Report on the investigation of

the grounding of the

inter-island passenger vessel

Trident VI

in Percée Passage, off Herm Island

near Guernsey in the Channel Islands

23 August 2003

States of Guernsey Board of Administration
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Extract from

The UK 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

DSC	-	Digital selective calling
GPS	-	Global positioning system
LSA	-	Life Saving Appliances
m	-	metre
MCA	-	Maritime and Coastguard Agency
mm	-	millimetre
MOU	-	Memorandum of Understanding
RYA	-	Royal Yachting Association
SAR	-	Search and Rescue
UTC	-	Universal Co-ordinated Time
VHF	-	Very high frequency

SYNOPSIS

At about 2255 (UTC + 1) on 23 August 2003, the Guernsey registered passenger catamaran *Trident VI* ran aground on Percée Rocks near Herm Island in the Channel Islands. There were 179 passengers on board, together with the skipper, engineer and a crewman. The vessel suffered extensive damage but nobody on board was injured and there was no pollution.

The MAIB was asked by the States of Guernsey Board of Administration to carry out an investigation into the accident, in accordance with the MOU between it and the MAIB.

Earlier in the evening, *Trident VI* had taken a number of passengers from St Peter Port, Guernsey, to Herm, for dinner at the island's hotel and tavern. The wind and sea-state were calm and the visibility was severely reduced because of fog, which persisted throughout the accident. At about 2230, the passengers returned to the waiting vessel and embarked for the return passage.

The skipper was using a GPS/electronic chart plotter, two radars and a magnetic compass.

On leaving the berth, the skipper made a 130° turn around the southern end of a sandbank and then steadied up on 310° for the transit through Percée Passage. From his plotter, and the radar, he found that the vessel was to the left of the narrow channel, and too close to the rocks to port. He altered course to starboard to bring the vessel on to the track-line, but the vessel overshot and grounded on the opposite side of the channel.

St Peter Port Co-ordination Rescue Centre called *Trident VI*'s sister vessel, *Trident V*, and the RNLI lifeboat. Both proceeded from St Peter Port to the stricken vessel. The passengers were evacuated from her to *Trident V* and returned to St Peter Port. Three crew members and a salvage pump from the lifeboat were placed on board *Trident VI* to assist the crew. The vessel floated off the rocks with the rising tide, and made her way back to St Peter Port under escort of the lifeboat. The vessel was beached in the harbour, as the forward three spaces in the port hull had been breached in the grounding.

This accident raised issues regarding blind pilotage, licensing of skippers, safety management and the vessel's manoeuvrability.

Recommendations have been made to the owners with regard to the vessel's manoeuvrability, and to the States of Guernsey Board of Administration regarding the local requirements for safety management systems. The latter has also been recommended to encourage operators to fit the equipment required to stabilise radars and chart plotters.

Photograph 1

Trident VI at the Careening Hard in St Peter Port harbour

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *TRIDENT VI* AND ACCIDENT

All times are UTC + 1.

Vessel details (Photograph 1)

Registered owner	:	Trident Charter Co Ltd
Port of registry	:	Guernsey
Type	:	Passenger catamaran
Built	:	In 1991 at Gravesend
Construction	:	Steel
Length overall	:	22.25m
Engine power	:	397kW
Service speed	:	10 knots
Maximum passengers	:	250
Other relevant info	:	Twin screw and twin rudders, the latter of which were activated by hydraulic power.

Accident details

Time and date	:	2255 (UTC + 1), 23 August 2003
Location of accident	:	Latitude 49° 27.96'N, longitude 002° 27.64'W Bearing 075° x 2.56 miles from St Peter Port's southern breakwater
Persons on board	:	182
Injuries/fatalities	:	None
Damage	:	Extensive damage to forward port hull and to aft starboard hull.

1.2 BACKGROUND

The following is relevant guidance from the Admiralty Sailing Directions for a passage to/from St Peter Port/Herm and the relevant charter arrangements between Trident Charter Co Ltd and Sark Shipping Co Ltd.

1.2.1 Pilotage to/from St Peter Port/Herm

The following are quotations from *Admiralty Sailing Directions - Channel Pilot*:

> *The Channel Islands lie to the S of the English Channel in the bight formed by the N coast of Normandy. They consist of the four main islands of Jersey, Guernsey, Alderney, and Sark, with innumerable islets and rocks which, with a few sparsely populated exceptions, are uninhabited. They are Dependencies of the Crown (of the United Kingdom).*
>
> *Herm and Jethou, two islands situated 2 miles off the E coast of Guernsey, belong to the States of Guernsey and attract many visitors in the summer months. These two islands, together with the rocks extending about 3.25 miles NE from Herm and those extending 1.5 miles SSW from Jethou, divide Big Russel from Little Russel.*
>
> *Herm Harbour, which dries, lies 2 cables N of Rosière Steps and is formed by a short pier extending NNW from the shore. It is used extensively in the holiday season by excursion boats from Guernsey.*

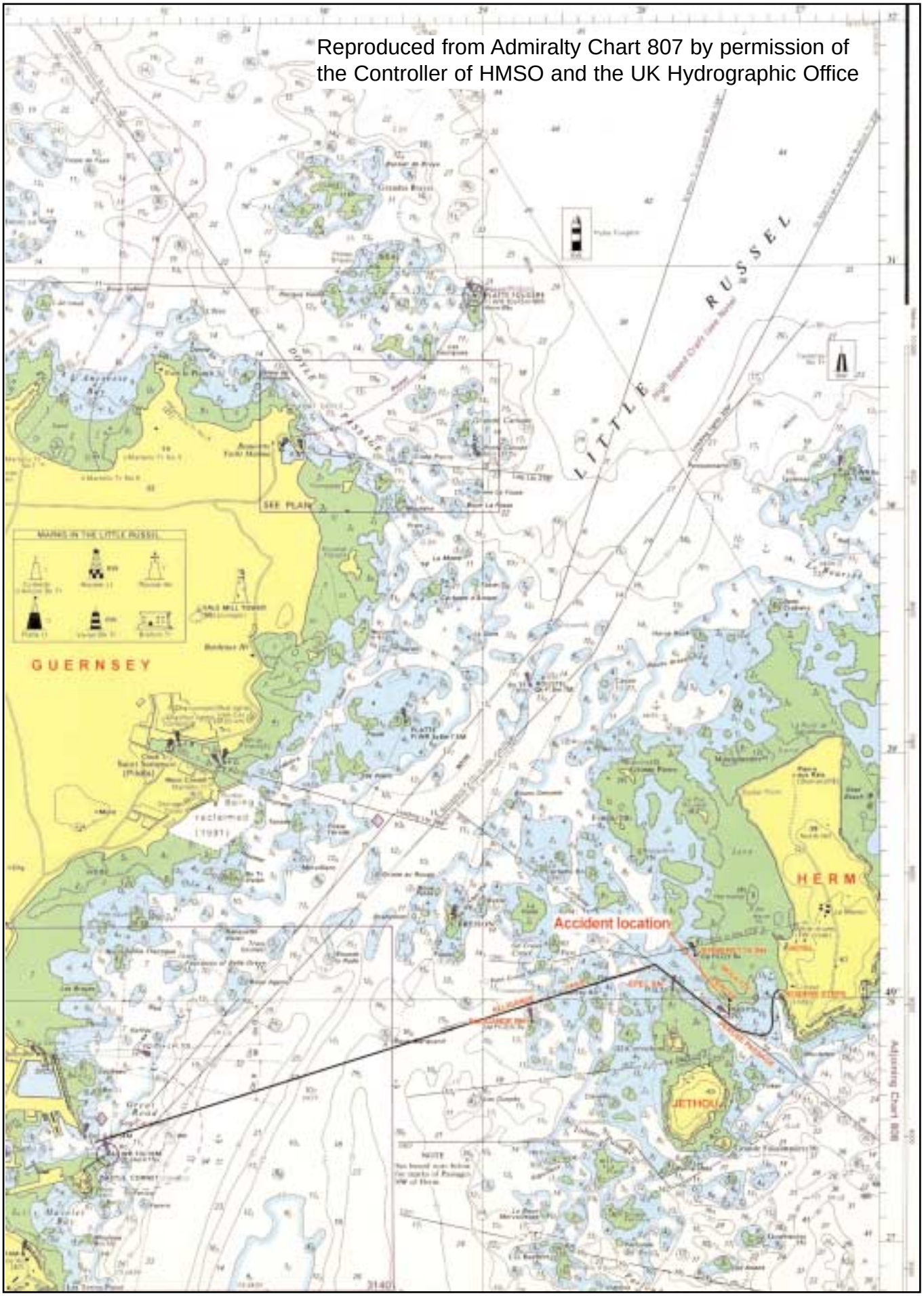
1.2.2 Directions - All courses are true **(Figure 1 and 1a)**

St Peter Port to Herm

On clearing St Peter Port breakwaters, the course to Alligande Beacon is 072°. On passing the beacon, the vessel alters course to 074° for Alligande Passage, heading for Vermerette Beacon. When about 1.8 cables from the latter, the course is altered to starboard onto 128° for Percée Passage and to pass Épec Beacon to starboard. When past Gate Rock Beacon, the vessel is slowly turned to port around the southern edge of the bank south of the small island of Mouette, and the approach to Rosière Steps is on a northerly course.

Herm to St Peter Port

On leaving Rosière Steps in Herm, the vessel is turned short round until she is heading on a southerly heading. Then a turn to starboard is made around the southern edge of the bank until she is heading 308°, which is a course change of about 130°. The vessel passes Gate Rock Beacon on her starboard side, and then between Percée rocks and the shelf to the north of Jethou. The minimum navigable width of Percée Passage is about 120m. When the vessel has passed Épec Beacon, the vessel alters course to port onto 254° for Alligande Passage. When past Alligande Beacon, the vessel alters course to 250° for St Peter Port breakwaters.



Extract from chart, showing the usual track to / from Rosière Steps, Herm

Figure 1a

An aerial photograph of Herm and Jethou islands

1.2.3 Bareboat charter

Between April and September 2003, *Trident VI* was bareboat chartered to the Isle of Sark Shipping Co Ltd, which operated the vessel to make daily daylight trips to Sark, manned by its own personnel. Occasionally, Trident Charter Co Ltd used the vessel to take parties over to Herm at night **(see Annex 3)**. On these trips, Trident Charter personnel manned the vessel. *Trident V* carried out the regular daily trips to Herm, which took about 20 minutes each way.

1.3 NARRATIVE

During the week before the accident, the manager of Trident Charter Co Ltd asked three of his staff to take *Trident VI* to Herm, for a large party having an evening meal at the White House Hotel and at the Mermaid Tavern. *Trident V*, the second vessel belonging to the company, was engaged that evening in taking another party to Herm.

St Peter Port to Herm

At about 1900 on 23 August 2003, assisted by the manager, the passengers boarded *Trident VI* in St Peter Port harbour at the eastern corner of St Julian's Pier. That morning, the weather forecast, which included mist and fog patches, had been noted in the logbook. There were signs of fog patches that evening when the passengers were boarding the vessel. The vessel sailed at 1920 with 147 people on board, which included the three crew members (skipper, engineer and deckhand). A taped safety announcement was made over the tannoy system. During the trip across to Herm the tide was slack **(see Section 1.4)**.

Once clear of the breakwaters, the skipper handed over the helm to the engineer, so that he could concentrate on one of the two radars and the GPS/ electronic chart plotter. The range of visibility was severely reduced. They steered an easterly course, heading for the centre of the island of Jethou **(see Figure 1)**. This initial course was not a direct one because the skipper wanted to give sea room to one of the fast ferries arriving from the north. About two-thirds of the way across Little Russel, the vessel altered course to port onto a heading of about 050° to shape a course for Alligande Beacon, which the skipper intended to pass to the north and on his starboard side.

When *Trident VI* was about 0.5 mile to the south-west of Alligande Beacon, the skipper took the wheel. As she approached the beacon, he slowed down the engines and began his turn into Alligande Passage. However, the vessel carried on turning, and the skipper found that he was heading towards a small rock. Because he was unsure of the clearance depth of water over the rock, he continued the turn into an area to the east of the beacon.

The skipper stopped the vessel, turned her around and, when confident of his position, headed back towards the beacon. He passed the beacon on the port side and then turned towards St Peter Port and into clear water. He turned the vessel round again and entered Alligande passage at full speed. No announcement was made to the passengers about the deviation from the passage.

Once past Épec Beacon, he slowed the vessel down for Percée Passage. When she passed Gate Rock beacon, the skipper started the turn for Rosière Steps, which was safely reached at about 1955.

The passengers were disembarked and the vessel remained alongside for about half-an-hour, after which she moored to a nearby buoy to make way for *Trident V*'s arrival. At about that time, the company's manager telephoned the skipper to ask if he was content to return to St Peter Port in the severely reduced visibility. The skipper replied that he was.

Herm to St Peter Port

At about 2230, the vessel began to embark 179 passengers. The visibility was still severely reduced by fog. With the skipper at the helm, *Trident VI* left the steps and made her turn around the southern edge of the bank south of Mouette island. She then steadied up on about 310° for the transit through Percée Passage. The tidal stream was slack in the Passage.

Once on course, the skipper found that the vessel was to port of the track shown on the GPS/electronic chart plotter, and too close to the rocks on that side **(see photograph 2)**. The lights on the compass and the rudder indicators were not illuminated. The vessel was on full speed, to gain maximum steerage response.

The skipper altered course to starboard to bring *Trident VI* back on to the track. However, the vessel's handling was sluggish and she overshot the central track. The vessel then grounded on Percée Rocks on the opposite side of the channel. Realising that she was stopped in the water, the skipper stopped the engines.

Events subsequent to the grounding

At 2255, the skipper alerted St Peter Port Radio, the local rescue co-ordination centre in the port authority's building, to inform the station that *Trident VI* was aground and that assistance was required.

The engineer went below and checked the two larger spaces of the engine rooms, and found them intact. He also checked the fuel tanks; these, too, were intact. He then went to the bridge.

Trident V's chart plotter and her position in relation to the track line, which was similar to that of *Trident VI*'s after leaving Rosière Steps for St Peter Port

The RNLI lifeboat in St Peter Port was called. *Trident V* had just disembarked her passengers in St Peter Port and she was also asked to go to the scene of the accident. At 2308, she left the harbour.

At 2310 and at 2325, *Trident VI*'s skipper gave his vessel's position to the co-ordination centre and said that there was superficial damage and that the passengers were calm: "just sitting there", and there were no injuries. The engineer made an announcement to the passengers that the vessel had grounded, they were safe and help was on its way.

During this time, the police and ambulance services became aware of the accident through a mobile telephone call from a passenger on board *Trident VI*, and from discussions with the duty SAR co-ordinator. The maritime incident room, in the harbour office, was activated and the harbourmaster and deputy harbourmaster were informed and attended.

At 2330, *Trident V* arrived on-scene and went alongside *Trident VI*'s port quarter. An announcement was made to the passengers for them to make their way to the other vessel so that they could be taken to St Peter Port. Because of the calm seas, and the two vessels being almost the same size, the passengers were embarked easily from the grounded vessel to *Trident V*. This was completed by 2340. *Trident V* left the scene and headed back for St Peter Port.

Once the passengers had been evacuated from *Trident VI*, the crew checked the void spaces and found the forward three compartments in the port hull were open to the sea **(see Figure 2)**.

Three RNLI crew members boarded the casualty to assess the situation and to assist the vessel's crew. They took a salvage pump with them.

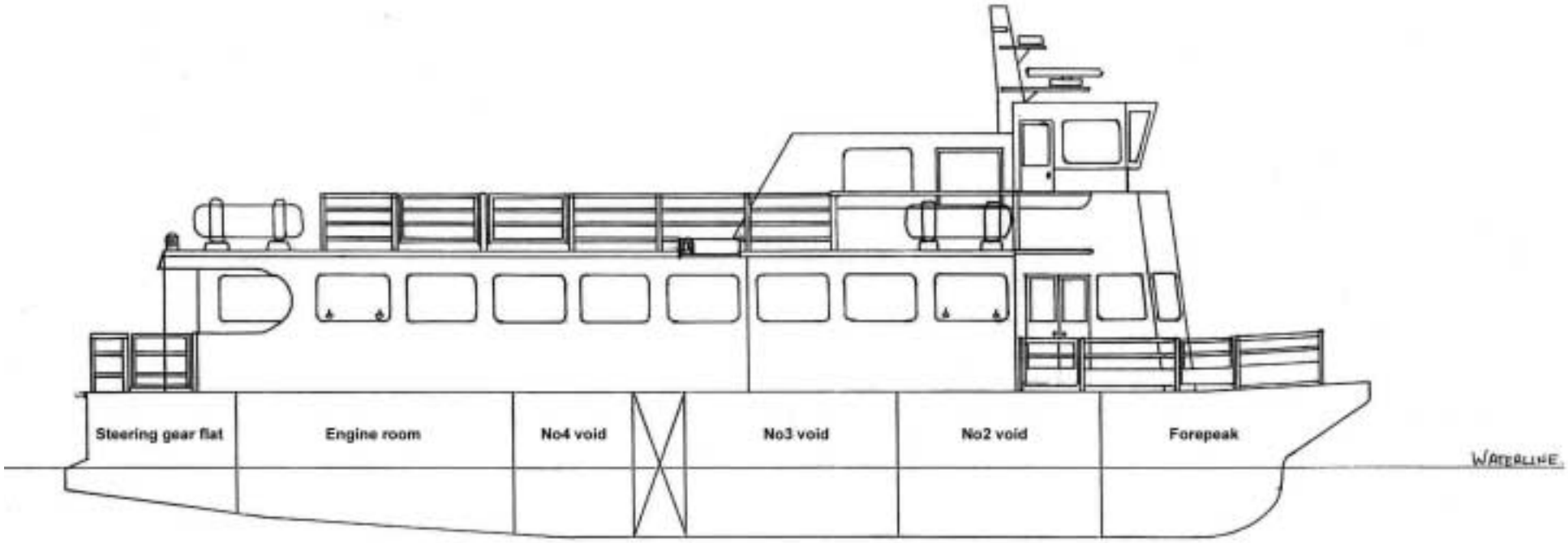
At 0024 on 24 August 2003, the starboard hull began to float and the lifeboat made fast a tow-line to *Trident VI*'s port quarter, to prevent her from drifting further on to the rocks.

