CREW RESPONSE

The nature of the accident meant that the crew members not only had to locate, determine and report the extent of passenger injuries, but also the severity of injuries to other crew members and carry out a damage report of the vessel.

Although the crew members' response to the accident appears to have been effective, the returned questionnaires indicate that misunderstandings occurred while passenger injuries were being assessed. In the minutes following an emergency, passengers are disorientated and often in varying levels of shock. Reassurance and communication can assist them during the period between an accident occurring and their evacuation from the vessel. The procedures being followed in the purser's contingency plan **(see Section 1.11)** need to be communicated regularly to the passengers to prevent confusion and frustration. More frequent announcements, even if the same message was repeated, would have been likely to reassure and calm passengers.

It is fortunate that *Pride of Provence* was not carrying its full complement of passengers. In different circumstances the crew members might have struggled to cope with greater numbers of injured.

One of the injured crew members mentioned the lack of any prior warning of the impending collision. It is recognised that in this accident there was no time to issue a warning to the crew and passengers. However, in other circumstances, this action may be possible, and quick means to give such a warning might be advantageous.

2.9 LOOSE FURNITURE AND FITTINGS

Falling and toppling loose furniture and fittings affected both passengers and crew in this accident. This potential danger, arising from a collision in good weather conditions, was not fully appreciated by P&O Ferries. When heavy weather was predicted it was normal practice to restack the goods in the shops to a lower level, and fit storm bars around the galley range. The loose tables in the passenger areas had heavy bases which, in normal sea conditions, were adequate for their security . However, it appears that little consideration was given to loose equipment, should the vessel be involved in a collision. Had the vessel been carrying a larger number of passengers, then overturned tables, chairs and other loose equipment would have contributed to injuries and might have impeded a rapid evacuation.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

The following safety issues arising from this accident have been identified in the analysis section of this report. They are given here in no particular order of priority.

1. Had *Pride of Provence* not made contact with the breakwater, a close quarters situation would have arisen with *Seafrance Cezanne*. This situation arose despite Port Control procedures having been followed. Where the manoeuvring of two or more vessels may come into conflict it is important for Port Control to establish an arriving vessel's intended pre-berthing manoeuvre before granting permission to enter. [2.2]

2. The passage planning and pre-arrival briefing given on *Pride of Provence* was rudimentary and only paid lip service to the sensible requirements contained in the Fleet Regulations. [2.4]

3. The master's chosen approach to the harbour was not a steady track and, therefore, could not be defined and monitored by others in the bridge team. For an approach to the eastern entrance to be capable of being efficiently monitored, it is necessary to steady on a predetermined track for some time before reaching the entrance. A plan which includes a steady approach can be monitored using radar parallel indexing and/or target trails. Additionally, or alternatively, transits ashore can be identified and held in line. Such a well-defined and monitored approach can be maintained in the varying strengths of tidal stream and can cater for the effects of a strong wind. The vessel could also slow down during the approach without the master and bridge team losing control. [2.3, 2.4]

4. The bridge was manned by a suitable number of qualified and experienced personnel, but they were unable to perform the monitoring tasks allotted to them because they were poorly briefed about the master's intentions. [2.5]

5. The quartermaster on the port bridge wing was not in the best position to judge stern clearances when the vessel swung, using 30° of starboard helm, while still between the entrance breakwaters. [2.5]

6. Transiting the eastern entrance of Dover Harbour on arrival poses considerable risk because of the narrowness of the entrance, the strong cross-tidal streams and the consequent perceived need to maintain a speed of over 10 knots. The MAIB considers that the provision of leading marks would reduce the risks involved. [2.7]

7. The command assessment procedures were not effective in identifying shortfalls in the master's performance in pilotage situations. [2.6]

8. More frequent announcements to the passengers concerning the emergency response arrangements might have served to reassure and calm them. [2.8]

9. It is fortunate that *Pride of Provence* was not carrying her full complement of passengers. In different circumstances the crew members might have struggled to cope with greater numbers of injured. [2.8]

