Report on the investigation of

the entanglement in moorings of

mv *Claymore*

St Margaret's Hope

11 March 2003

Marine Accident Investigation Branch
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the cause 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

AB	-	Able Seaman
CPP	-	Controllable Pitch Propeller
DP	-	Designated Person
ISM	-	International Safety Management
MCA	-	Maritime and Coastguard Agency
MD	-	Managing Director
MGN	-	Marine Guidance Note
MRCC	-	Maritime Rescue and Co-ordination Centre
MSN	-	Merchant Shipping Notice
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency

SYNOPSIS

On 11 March 2003, the ro-ro ferry *Claymore,* with twelve passengers embarked, was attempting to berth in St Margaret's Hope, Orkney, when the vessel's movement could not be controlled in the gale force winds. The ship was blown away from her intended berth and her starboard propeller became entangled in the moorings of smaller vessels, causing her starboard engine to shut down automatically. The Longhope lifeboat evacuated the passengers before assisting a workboat to tow *Claymore* alongside. There were no injuries.

MSRC Shetland informed the MAIB of the accident later that evening, and an investigation began the following day.

Claymore had only returned to service on 7 March, following a 4-month lay up. A number of factors contributed to the accident, which included:

- No operational limits or contingency plans were in force in the event of adverse weather in St Margaret's Hope.
- The master was inexperienced in handling *Claymore,* which had a large "sail area" forward, and might have felt pressured into trying to berth the vessel.
- Unavailability of the bow thruster following seawater saturation via a defective exhaust vent flap. Some of the ship's crew were aware of the defect to the exhaust flap but no remedial action had been taken.
- The starboard anchor would not release because it was seized in its hawse pipe. It had not been used for several months, and had not been walked back clear of the hawse in preparation for letting go.
- Ineffective bridge management and a breakdown in communication with the forward mooring team resulted in a mooring line, which had been passed and secured to the jetty, being lost from the inboard end.
- Insufficient time and resources had been allocated to prepare *Claymore* for returning into service.
- Neither international nor domestic safety management regulations were applicable.

Recommendations have been addressed to the MCA relating to the application and requirements of safety management systems. Recommendations have also been made to Pentland Ferries, the owner of *Claymore,* which, if implemented, should help improve the safety of its operation.

Figure 1

mv *Claymore*

SECTION 1 - FACTUAL INFORMATION

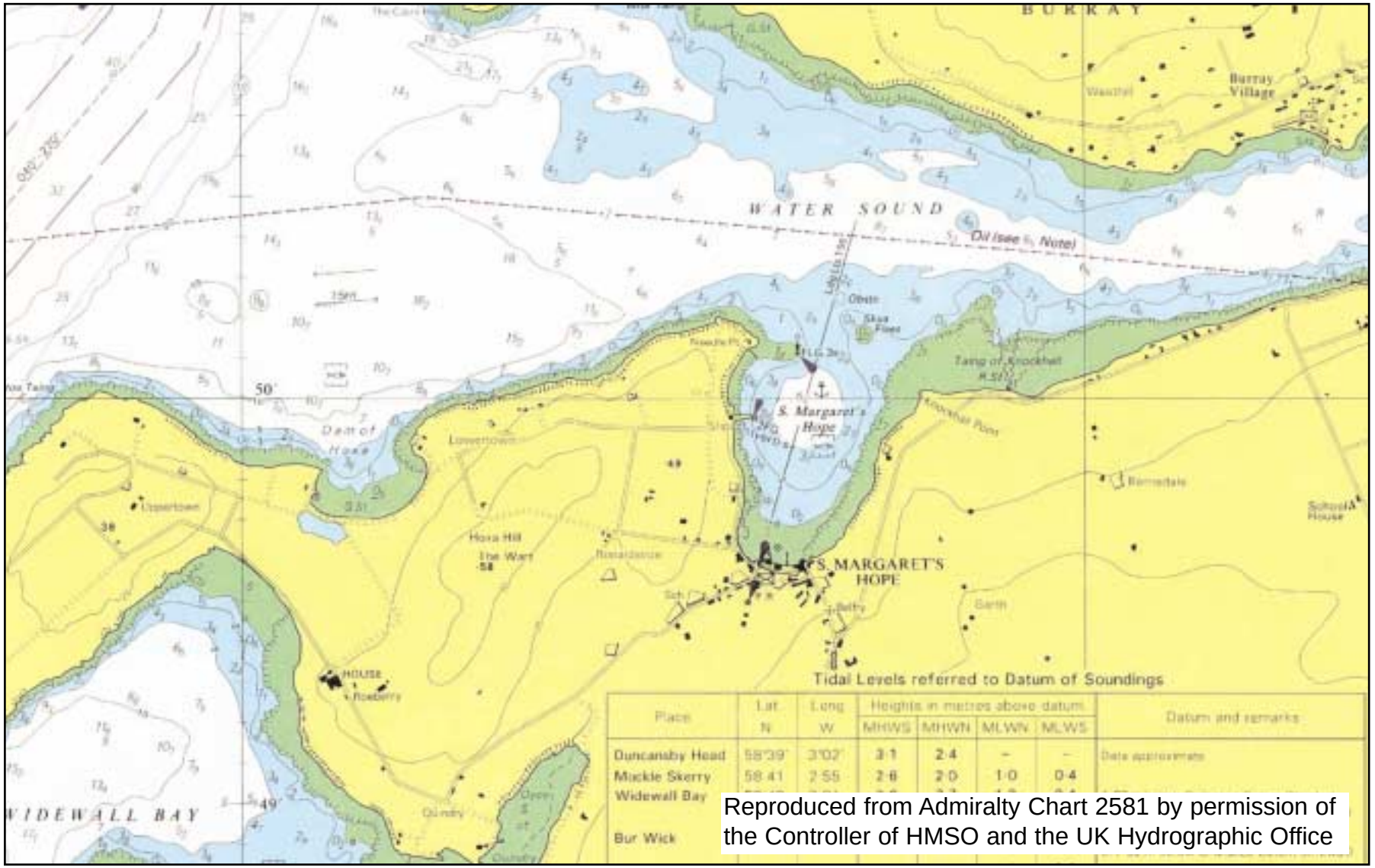
1.1 PARTICULARS OF MV *CLAYMORE* AND ACCIDENT (Figure 1)

Vessel details

Registered owner	:	Pentland Ferries Limited
Port of registry	:	Glasgow, Scotland
Flag	:	United Kingdom
Type	:	Ro-ro cargo
Built	:	1978
Classification	:	Lloyd's Register
Construction	:	Steel
Length overall	:	71.67m
Gross tonnage	:	1871
Engine power	:	1501kW
Service speed	:	13.5 knots
Other relevant info	:	Bow thruster fitted. Draught 3m

Accident details

Time and date	:	1950 on 11 March 2003
Location of incident	:	58° 49'.7N, 002° 57'.4W, St Margaret's Hope Bay, Orkney
Persons on board	:	22
Injuries/fatalities	:	Nil
Damage	:	Damage to propeller rope guard



Reproduced from Admiralty Chart 2581 by permission of the Controller of HMSO and the UK Hydrographic Office

Figure 2

1.2 BACKGROUND

Claymore was owned and operated by Pentland Ferries Ltd. She was bought in October 2002 when, after a short period in dock in Birkenhead, she ran for 6 weeks between St Margaret's Hope and Invergordon before being laid up for the winter. *Claymore* returned to service on 7 March 2003 to replace *Pentalina B*, a similar vessel also owned by Pentland Ferries. The company only intended to keep *Claymore* in service, operating between St Margaret's Hope and Scrabster, until *Pentalina B* completed a refit. It was anticipated *Claymore* would then be placed on a bare-boat charter with another company on a different route, and *Pentalina B* would begin a summer service between St Margaret's Hope and Gills Bay.

