Report on the investigation of

the grounding of the passenger vessel

Balmoral

Dagger Reef - Gower Peninsula

18 October 2004

Marine Accident Investigation Branch
Carlton House
Carlton Place
Southampton
United Kingdom
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Extract from

The Merchant Shipping

(Accident Reporting and Investigation)

Regulations 2005 – Regulation 5:

"The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 13(9) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purpose is to attribute or apportion liability or blame.

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AIS	-	Automatic Identification System
EBL	-	Electronic bearing line
DPA	-	Designated Person Ashore
GMDSS	-	Global maritime distress safety system
GPS	-	Global Positioning System
IMO	-	International Maritime Organization
ISM	-	International Management Code for the Safe Operation of Ships and for Pollution Prevention
MCA	-	Maritime and Coastguard Agency
SMC	-	Safety Management Certificate
SMS	-	Safety management system
SOLAS	-	Safety of life at sea
UTC	-	Universal Co-ordinated Time
VRM	-	Variable range marker
WEL	-	Waverley Excursions Limited

SYNOPSIS

During the afternoon of 18 October 2004, in fine weather and good visibility, the passenger vessel *Balmoral* grounded on Dagger Reef, Gower Peninsular. The vessel was carrying 213 passengers and 19 crew on a sightseeing excursion along the South Wales coast.

In accordance with the planned passage, *Balmoral* intended navigating within a distance of 4 cables from the coastline at various points, the purpose of which was to get as close as was safely possible to the coastline to give the passengers a good view from the vessel.

However, the master decided to deviate from the planned track and take the vessel even closer in land. He altered course to 304° towards Dagger Reef, south-west of Rhossilli Point. The master intended to come round to port onto a southerly heading when the vessel reached a position 3.5 cables off the Point. To achieve this, he used Rhossilli Point as a head mark, and distance off was monitored by using the VRM on the ship's head-up radar, which was set to the 0.75 mile range.

Balmoral grounded, damaging her two propellers. The hull remained watertight. After assessing the situation, a course was set and the vessel headed back to Penarth at reduced speed. Meanwhile, the crew sounded round tanks and spaces at regular intervals until the vessel arrived safely at her destination.

The MAIB investigated a similar accident that occurred on 20 June 2004 to *Balmoral*'s sister vessel, *Waverley,* which grounded while under the command of the same master. *Waverley* touched the rocky bottom on the edge of Boiler Reef, south-west of Sanda Island. She sustained damage to the underside of her hull, but her watertight integrity was not breached and there were no injuries.

The MAIB investigation into the grounding of *Balmoral* determined that the accident was caused by the master electing to deviate from his planned route and then failing to adequately monitor his approach to Rhossilli Point. This finding was similar to one concluded from the MAIB investigation into the *Waverley* accident, the provisional lessons from which were discussed with the vessel's management, Waverley Excursions Ltd (WEL) on 12 October 2004. WEL's subsequent actions did not prevent *Balmoral* from grounding 6 days later. Following the Preliminary Examination of the *Balmoral* grounding, which identified continued weaknesses in WEL's safety management system, the Chief Inspector of Marine Accidents immediately wrote to WEL recommending corrective action which should be completed before WEL vessels carried further passengers. Further recommendations were made in the report on the *Waverley* grounding, issued in January 2005.

In light of the positive actions taken by WEL in response to these recommendations, this report only makes limited additional recommendations to the vessel's owner, Waverley Steam Navigation Company, and to WEL to prevent a recurrence of the accident.

Figure 1

Motor vessel *Balmoral*

Figure 2

The paddle steamer *Waverley*

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF *BALMORAL* AND ACCIDENT

Vessel details		*Balmoral* **(Figure 1)**
Registered owner	:	Waverley Steam Navigation Company
Manager(s)	:	Waverley Excursions Ltd
Port of registry	:	Bristol
Flag	:	UK
Type	:	Passenger Ship
Built	:	1949 Southampton
Classification society	:	Under MCA survey regime
Construction	:	Steel
Length overall	:	62m
Gross tonnage	:	735
Engine power and/or type	:	2 x 800hp Grenna diesels
Service speed	:	12 knots
Accident details		
Time and date	:	1413 UTC on 18 October 2004
Location of incident	:	51° 33.1N 004° 18.1W Dagger Reef - Gower Peninsula
Persons on board	:	232
Injuries/fatalities	:	None
Damage	:	Damage to both propellers

1.2 BACKGROUND

Balmoral is operated by Waverley Excursions Limited, which also operates the paddle steamer *Waverley* **(Figure 2)**.