By 0025, *Trident V* had disembarked her passengers and was returning to the casualty. The duty police inspector dispatched two police officers to the harbour, and they were in attendance with the deputy harbourmaster when the passengers were brought ashore. The duty ambulance controller had been continually monitoring the situation by VHF radio and, at an early stage, had become aware that there were no casualties. Although ambulances were available immediately, none were deployed to the harbour.

In communications with St Peter Port Radio during the accident, the headcount of passengers had differed between *Trident V* and *Trident VI*. The port authority wanted to satisfy itself that the number originally reported was correct. As the passengers came ashore, they were grouped together by a policeman so that they could be counted before being allowed home.

At 0040, the stern was afloat but *Trident VI* was down by the head and had a port list. At 0110, the lifeboat applied a little weight to the tow-line and *Trident VI* floated off Percée Rocks.

One of the RNLI crewmen on board *Trident VI* steered her back to St Peter Port, following the RNLI lifeboat. He commented on how difficult it was to steer. She was placed on the Careening Hard in St Peter Port at about 0200 **(see photograph 3)**.



A profile of *Trident VI* showing the subdivision of the hulls

Figure 2

Photograph 3

Trident VI afloat at the Careening Hard, St Peter Port harbour, on the day after the accident

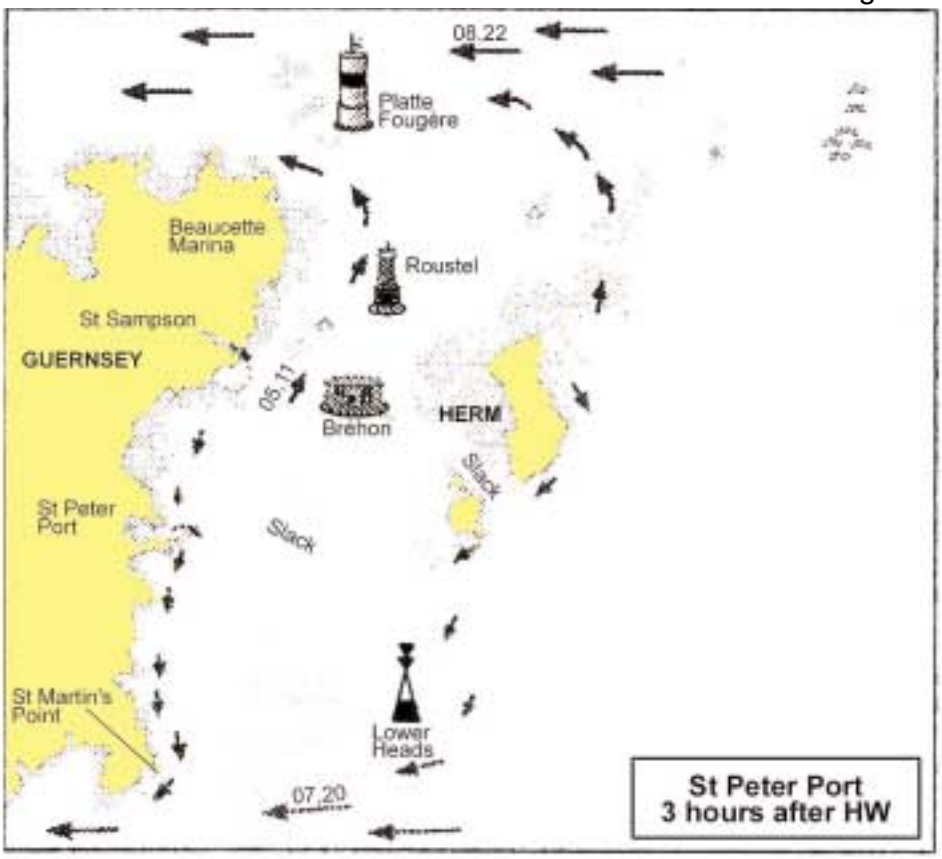
1.4 ENVIRONMENTAL CONDITIONS

During the incident, the visibility was restricted by fog, the wind and seas were calm. The *Admiralty Sailing Directions - Channel Pilot* describes the general conditions of fog and visibility in the area as follows:

> *Fog, visibility less than 1 km, and poor visibility is most likely in late spring and summer when warm moist W to SW winds blow over a relatively cool sea. The frequency of fog is between 3 and 4 per cent in June compared with less than 2 per cent in January.*
>
> *Fog is most likely to form near the S coast of England with a SW wind in summer but may extend to the Channel Islands and the N coast of France should the wind veer to the W.*

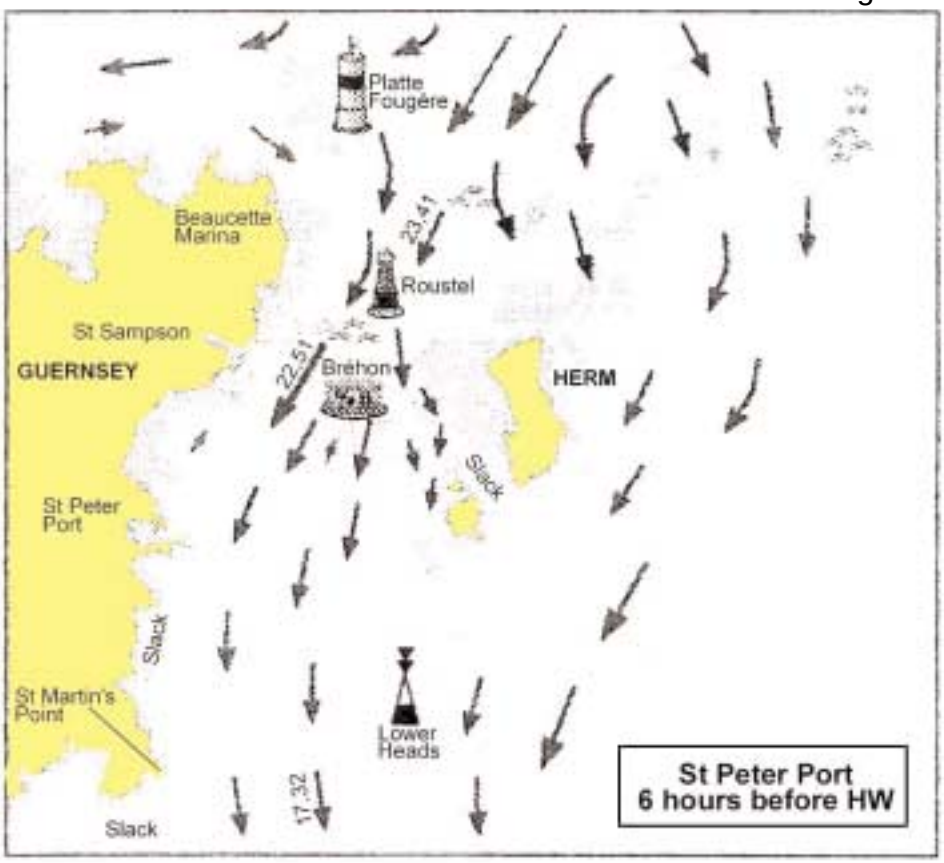
High water at St Peter Port on 23 August 2003 occurred at 1606; the following low water occurred at 2232. The tides were at neaps **(see Figures 3 and 4 for tidal streams during the accident)**.

Figure 3



The tidal stream for the outward passage to Herm

Figure 4



The tidal stream for the return passage from Herm

The *Channel Pilot* describes tidal streams between Herm and Jethou as follows:

> *No information regarding the tidal streams round Herm is available, except for that given below, but there must be strong eddies round and between the islets and rocks extending NE from the island. In Percée Passage the tidal streams begin as follows:*

Interval from HW St Helier	*Direction*
-0530	*SE and runs for 9 hours*
+0330	*NW and runs for 3.5 hours*

Sunset was at about 2010 and it was fully dark by about 2130.

1.5 *TRIDENT VI* AND CREW

1.5.1 Certification

Trident VI was certificated by the States of Guernsey Board of Administration. However, the annual survey of the vessel was, by invitation, conducted by the MCA as if it were a Class VI passenger vessel. The men-in-charge and engineers were examined and certificated by the harbourmaster's team in Guernsey.

Class VI vessels are defined as:

> *Ships engaged only on voyages with not more than 250 passengers on board, to sea, or in Category A, B, C and D waters,* **(see Annex 6)** *in all cases in favourable weather and during restricted periods, in the course of which the ships are at no time more than 15 miles, exclusive of any Category A, B, C and D waters, from their point of departure nor more than 3 miles from land.*

In the MCA's report of annual survey, each surveyor remarked that crew competence had not been considered.

1.5.2 Conditions of operation

The passenger certificates, issued by the States of Guernsey Board of Administration for Trident Charter Co Ltd and for Isle of Sark Shipping Co Ltd, certify the following limits:

> *During daylight within limits of between the harbour of St Peter Port and the Island of Herm by the most direct safe route, carrying no more than 250 passengers.*

During darkness within limits between the harbour of St Peter Port and the Island of Herm by the most direct Route, carrying no more than 187 passengers (75% of the maximum numbers).

During daylight within limits of between the harbour of St Peter Port and the Island of Sark by the most direct safe route, carrying no more than 250 passengers.

The passenger certificate imposed special conditions; the relevant ones are as follows:

the vessel shall be used to carry passengers only in fine weather conditions;

the vessel shall be only used to carry passengers during darkness-

when carrying navigation lights conforming to the collision regulations, night distress signals and not less than two lifebuoys fitted with self-igniting flares;

the vessel is equipped with radar apparatus for the operation of which at least one operator who is fully competent to operate the same is on board and with radio telephone apparatus in respect of which there is for the time being in force a licence issued by the Minister of Posts and Telecommunications and at least one operator licensed by the said Minister is on board; and

the vessel arrives at the Harbour of St Peter Port no later than one hour after midnight terminating the day on which it departed from the said Harbour.

The master or man-in-charge shall comply with any direction given by the States Harbour Master or any person authorised in that behalf.

The said Board shall be notified immediately of any material damage affecting the seaworthiness or efficiency of the vessel either in the hull or in any part of the machinery or equipment.

*The **MV TRIDENT VI** when going to sea from any place in the Bailiwick shall carry an efficient crew of at least **two** of whom one shall be the Master or Man-in-Charge of the said vessel and one shall be the Engineer of the said vessel, both persons being duly certified by the Board of Administration.*

(With regard to the last point, MCA's *Declaration of Survey of a Class VI Passenger Ship* states that the minimum crew should be **three**. The passenger certificate states a minimum of two, because this is the requirement if the vessel is operating as a less-than-150-passenger craft. However, the operators understand that the requirement in MCA's declaration is: if she is operating as a 250-passenger craft, she must have a minimum of three crew.)

1.5.3 The crew

The skipper, who was 42 years old at the time of the accident, gained his "man-in-charge" 250-passenger capacity licence, issued by the States of Guernsey Harbour Authority in 1986. To advance from the 150-passenger to the 250-passenger capacity man-in-charge licence, each skipper has to undertake an additional examination, including an act of blind pilotage. The licences are renewed each year on the production of a valid medical certificate.

Since gaining his man-in-charge licence, the skipper had spent time abroad and had worked ashore in engineering works and other places for a total of 15 years. However, he had worked occasionally on the local passenger boats as engineer and deckhand during his holidays.

Before being employed by Trident Charter Co Ltd in April 2002, he was assessed by the retired owner of the company on his abilities as man-in-charge. This included a practical assessment on ship handling and pilotage in one of the *Trident* catamarans. Once in full-time employment, he worked mainly on *Herm Clipper*, a single hull and a single screw passenger vessel, which mainly takes sightseers around the reefs off Herm to view the bird-life. He also regularly took command of *Trident V* during the summer, often taking lunch-time command of her when *Herm Clipper* was not in use. This occurred about four times per week in summer, increasing to ten trips per week in the winter.

During the winter, when *Trident V* was laid up for refit, the skipper served regularly on board *Trident VI* for the Herm trips, during which he controlled the vessel from time to time, even when the senior *Trident* skipper was in command. He had served on board *Trident VI* five times in 2003 for the night trips to Herm, but not in fog. He had made one trip on *Trident V* in fog about two weeks before the accident, and had made others on *Herm Clipper* in fog. During these he had encountered no difficulties.

The skipper had completed successfully the RYA Yacht Master theory course during the winter of 2001. He held a valid VHF, DSC Short Range Certificate and had completed the sea survival course and a local fire-fighting course.

The engineer had passed his 150-passenger man-in-charge licence in May 2002. He had been employed by Trident Charter Co Ltd for over 2 years, serving mainly on the regular trips to Herm on *Trident V*. He also worked for about three of the winter months on board *Trident VI* when *Trident V* was in refit.

The crewman had been employed by the company on a part-time basis, serving on board the vessels during the evening trips to Herm.

1.5.4 Manoeuvrability

The vessel was a twin-hulled catamaran, with twin screws and twin rudders. The propellers were in a soft tunnel, with the rudders set inboard of each one by 740mm, to enable both the propeller shaft and the propeller to be extracted in one piece. No part of the rudder overlapped the propeller disc **(see photographs 4 and 5)**. This unusual configuration made her handling difficult at less than full speed, although, by manipulating the two engines, she was highly manoeuvrable while going alongside.

Trident VI's rudders were of the spade type, and were supported by rudder heads mounted entirely in the hull. A small proportion of the area of the rudders lay forward of their axis so that the pressure on the leading part of the blades reduced the power required to turn the rudders.

From the Admiralty Manual of Navigation Volume 6:

> *The function of the rudder is to use the hydrodynamic force of lift to produce the turning moment to (1) start the ship turning, (2) keep it turning, (3) stop it turning, and (4) maintain a steady course. When stopping a turn, rudder is applied in the opposite direction and the rudder is centred.*
>
> *The rudder is a vertical blade, usually with a curved section. When at an angle to the flow of water, it is subject to the hydrodynamic forces of lift and drag. The rudder is thus a 'passive control device', only creating a turning moment fitted aft in a position where they benefit from lying in the flow of the propeller slipstream when the ship is going ahead.*
>
> *If the angle of attack of the rudder to the water flow is increased, the lift and drag forces also increase, until the flow on the rear side of the rudder becomes increasingly turbulent and finally breaks up altogether. This causes the lift force to be suddenly and dramatically reduced, which in turn causes a proportionate loss of rudder effectiveness; this is known as stalling. For this reason the rudder is limited to 35° in most ships. Rudder design, including the curved section shape, has to take into account the lift force required and efficiency through the range of rudder angles.*

1.5.5 Damage

The bottom plates of the forward three compartments, about 10m in length, of the port hull, suffered many indentations, splits and breaches, which caused flooding **(see photographs 6 and 7)**.

The starboard hull was dented, but not breached, on the outer side, about 8m from aft. There were some fresh longitudinal scrape marks to the hull and the propeller shaft leading from the dent towards aft **(see photograph 8)**.

Photograph 4

An end on view of the rudder / propeller arrangement

Photograph 5

A side on view of the rudder / propeller arrangement

Photograph 6

View looking aft showing the side damage to the forward part of the port hull

Photograph 7

View looking up at the bottom of the port hull showing temporary repair plates

Photograph 8

View looking forward showing the damage to the after part of the starboard hull

1.5.6 Subdivision and survivability

When the hull of a vessel is breached by a collision or by grounding, water enters the space bound by the transverse bulkheads on either side of the breach. In such circumstances, the buoyancy gained by the space is lost and the vessel will sink lower in the water and, because of non-symmetrical flooding, take an angle of list. The distance between the bulkheads is the degree of subdivision, which is calculated to give a ship a reasonable chance of remaining afloat after being damaged.

Passenger ships, carrying more than 12 passengers, must comply with certain standards of subdivision. This is done by determining a line beyond which the ship will not sink, and then ascertaining the position and length of one compartment which, when flooded, will cause sinkage to that line, known as the margin line*. The maximum distance between the bulkheads of this compartment, to meet this criterion, is known as the floodable length. *Trident VI* was built and approved to this one compartment subdivision standard.

(*Note: Margin line. This is a line drawn parallel to, and 76mm below, the upper surface of the bulkhead deck (uppermost continuous deck to which all transverse bulkheads are carried) at the side.)

1.5.7 Navigational equipment

Trident VI's wheelhouse was equipped with two Furuno radars, a Simrad GPS/RD plotter with an electronic C-Map chart of the area installed, and a magnetic compass.

1.5.8 Previous incidents

In June 1994, while at her moorings, *Trident VI* was hit by another vessel and foundered. The damage was so extensive that the vessel had to be rebuilt at the engineering works in St Sampsons, Guernsey. The rebuild included a new superstructure.

In June 1995, while heading north-west and travelling at about 5 knots in the Corbette Passage, the vessel took a sheer to port. The skipper tried to compensate using the helm and engines, but she sheered to starboard and moved sideways towards Corbette Rock, which she struck at slow speed. The starboard hull suffered a number of creases and was holed in two compartments, which were repaired at the engineering works in St Sampsons.

1.6 STATES OF GUERNSEY/UK OPERATIONAL REQUIREMENTS

1.6.1 Guernsey Harbour Authority

The Guernsey Harbour Authority is responsible for the administration and operation of the ports of St Sampsons and St Peter Port. It also has other maritime responsibilities, including the licensing and control of commercial vessels in local waters.