10 Loose tables and fittings, and high stacks of shop goods, fell as a result of the collision. Arrangements to secure these items should be in place even in good weather conditions. [2.9]

SECTION 4 - ACTION TAKEN

P&O Ferries Ltd has conducted its own internal enquiry into the accident and, as a result, has taken management action, including issuing Fleet Directives and circulars, which are briefly described as follows:

All holders of Dover Harbour Board Pilotage Exemption Certificates are to refresh their knowledge of the tidal flows adjacent to the eastern entrance and within the harbour. Additionally, they are reminded that the wind strength and direction can have an effect on the tidal flow and due allowance should be made.

Heads of department on each vessel in the fleet are to carry out a survey to identify any equipment which is not firmly secured against falling in a seaway or as a result of collision impact. A specialist contractor is to be used to survey fittings, such as shop display units. Work arising as a result of the survey will be progressed through the ship's technical manager.

The Command Assessment process has been incorporated within a new target audit of bridge team performance, with particular emphasis being placed on the master's deployment of bridge and crew resources.

Existing Fleet Regulations concerning Bridge Team Management are re-emphasised as follows:

- Critical phases of any pilotage are to be proactively monitored to ensure that intended clearances are achieved. The monitoring is to be accompanied by positive reporting of ship's progress and projected track.

- Briefing is to include the master's requirements regarding deployment of radar resources to ensure that ship's track is monitored by parallel index or relative motion target trails.

- The voyage plan should enable monitoring of beam clearances throughout the approach to the harbour and during critical phases of pilotage.

- Close and continuous monitoring of the vessel's position shall incorporate a variety of methods such as radar indexing, visual transits and use of electronic charts, to cross-check any errors rising from a single method.

The Port of Dover's Marine Department carried out its own investigation into the accident and, bearing in mind its conclusions and those of P&O Ferries Ltd, its actions are best described in the last paragraph of its report, as follows:

> *The Marine Operations Department will support P&O Fleet Department in a positive, practical and co-operative manner in trying to ensure that the lessons to be learned from this incident are indeed learned and reflected in robust navigational processes and procedures that reduce the risk of recurrence to an absolute minimum.*

The specific issues identified mostly involve a more pro-active approach to ensuring that PEC holders are fully aware of the tidal flows around the eastern harbour entrance. Additionally, the need to reinforce the importance of adequate passage plans and effective monitoring is recognised.

In addition, Dover Harbour Board has instigated a system whereby the competence of all PEC holders is reassessed at least every 3 years by a licensed pilot "tripping" with the PEC holder and observing his bridge and navigation management.

SECTION 5 - RECOMMENDATIONS

In addition to the actions already taken by both P&O Ferries (Dover) Ltd and Dover Harbour Board Marine Department, the following recommendations are made:

P&O Ferries Ltd is recommended to:

1. Ensure that masters plan a steady approach track to the eastern entrance to Dover Harbour and that this is communicated to the bridge team at the pre-arrival briefing.

Dover Harbour Board is recommended to:

2. Investigate the provision of leading marks/lights for the eastern entrance, utilising risk assessment methodology and simulation technology and in full and open consultation with both those with experience of the Port of Dover and those with experience of other ports where leading lights/marks are used in similar circumstances.

3. Tighten Port Control procedures for entry to prevent circumstances arising where vessels are committed to entry when the way is not yet clear for their intended manoeuvre.

Marine Accident Investigation Branch
November 2003

ANNEX 1

P&O Stena Line Ltd. Fleet Regulations:
Bridge Resource Management - Port Departures and Arrivals.

20. PORT DEPARTURES AND ARRIVALS

20.1 BRIDGE RESOURCE MANAGEMENT

- The Master shall ensure that he is on the Bridge in sufficient time before every departure and arrival so that he;
  - # can monitor checklist completion;
  - # can familiarise himself with the,
    - ► traffic situation,
    - ► state of tide,
    - ► weather,
    - ► and any other relevant factors.