Both vessels operate between Easter and October around the UK coast. Operating areas include: the Western Isles of Scotland, the Clyde, North Wales, Isle of Man, the Bristol Channel, the South Coast of England, the Thames and East Anglia.

Balmoral **(Figure 1)** was built in Southampton in 1949. For 20 years she carried passengers for the Southampton and Isle of Wight and South of England Royal Mail Steam Packet Company Limited. She then operated in the Bristol Channel with P&A Campbell's White Funnel fleet until the company ceased operation in 1980. *Balmoral* moved to Dundee to become a floating restaurant, returning to service in 1986 to operate the summer season in the Bristol Channel.

In winter 2002, *Balmoral* was fitted with new engines. The project was dependent on nearly £150K being raised through the help of the public sector and local councils, supporter societies and onboard fund-raising activities. This, in turn, secured a further £3/4m contribution from the Heritage Lottery Fund. The total sum covered the cost of replacement engines, several safety improvements, and enhancements for passenger comfort.

1.3 THE VESSEL

1.3.1 Certification and MCA liaison

Balmoral can carry up to 784 passengers, depending on the area of operation and the provisions of the relevant passenger safety certificate. *Balmoral* was certificated to sail as a Class III, Class IV, Class V or Class VIII vessel. As a Class VIII vessel, she can transit between operating areas, but not with passengers.

A number of MCA offices are involved in *Balmoral's* survey and inspection process, which is co-ordinated by an MCA customer service manager in Cardiff.

1.3.2 Bridge equipment

Balmoral was fitted with the following bridge equipment:

- A magnetic compass;
- 2 relative motion radars, one with a fixed ship's head-up display, the other stabilised with a magnetic compass;
- 1 GPS receiver;
- 1 AIS receiver;
- Echo sounder and the required radio equipment to conform to A1 area requirements under GMDSS **(Figures 3 and 4)**.

Figure 3

Radar in use

Figure 4

Photograph showing AIS

The ship was steered by a helmsman on a traditional wheel, and engine movements were ordered by means of telegraph from the bridge.

The plotting of parallel index lines was only possible on one of the radar displays, and was achieved by utilising a floating EBL and VRM. However, parallel index lines were not often used by the bridge watchkeepers and it was more usual for them to only utilise the VRM to monitor the vessel's distance off the coastline.

A compass pelorus was available on board, but was not being used at the time of the accident.

1.3.3 Propulsion machinery

Balmoral was fitted with 2 x 6-cylinder Grenna diesel engines, each delivering 800hp through twin reduction reversible gearboxes to fixed pitch propellers. Her turning circle at her normal sea speed of 12 knots was 0.5 cable.

1.4 CREW

Balmoral carried a crew of 19: the master, chief officer, chief and second engineers, one grade 1 seaman, three grade 2 seamen, a fireman and 10 non-specified catering crew.

The master was one of three masters employed by WEL to operate both of its ships. He was first employed by the company as chief officer on board *Waverley* between 1988 and 1990. In 1991, he was awarded his master's certificate, and worked as relief master until 1993, when he worked full-time. At the end of 1994, he left WEL to work in the short-sea trade and study for a degree, but rejoined Waverley Excursions Ltd in 2001. The master joined *Balmoral* on 15 October 2004.

The master held pilotage exemption certificates for the Clyde, Thames, Bristol Channel, Swansea and south-east Wales. He was on the bridge at all times when operating within a pilotage area. With the help of a dedicated helmsman, he manoeuvred the vessel when she arrived and left a berth, occasionally delegating this responsibility to the chief officer.

The operations director, a holder of a UK class 2 engineering certificate of competency, was serving as second engineer.

It was not unusual for the operations director to serve as an engineer on either *Waverley* or *Balmoral* when the need arose, in order to provide cover when the regular sea-going engineers were absent.