1.6.2 Crew training

Guernsey

In March 2003, the deputy harbourmaster wrote to the manager of Trident Charter to ask him if he could confirm that his men-in-charge were adequately trained in the use of LSA and fire-fighting equipment on board the company's vessels. He also questioned if he had procedures in place for dealing with various emergencies. The manager replied that the men-in-charge, and his crew, were adequately trained in that they had merchant navy lifeboat and fire-fighting certificates.

The deputy harbourmaster wrote later asking the manager to read MCA's Marine Guidance Note MGN 203 (M), which concerns crew training on UK domestic vessels **(see Annex 5)**, and to question him as to whether or not he was satisfied that everyone employed on his vessels complied with the requirements of the notice. The deputy harbourmaster went on to say that, if the manager had any doubts as to whether or not the crew complied with MGN 203,

he should arrange for an assessment to be undertaken. The manager replied that he was satisfied that his crew complied with MGN 203. He did, however, ask to meet the deputy harbourmaster at the end of the season to ensure that they were both happy that this was the case.

After this series of communications, the manager made enquiries with a local marine consultant to investigate crew training and to formulate a training schedule to comply with the current UK regulations. It was noted that the regulations, under which MGN 203 was drawn, would be extended to Guernsey in due course.

1.6.3 Man-in-charge/Boatmasters' Licences

Guernsey

The port authority of St Peter Port examines suitable candidates for the man-in-charge licence for the Herm/Guernsey areas. The syllabus **(see Annex 2)** for the special pilotage examination covers a knowledge of:

- various navigational lights and fog signals;
- striking, clearing and leading marks;
- navigational beacons, topmarks and white patches;
- courses and distances;
- international collision regulations;
- seamanship, emergency and radio procedures, which include;
  - fire on board vessel;
  - man overboard;
  - requirement to report accidents and other incidents;
  - reporting an emergency;
  - ship's radio transmission equipment;
  - tidal streams; and
  - port regulations and requirements.

In addition, a full practical examination is undertaken to cover all aspects of the oral syllabus, including visual pilotage.

The successful candidate is issued with an up-to-150-passenger man-in-charge licence. To progress to the 250-passenger licence, a candidate is also examined on:

fire on board the vessel;

breaching or stranding;

collision;

abandoning or sinking;

proficiency in the operation of radar (a practical test on board the vessel at sea, including an act of blind pilotage); and

knowledge of the collision regulations.

A practical examination is undertaken on board the vessel at sea, which includes an act of blind pilotage.

While the man-in-charge licence is the only qualification required by law, the majority of the men-in-charge and engineers have completed the sea survival and local fire-fighting courses. Revalidation of an individual's man-in-charge licence is granted on the presentation of a current medical certificate.

UK

On 1 June 1993, the previous voluntary Boatmaster's Licence scheme was superseded by a mandatory requirement that the person in command of a Class VI vessel (among other classes) must hold a Department for Transport's Boatmaster's Licence. The grade of licence depends on the number of passengers carried and the category of waters in which the vessel is sailing **(see Annex 6)**.

1.6.4 Domestic Safety Management Code

Guernsey

The States of Guernsey Board of Administration does not have a Domestic Safety Management Code at the time of the publication of this report.

UK

The Merchant Shipping (Domestic Passenger Ships) (Safety Management Code) Regulations 2001 came into force on 1 November 2001, and give statutory force to the Safety Management Code for Domestic Passenger Ships of Classes III to VI (A).

The Code is a shorter and simpler version of the International Safety Management system. It was implemented by the International Maritime Organization for ships worldwide, so that it can be applied to a wide variety of domestic ships, and developed by each company to meet the needs of that company.

The Code consists of the following subject headings:

1. *A health and safety protection policy.*

2. *Procedures to ensure safe operation of ships in compliance with the regulations and rules.*

3. *Lines of communication between personnel ashore and afloat.*

4. *Procedures for reporting accidents.*

5. *Procedures for responding to emergency situations.*

   There should be clearly stated procedures for responding to emergency situations. These may include but are not limited to: fire; collision; grounding; violent act; main propulsion or steering failure; and man overboard.

With regard to point 5, the Code addresses this issue with the following preparations for emergencies:

- *The potential emergencies likely to be encountered by the ship should be considered. Exercises should then be carried out in the handling of these emergencies and evacuation from the ship.*

- *Where possible, all personnel should be involved in these exercises, both ashore and afloat.*

- *The roles and responsibilities of all personnel in an emergency situation should be developed in accordance with the principles of the Code.*

- *The exercises should be recorded. The names of those who participated should also be recorded.*

1.6.5 Risk assessments

Risk assessment has become the cornerstone of modern health and safety practice, and is a process of establishing whether or not risks are adequately managed by the existence of a safe system of work. The Domestic Safety Management Code makes no specific requirement to carry out risk assessments on this type of vessel.

A more specific requirement for risk assessments is made in MCA's MGN 20 for the *Merchant Shipping and Fishing Vessels (Health and Safety at Work) Regulations 1997*. This gives advice on duties of employers on the avoidance of risks, the evaluation of unavoidable risks and the taking of action to reduce them.

There is no requirement to extend risk assessments to any consequential peril to a ship resulting from the particular work activity, nor to any external hazards which may imperil a ship.

1.7 PASSENGER QUESTIONNAIRES

Passenger questionnaires were freely available from the harbourmaster's office, and were sent out on request. The MAIB received 45 completed questionnaires.

- Safety announcements. Of the questionnaires received, 14 said that there were no pre-sailing announcements, three said that announcements were made, with one of these mentioning that the announcement was drowned out by people talking. The rest did not mention the pre-sailing announcements.

- *Trident* "lost" on way to Herm. The vessel circled in fog, stopped and went astern. Some passengers, familiar with the waters, were standing behind the bridge, and noted that the skipper and crew were busy identifying navigation marks on the radar. GPS waypoints on the electronic chart plotter were apparently set up for the run to Sark.

- Once aground there was a pause before any announcement was made by the crew - "*we are aground, don't panic, help is on its way*". Since this happened somewhere between 10 minutes and 20 minutes after the vessel grounded, it was considered unhelpful. Two further announcements were made concerning the arrival of the lifeboat and rescue craft, and the orderly evacuation of the vessel.

- LSA. The crew did not advise the passengers to put on lifejackets. Nevertheless, the passengers decided to don them of their own accord.

- Lifejacket stowages not clearly marked. No donning instructions were available; neither were the crew available to demonstrate the correct method of putting on a lifejacket. Half of them were stowed on the upper deck, which was roped off for the night-time sailing.

- Opinions vary as to the vessel's speed - *very fast, full cruising, about 10 knots, normal speed, full speed, reduced speed, about 12 knots*.

- Most passengers agree that the vessel hit at least twice, one loud "bang" followed by grinding noises.
- Concern was felt about the lack of flotation devices for babies (some passengers from the aircraft industry raised this as a problem).
- Crew did not check for injured passengers.
- Reception of passengers in St Peter Port was poor. No emergency services were available to deal with any injuries, although, in the event, there were none. All passengers were restricted to a defined area for a headcount to be carried out before they were allowed to leave the quay, but the purpose of this delay was not explained. No contact details were taken for any of the passengers.

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 CAUSE OF THE GROUNDING

A number of contributory factors led to the *Trident VI* grounding:

1. No visual references because of the severely reduced range of visibility in fog.

2. Over reliance on one navigational aid.

3. Compass and rudder angle illumination not operating.

4. The vessel's poor handling characteristics.

5. Travelling at an unsafe speed in fog.

6. Skipper's lack of experience of operating *Trident VI* in fog.

2.2.1 The grounding

Shortly after *Trident VI* had embarked her passengers at Herm Island, for the return journey to St Peter Port, and was clear of Rosière Steps, the skipper had to execute a large turn into Percée Passage. As he was doing so, he placed the engine control levers to full speed to increase the effectiveness of the rudders. He believed, correctly **(see Section 2.2.3 and Annex 4)**, that if the speed was any lower, the vessel would be difficult to handle. Therefore, he was placed in a difficult situation, in which he had to make an unsafe speed through a narrow channel, in fog, to be able to gain full manoeuvrability.

Having made the turn, he found that, from observations of the radar and the plotter, the vessel was to the port of the centre track-line on the electronic chart of the narrow channel **(see photograph 2)**. It is not unusual for any vessel making such a large alteration as 130° into a narrow channel, to steady initially to one side or another of the centre line.

Because *Trident VI* was close to the rocks to port, the skipper attempted to steer her to starboard, to move her into a more central position in the passage. However, he found it difficult to see the compass and the rudder indicators.

The vessel had initially been to port of the 120m-wide channel, about 90m from Percée Rocks on her starboard side. Travelling at a speed of 10 knots equates to about 300m/minute. Estimating the distance from the alteration of course to

regain the line to the grounding position to be about 150m, gives the interval of time between the two events as 30 seconds. This gave the skipper little time to make an assessment from his navigational aids about how fast the vessel was crossing the channel, and then to react to overshooting the central line. The vessel travelled across the passage, and grounded on the opposite side of the channel.

The likely scenario to cause the type of damage *Trident VI* sustained when she grounded was that, initially, the starboard quarter made contact with the rocks. This caused the vessel to then rotate quickly to starboard, which resulted in the forward part of the port hull grounding.

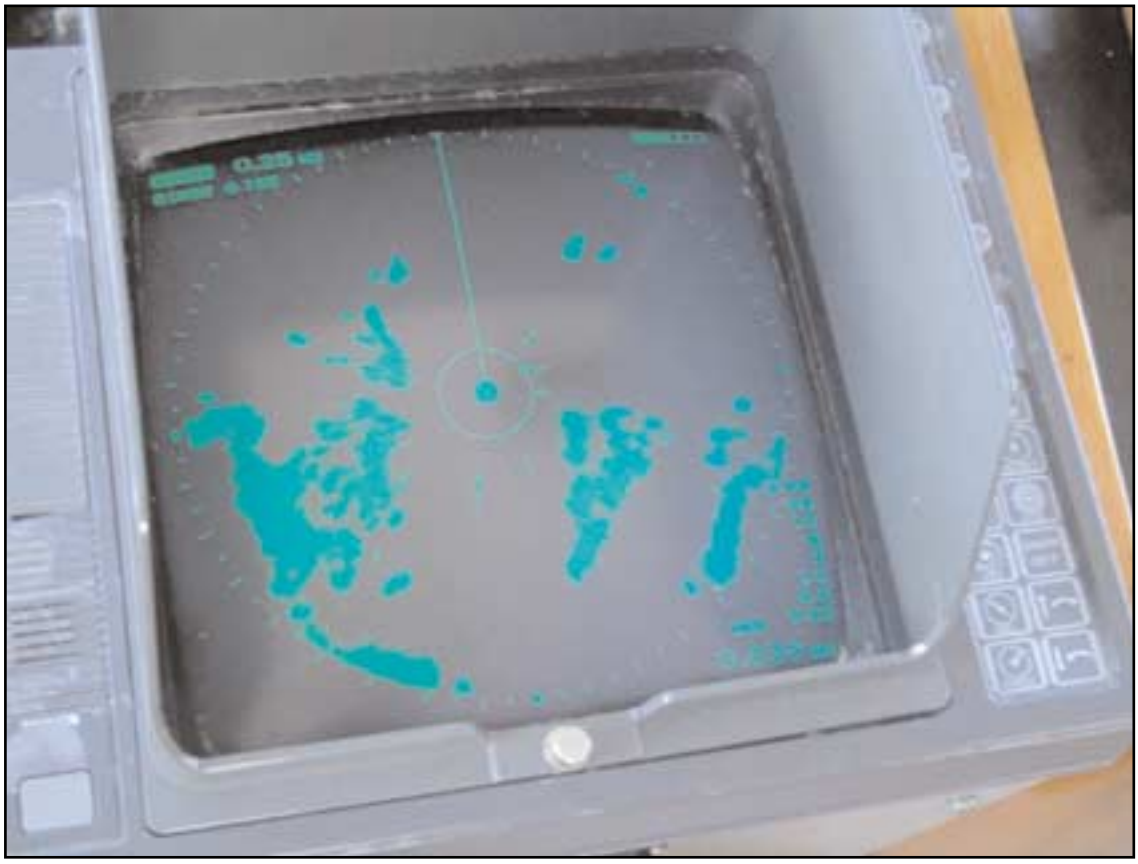
2.2.2 Blind pilotage

The severely reduced visibility, owing to fog, was the major factor which contributed to the accident. Considering the skipper's level of competency, without reduced visibility this accident would probably not have happened. He was totally reliant on his navigational instruments to give him his position and a sense of orientation, which, in good visibility, he would have derived from visual observation. Relying solely on navigational instruments is known as "blind pilotage". The skipper had been tested on this in 1986 as part of his 250-passenger capacity man-in-charge licence examination. Since then, he has seldom had command of *Trident VI* in such circumstances, and hardly at all in recent years.

The rudder indicator lights were not working. The skipper had assumed that the light on the compass was also not working because previously it had frequently not worked. He was also reluctant to use the light because there was no dimmer switch, and the direct light and the reflection on the windows would have diminished his night vision. Although there was some light from the accommodation below, it was not easy to read the instruments. However, during the MAIB investigation, it was found that this light was working, and was merely switched off on the switchboard panel located on the starboard side of the forward console. Therefore, two of the skipper's most useful navigational instruments were not easily available to him. He did not know how much rudder angle he had applied, nor did he know how fast the vessel was turning.

The navigational aids that were left available to him to use were the chart plotter and the radar.

The chart plotter was the more useful for situational awareness, since it displayed the vessel's position continuously and accurately on an electronic chart. It also provided an indication of the vessel's future track, in the form of a vector line, which was based on iterations of historical positions made good. When on a steady course, the difference between the vessel's heading and the predicted track would be minimal. However, as the vessel turned, there would be a time-lag difference between the predicted track and the actual vessel's



One of the two radar screens in use on *Trident V*
(similar to the units fitted on *Trident VI*)

heading, which increased the more rapidly the vessel turned. The situation on *Trident VI* was further complicated by the fact that the picture re-orientated itself sporadically, thereby losing the picture for short periods of time.

The plotter, therefore, gave the skipper no indication that his action to regain the centre of the channel was excessive, since there was a time lag between a large alteration of heading and a consequent change in ground track, as shown on the electronic chart plotter. The second available navigational aid was the radar, which was not stabilised with a compass input.

With an unstabilised radar, the vessel's heading marker on the screen remains stationary and, when altering course, other targets on the screen rotate. This causes the targets to 'blur' or merge with each other. On the other hand, with a stabilised radar, the heading marker moves when the vessel alters course; and the targets do not blur or merge. Had *Trident VI*'s radar been stabilised, the skipper would have seen that the rate of change of heading was too great, and that the vessel was crossing the channel too quickly towards the opposite side.

Many merchant navy ships use the output from gyro-compasses to stabilise radar pictures **(see photograph 9)**. However, on smaller vessels, the installation of gyro-compasses is not always practical because of cost and physical size. An alternative is the relatively inexpensive fluxgate magnetic compass, which is capable of electronically-stabilising a radar heading vector on the image of the vessel.

The MAIB recommends that the States of Guernsey Board of Administration encourage operators of this type of passenger vessel to install fluxgate compasses to generate stabilisation to their radars and chart plotters.

2.2.3 Manoeuvring characteristics

Trident VI had a history of poor and unpredictable steering qualities, which could take the less than very experienced skipper by surprise.

On the return journey, the skipper placed the engines at full speed to gain the most effectiveness from the rudders, because he knew that the vessel would be difficult to handle at a slower speed. Had the rudders been positioned in the propellers' slipstreams, the vessel's manoeuvring would have improved, and the skipper could have travelled at a slower speed through the narrow passages. The move to the centre of Percée Passage would have been more controlled, and would have lessened the danger of sheering across the channel.

Observations made by BMT Sea Tech Ltd, after examining photographs and drawings of the underwater propeller and steering arrangements on *Trident VI*, confirm that the vessel would be difficult to handle.

The main criticism was that the rudders were positioned outside the propeller slipstream, and produced a very small lift (steering) force. The rudders were positioned 740mm inboard of the propeller centre to facilitate the removal of the propeller shaft, together with the propeller, without the need to take the rudder off. However, if the rudder had been positioned just inboard of the shaft centre, so that it was still in the propeller's slipstream, there would have been enough space to allow the propeller to be removed so that the shaft could be taken out separately.

BMT Seatech Ltd also pointed out the disadvantage *Trident VI* would experience in a following sea, with the uncorrected rudder arrangements. It also commented on possible separated flow of water within the propeller tunnels, which would add to any handling problems.

The summary from BMT Seatech Ltd "strongly suggests that the underwater arrangements of *Trident VI* could have produced problems of handling and control", which is supported by the men-in-charge who manoeuvre *Trident VI* through the narrow rocky seas around Guernsey. Although this, and other vessels, have been operating with this rudder configuration for many years, some improvement can be made to her manoeuvrability by moving the rudders into the propeller's slipstream.

For this reason, MAIB has recommended that the owner of *Trident VI* consults a company of professional naval architects, with the aim of improving the vessel's manoeuvrability before going to sea.

2.3 PASSENGER MANAGEMENT

Announcements on Radio Guernsey, in the days following the accident, invited passengers to collect an MAIB Marine Accident - Passenger Questionnaire from the Harbour Office. The MAIB received 45 reports, representing both individuals and groups of passengers.