  NB: In this context, "in sufficient time" means at least fifteen minutes before departure or passing the relevant arrival waypoint; where appropriate, this may be earlier, dependent upon circumstances.
- The Master shall brief all members of the Bridge team and mooring deck personnel, as appropriate, concerning his intended manoeuvre and their part in it. The briefing shall take place before every departure and arrival and shall be a checklist item; the briefing is especially important when manoeuvres outwith normal practice or in reduced visibility are anticipated;

  The briefing shall cover;
  - # Allocation of specific duties to Bridge Officers taking account of relative levels of experience;
  - # Definitive instructions to helmsman, lookouts and mooring decks;
  - # Instructions concerning the use of radar sets, taking care to ensure that the relative motion plot is monitored in addition to making effective use of ARPA, that appropriate range scales are used and that requirements for docking radar(s) are specified;
  - # A discussion of the passage plan, predicted tidal conditions, traffic situation and other relevant factors.
- The Master shall ensure that all Bridge personnel are briefed when an officer is to carry out the manoeuvre under supervision;
- The officer assisting the master, or the master if roles are reversed, shall closely monitor the navigation and safety of the ship during manoeuvring, particularly;
  - # Supporting and assisting by ensuring that;
    - ► Relevant information is given about the ship's situation and performance in relation to its immediate environment, and
    - ► The orders given and use of engines/steering/thrusts/anchors are appropriate to the situation and consistent with the pre-manoeuvre briefing. Where there is doubt, clarification should be sought immediately.
  - # Ensuring helm and course orders have been correctly understood and executed,
  - # Ensuring propeller, thrust and rudder movements are operating and moving in the correct sense.

  See the section in this appendix entitled, "Handing over the "con"" and "Helm and Course Orders".
- Before leaving a berth, when approaching and passing a harbour entrance and if the vessel is hove to off a port, it is particularly important that a member of the Bridge team is tasked to monitor the blind side and/or astern as appropriate;
- The Master shall designate an officer to monitor the ship's position during arrivals and departures;

  NB: The designated officer shall report deviations from the planned track to the Master. Use shall be made of all means available, including the echo sounder, which shall be operational and where fitted, with the shallow water alarm set.

20.2 ARRIVAL

The master shall ensure that;

- The situation at the arrival port is assessed. The assessment shall include, but not be limited to information concerning;
  - # Shipping movements present and expected; and,
  - # Weather and tidal conditions, and any navigational limits imposed by the port authority; and,
  - # Ship, propulsion and mooring equipment condition.
- Plan the manoeuvre to use for his approach, including the speed of the ship, based on the assessment;
- When he decides to reduce the ship's speed, the initial propeller control movement to slow the ship shall be used as a test to verify that the propeller pitch follows the control requirement.

  This test shall be carried out;
  - # At the master's discretion, within the limits set out below for the respective arrival ports;

    Calais: At a point between the CA4 and CA8 buoys;

    Dover: At a point between "Point Alpha" and the East or West entrance (whichever is being used);

    Zeebrugge:

    Scheur Channel approach: At a point between the S3 and Z buoys.

    Wielingen Channel approach: At a point between SWW and Z buoys.

    NB: Where a ship is not in normal service (eg arriving at a refit or repair port), the master shall ensure that the test is carried out in sufficient time to ensure a similar level of safety.
  - # As an arrival checklist item; and,
  - # Only when there is no risk to navigational safety.

  Where a propeller fails the test, the master shall abort the approach. The approach to the port may only be continued after a further assessment of the situation is made including the new information concerning the defective equipment, or the defective equipment is repaired.

  Where the ship has already reduced speed for navigational/operational reasons and it has been established that the propellers are following control orders, the above test may be dispensed with. In this case the test is recorded in the checklist as complete at the time the speed reduction was made.
- When there are delays on arrival, that
  - # Departing and other waiting ships are allowed sea room for passage and manoeuvring, by the placing his ship in an appropriate position relative to the port entrance; and

  NB: Ensuring also that there is no ambiguity in any VHF communications concerning port movements.
  - # Passengers and crew are kept informed as to progress.
- The mooring decks are manned at an appropriate stage of the manoeuvres, taking into account the safety of the mooring party during bad weather/rough seas;
- When the arrival is in bad weather/rough seas, and an increase in vessel motion is anticipated in port approaches, passengers and crew are informed;

  NB: Requests from port control for a specific manoeuvre should only be agreed if entirely consistent with the safety of own ship.