1.3 NARRATIVE

(all times are UTC)

1.3.1 Passage from Scrabster

At about 1600 on 11 March 2003, *Claymore* sailed from Scrabster to return to St Margaret's Hope **(Figure 2)**; twelve passengers with vehicles, and ten crew were embarked. The wind was north-west at 35 to 40 knots, and there was also about a 4m north-west swell running in Dunnet Bay. The master was not worried by the conditions.

Initially, the speed made good was about 5 knots with the vessel heading directly into the sea to reduce the motion. Speed was also temporarily limited by power restrictions on the main engines, which were overheating in the rough seas. As the vessel left Dunnet Bay, however, the sea conditions improved and speed was increased to make good about 12 knots.

During the passage, the master requested information from the harbourmaster about the weather conditions in St Margaret's Hope. As the wind was reported as northerly and gusting over 40 knots, he arranged for the workboat, *Fara Lass* **(Figure 3)** to be available to assist during berthing. The workboat was to be operated by Pentland Ferries' managing director. *Fara Lass* was owned by Pentland Ferries and had assisted *Pentalina B* on previous occasions; she had a bollard pull of between 3 and 3.5 tonnes.

The master briefed the chief officer and the bosun of his intentions for berthing in St Margaret's Hope. The chief officer was to assist the master on the bridge and the bosun was in charge of the forward mooring team. His plan was to turn hard to starboard to the east of the jetty and then make a stern-board to put the stern ramp against the link-span with the vessel port side to on the jetty **(Figure 4)**. This was the usual practice for berthing in St Margaret's Hope.

Figure 3

Photograph of *Fara Lass*

Figure 4

Claymore berthed at St Margaret's Hope

When reaching Water Sound, the chief officer tried to start the bow thruster. This was done a little later than usual because a safety interlock prevented the bow thruster from being started until the stabilisers had been retracted, and the stabilisers had been kept in use longer than usual because of the conditions. After several unsuccessful attempts, the chief officer informed the master that the bow thruster would not start. He also informed the chief engineer, who went from the engine control room to the bow thruster space. As the vessel was then approaching Needle Point, the master informed the MD in *Fara Lass* of the situation. The master was apprehensive but was re-assured by the MD, who indicated that the wind was dropping and that *Fara Lass* was available to assist.

1.3.2 The first approach

At 1841, *Claymore* entered the bay as planned. Speed was reduced and the manoeuvre to starboard was started when east of the jetty. The head was altered to the north-west, but the master could not bring it further into the wind, and the vessel started to be blown to the south. Because *Claymore* still had headway, the MD could not keep *Fara Lass* on her port shoulder when pushing, and, therefore, was unable to assist. To clear the dangers to the south, the master put the main engines astern, and as way developed, the stern came round into the wind. At 1851, the vessel ran astern towards the safe water at the entrance to the bay.

1.3.3 The second approach

The master considered seeking shelter elsewhere, but in view of the likely needs of the passengers, which included a 5-month pregnant woman, he decided to try again. This time he planned to use the starboard anchor to help bring the head into wind when turning off the jetty. The bosun was briefed and told to prepare the starboard anchor for letting go. The deck covers and sea lashings of both anchors had been removed when the forward mooring team went on stations as the vessel approached Water Sound. No further preparations were made.

The second approach began at 1900. When the ship began to swing to starboard, the master ordered the starboard anchor to be let go. The chief officer relayed this instruction to the bosun. The brake on the starboard anchor was released, but the anchor did not move. Again, the ship's head could not be manoeuvred into the wind and, at about 1910, the attempt was aborted.

1.3.4 The third approach

By then, it was dark and, because the light on the beacon off Needle Point was not working, and low water was approaching, the master decided to hold his position in the bay to the east of the jetty. For the next attempt, the master planned to make a direct approach and berth starboard side to. The bosun was told of the master's intentions by the chief officer, and was ordered to prepare a line forward on the starboard side. Concerned that his attempts had so far been

unsuccessful, the master also discussed his plan with the MD in *Fara Lass*; the master recollects the plan being agreed. The MD, however, recalls persuading the master that with a line attached, *Fara Lass* could pull the head through the wind and enable her to berth port side to, as normal.

A ship's line was passed from *Claymore's* port bow and connected to *Fara Lass*. About 75m of line was then paid out. When the vessel was off the south-east end of the jetty, the workboat started pulling the bow to the north, towards the jetty. At about 1929, a mooring line was passed and secured to the jetty. Although the master assumed this line had also been secured inboard, only a single turn was taken around the bitts. At this point, with *Claymore* perpendicular to the southern face of the jetty and heading directly into the wind **(Figure 5)**, *Fara Lass* stopped pulling but remained secured.

The bow, however, began to pay off to starboard, tensioning the mooring line across the stem. This caused the bosun to become uncertain of the master's intentions. Having been briefed that the ship would be berthing starboard side to, he was reluctant to take more turns on the mooring line and hold on with the ship's head swinging in the opposite direction to that intended. He also considered the line to be in poor condition and was concerned for the safety of the persons on the jetty. The bosun repeatedly asked for guidance, but he was not heard on the bridge. Consequently, with the ship being set away from the jetty, the mooring line was surged until lost overboard at about 1931.

Figure 5

Claymore attempting to berth

1.3.5 Entanglement with moorings

The vessel was then almost beam-on to the wind, bow east, and quickly developed leeway to the south. The master was unable to manoeuvre the bow back to the north using opposed engines and rudder, and was reluctant to manoeuvre ahead because of the proximity of several small vessel moorings. *Fara Lass* was still secured forward; she tried to pull the bow into wind, but was dragged stern-first.

Claymore soon overran the mooring cable to which the diving vessel *The Three Sisters* was secured, causing it to drag. A mooring chain securing a raft in the harbour then caught on the starboard propeller, which resulted in the starboard engine automatically shutting down. The vessel finally came to rest at about 1950 lying against *The Three Sisters*, which had a draught of 3.5m.

1.3.6 The recovery

At 1955, the master reported details of the accident to MRCC Shetland, which had already been alerted to the situation by a telephone call made to the local press by a passenger about 10 minutes earlier. The Longhope lifeboat was tasked, and, at 2052, evacuated the passengers to the St Margaret's Hope terminal. *Claymore* was eventually towed clear by the Longhope lifeboat and *Fara Lass,* and returned alongside the jetty at 2216. A tug, which had been arranged by the master, was unable to assist because of tidal limitations.

1.4 ENVIRONMENTAL CONDITIONS

Weather forecasts were sent by facsimile by the Orkney Islands Council to the Pentland Ferries office at 0915 and 1715 daily. The forecast for the period 1800 to 2400 on 11 March 2003 predicted a 35-knot northerly wind, gusting to 45 knots.

Recorded wind speed and direction at the Scapa weather station located 14 km north of St Margaret's Hope were:

Time	Mean Speed	Direction	Max gust
1800	33 knots	008°	46 knots
1815	32 knots	008°	43 knots
1830	30 knots	005°	42 knots
1845	31 knots	008°	44 knots
1900	31 knots	007°	41 knots
1915	29 knots	011°	40 knots
1930	31 knots	009°	40 knots
1945	31 knots	010°	45 knots
2000	30 knots	008°	40 knots
2100	27 knots	006°	35 knots
2200	24 knots	005°	38 knots

N.B. The above figures have been rounded to the nearest whole number.

There was no anemometer available for use by the harbourmaster in St Margaret's Hope.

Low water on 13 March in St Margaret's Hope was 2032 (1.6m). Sunset was at 1752 and evening civil twilight was at 1832.