After *Trident VI* grounded, the passengers were not told of their situation for a number of minutes. During this time, the skipper was busy reporting the accident to the shore authorities, while the engineer and the deckhand were investigating the damage and ingress of water and helping and handing out lifejackets. No attempt was made to use the tannoy system to inform the passengers of the situation until the engineer returned to the bridge. This was about 15 minutes after striking the rocks.

During this wait, some of the passengers organised the distribution of lifejackets. Although the lifejacket stowages were marked, the passengers experienced difficulty in finding where they were stowed. Some were stowed on the roped off upper deck, which was in darkness. The crewman assisted with the distribution of lifejackets in the main cabin. However, his lack of identifying clothing meant that he was mistaken for a passenger. Passenger questionnaires suggest there were no crew available to show the passengers where the lifejackets were stowed, or to demonstrate the correct method of donning them. There were at least eight posters giving lifejacket donning instructions around the vessel. The skipper and crew were required to prioritise between looking after the vessel and looking after the passengers. There were too few crew to do both at the same time **(see Section 4)**.

Many of the passenger questionnaires indicate that the crew did not check for injuries among the passengers. Although the crew had stated that they walked through the passenger cabin a number of times, they were not readily identifiable to the passengers. Only those passengers who knew the crew personally confirm that the check was made.

However, it would be advisable for operating companies to provide crew with uniforms or surcoats to indicate clearly to the passengers that they are crew members.

The first announcement told the passengers that the vessel had grounded, that they were safe, and that they should not panic. Two further announcements were made, one to say that help was on its way, and another when the passengers were to disembark, "women and children first", to *Trident V*. The skipper recollected that at least three safety announcements were made but not all the passengers heard them.

The low profile of the crew, and the inaudibility of the announcements to some of the passengers, aggravated the feeling of shock they were experiencing.

No emergency procedures were available to the crew of *Trident VI*. Instructions were posted on board *Trident V*, although they gave no procedure to follow in the event of her grounding. When *Trident VI* was operated by the Isle of Sark Shipping Company, a Safety Training Manual was available, which gave full procedures for a number of different types of incident, including grounding.

The carrying out, and recording of, regular drills are requirements of the Domestic Safety Management Code **(see Sections 1.6.4 and 2.4.3)**. The Code also states that "there should be clearly stated procedures for responding to emergency situations". Had this Code been followed, the crew would have been better prepared to respond to the situation.

Since there was such a delay between the grounding and the first announcement from the crew, one of the passengers decided to contact the emergency services by mobile phone. This was counterproductive because it affected the response of the emergency services ashore.

It was later established that, although the harbour authority understood the accident to be a "major marine incident", this was not necessarily the case with the other services. Because the use of the trigger term "Major Incident" was replaced with words to the effect "the maritime incident room was activated", senior personnel in the police and ambulance services were not informed, and a full response was curtailed by duty officers, once it had become clear that there were no reported casualties **(see Section 4)**.

The passengers were counted as they transferred to *Trident V*, and *Trident VI* was confirmed clear of passengers before *Trident V* left for St Peter Port. On arrival, the passengers were met by police, harbour staff (acting in coastguard capacity) and lifeboat personnel, and were asked to wait on the jetty. This was to enable a headcount to be carried out, and the lifejackets to be collected. The reason for this wait was not explained to all the passengers, and was a source of irritation. After about 10 minutes, the passengers were told they could leave. No medical emergency services were present at the quayside to deal with any injuries, or the effects of shock. Passenger contact details were not collected. The treatment of the passengers, once they arrived ashore, was described in the passenger questionnaires variously as "shambolic", "disorganised", "third rate" and "an embarrassment".

It has been generally accepted by the various emergency services that it would have been appropriate to have established a police casualty reception facility for the passengers. Furthermore, it would have been more reassuring for them if an ambulance, and possibly a doctor, had been in attendance.

2.4 SAFETY MANAGEMENT - ADMINISTRATIONS

2.4.1 Crew training

The States of Guernsey Board of Administration had recognised the need for crew training for emergency preparedness aligned with the guidance given in MGN 203(M) and had ensured that the operators were aware of this guidance. However, in the absence of operational risk assessments and procedures, the training and drills carried out by the operators were of limited value.

Had the operators completed a full risk assessment leading to a set of emergency procedures, it is likely that otherwise unrecognised possibilities would have been addressed, and the need for additional crew for passenger handling might have been apparent.

2.4.2 Man-in-charge certification

The waters around the Channel Islands of Guernsey, Herm and Sark are not categorised as the waters around the UK are. However, for the purposes of licensing, it can be assumed that the local seas would be equivalent to UK category D waters. In category D waters, Class VI vessels are not allowed to sail in unfavourable weather and in conditions when the wave height would be expected to exceed 2.0 metres. Therefore, it would be expected that the man-in-charge licence for 250 passengers would be the equivalent to a UK Grade 1 Boatmaster's Licence, and that the two syllabi should be very similar.

However, there are certain differences between the man-in-charge syllabus and the Boatmaster's Licence syllabus **(see Annexes 1 and 2 and Section 4.1.6)**.

The skipper had only occasionally been employed in the passenger vessel trade for about 15 years, although he had renewed his man-in-charge licence throughout this period. There was no requirement to prove minimum service at sea. When he joined Trident Charter in 2002, his only requirement to renew his man-in-charge licence was to produce a valid medical certificate. However, in the UK, revalidation is set at every 5 years for all grades, and, in addition to a satisfactory medical report, the holder must also prove that at least 50 days at sea had been served in the previous 5 years.

2.4.3 Domestic Safety Management Code

The efficient and safe operation of ships requires the exercise of good management, both on board the ship and ashore. Direct operational responsibility lies with the man-in-charge. This includes management and technical activities to be performed by him with the assistance of the crew. However, overall responsibility should be shared by management ashore.

To achieve this shared responsibility, the UK has implemented the Domestic Safety Management Code. This Code is applicable to small vessels such as *Trident VI*, and lays down a number of responsibilities to owners and operators of these vessels. These are laid out in **Section 1.6.4**.

The Code ensures a structured, recordable, accountable, transparent system for the management of safety for domestic passenger vessels.

Once the safety management system has been developed, it is audited by the MCA to assess compliance with the Code and, on satisfactory completion, a certificate is issued. A mid-term audit is carried out between 3 and 6 months later, to assess whether the safety management system is functioning effectively. If successful, the certificate is endorsed to the effect that the period of validity becomes the same as the passenger certificate, which is for 1 year.

Operators should inspect every vessel at frequent intervals, to ensure they are properly maintained and operated in accordance with the relevant rules. Deficiencies should be rectified and records of inspections kept.

The operators should also review the following at regular intervals:

- The safety management system, analysing accidents/incidents;
- The vessel's safety minutes;
- Customer complaints;
- Internal company and MCA/Board of Administration audits;
- The effectiveness of procedural changes;
- Suggestions for improvement to the safety management system; and
- Identification of training needs.

The MAIB recommends that the Board of Administration introduces a Domestic Safety Management Code based on that in practice in the UK.

2.4.4 Risk assessments

As, at present, the States of Guernsey Board of Administration has no requirement for vessel operators ashore or afloat to carry out formal risk assessments, its adoption of the UK's Domestic Safety Management Code would introduce safety control.

To comply with this Code, operators should create a safe working environment, which includes an assessment of the risk to the health and safety of workers and others. Therefore, the MAIB has recommended that the Domestic Safety Management Code is introduced.

However, the planned operations carried out by the vessel, and hazards which may imperil a vessel, are specifically excluded from these requirements. This aspect has been discussed in other MAIB investigation reports and recommendations have been made to the MCA to review and modify the guidance given with regard to safety management. This recommendation is still under consideration by the MCA, and, if adopted in the UK, the States of Guernsey should adopt the same practice.

2.5 SAFETY MANAGEMENT - OPERATORS

2.5.1 General

Operating companies should be aware of the nature of the vessel's operation and should take into account each circumstance when deciding which skipper should take command.

2.5.2 Domestic Safety Management

On the evening of the accident, the vessel complied with the conditions of operation quoted in **Section 1.5.2**.

One of the major criticisms emanating from the passenger questionnaires was the passengers' inability to identify crew members, and their lack of instructions and reassurance at an early stage. The crew did not instruct passengers on how to don lifejackets.

The crew had made their first priority to check void spaces for ingress of water, and the skipper was occupied with communications on the radio; the management of the passengers took second place.

However, if a safety management system had been in place, it would have included procedures for responding to emergency situations, and a requirement for regular drills. This would have led to the crew being better practised to cope with the situation, enabling them to manage the passengers in a more efficient way.

If it was found, through drills and exercises, that the three crew members on *Trident VI* was not enough to cope with the assessment of damage, the necessary remedial action to secure the vessel, and to manage the passengers, the minimum number of crew would have had to be increased as necessary.

2.5.3 Risk assessment

Severely reduced visibility by fog is not uncommon in the Channel Islands. The spreadsheet at **Annex 3** shows that there were 19 days in 18½ weeks when fog was recorded in the logbook. Fog was present on the morning of the accident, and persisted in patches all day.

The evening trip to Herm was made by quite a number of residents of Guernsey, and would have been booked by them at different times in the preceding months. Therefore, there would have been a high expectation of the Trident Charter Company to ensure that the evening trip would go ahead as planned.

On the evening of 23 August 2003, the skipper and the manager were aware that fog patches were present around the islands, although it was not so dense in St Peter Port at the time of departure. The weather forecast for that evening could have been acquired in the afternoon, or a call to Herm could have been made to ascertain the severity of the fog in that area, before a commitment to depart was made. However, it is the skipper's decision on whether or not to sail and no such checks were made.

There was no company or regulatory requirement for the skipper to undertake any form of risk assessment for the passage. Had such an assessment been carried out, the skipper might have been prompted to assess the conditions more carefully.

The lack of risk assessment on the evening of the accident allowed the vessel to sail to and from Herm with over 100 passengers on board, through narrow passages surrounded by rocky shoals, in darkness and in severely reduced visibility, with a skipper who was relatively inexperienced in navigating in such conditions on board *Trident VI*, a vessel with less than ideal handling characteristics.

Had it been a requirement in Guernsey to conduct risk assessments, the company might have decided the best course of action would have been to cancel the trip because of the reduced visibility. Alternatively, it could have replaced the skipper with one more used to navigating this vessel in the prevailing conditions.

Should the MCA require formal risk assessments for any hazards which may imperil vessels during planned operations, the States of Guernsey should adopt the same practice.

2.6 HUMAN FACTORS

During the week preceding the accident, the skipper had been working his usual daylight hours on *Herm Clipper*, sometimes finishing at about 1430, and had worked no late shifts. On the day of the accident, he finished work at 1430, had been shopping and had a meal before returning to the harbour to take *Trident VI*. From this work pattern, it is probable that he was not suffering from fatigue.

The skipper had agreed to take the trip that night, as he had done about four times during the year. However, during that time, he had not been man-in-charge on an evening trip to Herm. If, on the night of the accident, he showed any doubt about taking command of the vessel in reduced visibility, it was not evident to the manager.

A critical opportunity to avert the accident arose when the manager, having heard of the vessel's late arrival at Rosière Steps after the trip from St Peter Port, telephoned the skipper and asked him if he was content to take the return passage. The skipper replied that he was. The fact that the skipper had experienced difficulty on the outward journey had naturally raised some concern about his likely performance on the return passage. Although the question of the skipper's confidence in his ability to execute the return passage was raised, it is likely that several factors led to a proper evaluation of the risks not being made. These were:

- The company's lack of a safety management plan, which could have provided guidance for the manager in the standards required for operating in the prevailing conditions. It could also have provided a formal framework for addressing the skipper's suitability for the return journey. Without these, it was almost inevitable that the manager would have relied on the skipper's own judgment and the knowledge that he had the qualifications required to do the job. It is unlikely that the manager would have known about the lack of regular competency testing entailed in the man-in-charge licence. If he did know about it, he probably would not have considered it at a critical moment.

- Several factors might have compromised the skipper's judgment. It is reasonable to expect that professional pride, and a desire not to let down the company, influenced his decision. As a member of a small, local community of boatmen, the skipper might also have been influenced by his perception of that community's expectations, particularly as several members of the community had also operated the vessel, presumably in similar circumstances at one time or another.

2.7 VESSEL SURVIVABILITY

Trident VI was safe from foundering while most of her two hulls was resting on the rocks. Despite having three void spaces open to the sea, she was able to float off the rocks with the rising tide, and was able to remain afloat for the return journey to St Peter Port.

SECTION 3 - CONCLUSIONS

The following are the safety issues which were identified as a result of the investigation. They are not listed in any order of priority.

1. Heading and steering information was not easily available to the skipper as the lights for the compass and rudder angle indicator were not illuminated. [2.2.2]

2. The chart plotter provided historical information made good. The radar was not compass stabilised. This meant that the skipper had no instantaneous clear view of the heading reference available from either of these instruments. [2.2.2]

3. The man-in-charge certificate issued by the States of Guernsey Board of Administration did not require proof of service or training on renewal or revalidation. [2.4.1, 2.4.2]

4. The skipper was not experienced as man-in-charge of *Trident VI* in fog. Although offered an opportunity by the company to hand over command for the return voyage to St Peter Port, he chose not to do so. [2.6]

5. The skipper was not practised with blind pilotage techniques on *Trident VI*, nor was there a requirement for him to practice. [2.2.2, 2.4.2]

6. To steer *Trident VI* effectively, it was necessary to maintain full speed, which was inappropriate in the prevailing visibility. [2.2.3]

7. The States of Guernsey Board of Administration did not require risk assessments to be made. [2.4.4]

8. The States of Guernsey Board of Administration did not require formal emergency procedures to be implemented by the passenger vessel operating companies. [2.4.1, 2.4.3]

9. There was a delay in providing information to the passengers following the accident. [2.3]

10. In the minutes immediately following the accident, the crew were not readily identifiable to the passengers. [2.3, 2.5.2]

11. The reception ashore of the passengers was uncoordinated and minimal in its scope. [2.3]

12. The survivability of the vessel was such that, even with three compartments breached, she was able to float on the rising tide and complete the return journey to St Peter Port. [2.7]

13. The vessel and crew were operating in compliance with the current legislation at the time of the accident. [2.5.2]

SECTION 4 - ACTION TAKEN

Since the accident, a number of actions have been taken.

4.1 STATES OF GUERNSEY BOARD OF ADMINISTRATION

1. All passenger vessel certificates have been amended to specify the minimum number of crew required for each operating condition and the number of passengers carried. In this regard, a Note has been issued to passenger vessel operators:

   In daylight with no more than 150 passengers; two crew = man-in-charge and engineer.

   In daylight with more than 150 passengers; three crew = man-in-charge, engineer and competent crew.

   In darkness with less than 110 passengers; three crew = man-in-charge, engineer and competent crew.

   In darkness with more than 110 passengers; four crew = man-in-charge, engineer and two competent crew.

2. The man-in-charge syllabus and revalidation requirements have been reviewed and amended to incorporate items from the UK Boatman's Licence not previously included.

3. A review of call-out procedures has taken place to ensure that, in the event of a "Major Incident" being declared, all senior officers in all affected services would be called to ensure the appropriate level of response is enacted.

4. The importance of using the trigger term "Major Incident", and the actions required, has been re-promulgated to all staff.

5. *Trident VI* has been restricted to operations in forecast conditions of visibility in excess of 1000m, pending the outcome of the MAIB investigation.

6. Annual revalidation of the man-in-charge licences now requires the applicant to confirm that a minimum of 10 days at sea has been maintained throughout the preceding calendar year.

4.2 TRIDENT CHARTER CO LTD

1. The company has complied with the Board of Administration's Note on minimum number of crew mentioned above.

2. The volume of the tannoy system has been increased for future trips.

3. The company has placed a contract to supply and fit radar and navigational equipment, which includes an integrated fluxgate compass.

4. The company has started to set up a domestic safety management system.

5. The company has instructed consultants to assess the vessel's manoeuvrability.

6. The company will require all crew to be certified in fire fighting, lifesaving and sea survival.

7. The company will provide baby/infant lifejackets.

8. The company will ensure that third and fourth hands are as proficient as the certified engineer/deckhands.

SECTION 5 - RECOMMENDATIONS

The **States of Guernsey Board of Administration** is recommended to:

2004/103 Encourage operators of this type of passenger vessel to install fluxgate compasses to generate stabilisation to the radars and chart plotter.

2004/104 Implement, by the most expeditious means, a Domestic Safety Management Code based on that in practice in the UK.

The **Trident Charter Co Ltd**, the owner of *Trident VI*, is recommended to:

2004/105 Consult a company of professional naval architects, with the aim of improving the vessel's manoeuvrability before she resumes service.

Marine Accident Investigation Branch
January 2004

ANNEX 1

Boatmaster’s Licence syllabus requirements

BOATMASTER'S LICENCE—SYLLABUS REQUIREMENTS

The syllabus below will be modified by the Examiner to take into account the local area of operation and the equipment on board the vessel.

For instance, it is unlikely that vessels operating solely on canals will be provided with a compass and an applicant would not be examined in this subject.