1.5 ENVIRONMENTAL CONDITIONS

The wind recorded in the deck log for 1200 and 1600 hours on 18 October 2004, was north-west force 2 to 3. The predicted tidal stream was westerly at 1.8 knots. The predicted high water at Swansea was 0933, and the predicted height of tide was 6.8m.

1.6 NARRATIVE OF EVENTS

(All times are UTC + I hour, all courses are true)

Balmoral was laid up at the end of her seasonal schedule in mid October 2004. However, subsequent constraints on *Waverley*'s schedule required that *Balmoral* undertake a further sailing. As a consequence, *Balmoral* was brought out of lay up.

Most of the 19 crew joined the vessel on Friday 15 October 2004, with some key members joining earlier. However, a commercial decision was taken not to sail that day, but to begin the programme the following day.

Saturday's cruise to Minehead, and Sunday's cruise to Lundy Island, in accordance with the schedule, passed without incident.

After anchoring in the Bristol Channel overnight on Sunday, *Balmoral* weighed her anchor at 0847 on Monday 18 October 2004. She then made her way to Clevedon, arriving at 0902 to pick up passengers. At 0915, she sailed from Clevedon for Penarth, arriving at 1011, where more passengers boarded. From there, *Balmoral* began her voyage for the day. There were 213 passengers on board and 19 crew. Her maximum draught was 2m.

The intended passage, which had been planned and plotted on the chart by the master, was to steam along the coastline with the ebb tide from Penarth to Nash Point, through the Nash Passage, inside Tusker Rock, round Porthcawl Point, across Swansea Bay, round the Mumbles and then along the Gower Peninsula to Worms Head. She would then return on the first of the flood tide.

In accordance with the planned passage, *Balmoral* intended navigating within a distance of 4 cables from the coastline at various points, the purpose of which was to get as close to the coastline as was considered safe, to give the passengers a good view of the land from the vessel.

By early afternoon, *Balmoral* had completed her excursion of Swansea Bay and, at approximately 1310, she rounded the Mumbles and settled on a course of 258° towards Port Eynon Point. Her speed was 12 knots.

On the bridge was the master, who had the con, and a helmsman. The chief officer had been on the bridge previously, but had gone below to his cabin as he was feeling unwell. The master was content with the level of manning on the bridge.

Monitoring of the vessel's position was achieved by infrequent GPS fixing on the chart and the use of the EBL and VRM on the ship's head-up display radar. Inspection of the chart by the MAIB, after the accident, showed little evidence of the use of visual limiting danger lines, planned under keel clearances or clearing bearings and ranges.

At 1332, the vessel was 3 cables south of Pwlldu Head, and the master ordered an alteration of course to 286° to take her into Oxwich Bay to enable the passengers to obtain a closer view of the coastline. This was a deviation from the original planned track and the master's decision for it was based on his assumed need to satisfy the passengers, his experience, having done it several times in the past, and the fact that the weather was good. Course lines were drawn on the chart for entry and exit into the bay, and a position was recorded at 1341, well inside the bay. The master then ordered a course of 191° to exit the bay, before resuming a course of 285°.

At approximately 1358, north of the Helwick cardinal buoy, a further alteration of course was made to 288° towards Worms Head, in accordance with the new planned track.

However, at 1404, the master again decided, for the same reasons as stated earlier, to deviate from that track and to take the vessel closer towards land. Course was altered to 304° towards Dagger Reef, south-west of Rhossilli Point **(Figure 5)**. It was the master's intention to come round to port onto a southerly heading when the vessel reached a position 3.5 cables off the Point. In order to achieve this, he used Rhossilli Point as a head mark, and distance off was monitored by the VRM on the ship's head-up radar, which was set to the 0.75 mile range.

At the required position, the master ordered a slow turn to port, but realised almost immediately that *Balmoral* was being set onto the reef by the ebb tide. He then ordered 20° port helm and rang down on the telegraph for dead slow on the main engines, with the intention of reducing the effect of squat. At the same time, the second engineer, who was on watch in the engine room, became aware that something was amiss, and momentarily de-clutched the shafts from the main engines to try and prevent damage to the ship's propellers. However, as he did so, at 1413, both propellers made contact with the reef. Immediately after making contact, the engineer engaged the shaft to enable the master to complete the turn and clear any further danger.