1.5 ADVERSE WEATHER POLICY AND PLANS

The adverse weather policy issued by Pentland Ferries **(Annex A)** applied only to *Pentalina B* and Gills Bay. No policy or contingency plans were in effect in the event of either *Pentalina B* or *Claymore* encountering unsuitable berthing conditions in St Margaret's Hope.

The marine superintendent has stated that he would not have sailed from St Margaret's Hope to Scrabster on 11 March, given the weather forecast for that evening. The MD had no reservations about the ship operating in the conditions which prevailed.

It was reported that there had been no instances where bad weather had prevented a vessel of Pentland Ferries from mooring alongside in St Margaret's Hope.

The ship could not have remained alongside Scrabster on 11 March, because an incoming ferry required her berth.

1.6 BRIDGE ORGANISATION

The bridge was manned by the master and chief officer, which was the normal practice for port entry and departure. During the berthing attempts, the chief officer liaised continually with the chief engineer to try and start the bow thruster. Communication between the two was via an intercom system sited at the forward centre of the bridge. This system was also used for communication between the bridge and the forward mooring team, because the VHF portable radio, normally carried by the bosun for this purpose, had been saturated by sea-spray and made unserviceable during the departure from Scrabster. At various stages, the master tasked the chief officer to check the proximity of dangers. To do this, the chief officer had to move about the bridge and bridge wings, thereby moving away from the intercom.

The master manoeuvred the vessel throughout using the engine and helm controls sited on the port bridge wing. From this position, he had only a limited view of the fore deck **(Figures 6 and 7)**, and could not see the forward mooring team or hear the bridge intercom system.

Figure 6

Control position on the port bridge wing

Figure 7

View of the foredeck from the port bridge wing

1.7 RETURN TO SERVICE

1.7.1 Planning

Details of the planning and organisation of *Claymore*'s return into service are sparse. The only documentary evidence found relating to the subject, which is dated 27 February 2003 and signed by the company's designated person ashore, states:

'*The crew will need time to carry out familiarisation checks prior to operation*'

The MD controlled the planning, and had issued an instruction for the crew of *Pentalina B* to familiarise themselves with *Claymore* about 2 weeks before she re-entered service. He also arranged for the marine superintendent to oversee the testing of machinery and equipment on 6 March. On the same day, the crew of *Pentalina B* was changed, and the MD told the oncoming master (who would be joining *Claymore* the next day) to make sure that everything was running satisfactorily on *Claymore*.

There were no detailed discussions between the MD, the remaining management or the seagoing masters regarding the desired level of crew familiarity with the vessel, the type of drills needed to be conducted, and the time-scales before the vessel returned into service. No equipment checklists were produced. The extent of the equipment checks and familiarisation training conducted was left entirely to the discretion of the marine superintendent and the masters. On completion of the equipment checks, a list of outstanding defects was not requested or produced for scrutiny by the shore management. The MD was not aware of the extent of the familiarisation training or drills which had been conducted before *Claymore* sailed.

1.7.2 Changeover

On 7 March 2003, *Pentalina B* was taken out of service to start a refit, and was replaced by *Claymore.* The changeover took place after *Pentalina B* returned to St Margaret's Hope at about 1200. She discharged her passengers and cargo and then exchanged berths with *Claymore*. For this move, *Claymore* was manned by the marine superintendent, two engineers, and four ABs. The master, chief officer, bosun, four able seamen, the cook, and the purser from *Pentalina B* then walked across the jetty and joined *Claymore*. Passengers and cargo were then embarked. At 1345 *Claymore* sailed for Scrabster. Her crew comprised the marine superintendent as master, the personnel from *Pentalina B*, and the two engineers who had previously stood by the vessel.

1.7.3 Familiarisation and equipment testing

1. Before returning to service

On March 2, apart from the engineers and the cook, the crew from *Pentalina B* visited *Claymore* in anticipation of transferring on either 4 or 5 March. This, however, was not the same crew that transferred across on 7 March.

On 6 March, the marine superintendent oversaw the testing of *Claymore*'s main engines, bow thruster and bridge equipment. The only problem identified during these trials concerned the steering gear. This problem was quickly rectified. During the engine trials, the ship's two engineers were on board with the marine superintendent. The harbourmaster also attended to monitor the mooring lines. At the end of the trials, and after conducting a walkround, the marine superintendent was satisfied that the ship was fit to return to service.

Also on 6 March, the crew on *Pentalina B* was changed, and her oncoming master, chief officer and deck crew visited *Claymore* between sailings to have a general walkround to familiarise themselves with the vessel. Whilst there, they lowered the starboard lifeboat and started its engine.

Of the eight crew who transferred from *Pentalina B*, the chief officer had served on board *Claymore* for 2 weeks during October 2002, and the bosun and one of the deckhands had completed the occasional passage; the remainder had not served on board *Claymore* before.

Since the accident, many of the key personnel interviewed have stated that more time should have been allocated for familiarisation and the testing of equipment.

2. After returning to service

Initially, the marine superintendent was in command to allow the master from *Pentalina B* to familiarise himself with the vessel, particularly the shiphandling aspects. There were several fundamental differences between the two vessels including: *Claymore* had CPP, whereas *Pentalina B* was fixed pitch propeller, the superstructure on *Claymore*, which provided a large "sail area", was more biased towards the forward end, and her bow thruster control was of a different design.

The marine superintendent conducted the manoeuvring until 8 March, when the master-designate took over for the arrivals and departures in both St Margaret's Hope and Scrabster. Although the marine superintendent intervened on one of these occasions, when the bow thruster control was put the wrong way, he considered the master-designate to be competent. The marine superintendent left the vessel on the evening of 8 March, leaving the master from *Pentalina B* in command.

On 9 March, the port lifeboat was lowered and started, and the crew familiarised themselves with the location of the fire hydrants. No drills were conducted.

The crew were required to complete a familiarisation and training checklist within 14 days of joining. A copy of a completed checklist is at **Annex B**. The names of the crew have been removed.

1.8 MAINTENANCE

When taken out of service at the end of November 2002, *Claymore* was moored on the north side of the jetty in St Margaret's Hope. She was manned by a chief and second engineer, who worked together on board for 2 weeks, followed by 2 weeks leave. When not manned, the vessel was checked periodically by the MD, or by the second engineer who lived nearby. While out of service, the maintenance conducted by the chief and second engineers included the overhaul of the port main engine, No 3 generator, and all of the air receivers, progressing items on the work list, and the ship's safety equipment.

The chief engineer used the maintenance records of the previous owners and had kept these up to date. Maintenance of the bow thruster exhaust vent was not included in these records. There was no formal defect reporting system in operation. Instead, the chief engineer kept a list of defects, which he then prioritised and progressed. The date of the last entry in the defect log kept on the bridge was 16 November 2002.

1.9 DEFECTS

1.9.1 Bow Thruster

The bow thruster would not start because its engine was waterlogged. Seawater had entered through its exhaust vent situated on the port side immediately below the fore deck.

The vent flap was opened and closed by a lever on the fore deck **(Figure 8)**. It had been operated on two occasions during the ship's lay up, and although stiff, it had worked correctly. It was usual practice for the flap to be closed during passage, and opened when entering and leaving port, to allow the bow thruster to be used. The bosun had operated this control lever accordingly on sailing from Scrabster and on going to stations for arrival in St Margaret's Hope, and had reported his actions to the chief officer.

The bosun, however, was aware that, although the lever on deck moved freely, the vent flap sited below the deck was not operating. He had informed the marine superintendent of this deficiency. The defect had also been noticed by a deckhand on 2 March, and had been verbally reported to the ship's engineers.

Figure 8

Bow thruster exhaust vent lever

Examination in St Margaret's Hope, following the accident, showed that the pins in the flap's drive assembly had sheered and, although the control lever on the deck was moving, the flap was not. The flap itself was half-open and, in the rough seas, seawater had passed through.