1. *Syllabus Content*	*Grade* 3	2	1
A. PRACTICAL TEST			
(This test should take place on a vessel of a type for which the applicant is requiring a licence).			
(1) BOAT HANDLING:			
Berthing and unberthing	Y	Y	Y
Coming to and weighing anchor	Y	Y	Y
Making fast to and leaving a buoy	Y	Y	Y
Boat manoeuvring in confined waters	Y	Y	Y
Turning short round	Y	Y	Y
Knowledge and effect of transverse thrust	Y	Y	Y
Steering a compass course and taking a rough bearing	Y	Y	Y
Use of locks	Y	Y	Y
Practical demonstration on the use of VHF on board the applicant's vessel	Y	Y	Y
B. ORAL EXAMINATION			
(1) EMERGENCY SITUATIONS:			
Recovery of man overboard	Y	Y	Y
Loss of engines	Y	Y	Y
Loss of steering ability	Y	Y	Y
Action to take in the event of collision	Y	Y	Y
Grounding	Y	Y	Y
Accident to crew member or passenger	Y	Y	Y
Use of extinguishing appliances	Y	Y	Y
Use of lifesaving appliances	Y	Y	Y
Search and rescue techniques in bad weather or reduced visibility		Y	Y
Choosing an appropriate area for beaching		Y	Y
(2) REGULATIONS FOR PREVENTING COLLISIONS AT SEA:			
A practical knowledge of the Rule of the Road as appropriate to the area of operation	Y	Y	Y
A full knowledge of the regulations		Y	Y
Keeping a good lookout	Y	Y	Y
(3) LOCAL KNOWLEDGE AND REGULATIONS:			
Knowledge of the contents of The Waterways Code for Boaters (canal vessels only)	Y		
Local signals and traffic regulations	Y	Y	Y
Local marks—to include buoyage, lights, leading lights and marks	Y	Y	Y
Local dangers to navigation—minimum and maximum depths over banks, etc., obstructions, currents and abnormal tidal streams		Y	Y
Local safe landing places in differing weather conditions		Y	Y
A general knowledge of the times and heights of spring tides		Y	Y
Safe compass courses in and out of local harbours		Y	Y
Any other item of local knowledge which the examiner may deem to be necessary	Y	Y	Y
A thorough knowledge of the local regulations and bye-laws		Y	Y
The locality of and means of communication with proximate Coastguard-Rescue Centres		Y	Y
(4) SEAMANSHIP:			
Common nautical terms	Y	Y	Y
Interaction with other vessels	Y	Y	Y
(5) CHARTWORK:			
The meaning of common chart symbols		Y	Y
The use of Tidal Diamonds		Y	Y
Position fixing			Y
Courses to steer allowing for current and leeway			Y
Familiarity with the use of parallel rules, dividers, compasses, etc.			Y
(6) LIFE-SAVING AND FIRE-FIGHTING APPLIANCES:			
A knowledge of the statutory requirements and appreciation of the fact that the person in charge of a vessel must be satisfied that the life-saving and fire-fighting appliances are properly maintained		Y	Y
Use and deployment of inflatable liferafts and inflatable or rescue boats			Y
Inflatable liferaft and boat servicing requirements			Y
Hydrostatic release units			Y
Maintenance and care of buoyant apparatus		Y	Y

1. *Syllabus Content*	*Grade* 3	2	1
(7) DISTRESS SIGNALS:			
A knowledge of the contents of Annex IV of the Collision Regulations and the operation of the signals and equipment required to be carried in the applicant's vessel		Y	Y
Coastguard response to distress signals		Y	Y
(8) PASSENGER CONTROL:			
Safety announcements (M.1386)	Y	Y	Y
Disposition of passengers and crew to ensure stability and trim	Y	Y	Y
Passenger numbers and reporting systems (M. 1408)	Y	Y	Y
Knowledge of other relevant M Notices	Y	Y	Y
(9) LEGAL RESPONSIBILITIES TOWARDS PASSENGERS AND CREW:			
Safe access	Y	Y	Y
Safe working practices	Y	Y	Y
Passenger Certificate and the law regarding it	Y	Y	Y
(10) WEATHER:			
Sources of information	Y	Y	Y
Local conditions and effects	Y	Y	Y
Signs of approaching bad weather	Y	Y	Y
(11) FIRST AID:			
An elementary knowledge of First Aid and the use of the equipment carried on board	Y	Y	Y
(12) ENGINEERING KNOWLEDGE:			
Basic knowledge of day to day engine and battery checks	Y	Y	Y
The requirement for servicing and routine maintenance of propulsion and auxiliary machinery	Y	Y	Y
(13) PUBLICATIONS:			
Local Notices to Mariners		Y	Y
Admiralty Notices to Mariners			Y
Merchant Shipping Notices (as applicable)			Y
Statutory Instruments (as applicable)			Y
(14) UK PREVENTION OF POLLUTION REGULATIONS:			
A general appreciation of the Regulations applicable to the prevention of pollution			Y
(15) RADAR AND NAVAIDS:			
Knowledge of the use of Radar, Echo Sounder and Decca or other position-finding device fitted on board the applicant's vessel		Y	Y
(16) PASSENGER MUSTER AND EMERGENCY DRILL:			
Knowledge of methods of orderly evacuation following any emergency, having regard to the size of the vessel concerned and its operational area		Y	Y
(17) BASIC KNOWLEDGE OF VESSEL CONSTRUCTION AND STABILITY:			
General ideas on ship construction and on plans available on board the vessel, where these are carried			Y
Maintaining watertight sub-division			Y
General pumping arrangements			Y
Outline knowledge of the effect on stability of loading, discharging, weight distribution and slack tanks			Y
Outline knowledge of freeboard and trim			Y
The use of stability and hydrostatic data where provided			Y

ADDITIONAL QUALIFICATIONS

	Grade 1	Grade 2*	Grade 3
Basic Sea Survival Certificate	X	X	
First Aid at Sea Certificate	X	X	
Two-Day Firefighting Course	X		

Notes:

1. *Basic Sea Survival and First Aid at Sea Certificates are not required for Grade 2 Licence holders operating solely within Category A and B waters.
2. M.1139 gives details of the Basic Sea Survival requirements and establishments where courses are held.
3. A Red Cross or a St John's Ambulance First Aid Certificate or an HSE First Aid at Work Certificate will be considered to be equivalent to a First Aid at Sea Certificate.
4. Details of establishments offering the Basic Fire-fighting Course (2-Day) can be found in M.1367. Alternatively details regarding the more intensive 4-Day Fire-fighting Course are listed in M.1494.
5. The Department's M Notices are issued free of charge and can be obtained from the local Marine Office.
6. VHF Certificate: Every person in charge of a vessel which has a VHF set on board must be the holder of a VHF licence. Details of local courses for the VHF certificate can be obtained from the Royal Yachting Association (0703 629924).

ANNEX 2

Herm and Guernsey special pilotage examination syllabus for man-in-charge licence

HERM AND GUERNSEY.

SPECIAL PILOTAGE EXAMINATION

FOR MAN-IN-CHARGE

SYLLABUS

1. Lights and Fog Signals.
2. Striking Marks.
3. Clearing and Leading Marks.
4. Beacons and Top Marks.
5. Courses and Distances.
6. Collision Regulations.
7. Seamanship, Emergency and Radio Procedures.
8. Tidal Streams.
9. Port Regulations and Requirements

LIGHTS

1. ***PLATTE FOUGERE LIGHTHOUSE***

Fl.W.R. ev. 10 secs. (Red 085°-155°) 16 M

Horn : 1 blast ev. 45 secs. Racon : morse "P".

2. ***PETITE CANUPE. - South Cardinal***

Q(6)+L.Fl.ev. 15 secs

3 ***TAUTENAY BEACON***

Q(3) W.R. ev. 6 secs.(Red 215° through W to 050°)7/6 M

4 ***ROUSTEL BEACON***

Qk. Fl. ev. sec.7 M

5 ***PLATTE ROCK BEACON***

Fl. W.R. ev. 3 secs. (Red 024° through E to 219°) 7/5 M

6 ***BREHON TOWER***

Isophase ev. 4 secs. 9M

7 ***WHITE ROCK LIGHT***

Occ. G. ev. 5 secs. 14M

8 ***CASTLE BREAKWATER LIGHT***

Alt. W.R. ev. 10 secs.16/8 M

Horn : 1 blast ev. 15 secs.

Radio Beacon 285 kHz., ident. 'GY' continuous.

9 ***OLD HARBOUR RED LIGHT***

Occ. R. ev. 5 secs. 14M

10 ***BELVEDERE LIGHT***

Occ. ev. 10 secs.14 M

11 ***ST MARTIN'S POINT LIGHT***

Gp.Fl. (3) W.R. ev. 10 secs.14 M
(Red from 185° - 191°, thence white to 011°, thence red to 060°)
Horn : 3 blasts ev. 30 secs.

12 ***LOWER HEADS BUOY - South Cardinal.***

Q (6) + 1 long Fl. ev, 15 secs. - Bell.

13 ***NOIRE PUTE BEACON***

Gp. Fl. (2) W.R. ev. 15 secs. 6M (Red 040° through east to 220°).

14 ***COURBEE DU NEZ - SARK***

Gp. Fl. (4) W.R. ev. 15 secs.8 M (Red 230° through west to 057°).

15 ***POINT ROBERT - SARK***

Fl. ev. 15 secs. 20M
Horn : 2 blasts ev. 30 secs.

16 ***HARBOUR ST SAMPSON***

F.G. and F.R. leading lights 286°.(Rear green, front red). Crocq Pier : F.R

17 ***REFEE BUOY - South Cardinal***
Q (6) + 1 long Fl. ev. 15 secs.

18 ***QE II MARINA***
Dir. Occ. W.R,G. ev. 3 secs.

19 ***FOURQUIES BUOY - North Cardinal***
Qk. Fl.

20 ***ALLIGANDE BEACON***
Gp. Fl. (3) G. ev. 5 secs.

21 ***EPEC BEACON***
Fl. G. ev. 5 secs.

22 ***GATE ROCK BEACON- West Cardinal***
Qk. Fl. (9) ev. 15 secs.

23 ***VERMERETTE BEACON***
Fl. (2) Y. ev. 5 secs.

STRIKING MARKS.

METRES

1. ***Longue Pierre.*** ***dries 4.9***

North side of Fermain Tearooms touching bluff of Bec du Nez.
St Martin's Point Hummock to Andrillot Hummock.

2. ***Gabrielle.*** ***dries 2.1***

Southside rocks of Fermain with south end of sea wall.
West Power-Station Chimney to Anfré.
Doyle's Column to W/R triangular daymark amongst trees.
Pepper Pot to W rectangular daymark.

3. ***Anfré.*** ***dries 3.3***

St James' Steeple with the slope of Terres Point.
Delancey Houses to the east side of Castle Cornet.
Vivian to the east side of mound at the Pétils.

4. ***Boue Sablon*** ***awash***

Moulinet Bn. just open E. of Castle Breakwater L/H.
Goubinière to the north side of Ferrière d'Aval

5. ***Moulinet (east head).*** ***dries 4.3***

Victoria Tower to the Town Church.
Old Power-Station Chimneys seen to the centre of the Castle Breakwater.

6. ***Ferico.*** ***0.9 on***

'Gentlemens' changing room at bathing pools to Oyster Beacon.
Commerce House seen just peeping E. of Castle Breakwater.
Platte Fougere L/H on the east side of Becquets.

7. ***Boue Sardrette.*** ***dries 0.6***

Goubeau Beacon in the middle of Commerce House.
Belvedère Light to White Rock Light.

8. ***Reffée*** ***1.2 on***

Belvedère House to White Rock Light.
Landsdowne House - Salerie Battery.

9. ***Fourquies of Belgrève*** ***dry 1.5***

Castle Cornet white patch with Breakwater Lighthouse.
Demie Flie Beacon between "Chiquita" and Red Lion Hotel (covers three heads).

10. ***SW Boue of Agenor*** ***2.1 on***

Platte Fougère Lighthouse to Bectondu.
North side of cottage ('Chiquita') with Demie Flie Beacon.

11. ***Mervillière.*** ***dries 0.6***

Platte Fougère Lighthouse with the east side of Bectondu.
Sauzebourge Point to Bréhon Tower.

12. ***Torode*** ***dries 2.7***

Platte Fougère Lighthouse with Bectondu.
Jethou House with the steps of Bréhon Tower.

13. ***Fosse Torode*** ***awash***

Jethou House north of Bréhon Tower.
Becquets seen west of Houmet de Paradis.

Tautenay Beacon to Roustel.

14. *SW Boue of Platte Rock* ***dries 2.7***

'Five Chimneys Cottage' to Flat Jumelle (Bordeaux).
'Bella Vista House' (Delancey) to Mont Crévelt Tower.
Victoria Tower to the west head of Vivian.

15. *East Boue of Platte Rock* ***awash***

Platte Rock Beacon to centre of Vale Castle.
Belvedère House to Breakwater Lighthouse.

16. *Lower Heads* ***dry 1.2***

Big Aiguillon with Les Barbées Beacon.
Victoria Tower with St James' Steeple and to the southern base of Castle Cornet.

17. *Musé* ***dries 1.2***

Little Aiguillon peeping west of Les Barbées.
Goubinière with Demie Musé Beacon

18. *Boue Verquesse* ***dries 1.8***

East side of Herm with the east side of Fauconnière.
Les Barbées Beacon seen east of Ferrière d'Aval.
Gasometer seen east of Étacré of Ferrière d'Aval.

19. *East Boue Barrarette* ***dry 3.9***

Vale Castle with Bréhon Tower.
Big Aiguillon with La Platte.

20. *West Boue Barrarette* ***dry 4.3***

Bréhon Tower with bluff at centre of Clavelée.

21. *Boue SSW of Fauconnière* ***0.7 on***

Herm Hotel in gap between Petite and Grande Fauconnière.
Bréhon Tower in centre of Clavelée.

22. ***Half-tide Rock of Jethou*** ***dries 5.2***

Rosaire Cottage peeping north of Crévichon.

Vale Castle seen north of Bréhon Tower.

23. ***Boue Foutu*** ***dries 1.5***

Rosaire Cottage in the hollow of the Petit Creux Rock.

Le Hauteur House to Mowlem's Chimney.

24. ***Bréhonnet*** ***dries 5.8***

Ozanne's Mill with the White Rock Light.

Amfrocque to l'Élingue.

Rosaire Cottage with the south side of Bréhon Tower.

25. ***Basse*** ***dries 1.8***

Grosse Ferrière to Alligande Beacon.

Mowlem's Chimney to the north side of St Sampson's Coalhole white patch.

26. ***Boue Genêté*** ***awash***

St Martin's Point to the west side of Bréhon Tower.

'Pétils House' north of the Platte Rock Beacon.

Amfrocque west of Rousse.

27. ***Towey*** ***dries 4.0***

Rosaire Landing Archway to Vermerette Beacon.

Petit Creux Beacon to the west side of Grand Creux.

28. ***Boue de Lionnais*** ***dries 0.7***

St Barnabas Church with the White Rock Light, and to the north head of the Petit Creux.

St Martin's Point Lighthouse with Alligande Beacon.

29. ***Étacré*** ***dries 1.0***

Vermerette Beacon to the south side of the White House Hotel, Herm.

Fort Doyle to Corbette de la Mare Beacon.

30. *Tinker* **dries 2.5**

Hermétier with Mouette.

Petite Fauconnière open south of Rouge Fauconnière.

Vale Mill to the high head of Péreche Rock.

31. *Meulettes* **dry 1.7**

Selle Rocque with the east side of Herm.

Hermétier with the Rosaire Landing.

32. *Les Fourquies of Big Russell* **dry 2.3**

Hummock on the slope of St Martin's Point with the low west side of Goubinière.

Caquorobert with the western horn of Selle Rocque.

33. *East Boue of Col des Maunes* **1.0 on**

Pûtrainez open of the east point of Herm.

Victoria Tower over the Big Aiguillon.

34. *L'Itrière* **dries 0.8**

Rouge Fauconnière peeping east of Grande Fauconnière.

Doyle's Monument to Ferrière d'Aval.

35. *Boue SW of Grande Fauconnière* **awash**

Rouge Fauconnière seen between the Grande Fauconnière and Petite Fauconnière.

L'Étac de Serk south of Goubinière.

36. *Les Anons* **dry 3.3**

Vale Mill with the west side of Bréhon Tower.

Noire Pute west of Goubinière.

37. *Banc des Anons* **2.6 on**

Selle Rocque with the east side of Goubinière.

Platte Fougère Lighthouse with the west tangent of Jethou (covers both heads).

CLEARING AND LEADING MARKS.

LITTLE RUSSEL

Miscellaneous:

1 To clear Bec du Nez (Fermain) to Moulinet Beacon :
Vale Mill just open east of Breakwater Lighthouse.

2 Between Ferico and Oyster Beacon:
Goubeau Beacon to the Castle Breakwater end.

3 To clear east of Boue Sardrette :
St Martin's Point Light open east of Castle Breakwater.

4 To clear Fourquies of Belgrève :
White patch of Castle Cornet open south of Castle Breakwater Lighthouse.

5 To clear between Mervillière and Torode :
Tautenay Beacon just open south of Roustel Beacon.

HERM AND JETHOU

1 To clear Tinkers : Southeastward - Hermétier open east of La Mouette.
Eastward - Vermerette Beacon with Gate Rock Beacon.

2 Rocquerie to Vermerette : Roustel Beacon just open west of the Rocquerie and Fondu LW mark.

3 North of Étacré : Grand Creux with Bréhon Tower until Victoria Tower is in line with Petit Creux Beacon.

4 Between Clavelée and the Half-tide of Jethou : St Joseph's Church Spire in line with the White Rock Light.

5 Between Les Anons and Banc des Anons : Victoria Tower in line with Les Barbées Beacon.

6 Between Musé and Lower Heads : Victoria Tower with the NE tangent of Castle Cornet 291°.

7 Alligande Beacon to Herm Harbour : Herm Pierhead white patch with Vermerette Beacon, pass north of Vermerette to bring Herm Leading Lights in line (white drums Fixed.W. Lights). (When Vermerette Rock is awash, there is 1 metre in Harbour entrance).

8 Percée Pass (south-eastward from Epec Beacon) : Vale Mill open southwest of Corbette de la Mare Beacon 308° leads south of Meulettes. For anchorage off Rosaire Landing (4.5m - 1m, gravel), pass south of Gate Rock Beacon, giving La Mouette a very wide berth at LW Springs before altering course to the northward.