Once *Balmoral* was clear of the reef, the master contacted the coastguard and reported the accident. The engineer officer of the watch then instructed the crew to sound round, but no announcement was made at that stage to inform the passengers as to what had happened.

Evidence obtained from passengers who had been on board the vessel at the time confirmed that, following the grounding the vessel started to make slow headway to seaward. As power was progressively increased a marked vibration could be felt, synchronous with the rotation of the propeller shafts. Apart from one passenger, who became very concerned, it was reported that the rest appeared unconcerned.

A course was then set to return to Penarth at reduced speed, and the crew were instructed to continue sounding round at regular intervals.

Thirty minutes after the accident, an announcement to the passengers was made, informing them that there was a problem with the starboard propeller and the ship was returning to port. To prevent any unnecessary panic, the master decided not to tell the passengers that the vessel had grounded.

At 1840, *Balmoral* arrived at Penarth, where the passengers were disembarked.

Figure 5

Photograph showing chart in use

1.7 DAMAGE

As a result of the grounding, the following damage was sustained to *Balmoral:*

- Port propeller: peened over on three blades
- Starboard propeller: peened over on all 4 blades with the misalignment of one.

1.8 SAFETY MANAGEMENT

1.8.1 Background

Waverley and *Balmoral* operate a safety management system (SMS) based on the International Safety Management (ISM) Code.

Balmoral operates an SMS because excursions to the Isle of Man require passage through international waters. Although there is no requirement to do so, for consistency, *Waverley* operates a similar SMS within the context of the ISM Code.

Balmoral has an SMC valid until 9 May 2009. Waverley Excursions Ltd was issued with a Document of Compliance on 9 July 2004 after an audit by the Glasgow MCA office.

The objectives of the SMS are defined in section 1.2.2 of the ISM Code:

1. *Provide for safe practices in ship operation and a safe working environment;*
2. *Establish safeguards against all identifiable risks;*
3. *Continuously improve safety management skills of personnel ashore and on board ships, including preparing for emergencies related both to safety and environmental protection.*

1.8.2 Grounding of *Waverley*

On 20 June 2004, *Waverley,* while under command of the same master, touched the rocky bottom on the edge of Boiler Reef, to the south-west of Sanda Island. The vessel was damaged on the underside of her hull, but her watertight integrity was not breached. There were no injuries. The MAIB investigated the accident, and subsequently recommended safety actions which are referred to later in this section.

1.8.3 The management team

Waverley and *Balmoral* are owned by the Paddle Steamer Preservation Society through the Waverley Steam Navigation Trust, which is a charity registered in Scotland. The ships' commercial operation and management is undertaken by Waverley Excursions Ltd, in Glasgow.

The board of directors of Waverley Excursions Ltd comprises a number of non-executive directors. The non-executive directors are active and retired senior managers from industry, appointed on the strength of their commercial and business experience.

The four executive directors comprise: the operations director, the safety director, the commercial director and the senior master.

The operations director

The operations director is an experienced sea-going marine engineer, as well as an experienced industrial engineer. He joined WEL in 1988 as chief engineer, and in the same year took on the additional role of operations director.

His responsibilities include the superintendence of the running and maintenance of the two vessels, liaison with shipyards, the MCA, classification society and the overall commercial operation of both vessels.

He wrote the first SMS policy statements and, with the ships' masters, developed the safety management procedures. He conducted the SMS ships' safety audits with the safety director and also acts as relief ship's engineer. He is also chairman of the board of directors.

The safety director

Of the four executive directors, the safety director's post is the only one which is unpaid. The safety director is a retired, experienced naval architect previously involved in quality assurance work with a major engineering company and shipyard. He joined Waverley Excursions Limited in 1996.

With the help of the senior master, he wrote the current ISM procedures manual. He is the safety management system's designated person ashore (DPA). He considers himself to be the conduit between ship and shore contact. His post is voluntary and part time.