The bridge was fitted with lights indicating when the flap was in the open or closed position. These had not been working since the vessel returned to service. Both the master and chief officer were aware of this. The lights had not illuminated because they relied on electrical contacts being made when the flap was either fully open or closed.

1.9.2 Anchors

It is not known when the anchors had last been used. No maintenance had been conducted on them during the lay-up period, but the marine superintendent had conducted a limited functionality test on 6 March. A full test had not been possible because nobody was available to assist.

The anchors were later successfully tested and let go alongside on 13 March, although difficulty was experienced when first moving them from their stowed position.

1.9.3 Mooring lines

Soon after joining, the bosun had informed the master that, generally, the mooring lines were in poor condition. After this had been relayed to the MD, a second-hand line was provided and stowed in the fore deck store. It was not used during the attempted berthing.

1.10 THE MASTER

The master first went to sea in trawlers in 1983 and obtained a class 2 certificate of competency (fishing) in 1990. In 1996 he worked in the offshore oil industry in rig stand-by vessels as a chief officer. He then joined Pentland Ferries in June 2001, as chief officer on board *Pentalina B*. He was paid off in November 2001, when the ferry service was terminated for the winter and joined a supply vessel as chief officer until March 2002. He then rejoined *Pentalina B* when the ferry service resumed and was promoted to master on 6 July 2002. During his time with Pentland Ferries, he worked a cycle of 2 weeks on duty followed by 2 weeks on leave, and along with his opposite number was responsible for organising the crew rotation.

When he was in command of *Pentalina B*, the vessel suffered minor damage while berthing in St Margaret's Hope in a south-easterly wind. After the incident, the master asked if he could revert to being a chief officer. This request was refused.

On several occasions when the master appeared to be concerned at sailing in bad weather, the MD accompanied him during the passage.

The master was paid off shortly after *Claymore* returned alongside on 11 March.

1.11 PENTLAND FERRIES

Pentland Ferries was set up in 1997 when *Pentalina B* was purchased, but had only provided a ferry service between St Margaret's Hope and mainland Scotland since 2001. During the previous 4 years it had built a jetty in Gills Bay, of which it had exclusive use, and which it used extensively throughout the summer months. In the winter months and in bad weather, the service was usually transferred from Gills Bay to Scrabster. The company's main office was located adjacent to the jetty in St Margaret's Hope, which was managed by trustees on behalf of the people of South Ronaldsay.

Management

1. The Managing Director

The MD owned Pentland Ferries and was a trustee of St Margaret's Hope. He had previously worked on workboats and in aquaculture. With regards to the operation of larger vessels, he valued the professional knowledge and advice of the marine superintendent.

He demonstrated a ‘hands-on’ management style and was involved in nearly all aspects of the company’s operations, particularly those of a practical nature. The MD had difficulty delegating work to others, but disliked paperwork and passed all aspects of the company’s safety management to the DP. He considered meetings to be useful only if there was a specific problem to be dealt with. He viewed the means to achieving ISM certification as a burden on his and his management team’s time, rather than a means of achieving a safer operation.

The MD personally recruited all employees. He considered there was a shortage of mariners with appropriate and relevant experience in Orkney, and felt the salaries he could afford to offer were insufficient to attract people to the island.

As *Claymore’*s port and starboard main engines had been inspected and certified by Lloyd’s Register since he had bought her, the MD considered the ship to be mechanically sound.

2. The Designated Person

The DP started his career as an industrial chemist, and in the 1970s was part of a large chemical manufacturer’s safety management team. In the 1980s he worked in the Middle East, project managing the construction of a variety of chemical, gas, power, and water plants. He went to Orkney in about 1989 and joined a local shipping company as an office and operations manager.

He joined Pentland Ferries in 1997 on a full-time basis, but since November 2001, was semi-retired and worked about 10 hours per week for the company as a consultant. In this role, he implemented and oversaw the company’s compliance with the safety management systems required. Because of his experience in ship operations, he was also available to offer advice on operational matters.

As the DP had no seagoing experience, he had been assisted in the practical aspects of his role, such as the witnessing of drills, by another consultant. This consultant was an experienced ferry master who lived and worked on Orkney. The DP had, on occasion, advised the MD that his role would be better suited to a person with seagoing experience.

The DP was not involved in any way with the preparations to bring *Claymore* back into service, or in her day-to-day running; he was only informed of the accident to *Claymore* the following morning.

3. The marine superintendent

The company did not employ a full-time marine superintendent. The person who undertook the marine superintendent-type role was an experienced mariner who had worked for a local ferry company for about 25 years. He was semi-retired and employed on a consultancy basis.

The marine superintendent had been employed by Pentland Ferries to assist in bringing *Claymore* into service soon after being purchased. He was also to oversee the testing of machinery and equipment on board *Claymore* on 6 March 2003, and to command *Claymore* during her first 2 days of operations after being laid-up during the winter. He had also helped to acquaint the company's masters with *Pentalina B* and the ports visited.

4. Operations manager

Apart from the MD, the operations manager was the only full-time manager. Her roles included the day-to-day running of the service, the requisitioning of spare parts, the administration of vessel certification and dangerous goods, arranging training courses, and customer relations.

5. Engineering

An engineering superintendent was not employed. Reliance was placed on the ships' chief engineers to initiate the ordering of spares, and to rectify defects.

1.11.1 Vessels

At the time of the accident, both *Claymore* and *Pentalina B* were operating under Class VIII(A) certification and were permitted to carry up to 12 passengers. This class of certification is applicable only to ships other than passenger ships not engaged in international voyages.

It was the company's intention, however, to operate *Pentalina B* from April 2003 as a Class VI passenger ship[1].

In the longer term it was hoped to operate her as a Class 2A passenger ship[2].

1.12 SAFETY MANAGEMENT

The operation of *Claymore* as class VIII(A) did not require compliance with either the International Safety Management Code or the Safety Management Code For Domestic Passenger Ships of Classes III-VI(A).

1.12.1 International Safety Management Code

Operating as a Class VI domestic passenger ship during the summer of 2002, *Pentalina B* complied with the Safety Management Code for Domestic Passenger Ships, and was certified by the MCA accordingly. As the ship was a ro-ro construction, however, certification under the international safety

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1 *engaged only on voyages with not more than 250 passengers on board, to sea, or in Category A, B, C and D waters, 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 A, B, C and D waters, from their point of departure nor more than 3 miles from land*

2 *engaged on voyages of any kind other than international voyages*

management regulations was required, not the domestic code. To meet this requirement, Pentland Ferries developed a safety management system in its shore offices in accordance with the ISM Code. This safety management system was audited by the MCA on 7 February 2003, and an ISM Document of Compliance for the operation of passenger ships was issued one month later. Two non-conformities were highlighted during the DOC audit (both observations). The first concerned the highlighting of equipment for critical onboard systems within the planned maintenance system. The other referred to the inclusion of a customer complaint procedure into the safety management system.

Within the company's safety management structure, a DP was nominated in accordance the ISM Code, which states:

To ensure the safe operation of each ship and to provide a link between the company and those on board, every company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution prevention aspects of the operation of each ship and ensuring adequate resources and shore based support are applied as required.

MGN 40 also states:

The MCA considers the designated person's role to be highly important and expects companies to regard it in the same light and to consequently provide the necessary responsibility and authority and resources. The regulations do not state who it should be or what qualifications they must have, but they should be well experienced in the operation of ships both at sea and in port.

1.12.2 Onboard procedures

A set of procedures had been provided for both *Claymore* and *Pentalina B* in preparation for the company's compliance with the ISM Code, but had only been issued to *Pentalina B*. *Claymore's* onboard documentation was retained in the company's offices because of her anticipated charter after *Pentalina B*'s return to service. Relevant extracts from Pentland Ferries' Fleet Procedures Manual are at **Annex C**.