N.B. Soundings at LW Springs at a distance of up to 1 cable WSW of Vermerette Bn. appear to be decreasing annually due to shingle silting.

9 Tobar Passage (from westward) : Grande Fauconnière white beacon seen on the southern slope of Jethou, until the Vale Mill is in line with the west side of Bréhon Tower, thence Noire Pute just open east of Grande Fauconnière.

To pass north of Les Barrarettes : Castle Breakwater Lighthouse touching the north side of the Big Aiguillon, or St Joseph's Church Spire seen over the north flat of the Big Aiguillon.

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BEACONS TOPMARKS TOWERS & WHITE PATCHES

R = Red
G = Green
Y = Yellow
B = Black
W = White
Fo= Fluorescent orange
HS= Horizontal Stripe
VS= Vertical Stripe

1.	Longue Pierre Beacon	Y, Fo letters "LP"
2.	Anfré Beacon	Y, Fo letter "A"
3.	Moulinet Beacon	Y, Fo letter "M"
4.	Oysters Beacon	Y, Fo letter "O"
5.	Sardrette Beacon	Y, Fo letter "S"
6.	Goubeau Beacon	Y, Fo letter "G"
7.	Quaine Beacon	Y, Fo letter "Q"
8.	Demie Flie Beacon	Y, Fo letter "F"
9.	Vivian Conical Tower	B.W.H.S.
10.	Platte Rock Tower	G
11.	Roustel Lattice Tower	B.W. Check
12.	Grande Fauconnière Beacon	White conical.
13.	Crévichon Beacon	White conical,
14.	Herm Harbour Leading Marks	White drums.
15.	Herm Pierhead	White.

16.	Vermerette Beacon	Y, Fo letter "V"
17.	Godfrey Beacon	G. Fo letters "GB"
18.	Epec Beacon	G. Fo letter "E"
19.	Alligande Beacon	G. Fo letter "A"
20.	Petit Creux Beacon	R, Fo letter "C"
21.	Les Barbées Beacon	Y, R Barrel topmark
22.	Corbette de la Mare Beacon	Y, disc topmark
23.	Rousse Small Tower	Y, crossed anchor flukes topmark

COURSES AND DISTANCES

The Courses stated below are True

FROM	TO	CO.	DIST.
St. Peter Port	Petit Creux Beacon	068°	2.0'
St. Peter Port	Alligande Beacon	074°	1.9'
St. Peter Port	Aiguillons (Tobar Pass.)	089°	1.9'

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INTERNATIONAL COLLISION REGULATIONS

A sound knowledge of the International Collision Regulations for Preventing Collisions at Sea, 1972, (including 1983 Amendments) are required, especially those Regulations contained in Part B - (Steering and Sailing Rules - Rule 4 to Rule 14), Part C - (Lights and Shapes - Rule 20 to Rule 31), Part D - (Sound and Light Signals - Rule 32 to Rule 36), and Annex IV - (Distress Signals), which Regulations may be obtained from a variety of sources.

SEAMANSHIP, EMERGENCY & RADIO PROCEDURES

Whilst the following recommendations will not cover every eventuality, they are, in general terms, intended as a guide.

1. Fire on Board Vessel

A. Fire in Engine Compartment/Engine Room

(i) Do not enter Engine Compartment or Engine Room.

(ii) Stop engine/s.

(iii) Operate external fuel cut-off valve/s.

(iv) Close flaps on E.R. air intakes.

(v) Operate E.R. fire extinguishers.

(vi) Do not attempt to gain access to E.R. or Engine Compartment, (a) which would allow oxygen to fuel the fire, or (b) because of inert gas emitted from the fire extinguishers which will not support life.

(vii) Do not attempt to re-open engine compartment or air intake flaps, or re-start engine/s, but request an immediate tow to the nearest port and Fire Brigade assistance.

B. *Fire on board Vessel (not in E. Compartment/E.R.).*

(i) Reduce speed to stop, alert all on board, and tackle the fire, which, however small, should be treated as a major incident. Extinguishers should be aimed at the base or centre of the fire where it will probably have the greatest hold.

(ii) Direct crew member to take over the fire-fighting, and manoeuvre the vessel so as to minimize spreading the fire by the wind.

(iii) Initiate Mayday call, indicating your position and predicament, and request immediate assistance.
(It is better to first transmit a distress call, then if the situation becomes less urgent, down-grade to a PAN message, or to even cancel an alarm, than to be too late in sending a Mayday).

(iv) Stop engine/s completely.

(v) Close any hatches, doors, etc., that will reduce the draught through the vessel, and operate fuel cut-off valve/s to prevent fuel feeding the fire.

(vi) Ignite pyrotechnic distress signals, and launch any life flotation gear as soon as it becomes obvious that they will be required to be used. Placate and calm distressed passengers, if any.

(vii) Do not evacuate vessel until it has become obvious that this critical stage has been reached, having first sent a further Mayday call stating the intended abandonment and up-dated position of vessel.

C. *Electrical Fire*

(i) If fire is external to battery compartment, switch off battery isolator switches to prevent further short circuiting.

(ii) Direct extinguisher to base of fire.

(iii) Proceed as in B above.

NB. A separate dedicated battery supplying power to the VHF Radio should be fitted in all passenger vessels.

Caution: do not inhale smoke from any fire, especially electrical fires, where harmful fumes are emitted from wire cable insulation, (similar to those given off from old-type furniture expanded foam cushions).

2 ***Man Overboard***

Once a person has been reported fallen overboard :-

(i) Return propeller drive control to neutral position.

(ii) If the side at which the casualty has fallen overboard is known, turn the vessel's stern away from the MOB.

(iii) Release one or more life-buoys in the direction of the casualty.

(iv) Instruct a responsible person to keep a constant look-out and report the position of the casualty.

(v) Return the vessel to the position of the casualty, forming a lee with the vessel, whilst informing the Shore Radio Station of the PAN incident by VHF - give position.

(vi) Position the MOB on the lee side and secure him to the vessel by means of a heaving line, warp, or a secured life-buoy.

(vii) Recover the MOB on board the vessel at the lee side, using rope and/or the life-buoy to advantage.

(viii) Inform the Shore Radio Station of the present situation

3 ***Requirement to Report Accidents and other Incidents***

Masters of Licensed Passenger Vessels are required to report any incident involving the vessel or passengers to the Licensing Authority, namely the States Board of Administration, by way of a report addressed to the States Harbour Master, as soon as possible after the incident.

These incidents include :

(a) Collision or near collision with another vessel.

(b) Grounding or stranding.

(c) Damage sustained to the hull of the vessel as a result of collision or striking the bottom.

(d) Injury sustained by a passenger or passengers.

(e) Other incidents involving passengers.

The reporting of either (a), (b), or (c) above should be accomplished by VHF radio to the nearest Shore Radio Station in the first instance, (in case of the need to render immediate assistance).
Where relevant, endeavour to establish the name of the other vessel involved.

It is also the duty of every Master, in the case of collision, to render any assistance as may be practicable, in so far as he can do so without danger to his own vessel, crew, or passengers (if any) - as prescribed by Sections 422 and 423 of the Merchant Shipping Act.

4 Reporting an emergency

Emergencies, however slight, should be reported promptly by VHF radio to the Shore Radio Station. In the event that the emergency situation worsens, this will allow more time to be available for the Rescue resources to be put on standby and for the situation to be assessed, in order that prompt action can be rendered, if required.

It is preferred to cancel assistance rather than to arrive too late at the scene of the emergency.

5 Ship's Radio Transmission Equipment

Radio Licenses

(a) Every British vessel fitted with transmission equipment must be licensed by the British Radio Licensing Authority, who will issue a call-sign for that particular vessel.

(b) In order to operate a radio transmitter, a person is also required to be licensed by the above Authority.

(c) Radio procedures must be carried out according to the Radio Operator's Handbook, a copy of which should be carried on board the vessel.

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TIDAL STREAMS

(a) General Tidal Flow in the Bay of St. Malo.

Consider firstly the general flow of the early flood tide into the English Channel, and in particular the increasing pressure of water as it is built up in the confines of the Bay of St.. Malo, commencing just after local Low Water at each place along the north Brittany Coast in the form of a broad band, whilst further to the north the main flow proceeds at a more leisurely pace up the English Channel.

At progressively later Low Water times, the tide turns eastwards along the north Brittany Coast until the west-facing Normandy coast is reached, building up into the south-east corner of the Bay of St. Malo, until local HW. Meanwhile, east of Les Roches Douvres this easterly set is divided by the island of Jersey, part of which flows NE up the la Déroute towards Cap de la Hague, accelerating as it is squeezed through the Race and Swinge of Alderney, slackening and turning here at four and a half hours after HW St.. Peter Port, then turns first southerly then south-westerly when influenced by the main Channel ebb.

Thus a circulatory anti-clockwise flow is set up in the general area surrounding the Bailiwick of Guernsey, approximately contained within imaginary lines drawn between Les Roches Douvres, Jersey, Casquets, a point 10 miles NW of Les Hanois and return to Les Roches Douvres.

It will therefore be seen that except for certain inshore areas, there is no definitive slack water in the Bailiwick of Guernsey area, but rather as the flood and then the ebb evolves, the direction of the current alters anti-clockwise in the general area surrounding Guernsey at a rate of approximately 30 degrees per hour (in general terms), during the tidal cycle. Along the north Brittany Coast, the tide flows and ebbs in an east-west direction at local LW and HW respectively; similarly the current flows north-south along the Normandy Coast.

(b) Tidal Flow-Guernsey

The easterly flow rate is increasing rapidly in the latitude of Guernsey at half-flood along the south and north coasts, whilst in the Little and Big Russels, slack water is experienced due to the Island mass blocking the flow.

As the flow direction alters anti-clockwise towards the north-east, the current commences to flow up the Little and Big Russels after half-flood, and at HW the tendency is to turn towards the north. Thus the flow is split at St.. Martin's Point, but whilst the main stream of flood tide continues to run northerly through the Big and Little Russels at 2.5 to 3.0 knots during springs, the early ebb drift is commencing to go west close inshore along the south coast of Guernsey at 1 knot.

After high-water, the configuration of the East Coast of Guernsey continues to force the main flow NEly past the Platte Fougère Lighthouse and Amfrocque, but tends to turn more northerly a few miles north of this area. At this time close

inshore south of St.. Peter Port a southerly drift is produced, which joins the first ebb along the south coast; and close inshore the eddy is felt along the NW coast from the Platte Fougère L/H, and the first westerly ebb is commencing.

At half-ebb the general flow has turned westerly, and slack water is again experienced in the Little and Big Russels, but is soon forced to turn SW'ly in this area, first by the configuration of the land and then by the influence of the main ebb gaining momentum.

At low water the tendency is for the flow to turn more southerly, causing slack water in the eddy of the south coast of Guernsey, and a strong SE'ly flow to commence in the area of the Platte Boue and Amfrocque towards the Big Russel, caused by the influential southerly stream in this Channel.

After low water the first flood tide is commencing towards the east at Pleinmont Point and along the inshore north-west coast, the former event being induced to join the main flow down the Little and Big Russels at St.. Martin's Point, but inevitably this easterly flow is gradually increased until half-flood, and overwhelming the southerly Russels' current, thus re-commencing the cycle once more.

The greatest volume of tidal flow will be felt in the narrows off Roustel (rate 4.5 knots) during Spring tides at high and low water, in the Big Russel and along the south and north coasts of Guernsey, also in the area of the Platte Boue between LW and Half-flood.

The tidal rate in the near approach to St.. Peter Port is generally weak at 1 knot maximum, but candidates should be aware of a fairly strong circulatory flow into the Harbours of St.. Peter Port and St.. Sampson's, especially during the two hours either side of half-flood at Spring tides.

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PORT REGULATIONS & REQUIREMENTS

These may vary from time to time, therefore the Harbour Master or his Deputy should be consulted prior to being examined.

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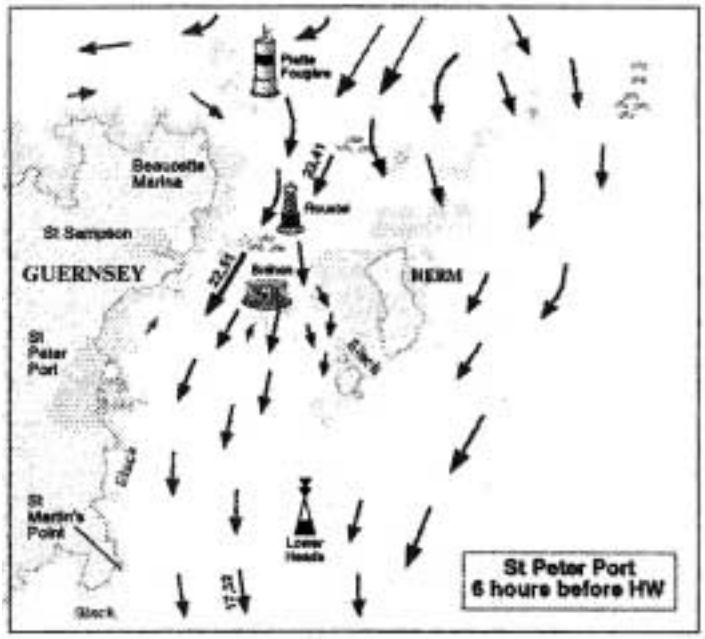
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Brehon
HERM
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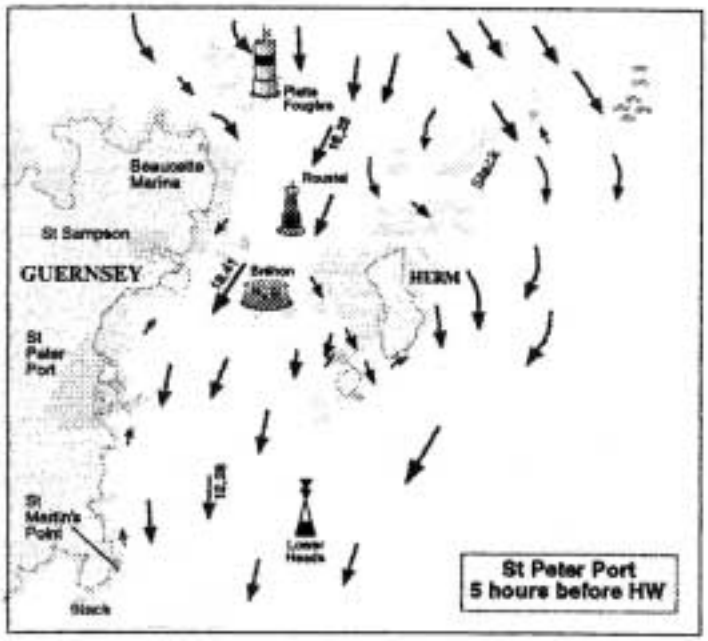
St Martin's Point
Lower Heads
Slack
St Peter Port
6 hours before HW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St Martin's Point
Lower Heads
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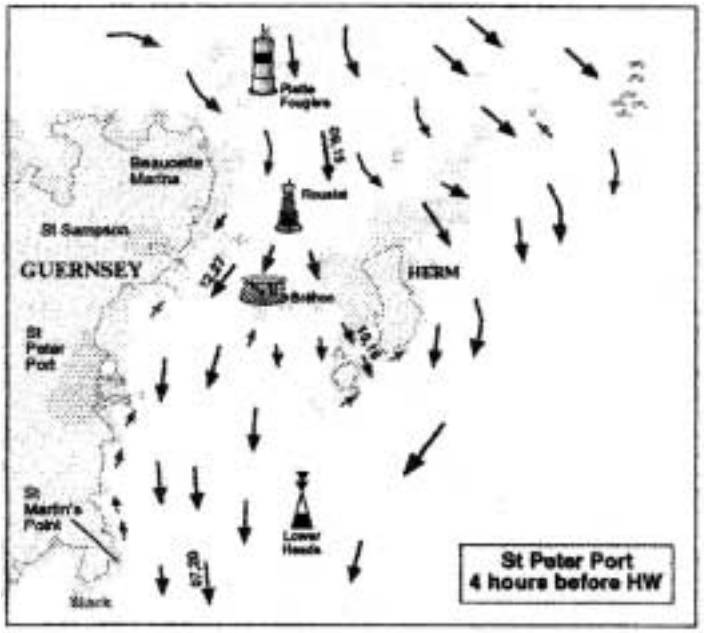
St Peter Port
5 hours before HW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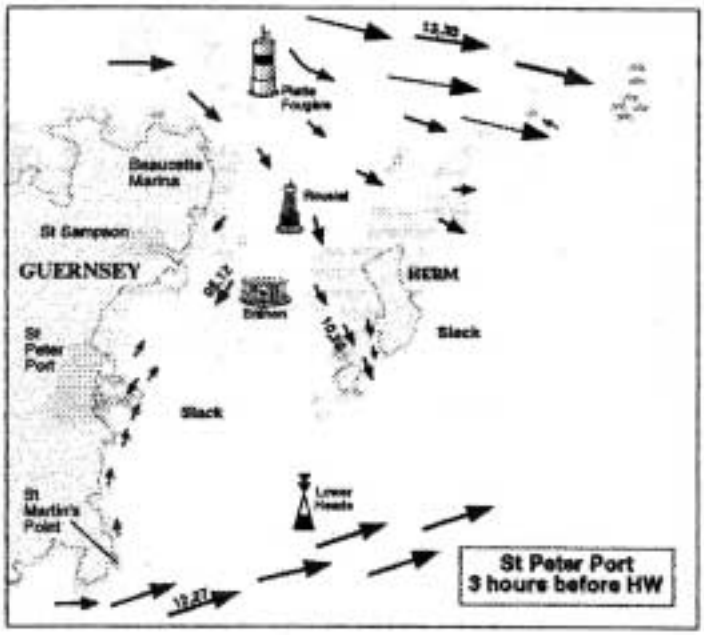
Brehon
HERM
St Peter Port
St Martin's Point
Lower Heads
Slack
St Peter Port
4 hours before HW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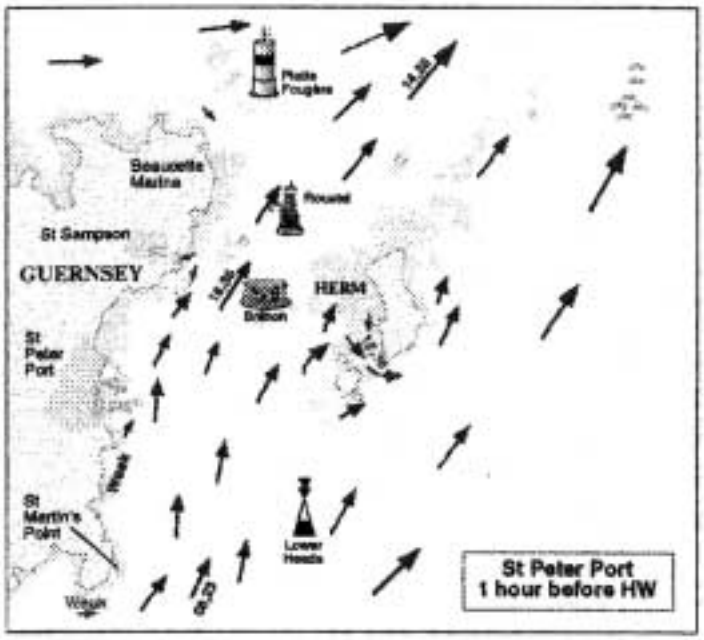
St Sampson
GUERNSEY
Brehon
HERM
Slack
St Peter Port
Slack
St Martin's Point
Lower Heads
St Peter Port
3 hours before HW