20.3 DEPARTURE

See also, "Pre-Departure Checklist", "Assessment by the master", and "Main Engines".

In addition to requirements detailed in the above listed Fleet Regulations, the master shall ensure that;

- When the main engines and propellers are running and "Standby" rang, only he or another officer operates the propulsion controls (combinators/bow thrust/propeller controls); and
- When the weather is rough, passengers and crew are warned of the likelihood of motion as the vessel reaches open water and the precautions they should take to enable them to move about the ship safely; and,
- All is in order and all personnel are ready, in addition to checklist completion, before giving the orders to let go moorings;

20.4 RESTRICTED VISIBILITY

See "Bridge Resource Management", in this appendix. The briefing before manoeuvres in restricted visibility is particularly important.

ANNEX 2

P&O Stena Line Ltd. Fleet Directive:
Bridge Resource Management - Port Departures and Arrivals.

To: Master
P&OSL Aquitaine/Burgundy/Calais
Canterbury/Dover/Kent/Provence
European Highway/Seaway/Pathway

From: Fleet Managers

Date: 29 November 2001

FD: 01/31/01
Circulation: Masters
Deck Officers

Bridge Resource Management – Port Departures and Arrivals

The Master's Briefing of his planned manoeuvre to the Bridge Team shall include the clearing distance he intends to maintain between the vessel and pier(s) during the vessel's pier head transits.

The officer designated to monitor ship's position shall report any deviation from the planned track to the Master. (See Fleet Regulations Chapter 5, Appendix 2, "Port Departures and Arrivals").

FM/RSR/bb

ANNEX 3

Passenger and Crew Questionnaires

Marine Accident Investigation Branch

Marine Accident - Passenger Questionnaire

- The Marine Accident Investigation Branch (MAIB), based in Southampton, is responsible for investigating any marine accident in the United Kingdom. The aim is to make travelling by sea safer by thorough investigation, gathering information from crew and passengers. Following the accident in which you have recently been involved could you please provide as much of the following information as possible?

Vessel Name

Personal Details

Full name: ……

Address:. .....……...

.....……

.....……

Telephone: ……..... (Home) ……..……... (Work/other)

Occupation: .....……..

Age: ..... Gender: Male / Female

General Details

How many people were travelling with you .....……..

What were their names and relationship .....…….

.....……...

What was your Port of Embarkation .....……

Where were you when the accident occurred .....……...

(cabin/seat number or general area) .....……

Foot passenger / bus / lorry / car .....……...…..

Description of Event

How and when did you realise something was wrong? .....……...

.....…….....

.....…….....

Please give a brief account of what you saw and heard: .....…….....

.....……...

.....……..……

Were you kept informed about what was happening? …….....….....

……...

Leaving the vessel

Did you hear any announcements made by the crew? YES / NO

Were they clear? YES / NO Were you able to follow the instructions? YES / NO

Were any of the following illuminated: Cabin lights / Emergency exit lights

Please indicate how you left the vessel: .....……..…

.....…….....…

Please describe any difficulties encountered.. .....…….....

.....……...…

Injuries

Please briefly describe any injuries you suffered and how sustained .....…….....

.....…….....

.....…….....

Were you hospitalised or incapacitated for more than 3 days? YES/NO

Fire

Please describe any fire or smoke .....…….....…

.....……...…

.....……...…….....

General comments

Is there anything else you feel would help in our investigation? .....…….