When an MAIB inspector visited *Claymore* on 12 March 2003, other than entry and departure checklists, no bridge procedures or standing orders could be found, and none of the crew were aware of any. A copy of the master's standing orders issued in November 2002 was subsequently forwarded by Pentland Ferries **(Annex D)**.

1.12.3 Communication

As part of the company's safety management system, the DP held meetings about three times per month with the master, chief officer and, occasionally, the chief engineer from *Pentalina B*. A report from these meetings was produced by the DP and distributed to the ship, the MD, the operations manager and, depending on its content, the additional consultant used for ISM matters. These meetings were suspended on 7 March when *Pentalina B* was taken out of service; none was held on board *Claymore* while in service.

An annual meeting was held in December 2002, to review the company's safety management that year, with regard to *Pentalina B*. The meeting was attended by the MD, DP, operations manager, and master, chief officer and chief engineer from *Pentalina B*. The engineers from *Claymore* did not attend. Items discussed at the review included: analysis of accidents, ship safety minutes, surveys and inspections, internal audits, and customer comments.

1.12.4 Safety Management Code for Domestic Passenger Ships of Classes III-VI(A)

Guidance on the Safety Management Code for Domestic Passenger Ships of Classes III-VI(A) is provided in MGN 158(M). The key points of this code outlined in MGN 158(M) are:

- *To comply with the code, a safe working environment must be in place, which includes:*
  - *a health and safety protection policy;*
  - *procedures to ensure the safety operation of ships in compliance with relevant rules, which may be in the form of checklists;*
  - *lines of communication between personnel, ashore and afloat;*
  - *procedures for reporting accidents; and*
  - *procedures for responding to emergency situations.*
- *Companies must ensure adequate training is provided for the full range of duties personnel are required to fill*
- *Companies must undertake a review of the safety management system of their ships at least once every three years.*

1.13 THE PASSENGERS

During the problems experienced when berthing in St Margaret's Hope, the 12 passengers were looked after by a rating nominated as the vessel's purser. All of the passengers interviewed by the MAIB stated they were kept fully informed, and were complimentary about the crew's efforts.

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 DECISION-MAKING

2.2.1 Sailing from St Margaret's Hope

The weather forecasts received by Pentland Ferries on 11 March warned of the near gale to gale force northerly winds which were experienced that evening. The predicted conditions were not considered by the master or the management sufficiently severe to warrant the cancellation of any of the scheduled services, even though *Claymore* could not shelter in Scrabster overnight, and a strong northerly wind made berthing in St Margaret's Hope more difficult.

2.2.2 The attempts to berth

As *Claymore* approached St Margaret's Hope Bay, her master was aware of the conditions at the jetty, and had taken the precaution of arranging for *Fara Lass* to be available to assist. When he was informed that the bow thruster would not start, the master realised that he would not have the benefit of a vital manoeuvring aid. Despite this, and despite being uncertain, the master opted against temporarily seeking shelter in favour of attempting to berth the vessel.

In making this decision, it is possible that the master felt obliged not to cause inconvenience to the passengers. It is also highly probable, however, that the master was strongly influenced in his decision-making by the MD. The MD had no reservations about the ship operating in the conditions, despite the fact that he had considered it necessary to accompany the master on several crossings in bad weather, and reassured the master that he would be able to enter as normal. With this in mind, it would have been difficult for the master not to feel under pressure to enter.

2.2.3 The lack of company policy

Every master is different in terms of experience, knowledge and ability and it is likely that many masters, including the marine superintendent, would not have sailed in similar circumstances. It is also likely that many would have not attempted to berth without a bow thruster. While a master is always responsible for the safety of his ship, the provision of policy and guidance regarding adverse weather conditions can give masters a yardstick by which they can gauge the upper envelope of the conditions in which they are expected to operate. Had such a policy or guidance been considered and provided in this case, it is possible the ship might not have sailed, or the berthing would not have been attempted until either the conditions improved or the bow thruster was available.

2.3 SHIPHANDLING

Claymore became entangled with the small vessel moorings in St Margaret's Hope because her movement could not be controlled as intended in the strong northerly wind. It is not certain if the ship grounded. She might have been prevented from doing so by *The Three Sisters*, which had a marginally deeper draught.

2.3.1 Shiphandling problems

Claymore's large sail area forward, and her controllable pitch propellers, made the vessel handle differently to *Pentalina B*. The large "sail area" forward would have made it difficult to bring the bow into wind when turning at rest, and the controllable pitch propellers would not have produced the same turning moment as fixed pitch propellers because of the reduced '*paddlewheel effect'*. It is also possible that interaction with the sea bottom reduced the effectiveness of the propellers when the ship entered the shallower water to the south of the jetty.

2.3.2 The master

The master had only been on board the vessel for 5 days. During previous mooring operations, the bow thruster had been available and used, and the wind had not been as strong. The master was, therefore, still relatively inexperienced in handling the vessel in which were challenging conditions. His previous accident in *Pentalina B*, which resulted in his request to revert to the rank of chief officer, and the marine superintendent's intervention 3 days earlier, perhaps indicate that the master was not a confident shiphandler. Without the benefit of a VDR or other recording equipment, however, it has not been possible to analyse the appropriateness of the engine and rudder movements made by him.

2.4 EQUIPMENT AVAILABILITY

Notwithstanding the vessel's shiphandling characteristics and the master's relative inexperience of manoeuvring her, the unavailability of the bow thruster, and the failure of the starboard anchor to release, impeded the master's attempts to berth.

2.4.1 Bow thruster

Operating in the Pentland Firth where there is a high incidence of bad weather, and with only a workboat available to assist in St Margaret's Hope, the bow thruster was important to *Claymore's* safe operation when berthing. As such, its exhaust vent flap was part of a critical system. However, the significance of the defect to the exhaust vent flap, which was seen and reported before the ship returned to service, does not appear to have been recognised by either the marine superintendent or the ship's engineering staff. The failure to record and take remedial action on the defect also reflects the absence of a formal defect reporting and prioritised rectification system.

The exhaust vent flap was fitted to prevent seawater from entering the bow thruster. As the sheer pins of the drive assembly had sheered with the flap half-open, water passed through the flap into the thruster during the heavy weather experienced on leaving Scrabster. Had the defect been avoided using planned maintenance, or repaired before 11 March, the bow thruster would not have become saturated and would have been available for use.

2.4.2 Anchor

In view of the fact that the starboard anchor did not move when its brake was released, and difficulty was experienced when trying to move the anchor from its stowed position during subsequent tests alongside, it is considered the anchor had been seized in its hawse pipe. This is a common problem with anchors, particularly when not used for lengthy periods. A check to ensure that cables and anchors are functional is an obvious need for a vessel entering into service after a 4-months' lay-up. It was impossible for the marine superintendent to conduct such a test without assistance. Had this test been done, the anchors could have been freed before the ship re-entered service, increasing the likelihood that they would have released when required.

Good practice is to walk back the anchor several feet until clear of the hawse pipe when preparing it for use. This procedure was required by the Pentland Ferries' Fleet Procedures Manual **(Annex D)**, which was in force on board *Pentalina B* but was not carried onboard *Claymore*. Had the prescribed anchoring procedure been followed, the anchor might have remained seized, but at least the master would have been aware of its unavailability before starting the entry, and thus been able to reconsider his plan.

As the bosun had previously served on *Pentalina B*, doubt must be cast on his knowledge and adherence to the company's written procedures. The fact that the relevant boxes for Domestic Safety Management Code, Master's Standing Orders, and anchoring procedures had been initialled as completed on the crew familiarisation checklist **(Annex B)**, despite none of these being held on board, also casts a shadow over the integrity of the onboard familiarisation process.