Platte Fougère
Beaucette Marina
Roustel
St Sampson
GUERNSEY
Brehon
HERM
St Peter Port
St Martin's Point
Lower Heads
St Peter Port
2 hours before HW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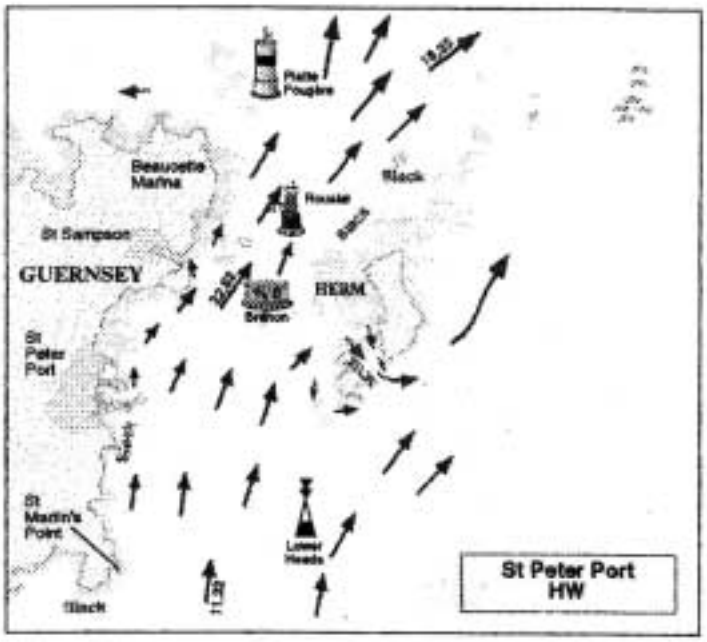
Roustel
St Sampson
GUERNSEY
HERM
Breton
St Peter Port
Lower Heads
St Martin's Point
St Peter Port
1 hour before HW


Platte Fougère
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HERM
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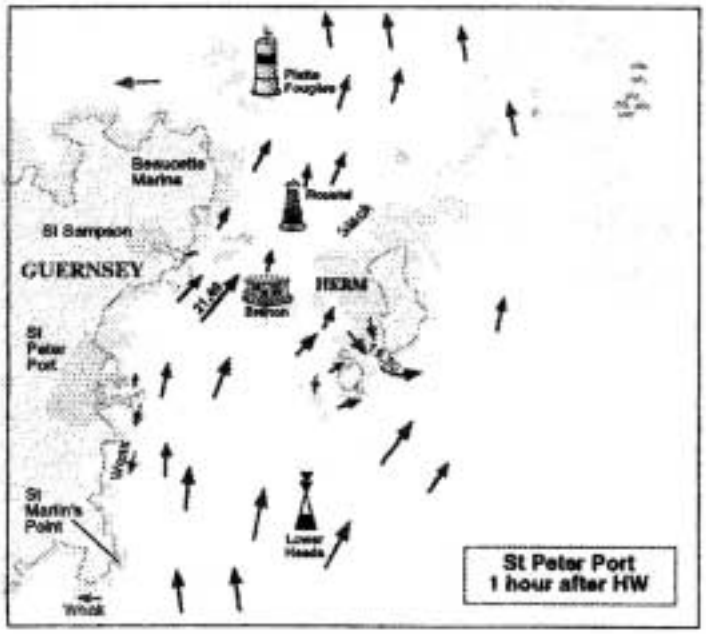
St Peter Port
HW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HERM
Breton
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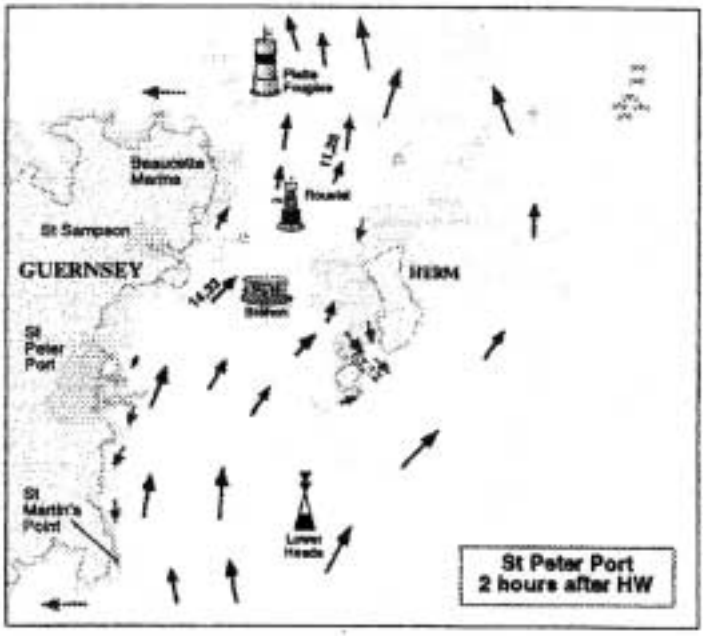
Lower Heads
St Martin's Point
St Peter Port
1 hour after HW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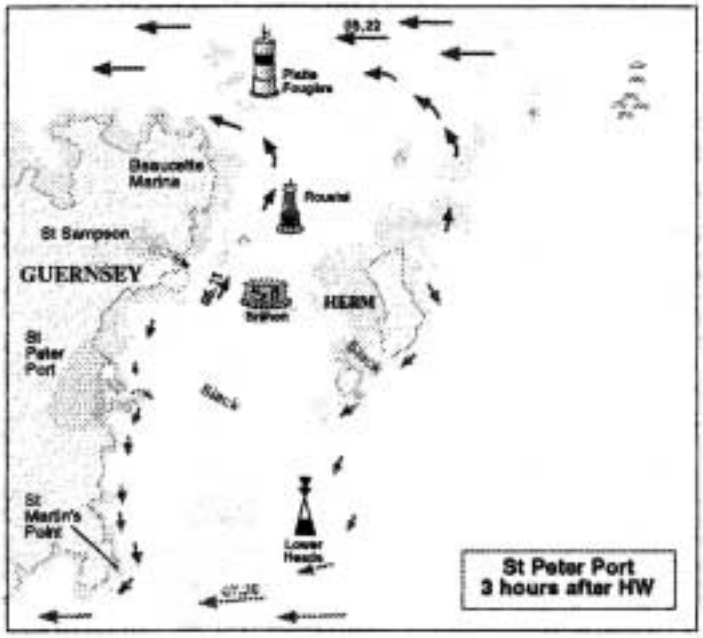
St Sampson
GUERNSEY
HERM
Breton
St Peter Port
Lower Heads
St Martin's Point
St Peter Port
2 hours after HW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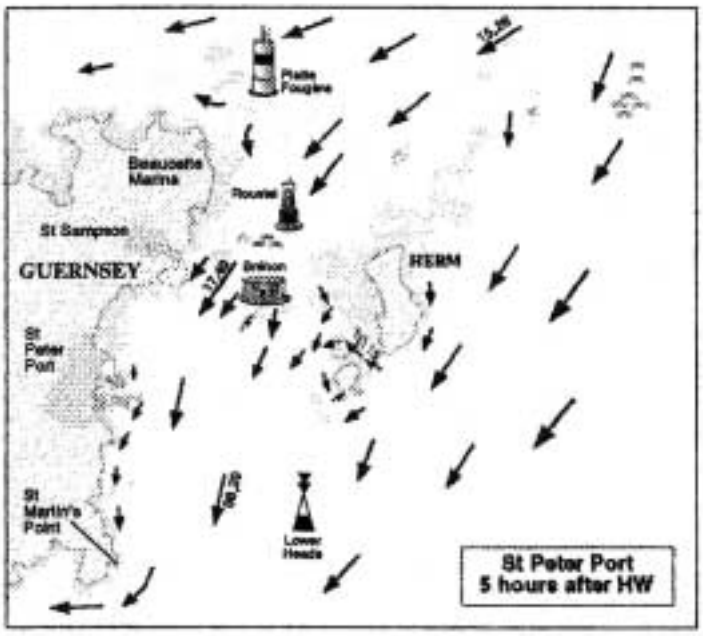
Beaucette Marina
Roustel
St Sampson
GUERNSEY
Sérénon
HERM
St Peter Port
St Martin's Point
Lower Heads
St Peter Port
3 hours after HW


11.32
Platte Fougère
Beaucette Marina
Roustel
St Sampson
GUERNSEY
Sérénon
HERM
St Peter Port
St Martin's Point
Lower Heads
09.23
St Peter Port
4 hours after HW


Platte Fougère
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St Sampson
GUERNSEY
Sérénon
HERM
St Peter Port
St Martin's Point
Lower Heads
St Peter Port
5 hours after HW


Slack
Platte Fougère
Beaucette Marina
Roustel
St Sampson
GUERNSEY
Sérénon
HERM
St Peter Port
St Martin's Point
Lower Heads
Slack
St Peter Port
6 hours after HW

CATEGORY 1 BOATMAN'S LICENCE – SYLLABUS

This category would relate to a person in charge of a Class VI vessel carrying over 150, but not more than 250 passengers, who would be required to undergo tests in addition to the requirements of Category II Boatman's Licence, in order to satisfy the Board of his proficiency in procedures and instructions to passengers in the following cases:-

(i) **FIRE ON BOARD THE VESSEL**

(Instruction and examination on this subject by the Deputy Harbour Master, therefore apply at the Harbour Office for an appointment).

(ii) **BREACHING OR STRANDING**

Steps to be taken to safeguard passengers in the event of breaching or stranding.

(iii) **COLLISION**

As for (ii).

(iv) **ABANDONING SHIP OR SINKING**

i.e. use of life-saving appliances.

(v) **PROFICIENCY IN THE OPERATION OF RADAR**

As applied to local conditions (a practical test on board the vessel at sea).

(vi) **HAVE A COMPREHENSIVE KNOWLEDGE OF THE STEERING AND SAILING RULES**

Should have a more general knowledge of the other Rules contained in the Regulations for the Prevention of Collision at Sea.

(vii) **PASS AN EYESIGHT TEST**

Including colour vision.

April 1984

ANNEX 3

Spreadsheet showing the data from *Trident VI*'s logbook

	No. of trips	HW	HW	LW	LW	Weather	Wind	Sea	Remarks
April									
15 T	2 to Sark	619	1849	1248		Fair	Var 1-2	Calm	
16 W	3 to Sark	705	1932	1334		Fine	Var 1-2	Calm	
17 T	2 to Sark	749	2014	1417		Fine	Var 1-2 inc NE 3-4 later	Calm	S about
18 F	3 to Sark	832	2054	1458		Fair	Var 1-2 bec ENE 4/5 poss 6 to 35kn later	Calm bec rough later	
19 S									No sailings strong winds
20 S									No sailings
21 M	3 to Sark	1035	2253	1655		Fair	S 2-3	Slight	Via Herm
22 T	2 to Sark	1120	2340	520	1739	Fine	Var 1-2	Calm	
23 W	2 to Sark, 3 to Herm, 1 to Sark, then 1 to Herm	1217		614	1837	Fair	E or Var 1-3 inc 4-5 later	Calm bec moderate	
24 T	1 to Herm, 1 to Sark, 3 to Herm, 1 to Sark		1345	730	2007	Overcast	Var light airs	Smooth	Vessel used for Captain's Table
25 F	1 to Herm, 1 to Sark, 2 to Herm		1531	917	2157	Fair	S-SE 3-4	Moderate	Vessel withdrawn afternoon repairs to cracked exhaust manifold
26 S	1 to Herm, 1 to Sark, 1 to Herm, 3 to ?		1636	1034	2300	Fair with fog patches	S 3-4 inc 4-5 veering SW 5-6 to 35kn	Slight bec rough	
27 S	5 to Herm		1725	1124		O/cast, rain, mod-good vis	SW 4	Light	
28 M	3 to Herm		1805	1208		Cloudy with rain	S 5 to 7 veering Sw to W 4-5	Mod inS to rough in N bec slight to rough	
29 T	I to Herm, I to Sark, 3 to Herm, I to Sark, 1 to Herm	620	1841	1246		Fine and clear, good vis	SW 4	Light to moderate	Night trip to Herm
30 W	3 to Sark	657	1915	1321		Cloudy	S- SW 3-4 poss inc to 5-6 later	Moderate	
May									
1 T									No sailings due to Wx
2 F		804	2018		1422	Cloudy with heavy rain	S-SW 5-6	Rough or very rough	No sailings due to Wx
3 S	3 to Sark	835	2047	1450		Fair	WSW 4	Moderate	
4S									No sailings
5 M	3 to Sark	932	2140	1545		Fair with some cloud	WSW 3-4	Slight - moderate	
6 T	2 to Sark	1002	2210	400	1614	Fair	N - NW 2-3	Slight - moderate	
7 W	3 to Sark	37	2248	431	1648	Fine	Var 1-2	Calm - slight	
8 T	2 to Sark	1124	2341	512	1735	Cloudy	W - NW 2	Slight	
9 F	3 to Sark	1231	54	612	1844	Cloudy	NW 2-3	Slight - moderate	
10 S	3 to Sark		1355	742	2019	Cloudy	S 2-3	Slight - moderate	Via Herm
11 S									No sailings
12 M	2 to Sark	344	1632	1025	2250	Cloudy with thundery showers	WSW 4 occ 5	Moderate	
13 T	2 to Sark	450	1727	1123	2346	Fair but with occ heavy showers	WNW 3-4 inc 4-5 later	Moderate	
14 W	3 to Sark	545	1817	1215		Fair	NW 3-4	Slight to moderate	New hydrostatic releases fitted to liferafts
15 T	2 to Sark	636	1904	1304		Fair	Var 1-3	Slight	
16 F	1 to Herm	724	1948		1351	Rain, heavy at times	S 3-4 occ 5 from late am, veering SW pm		0935 tender Discovery return 1040. Night trip Herm
17 S	4 to Sark	810	2032		1436	Cloudy showers	SSW 4	Moderate	Damage done to vessel by drunken pax and rude to crew
18 S									No sailings
19 M	2 to Sark	939	2157		1601	Heavy rain	SSW 3-4 inc later	Moderate	
20 T	1 to Sark	1024	2240	425	1643	Fair- cloudy	W 5 and gusty	Moderate to rather rough	Pm sailings cancelled due to wx. Inspection to hull damage to prop and rudder
21 W	4 to Sark	1111	2328	512	1730	Cloudy	SW-W 3-4, perhaps 5 later	Moderate	
22 T	3 to Sark	1206		605	1825	Cloudy with drizzle and fog patches	W4 occ 5 dec later	Moderate	
23 F	3 to Sark	1316		710	1936	Cloudy with rain and drizzle	W 4-5 dec 3-4 this evening	Moderate	Problem with poprt m.e. vessel with drawn from service to effect repairs
24 S									
25 S									1105 sea trials 1150 trials complete all OK
26 M	4 to Sark	408	1640	1038	2303	Fair	W 1-2	Calm with low swell	
27 T	3 to Sark	458	1723	1124	2345	Cloudy	WSW 1-3	Slight	
28 W	4 to Sark	541	1803	1204		Fog clearing later	Var 1-2	Calm	Near miss with L'Esprit de Serm off Nez at 1037
29 T	3 to Sark, I to Herm	621	1840	1241		Fair with mist and fog patches	Var 1-3	Calm - slight	Vessel used for Captain's Table to Herm
30 F	3 to Sark	659	1915		1316	Fair with mist and fog patches	Var 1-2	Calm	
31 S	4 to Sark	734	1949		1350	Fog	W 2-3	Slight	
June									
1 S									Vessel ised for round Guernsey Trip
2 M	4 to Sark	843	2053		1456	Cloudy with patchy rain	WNW 2-3	Slight	
3 T	2 to Sark	916	2125		1529	Cloudy occ showers	S-SE 3	Slight	Vessel with drawn from service starboard at 1610 m.e. valve on no.6 cylinder
4 W									Repairs being made finish at 2130
5 T	3 to Sark	1032	2243	426	1644	Fair	S- SW 2-3	Slight	
6 F	2 to Sark, I to Herm	1120	2335	511	1732	Cloudy	S - SW 3-4 occ 5 dec 2-3 later	Moderate	Night trip to Herm
7 S	2 to Sark	1218		607	1832	Cloudy with mist and drizzle	S - SW 3 occ 4	Moderate	
8 S									No sailings
9 M	4 to Sark	1439		831	2101	Fair	S 2	Slight	
10 T	3 to Sark	302	1549	943	2212	Cloudy with occ showers	SSW 3	Moderate	
11 W	4 to Sark	412	1657	1047	2314	Cloudy with occ showers	SSW 3	Moderate	
12 T	3 to Sark	514	1746	1145		Fair	MW 1-3	Slight	
13 F	3 to Sark	610	1839		1239	Fine	ENE 2-3	Slight to moderate	
14 S	4 to Sark	703	1928		1330	Fair - cloudy	NE 1-3	Slight	
15 S	5 to Herm	754	2015		1419	Good, sunny, clear	NE 2-3	Slight	
16 M	4 to Sark	843	2101		1506	Fine	Var	Calm	
17 T	3 to Sark	929	2145	331	1557	Cloudy with mist and fog patches	WNW 3-4 inc 5 poss 6 later	Moderate locally rather rough later	
18 W	4 to Sark	1015	2229	417	1634	Fair with fog patches developing	W 2-3 inc 3-4 poss 5 later	Moderate	
19 T	3 to Sark, 1 to Herm	1100	2314	502	1718	Cloudy with drizzle andf fog patches	WSW 3-4	Moderate	Night trip to Herm
20 F	3 to Sark	1146		548	1804	Fair	NW 1-3 becoming NE 2-4 later	Slight	
21 S	4 to Sark, 1 to Herm	1236		638	1855	Fair	Var 1-2	Calm	Night trip to Herm
22 S									No sailings
23 M	4 to Sark	1437			832	Fine	NW 3	Slight	Moored in Grede de la Ville 1450 - 1546 D Day
24 T	3 to Sark	1539			933	Fine	Calm	Calm	
25 W	4 to Sark	1633			1028	Fine	Calm	Calm	
26 T	3 to Sark, 1 to Herm	450	1720		1117	Overcast, mist and fog	WNW 2-3	Slight	Pick up broken down rib, 0.5 E of ..... Night trip to Herm
27 F	3 to Sark	543	1824		1201	Overcast, mist and fog	WSW 1-2	Smooth to slight	
28 S	4 to Sark	628	1845		1243	Fine	Calm	Calm	Lot of drunken passengers
29 S	2 to Sark	709	1924		1324	Fair	S - SE 2-3	Slight	
30 M	4 to Sark	750	2003		1403	Fair, cloudy	S-SE 3		