.....…….……...…

.....…….……...…

.....…….……...…

.....…….……...…

.....…….……...…

Thank you for helping with our investigation. Please give this questionnaire to the Police, an MAIB investigator, Coastguard or RNLI crewman or post to the following address:

Marine Accident Investigation Branch, First Floor, Carlton House, Carlton Place, Southampton, SO15 2DZ

If you have any questions, or any point you wish to discuss, please write to us at the above address or contact us by telephone/fax/email on: **Telephone (023) 8039 5500 Fax (023) 8023 2459 Email maib@dtlr.gov.uk**

Thank You for your assistance.

Marine Accident Investigation Branch

Marine Accident - Crew Questionnaire

- The Marine Accident Investigation Branch (MAIB), based in Southampton, is responsible for investigating any marine accident in the United Kingdom. The aim is to make travelling by sea safer by thorough investigation, gathering information from crew and passengers. Following the accident in which you have recently been involved could you please provide as much of the following information as possible?

Vessel Name

Personal Details

Full name: ……

Address:. .....……...

.....……

Telephone: ……..... (Home) ……..……... (Work/other)

Rank/Occupation: .....……

Age: ..... Gender: Male / Female

General Details

How long have you worked on board ships.....……..

How long have you worked on board this vessel ……

What was your Port of Embarkation .....……

Where were you when the accident occurred .....……...

Are you regular/temporary crew .....……...…..

Description of Event

How and when did you realise something was wrong? .....……...

.....…….....

.....…….....

Please give a brief account of what you saw and heard: .....…….....

.....……...

.....……..……

Were you kept informed about what was happening? …….....….....

……...

What were your actions ……

……

If passengers were carried, what involvement did you have with them……

……

Leaving the vessel

What announcements were made for muster/evacuation …….

……...

Were they clear? YES / NO* Were you able to follow the instructions? YES / NO*

Were any of the following illuminated: Cabin lights / Emergency exit lights

Please indicate how you left the vessel: .....……..…

.....…….....…

Please describe any difficulties encountered.. .....…….....

.....……...…

Injuries

Please briefly describe any injuries you suffered and how sustained .....…….....

.....…….....

.....…….....

Were you hospitalised or incapacitated for more than 3 days? YES/NO

Fire

Please describe any fire or smoke .....…….....…

.....……...…

General comments

*/Is there anything else you feel would help in our investigation?

.....……...…

.....……...…

.....……...…

.....……...…

Thank you for helping with our investigation. Please give this questionnaire to the Police, an MAIB investigator, Coastguard or RNLI crewman or post to the following address:

Marine Accident Investigation Branch, First Floor, Carlton House, Carlton Place, Southampton, SO15 2DZ

If you have any questions, or any point you wish to discuss, please write to us at the above address or contact us by telephone/fax/email on: **Telephone (023) 8039 5500 Fax (023) 8023 2459 Email maib@dtlr.gov.uk**

Thank You for your assistance.

ANNEX 4

Pursers Contingency Plan “Overview”

DRAFT

ESCC ?. INCIDENT MULTI-CASUALTY

- Ascertain Nature of Incident–Initial Reports to Bridge & Damage Reports. ❑
- Instigate Securing of Ship/Area of Incident ❑
- Delegate Recorder of events ❑
- Announcements to Passengers - Initial and updates ❑
- First Assessment of Incident ❑

1. Establish Communications – Language Skills ❑
2. Establish Incident Control Location ❑
3. Establish Treatment/Local Control Location – Incorporate Record of both Pax and Crew Casualty Details ❑
4. Establish Communications Centre – To Bridge and Shore Management ❑
5. Establish Information Centre – Passenger Enquiries ❑
6. Bridge Team Brief – Include Chief Engineer as appropriate ❑
7. Hotel Services Team Brief ❑
8. Activate Pursers Contingency Plan ❑
9. Triage – To assess Casualty Nos. and Location
10. Inform Engine Room ❑
11. Doctors Tape and Response – No. Of Doctors,Nurses,First Aiders ❑
12. Liase with Medical Services – In Port /at Sea/Coast Guard Stations ❑
13. Isolation Of Areas – Designated "No Injuries" Zones ❑