The senior master

The senior master has been a director of the company since 2003. He is an experienced coastal navigator, and holds a Class 4 certificate of competency and a limited European command endorsement. He is one of the three regular masters of *Waverley* and *Balmoral.*

The senior master has a pivotal role in assessing the suitability of officers and crew who are appointed on evidence gleaned from interviews and references. In the case of masters, successful candidates are subjected to two interviews. The senior master interviews the candidates first, and recommends that potentially suitable candidates are interviewed a second time by the operations director. The operations director makes the final decision for the appointment of masters.

Another of the senior master's responsibilities is to plan the summer passages and timetables with the commercial director, though at the time of the grounding he did not have any written terms of reference.

The commercial director

The commercial director is shore-based and has the overall responsibility for the commercial operation of the company.

1.8.4 Safety management policy

A safety management policy influences a company's activities and decisions, including selection of people, procedures, information and operation. The stated policy of WEL is attached at **Annex A**.

1.8.5 Performance standards

A successful organisation, which achieves high health and safety standards, is structured and operated so as to put its health and safety policies into effective practice. To enable this, clear written procedures, which are properly understood and implemented by the operator, are necessary.

The written procedures for safe navigation prior to *Waverley* grounding, which occurred 120 days before the grounding of *Balmoral*, were in force **(Annex B)**.

Despite these instructions, a contributory factor to *Waverley* grounding was that the passage had not been properly planned. This shortcoming was identified to WEL masters and chief officers in WEL safety memoranda issued on 1 July and 16 August 2004 **(Annexes C and D)**, and subsequently ratified on 15 September 2004 in the company's SMS documentation **(Annex E)**.

The SMS provides for the auditing of the performance of ship's staff to ensure that standards set by management are properly followed. This auditing is undertaken externally by the MCA, and internally by WEL and others.

WEL's safety director reported that up to 20 audits of the two ships are undertaken annually. These comprise observations of safety reports, logs and statutory drills and informal chats with the crews.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 FATIGUE

Before joining *Balmoral* on 15 October, the master had been at home on leave. On the nights of 16 and 17 October 2004, he had a full night's rest in bed while the vessel was at anchor. Based solely on the time the master had rested prior to the accident, it is not likely that his performance would have been affected by tiredness. However, during interview, the master reported suffering sleep disturbance, irritability and difficulty in concentrating. Therefore, despite the rest the master had taken, it is possible that sleep disturbance had caused him to suffer some level of fatigue at the time of the accident. The issue of sleep disturbance is further discussed at 2.3.4.

2.3 REASONS FOR THE ACCIDENT

2.3.1 Planning

Before *Balmoral* sailed, the master had, in accordance with company instructions, devised a passage plan. Courses and distances had been plotted and a notebook prepared. Although the master was not immediately familiar with the contents of SOLAS chapter 5 - passage planning, he was familiar with WEL's safety management procedures on passage planning **(Annex E)**, and the two WEL safety memos' on safe navigation and passage planning **(Annexes C and D)**.

2.3.2 Deviation from the planned track

WEL's aim was to make excursions on both *Balmoral* and *Waverley* as enjoyable as possible so that satisfied passengers would return for future excursions. The master's interpretation of this was a belief that the closer to the coastline the vessel operated, the better the view, and the greater the level of passenger satisfaction and fulfilment was achieved.

The master reported that part of his decision to deviate from the planned track and proceed closer inshore was based on the principle of giving passengers a better view of the shoreline. Additionally, as part of his decision-making process he had also given consideration to the prevailing fine weather conditions, an offshore north-easterly breeze, and sightseers situated on the rocky shoreline watching *Balmoral* steam past. These facts, together with the realisation that the vessel had reached a designated alteration of course position on the original passage plan, prompted the master to deviate toward Rhossilli point. The master indicated that this decision was a personal preference and not as a result of company policy.

The risks associated with the deviation were not properly considered, and passage planning for the new course was neither in accordance with IMO guidance or WEL's instructions. After making the decision to deviate, the master simply plotted the new course on the chart and then checked his position about half way along the track. He did not make a proper assessment of the risks involved in the new plan and, as a result, was unable to take steps to mitigate them.