	No. of trips	HW	HW	LW	LW	Weather	Wind	Sea	Remarks
July									
1 T	4 to Sark	829	2040		1442	Fair, cloudy	SW 1-3	Slight with low swell	
2 W	4 to Sark	907	2117	304	1521	Cloudy, occ showers	SW 3-4 becoming NW pm	Moderate	
3 T	3 to Sark, 2 to Herm	946	2156		1600	Cloudy	W - NW 2-3	Light to moderate	1 Sark trip via Herm, 2 night trips to Herm
4 F	3 to Sark	1026	2238		1640	Cloudy	NW 2-3	Slight	1 Sark trip via Herm
5 S	4 to Sark	1110	2238	507	1724	Cloudy	Var 1-2	Calm	
6 S	2 to Sark	1159			1814	Overcast	Calm	Calm	
7 M	4 to Sark	1255		648	1912	Fair, cloudy	Calm	Calm	
8 T	4 to Sark	1400		750	2020	Fair	Var 1-2	Calm	
9 W	4 to Sark	1511		902	2136	Mist and fog clearing later	Var 1-2	Calm	Thick fog < 100m reported am and pm
10 T	4 to Sark, 1 to Herm	341	1622	1016	2249	Fair, fog patches developing later	Calm	Calm	Trip to Herm at noon
11 F	4 to Sark	451	1726	1123	2353	Fair	NW 2-3	Slight	Delay due to starter motor failure. Via Herm at 1600
12 S	4 to Sark, 1 to Herm	555	1823	1223		Fair	N - NE 2-3	Slight	Via Herm at 1400. Night trip to Herm
13 S	2 to Sark, 1 to Herm	653	1916	51	1318	Fine	Var 1-2	Calm	SPP-H-S-H-SPP, SPP-H-SPP, SPP-H-S-SPP
14 M	4 to Sark	745	2005		1410	Fine	S - SE 1-2	Calm	Vessel left in a mess by previous " Venture" crew
15 T	4 to Sark	834	2051	236	1457	Fair	Var	Calm	Via Herm at 1400
16 W	2 to Sark	919	2133	321	1540	Cloudy with thundery showers	Var 1-3, bec SW - W 4-5 pm	Slight bec modertae later	Vessel dried out at N0. 9 to scrub bottom and to dress damaged propeller
17 T	4 to Sark	1000	2213	404	1620	Cloudy with occ showers	WSW 5 occ 6 dec 4 later	Rather rough, moderate later	
18 F	4 to Sark	1039	2250	433	1656	Cloudy	WSW 2-3	Slight	
19 S	4 to Sark	1115	2326	521	1732	Cloudy	S 2-3	Slight to moderate	Hen party
20 S	2 to Sark	1152		557	1808	Fair	SSW 2-3	Slight to moderate	
21 M	4 to Sark, 1 to Herm	1239		637	1849	Cloudy with occ showers	SSW 2-3	Slight	Trident charter using vessel for Puffin Trip
22 T	4 to Sark	1323		724	1943	Cloudy	WSW 2-3	Slight	
23 W	4 to Sark, 1 to Herm	1427		822	2050	Fair, cloudy	S - SW 1-3	Slight	Night trip to Herm
24 T	4 to Sark	300	1537	927	2159	Fair	W 2-3	Slight	
25 F									Sailing cancelled due to weather
26 S	4 to Sark	511	1735		1127	Cloudy	S 2-3	Moderate	
27 S	2 to Sark	601	1823	1218	44	Fine	W-NW 2-3		
28 M	4 to Sark	652	1908		1305	Fair, cloudy	WSW 2-3	Slight to moderate	Elderly lady caught shin, first aid given
29 T	4 to Sark	736	1949		1349	Cloudy	W 2-3 inc later	Moderate	
30 W	3 to Sark	818	2029		1431	Cloudy bec fair later	WNW 3-4 poss 5 dec later	Moderate rather rough	
31 T	4 to Sark	857	2108		1512	Fair, cloudy	W 2-3	Slight to moderate	
August									
1 F	4 to Sark	936	2146		1550	Fair	WSW 3	Moderate	
2 S	4 to Sark	1014	2225		1629	Fair	Var 1-2, bec 1-3	Calm	
3 S	2 to Sark	1053	2306	452	1708	Fine, hot	N - NE 2-3	Calm	
4 M	4 to Sark	1135	2352	523	1751	Fair	W - NW 2-3	Slight	Vessel left in a mess by previous " Venture" crew
5 T	4 to Sark	1224		619	1841	Fair, cloudy	SSE 3 backing WNW pm	Slight to moderate	
6 W	4 to Sark		1324	715	1945	Mist and fog, thinning later	WNW 1-3	Slight	
7 T	4 to Sark		1443	828	2110	Mist and fog	N-NE 1-3	Slight	Thick fog via Muse
8 F	4 to Sark	322	1608	958	2239	Fair with mist and fog	Var 1-2	Calm	
9 S	4 to Sark, 1 to Herm	446	1719	1116		Fair	Var - ENE 1-2	Calm	Trident night charter using vessel for Captain's Table
10 S	2 to Sark	553	1818	1219		Fair	Var 1-2	Calm	
11 M	4 to Sark	649	1909		1313	Fair with mist and fog patches	Var 1-2	Calm	
12 T	4 to Sark	738	1954		1401	Fair with mist and fog patches	N 1-2	Calm	
13 W	5 to Sark	821	2036		1443	Fair, cloudy	NW 1-2	Calm	
14 T	3 to Sark	901	2114	305	1522	Fair, cloudy	NN-NE 3-4 occ 5 poss 5 later	Moderate	
15 F		937	2143	342	1556	Cloudy	ENE 4-5 occ 6 and gusty	Moderate, locally rather rough	Sailings cancelled due to weather conditions
16 S									Sailings cancelled due to weather conditions
17 S	2 to Sark, 1 to Herm	1038	2248	445	1653	Cloudy	Var 1-3	Calm	SPP-S-SPP, SPP-H-S-SPP
18 M	4 to Sark	1107	2318	512	1720	Cloudy	WSW 2-3 poss 4	Slight to moderate	
19 T	4 to Sark	1137	2352	539	1750	Fair, cloudy	WNW 1-2	Calm with low swell	
20 W	4 to Sark	1214		612	1829	Fair, cloudy	NE-N 1-2	Calm	
21 T	4 to Sark	1309		703	1937	Fair	NW-W 1-3	Calm	
22 F	4 to Sark	1438		829	2112	Cloudy with mist and fog patches	W 2-3	Slight	Fog via Muse x2 am and pm
23 S	4 to Sark, 1 to Herm	330	1606	953	2232	Cloudy with mist and fog patches	W 1-2	Calm	Trident night charter

ANNEX 4

A critique by BMT SeaTech Limited on *Trident VI*'s manoeuvrability

SUBJECT: TRIDENT VI: MANOEUVRABILITY

We have looked at the photographs and drawings with a view to assessing the manoeuvring capabilities of the vessel and have the following comments:

1. The most striking feature of the vessel is the stern arrangement. The propellers are in soft tunnels with the rudders set inboard of each one by a significant amount. There is no overlap of the propeller disk by any part of the rudder and we estimate it would need a rudder angle of some 32° toward the propeller before the trailing edge of the blade came near the periphery of the propeller slipstream. For most of the time, therefore, each rudder will get no benefit from the increased flow of the propeller slipstream and, as a consequence, will produce very small lift (ie steering) forces. The vessel may therefore expect to have a very poor response to the rudder and be quite difficult to handle.

   The positioning of the rudders in this way cannot be regarded as good practice; rudders benefit considerably from the rudder slipstream and those vessels which do not allow this are usually poor handlers. Examples are some of the old paddle steamers with rudders at the stern (if the paddle wheels could not be operated independently, they were very difficult to turn) and ships with a twin-screw/single rudder stern arrangement.

2. In a following sea, when rudders are affected by the local water velocities in the wave and become less effective, the Trident VI might be expected to be particularly disadvantaged. In such situations, a conventional stern arrangement would allow the master to increase shaft speed, thereby inducing an increased slipstream over the rudder to regain control. This would not be possible with Trident VI. Similarly the low speed "kick ahead" technique would not be possible with this vessel.

3. It would appear that the rudder area (some 4.4% in total of the product of length and draught) is probably adequate for a conventional stern arrangement; probably not for the arrangement adopted in Trident VI.

4. Although rudders are offset in twin screw vessels to allow shaft removal, they are invariably positioned within the propeller disk.

5. The port and starboard A-brackets supporting the propeller shafts differ in their mounting arrangements. That to port has the A-bracket arms mounted directly to the tunnel plate; that to starboard has each arm terminating in a large unstreamlined pad. The tunnels have a poor shape hydrodynamically and it is possible that the pads to starboard could cause (or enhance) separated flow. Such flow into the starboard propeller might induce a bias which would add to any handling problems.

6. The above water lateral windage area appears to be about 4 times the lateral underwater area. This measure is often used to determine any problems a vessel may have in cross-winds and a value of 4, while within the range expected for cruise liners and ferries, is at the high end of that range. Furthermore, the wheelhouse, sited well forward with no balancing feature aft, will tend to make the vessel bear away from the wind. This may make berthing and general low speed manoeuvres more difficult and add to any problems created by the design of the stern arrangement.

7. Although not shown on the general arrangement drawing, the photographs show skegs on the inner bilges of the demi-hulls. It is not possible to determine the extent of these from the photographs, but it may be mentioned that they will have an important part to play in manoeuvrability. Too short and the vessel will have poor directional stability and be difficult to control; too long and the vessel will be difficult to turn. These aspects will be aggravated by the poor stern arrangement.

8. While the outboard bilges of each demi-hull are radiused, those on the inboard side are not. Therefore, when the hull sideslips in a turn, the flow past these sharp edges may well separate and shed eddies. The drag this creates may affect the vessel's inherent ability to turn, and the eddies it creates may cause oscillating and poor flow to be swept into the propeller disk and rudder in a turn. If this happens, control is likely to be poor.

In summary, the underwater arrangement of this vessel is not the best we have seen; indeed it strongly suggests that the vessel could have had significant problems of handling and control.

Ian W Dand
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Gosport Office

ANNEX 5

Extracts from Marine Guidance Note MGN 203 (M)

The following are relevant extracts from MCA's Marine Guidance Note MGN 203 (M) *Crew Training for Personnel serving on Domestic Passenger Vessels*:

> *The Thames Safety Inquiry by Lord Justice Clarke into the collision between the Bowbelle and Marchioness in August 1989 recommended a review of current manning requirements for passenger vessels operating in the inquiry area, to consider whether they are sufficient to ensure safety of passengers in the event of emergency. This includes a review of manning levels and crew training requirements for these vessels.*
>
> *In identifying manning levels there is a need to define what constitutes 'crew' and the minimum level of training required for a person to be recognised as crew. The training system in this notice is intended to enable personnel serving on board these craft to obtain the necessary level of training to satisfy the minimum level of competence.*
>
> *In recognising the seasonal nature of the industry, and widespread use of casual staff, this training may be delivered at a company level or in conjunction with a training provider as appropriate to the size and nature of the operation, provided that it is fit for purpose.*
>
> *The Merchant Shipping (Local Passenger Vessels) (Master's Licences, Hours, Manning and Training) Regulation 1993 require the owner/operator to ensure that every person employed or engaged in any capacity on board the vessel has received on-board training in procedures to be observed in the event of an emergency.*
>
> *Familiarisation training is a requirement for all personnel serving in any capacity on board these vessels. All new personnel shall undergo familiarisation training prior to sailing on the vessel.*
>
> *Competent Crew training is the minimum level of training that a person shall receive before being recognised as part of the permanent crew for the purpose of the minimum manning recorded on the Passenger Certificate or Safe Manning Document.*
>
> *Training may be either in house or college based, supported by an onboard training period, and recorded in a training portfolio. When the crew member confident of undertaking some or all of the tasks set out in the Training Portfolio they should request their supervisor or manager to assess them on their skills. When the assessor is satisfied that the requirements are met the task(s) should be signed off in the portfolio.*

ANNEX 6

Extracts from Merchant Shipping Notice M1525

The following are relevant extracts from MCA's Merchant Shipping Notice M1525 *Boatmaster's Licence, hours of Work, Manning and Training (Local Passenger Vessels)*:

Three grades of Boatmaster's Licence are issued, the basic grade being Grade 3. The requirement for the Master of a local passenger vessel to hold a certain grade of licence depends on the area in which the vessel is operating and the number of passengers it carries.

Areas	Passenger Numbers			
	13 to 50	51 to 100	101 to 250	250 plus
Category A waters	Grade 3	Grade 3	Grade 3	Grade 3
Category B waters	Grade 3	Grade 3	Grade 2	Grade 2
Category C waters	Grade 2	Grade 2	Grade 2	Grade 2
Category D waters	Grade 2	Grade 2	Grade 1	Grade 1
To sea	Grade 2	Grade 2	Grade 1	Not allowed

Category A - Narrow rivers and canals where the depth of water is generally less than 1.5 metres.

Category B - Wider rivers and canals where the depth of water is generally more than 1.5 metres and where the significant wave height could not be expected to exceed 0.6 metres at any time.

Category C - Tidal rivers and estuaries and large deep lakes and lochs where the significant wave height could not be expected to exceed 1.2 metres at any time.

Category D - Tidal rivers and estuaries where the significant wave height could not be expected to exceed 2.0 metres at any time.

In addition to having a grade, the Boatmaster's Licence will be restricted to a particular geographical area(s).

Where an applicant is required to have had "sufficient" service this will be construed as he or she having enough experience to demonstrate proper boat handling skills in whatever craft or vessel that experience may have been gained. However, it will be borne in mind that the prospective licence holder needs to demonstrate adequate knowledge of the methods of controlling, handling and directing passengers in emergencies on the vessels which he will be entitled to command.

The applicant will have to undergo a medical examination, which will include an eyesight test. After this initial examination, the holder of a Boatmaster's Licence will not be required to undergo any further medical examination until the age of 45 is reached. After this age a medical examination is required every 5 years when the licence is revalidated. After the age of 65 a medical examination will be required annually.

The Boatmaster's Licence examination for all grades consists of two parts, the first of which is a practical test carried out on the type of vessel for which the applicant needs a licence. ***(See Annex 1)*** *This test requires applicants to demonstrate their ability to handle the vessel in various circumstances. The second part consists of an oral examination during which applicants will be tested on their knowledge of safety, navigation (with particular reference to navigation in the local area) Rules of the Road and seamanship subjects and also as to how they respond to certain emergency situations.*

Where applicants hold a Pilotage Exemption Certificate for the appropriate area he or she will be exempted from the local knowledge part of the examination.

For holders of up to 65 years of age, licences are subject to revalidation by the Department every 5 years. Revalidation will be subject to the holder having proof that he or she has had at least 50 days service, in any vessel for a Grade 3 licence, and in local passenger vessels for Grade 1 and 2 during that time and submits a satisfactory medical report.