2.5 BRIDGE MANAGEMENT

The master's lack of awareness regarding the forward mooring-line, and the failure to prioritise the duties of the chief officer were indications of ineffective bridge management. On the port bridge wing, the master was isolated from key communications, and could not keep pace with events. Consequently, he was unable to maintain control of the situation.

The chief officer appeared to have three functions: to liaise with the chief engineer to get the bow thruster started; to communicate with the forward mooring team; and to check visually that the ship was clear of navigational dangers.

Given the communications arrangements, these functions were not compatible. The chief officer could not have effectively monitored the intercom system when checking for navigational dangers from the bridge wings, and it would have been extremely difficult to converse simultaneously with both the chief engineer and forward mooring team from the same intercom. It is, therefore, not surprising that the requests for intentions regarding the mooring line were not heard.

During the berthing attempts, the chief officer was pre-occupied with trying to start the bow thruster. This sidetracked him from more relevant tasks. As soon as the ship had manoeuvred into a position from where a forward mooring line could be passed, his attention would have been better placed co-ordinating the actions of the master and the forward mooring team. Instead, communications between the bridge and fore deck broke down during a key phase, and the opportunity to use the mooring line to help bring the ship alongside was lost.

2.6 MANAGEMENT

It is apparent that *Claymore'*s return to service was a temporary measure that attracted little forethought. The company was focused on getting *Pentalina B* through her refit and, onward, to operating her as a Class VI passenger ship with ISM certification. This, however, should not have affected the safe operation of *Claymore*, if an effective safety management system had been in place.

Pentland Ferries was just as responsible for the safe operation of *Claymore* as it was for the safe operation of *Pentalina B*, irrespective of the applicability of the domestic or international safety management codes. The safe operation of ships is usually achieved by the use of management systems incorporating policies, procedures, checks and balances which facilitate the identification of hazards, the assessment of risk, and enable personnel to be aware of what is expected of them.

These management systems, for which the domestic and international safety management codes provide a framework, do not have to be bureaucratic and time consuming, but should be tailored to fit the circumstances, particularly in the case of smaller companies such as Pentland Ferries.

In this case, the lack of company policy regarding berthing in adverse weather, the lack of formal engineering procedures, the failure to follow good practice when preparing the anchor, the unsystematic approach to equipment checks, the ad hoc crew familiarisation, the lack of safety drills, and the absence of written onboard procedures, indicate that the management of *Claymore* failed to support her safe operation.

Furthermore, *Claymore'*s return into service was not carefully considered or well planned. The MD, who was not completely familiar in all aspects of ship operations, and had no seagoing experience in larger vessels, took it upon himself to oversee her readiness.

The influence of the MD, who exercised both long term and day-to-day control of affairs, was considerable. Although relevant expertise was available, it was not used. Neither the marine superintendent, nor the masters from *Pentalina B*, who he expected to play a role, were consulted regarding the overall requirements of this task. Consequently, without the benefit of the knowledge of the scope of preparation required and the checks usually conducted following lay up, insufficient time and resources were allocated.

2.7 SAFETY CULTURE

The company had adopted a safety management system which resulted in its receipt of a DOC in February 2003. This certification reflected that the company had fulfilled the measurable requirements such as documentation and written procedures. However, the company's failure to apply the principles of safe management when returning *Claymore* into service, as shown by the lack of agreed goals, planning, and company policies, and the failure to ensure that comprehensive equipment checks and crew familiarisation were undertaken, shows that its commitment to safety management had not extended beyond the requirements of regulation. Safety management in Pentland Ferries was seen as a means to an end, not an objective in its own right. In turn, this indicated that a safety culture had yet to develop within the company.

The adoption of a safety management system can help foster positive safety values, but it does not change attitudes overnight. To create a positive safety culture requires leadership and commitment from the top. In this case, the MD had a sceptical view of the ISM Code and distanced himself from it. Given his dominant and ever-present influence on all of the company's activities, this was not conducive to the development of a safety culture.

2.8 REGULATION

Because *Claymore* was operating under class VIII(A) certification, Pentland Ferries did not have to abide by either domestic or international safety management regulations. Before the implementation of these regulations, guidance on the management of ships had been issued in MSN 1188 and MSN 1424, but these were no longer in force. Had a safety management system been required, and been in place, in this case, it might have laid the foundation for improved preparations for *Claymore'*s return to service and, ultimately, the safety of her operation.

Furthermore, it is inconsistent that a 500gt cargo vessel operating with a crew of three between the UK and near continent is required to adhere to the ISM Code, whereas a 1871 gt ro-ro ferry with 12 passengers and a crew of 10, working in an area with a high incidence of bad weather and strong tidal streams, does not need to comply with any mandatory requirements in this respect.

2.9 THE DESIGNATED PERSON

The DP is pivotal to the success of the ISM Code and, although MGN(40) specifies that a DP should be experienced in the operation of ships at sea and in port, little other guidance regarding qualifications and experience is provided.

Although the DP in Pentland Ferries had no seagoing experience and only worked part-time, with the assistance of a seafarer consultant, he was able to implement a safety management system for the company to operate *Pentalina B*. This, however, was mainly an administrative task. It is considered likely that his lack of seagoing experience, and the hours he worked, would have hindered overall effectiveness in the more practical aspects of his role, where a degree of technical knowledge is required. Indeed, this had been recognised by the DP himself, who had suggested to the MD that an experienced mariner might be more appropriate to undertake his role.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

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

1. It is highly probable that the master was strongly influenced by the MD in his decision to berth *Claymore* without the assistance of a bow thruster. [2.2.2]

2. In the absence of any company policy and guidance regarding adverse weather conditions, the master had no indication of the upper limit of the weather conditions in which he was expected to berth. [2.2.3]

3. *Claymore* became entangled with the small vessel moorings in St Margaret's Hope because her movement could not be controlled as intended in the strong northerly wind. [2.3]

4. Manoeuvring in the strong wind was made difficult by *Claymore'*s large "sail area" forward, and the effectiveness of her propellers might have been affected by interaction with the sea bottom and a reduced '*paddlewheel effect'*. [2.3.1]

5. The master was relatively inexperienced in handling *Claymore.* [2.3.2]

6. The unavailability of the bow thruster, and the failure of the starboard anchor to release, impeded the master's attempts to berth. [2.4]

7. The significance of the defect to the exhaust vent flap, which was seen and reported before the ship returned to service, was not recognised by either the marine superintendent or the ship's engineering staff. [2.4.1]

8. The failure to record and take remedial action on the defect to the exhaust vent flap reflects the absence of a formal defect reporting and prioritised rectification system. [2.4.1]

9. Had the defect to the exhaust vent flap been prevented via planned maintenance, or repaired before 11 March, the bow thruster would not have become saturated and would have been available for use. [2.4.1]

10. Had the anchors been fully checked before the ship re-entered service, they would have been more likely to release when required. [2.4.2]

11. Had an attempt to walk back the starboard anchor clear of the hawse pipe, as required by the Pentland Ferries Fleet Procedures Manual **(Annex D)**, been made, the master would have been aware of its unavailability before starting the entry, and been able to reconsider his plan. [2.4.2]

12. The bridge management during the berthing attempts was ineffective and the master was unable to maintain control of the situation. [2.5]

13. The chief officer's pre-occupation with trying to start the bow thruster sidetracked him from more relevant tasks. [2.5]

14. A breakdown in communication between the bridge and fore deck caused the opportunity to use the mooring line secured to the jetty to help bring the ship alongside to be lost. [2.5]

15. *Claymore's* return to service was a temporary measure that attracted little forethought. [2.6]

16. Lacking experience and not seeking advice, the MD allocated insufficient time and resources to bring *Claymore* back into service. [2.6]

17. Safety management in Pentland Ferries was seen as a means to an end, not an objective in its own right. [2.7]

18. The MD's sceptical view of the ISM Code, along with his dominant and ever-present influence on all of the company's activities, was not conducive to the development of a safety culture. [2.7]

19. Because *Claymore* was operating under class VIIIA certification, Pentland Ferries did not have to abide by either domestic or international safety management regulations. [2.8]

20. The DP's lack of seagoing experience and limited working hours hindered his effectiveness in this role. [2.9]

SECTION 4 - ACTIONS TAKEN

4.1 GENERAL

On 14 March 2003, the MCA conducted a port state inspection on *Claymore*, during which 17 deficiencies were noted. The majority of these deficiencies were related to the vessel's lifeboats and fire-fighting equipment.