Despite the lessons identified from the *Waverley* incident, the master did not appear to appreciate the importance of not deviating from a planned passage. WEL should have clearly instructed all its masters that no deviation from the planned passage was acceptable, unless for health and safety reasons, once the passage had commenced. This would then have removed any doubts from the master's mind about deviating from the plan mid-excursion.

There was no reason why the master could not have safely followed the planned track as laid down in his original passage plan, and still provide an enjoyable voyage for his passengers. Had the original plan been followed, this accident would have been avoided.

2.3.3 Track monitoring

The master was navigating mainly by sight and by the ship's head-up radar. He monitored the vessel's position relative to the new track by using Rhossilli Point as a head mark, and monitoring the distance off the head mark and the nearest point of land with the forward radar's VRM. Because of the bridge design, specifically the position of the magnetic compass directly in front of the helmsman, it was not possible for the master to take a compass bearing of the head mark to gauge how far the vessel was left or right of track.

The grounding could have been avoided had the passage plan at least included limiting danger lines, minimum under keel clearance, clearing bearings and ranges, and the procedures to be used for monitoring. If these measures had been adopted, and had the radar that he was using been capable of supporting the use of parallel indexing, the likelihood of an accident would have been significantly reduced.

Given the tidal conditions and *Balmoral*'s speed, he was mistaken to allow only 3.5 cables clearing distance off Rhossilli Point: a distance that did not allow sufficient margin of error. At interview, the master described how he suddenly became aware that the radar was already showing a position too close to Rhossilli Point. This suggests a lapse of concentration during the critical period in the approach to the wheel over position.

The master recalled no significant distractions that might explain this lapse, and there were no ergonomic reasons why he could not monitor the distance from Rhossilli Point reliably. It seems possible that preoccupation was the underlying cause.

2.3.4 External pressures

During interview, the master reported that the sailing season had been a busy one; he had been involved for two days on an overseas recruitment trip, had suffered a family bereavement in April, and had been required to undertake an additional pilotage exemption certificate.

The grounding of *Waverley* in June 2004, and the subsequent investigation into the cause of that accident, had taken its toll, and indirectly necessitated leave periods to be rescheduled, occasionally resulting in shorter periods at home.

In October 2004, the MCA served the master with a caution as a result of the *Waverley* grounding. Although he initially felt a release of nervous tension, thereafter the master reported developing symptoms of sleep disturbance, difficulty in concentrating, irritability and tiredness. Other MAIB investigations have determined that accidents can be linked to pre existing stress, and under these circumstances involuntary lapses of attention were quite likely.

The investigation received conflicting evidence as to the amount of strain the master was under at the time of the grounding. However, it was clear that he did not show sufficient outward signs of pressure in the preceding period to trigger WEL management into taking remedial action.

2.4 SAFETY MANAGEMENT SYSTEM

When interviewed by the MAIB, the directors of WEL indicated they had a genuine commitment to safety. They felt content with the policies and procedures in place, in the knowledge that the MCA had audited and fully endorsed their SMS. However, the SMS did not alert WEL management that the master of *Balmoral* was not satisfying the company's requirements for passage planning and safe navigation.

The operations director and chairman were responsible for the internal auditing of the SMS. They were firm in their belief that they were not qualified to audit bridge procedures. To compensate, it was left to the senior master to deal with issues of bridge procedure, but without a formal process of auditing or feedback to the management board.

The senior master, who is a company director, was the most logical person to take on the role of ensuring navigators satisfied company objectives, but he was not fully empowered to do so. He did not have any terms of reference. He was not encouraged to bring the other two masters and watchkeepers together to discuss safety matters arising from the earlier grounding of *Waverley*. He also had no mandate to guide or instruct the other masters on how they should navigate.

The WEL management team had developed comprehensive bridge and navigation procedure guidelines. The opportunity was lost to use these guidelines as a basis for formulating an audit trail, and to empower the senior master to undertake this audit to assure best navigational practice. WEL's other directors were not qualified to review the safety performance of its navigators.

In summary, the safety management system was flawed in the sense that it failed to include all reasonably practicable measures which could have been used to try to prevent the accident. Greater management direction was required to establish and ensure effective audit procedures, meaningful discussions with staff, and the promulgation of instructions and procedures that are understood by everyone.