Claymore was taken out of service on 4 April, when *Pentalina B* returned from refit. As her intended charter did not materialise, she was laid up in St Margaret's Hope. Her master was re-employed by Pentland Ferries about 3 weeks after being paid off.

On 16 April, the Chief Inspector of Marine Accidents informed Pentland Ferries by letter of a number of safety issues that had been identified at that stage. These included:

- The lack of sea-going experience among its management;
- No time was allocated to the crew for familiarisation or drills;
- Not all equipment was tested before returning into service;
- The defect on the bow thruster exhaust vent was known but no remedial action was taken;
- The starboard anchor was not made fully ready even after the master had indicated his intention to use it;
- Operating limits for the vessel in the event of bad weather or non-availability of equipment had not been specified;
- Contingency plans in the event of bad weather or non-availability of equipment had not been formulated;
- Other than entry and departure checklists, no bridge procedures were available on board.

4.2 SAFETY MANAGEMENT

In April, *Pentalina B* was issued a Class VI certificate and an Interim Safety Management certificate, allowing the ship to carry up to 250 passengers.

Pentland Ferries has started a review of its policy regarding operating limits, and contingency plans, in the event of bad weather.

Work has begun to install safety management documentation on board *Claymore*.

Preparations have been made to replace the bow thruster exhaust vent flap with a gate valve.

SECTION 5 - RECOMMENDATIONS

The Maritime and Coastguard Agency is recommended to:

1. Investigate the benefits of applying a safety management system, similar to Safety Management Code for domestic passenger ships, to those vessels currently not required to have a safety management system by statute.

2. Consider developing guidelines for the experience and knowledge required by a designated person.

Pentland Ferries, the owner of *Claymore,* is recommended to:

3. Planning

- Ensure that when any of its ships are returning to service from lay up or refit, the requirements are well considered by all relevant parties, and that sufficient resources and manpower are allocated.

- Promulgate the results of its review of operating limits and contingency plans in the event of bad weather to its masters and chief officers.

- Allocate sufficient time for personnel to familiarise themselves when joining a vessel, and adopt measures to ensure that the ships' familiarisation forms are properly completed.

4. Bridge Resource Management

- Place its masters and chief officers on courses aimed at improving their bridge resource management.

5. Operations and Safety

- Review the planned maintenance system in its vessels to ensure the components of all critical systems are included.

- Ensure that a formal defect reporting and prioritised rectification system is used onboard its vessels.

- Ensure all personnel understand and comply with the company's written operational procedures.

- Apply the principles of safety management to all of its activities, not just those required by regulation.

Marine Accident Investigation Branch
October 2003

ANNEX A

Pentland Ferries' Adverse Weather Policy

Pentland Ferries Ltd.

Company's Adverse Weather Policy

Pentilina B Berthing at Gills Bay

Master and Office to monitor permanent weather situation from Orkney Harbour Radio, 3 Day forecast, Weather charts, Navtex weather forecast.

Any Gale Warnings, Master to inform office immediately.

The Pier Master in Gills Bay to inform the Master and the Office in St. Margarets Hope of any unsuitable berthing conditions in Gills Bay. To include direction & force of wind, sea state, swell at pier & visibility.

Any change in weather / visibility during passage, Master's decision.
Gale force winds, heavy sea/swell, vessel to return to St. Margarets Hope.
Restricted visibility, vessel to anchor in Gills Bay.

Master & Office to prepare any cancellations of sailings due to adverse weather.

Signed

D.P.A.

Master

Chief Officer

Pier Master, Gills Bay

Managing Director

Copies to be posted onboard Pentalina B, at St. Margarets Hope & Gills Bay

ANNEX B

Mv *Claymore* Familiarisation and Training Form

M.V. CLAYMORE

FAMILIARISATION AND TRAINING

To conform with STCW Regulations the Master should ensure that every crewmember has been given instruction on the items listed below within 14 days of joining the ship. Each new crewmember should initial and date the relevant boxes as detailed below.

All Crewmembers	Deck Officers	Engineer Officers	Deck Ratings	Catering Ratings
To complete items	To complete items	To complete items	To complete items	To complete items
1 - 17	1 - 32	1 - 29 & 33 - 41	1 - 17 & 20 - 32	1 - 17

NAME RANK

No.	Subject	Initials	Date
1	The Muster List		2/3
2	General arrangement of the ship		7/3
3	Domestic Safety Management Code		8/3
4	Master's Standing Orders		7/3
5	Policy Statements e.g. Health, Safety and Environmental		8/3
6	Job Descriptions		7/3
7	Life Saving Appliances		8/3
8	L.S.A. Training Manual		8/3
9	F.F.A. including alarm systems and fire dampers		9/3
10	Communications on board (VHF Radio, Talkback and P.A.		7/3
11	Weathertight doors and hatches		9/3
12	Actions in emergency. a) black out b) fire c) loss of control		9/3
13	Garbage Management Plan		7/3
14	Steering systems, including emergency steering		8/3
15	Fire pumps (including emergency fire pump)		7/3
16	Ship s ventilation system		7/3
17	Communications in an emergency between ship and shore		8/3

18	Ships manoeuvring characteristics – turning circle, stopping dist.		
19	Main engine and bowthrust controls, including transfer of control		
20	The Shipboard Oil Pollution Emergency Plan		
21	Statutory Instrument file - location		
22	MGN, MIN and MSN files - location		
23	Ship and other information files - location		
24	Fleet Circulars file – location		
25	Ship's intact and damaged stability criteria		
26	~~Visor, bow ramp~~, stern door and side loading ramp		7/3
27	Mooring decks, machinery and mooring arrangements		7/3
28	Anchoring procedures (lowering and raising)		
29	Planned Maintenance systems		7/3
30	Cargo loading and stowing procedures		7/3
31	Cargo lashing procedure		7/3
32	Carriage of Dangerous Goods		7/3
33	Fuel oil daily service tank quick closing valves		
34	Damage control systems and storm valves		
35	Emergency fire/bilge/drench pump fitted to bowthrust engine		
36	Ballast and bilge pumping systems (including extended spindles)		
37	Oil Record Book (Part 1) Machinery Space Operations		
38	Emergency stops: fuel, main engines and fans		
39	Oily water separator system		
40	Fuel system, including action when supply fails		
41	Electrical switchboard procedures and alternators		

ANNEX C

Extract from Pentland Ferries' Fleet Procedures Manual

8.0 Preparations for Arrival

8.1 Engine and Navigation Equipment Checks

Prior to entering a port the Master shall ensure that the following are checked to confirm that they are working correctly :-

a. Main engine manoeuvring gear
b. Bow thruster and controls
c. Radar
d. Echo Sounder
e. Compasses
f. Hand steering gear systems
g. Windlass, capstan and winches
h. Radio equipment both portable and fixed installations
i. Ships whistle
j. Re-house stabilisers

Any defects found in any of the equipment shall be reported to the OOW and the ship's Master

8.2 Engine Room Standby

The Master shall inform the Engineers in plenty of time when manoeuvring of the vessel is expected to take place.

8.3 Manual Steering

Manual steering shal be engaged in plenty of time to allow the helmsman and OOW to become accustomed to the vessel's response

8.4 Bridge Checks for Arrival

The Master must ensure that the following information is avaible before entering harbour :-

a. Port information.
b. Sailing directions.
c. Weather reports.

d. Tidal information.
e. Depth of water in approaches, channel and berth.
f. Restrictions on draft, trim, speed, entry times.

And that the equipment checks below have also been carried out :-

1. Course and engine movement recorder.
2. Clocks synchronised.
3. Internal communications equipment.
4. Signalling equipment.
5. Deck lighting.
6. Mooring winches.
7. Mooring lines/wires/heaving lines.

8.5 Preparation of Ropes and Wires

Due to the nature of trading of the Company vessels, where mooring ropes and wires are in constant use, it is important that the Chief Officer checks all ropes and wires for damage or ware at regular intervals. The findings of these checks shall be recorded in the Chief Officers Planned Maintenance Record Book.

The crew shall be called to harbour stations in ample time to ensure that all ropes, wires heaving lines etc. are ready when required. The Forecastle party shall have the anchor prepared for immediate use.

8.6 Anchoring

In the event that the ship has to be anchored the Master shall ensure that the following preparations are made in ample time and that suitable orders are issued to deck crew :-

- Power to the windlass
- Pipe covers to be removed
- Windlass engaged in gear
- All lashings removed
- Brake released and anchor lowered clear of hawse pipe
- Brake applied and gearing disengaged
- Anchor day signals/lights ready for use

8.7 Vessel at Anchor

When the ship is at anchor the Master should ensure that the items listed below are carried out :-

a. Bridge watch maintained.
b. Regular position plot to check for dragging.
c. Lookout.
d. Lights and shapes.
e. Sound signal in restricted visibility.
f. Readiness of main engines.

When the vessel has brought up to her anchor, the Master shall establish the ship's position and check it by at least one other alternative method

The particulars are to be entered in the Deck Log Book,also the length of cable,depth of water and type of bottom. Frequent position checks are to be made throughout the period at anchor.

The Master shall ensure that a watch is kept when the ship is at anchor. Machinery and personnel must be kept in a sufficient state of readiness to deal with any conditions which may arise. The Master shall inform the Chief Engineer of the degree of readiness required for main engines,steering gear and deck machinery. The number of personnel on watch shall at all times be adequate for the prevailing conditions, bearing in mind the need for preservation of the ship's safety and security.

When an Officer assumes the duty of Officer of the Watch while at anchor then he must :-

- Observe the Masters Standing Orders
- Check vessels position for drift
- Check vessels anchor signals both day and night
- Pay particular attention to weather forecasts and enter the details in the Deck Log Book
- Monitor the movements of other vessels in the vicinity of the anchorage.

10.0 Maintenance

10.1 Deck Department Inspection Maintenance and Testing

The Chief Officers Planned Maintenance Folder contains an inventory of all items on board each individual vessel which are subject to checks and inspections on a monthly and weekly basis.

The Chief Officer shall make inspections on all categories of equipment at monthly intervals. He may delegate some of the inspections to a suitably experienced seaman. The seaman should be thouroughly familiar with the equipment he is inspecting. Any defects found should be reported to the Chief Officer who will make the relevant entry in the Planned Maintenance Record Book.

These entries shall include but are not limited :-

a. The inspection date
b. Brief details of any defect found
c. Date when defect rectified
d. The initials of the Chief Officer

When the defect has been rectified the completion date and initials of the Chief Officer shall be entered in the columns provided

The D.P.A. shall ensure that a new blank record book is available for each ship by the end of December each year. The content of the Planned Maintenance Record Book is subject to continual review and updating throughout the year.

The D.P.A. shall at periods not exceeding three months visit each vessel to check that the maintentance inspections are being carried out and that the appropriate records are being recorded in the Maintenance Record Book. This D.P.A. review shall be recorded on the appropriate page in the front of the Maintenance Record Book.

10.2 Defect Reporting

All identified defects which cannot be rectified by ships crew or require spares or any other support from onshore shall be reported in writing using the Company Defect Report Form. The defect form shall be sent ashore to the Head Office for further action.

10.3 Repair Items for Drydock

All major defects and other items required to be carried out at the annual refit shall be recorded on Defect Report forms and sent ashore for further processing to the Head Office. Any minor items that the Chief Engineer and Chief Officer feel should be carried out at the Annual refit shall be recorded on a separate sheet. This sheet shall be sent ashore approximately two months before the refit for processing and possible inclusion in the refit specification.

The Managing Director is responsible for preparing a refit specification and for arranging for dates and times for drydocking.

10.4 Laid-up Vessel

In the event that a vessel has to be laid-up for any period of time, a maintenance and inspection schedule shall be initiated to ensure that the vessel does not suffer from flooding or other mechanical damage

All planned maintenance schedules shall continue to be carried out. A responsible person shall visit the ship twice a day and carry out an all round inspection of all areas for any signs of flooding or damage.

Under no circumstances should a vessel that has been laid up be brought into service untill all the equipment essential for it to operate safely has been tested and the Master and Chief Engineer are completely satisfied that the vessel is in a fit state to enter service.

10.5 Machinery Maintenance – Safety Precautions

Prior to commencing a maintenance task on any piece of plant or machinery, other than routine tasks normally undertaken while the machinery is in motion (e.g. lubrication), the Engineer shall ensure that the machine has been isolated from its power supply and cannot be inadvertantly restarted. Appropriate cautionary notices shall be attached to the isolating device. The Chief Engineer shall ensure that a 'Permit to Work' is raised for activities other than frequently undertaken routine tasks.

It is important that the Engineer concerned ensures that temperatures and pressures in the machine and associated pipework have been reduced to safe levels prior to commencement of work.

ANNEX D

Mv *Claymore* Master's Standing Orders (17 November 2002)

M.V. CLAYMORE

MASTER'S STANDING ORDERS (BRIDGE)

- When Mate is on watch, he has the con till I specifically take over.
- Be aware of effect of tide and wind at all times.
- 2 men on bridge between Duncansby Head and St. Margaret's hope.
- Inform me if it is necessary to deviate from voyage plan or courses on chart.
- Call me if visibility or weather deteriorates markedly or unexpectedly.
- Do not hesitate to use engines at any time
- Do not hesitate to call me if in any doubt at any time.
- When engine room is on single man watch, maintain contact every 20 minutes
- In adverse weather, cargo lashings should be checked regularly. 2 men to do this.
- Check auto pilot against main gyro regularly.

Signed.....Date..17/11/02.....

To: Captain/C.O. MV Claymore

From: Designated Person Ashore

Date: 18 November 2002

SUBJECT: SHORE-SIDE DOCUMENTATION

1. Below is a list of items which I will need for the shore-side records. Some items may not be readily available yet (F-Forms not yet on board, for example), but we can use this memo as a reference to tick off items as they become available:

   (a) Copy of G A Plan }
   (b) Tank Plans } For Emergency Response Team
   (c) Fire Plans }
   (d) Copies of all ships' certificates
   (e) Crew medicals - renewal dates
   (f) Crew qualifications - copy of each crew member's record (not the certificates)
   (g) Acknowledgement sheets (policy documents: asbestos, chemical, etc)
   (h) Copy of MCA list of deficiencies from Birkenhead survey
   (i) Copy of Masters' standing orders
   (j) Copy of Chief Engineers' standing orders
   (k) Watch rating forms

2. Documents to MV Claymore

   (a) Dangerous goods information - already on board
   (b) Product safety data sheets - already on board
   (c) HSE F2508 (accident reporting) } Do you have these on board?
   MAIB IRF 1/99 (accident reporting) } If not, I can supply