2.5 THE EMERGENCY RESPONSE

It was 30 minutes after the grounding before details of the accident were announced to the passengers; even then, the information given painted a misleading picture of what had happened.

An accident such as this will require the bridge team to be heavily pre-occupied in handling post-accident matters; keeping passengers informed is not always considered to be the highest priority. A bridge team may have concerns about making an announcement, possibly because insufficient facts are available to them. Nonetheless, a timely broadcast of reassurance, presented calmly and authoritatively, and with the promise of a regular update, is crucial. Failing to do so can lead to passengers becoming unnecessarily anxious, which can then affect their efficient and safe mustering should the need arise.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES

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

1. The lessons from the *Waverley* grounding were not effectively communicated to the master, and steps were not taken subsequently to monitor the implementation of the revised passage planning instructions. (2.3)

2. The grounding was caused by the master electing to deviate from his planned route and then failing to adequately monitor his approach to Rhossilli Point. (2.3)

3. The safety management system provided neither an effective regime to bring masters together to discuss safety matters, nor a system of auditing bridge watchkeepers' procedures. (2.4)

4. The senior master neither had a mandate nor management support to instruct fellow masters on how they should navigate safely. (2.4)

5. Greater management direction was required to establish and ensure effective audit procedures. (2.4)

6. Timely and accurate information was not given to the passengers. This could have affected their efficient and safe mustering, should the need have arisen. (2.5)

SECTION 4 - ACTION TAKEN

4.1 EXTANT RECOMMENDATIONS

For WEL's actions to be seen in context, it is appropriate to reiterate the MAIB recommendations issued to the company prior to this report:

On 1 November 2004, shortly after the *Balmoral* grounding, the Chief Inspector of Marine Accidents wrote to WEL recommending they:

- *Conduct a comprehensive risk assessment of the company's navigational policies and procedures. This risk assessment should include, but not be limited to, the company's instructions to masters, the suitability of the navigational equipment outfit on both vessels, an assessment of the capabilities of all navigational watchkeepers, including masters, and the effectiveness of current bridge team practices. The ability of ship's staff to deal with likely emergency scenarios should be carefully evaluated, especially with respect to the care and safety of passengers. Corrective action should be completed before further passengers are carried.*

The MAIB report into the grounding of *Waverley* on 20 June 2004, issued in January 2005, recommended WEL to:

- *Require that all voyages undertaken by its vessels are planned and conducted in accordance with requirements of SOLAS V and IMO guidance.*

- *Ensure that all navigation procedures are validated by a person with relevant training and experience, and that these procedures are then audited to the required standard.*

- *Ensure that all navigation equipment is fit for purpose.*

- *Define the terms of reference of the senior master with regard to his advice on, and involvement in, navigational policy, audit and performance.*

4.2 WAVERLEY EXCURSIONS LTD

Following the MAIB recommendations above, WEL has examined its internal procedures and has undertaken the following actions:

1. It will employ reputable external resources to lead risk analysis, focusing widely on ship operation but with a detailed brief to analyse navigational safety.

2. A new 'core procedure', 'Safe Navigation', which expands on the requirements in the existing Section 7 of the SMS manual, will be included in the company's SMS. Early external audit will check compliance with its provisions. The 'core procedure' will be supported by detailed work procedures for passage planning and the use of navigation aids, and include expanded checklists where appropriate.

3. A full suite of ‘company’ passage plans will be established prior to the re-introduction to service of the ships, covering all the excursion and cruise sailings within the current operation.

4. It will develop deck logbooks to capture recorded details of passage. Pre-printed books will be produced to revised format.

5. As part of risk analysis, it will review navigational equipment provision and location and will introduce electronic charting system as a further navigational aid.

6. Masters and chief officers will undertake recognised external bridge management courses. The first students were passed through this course at the end of February 2005.

7. It will investigate enhanced vocational training for masters in respect of emergency preparedness.

8. It will develop support information for ports and piers for berthing, all as an adjunct to passage planning.

9. It will document the senior master’s role, particularly detailing his responsibilities for training and auditing.

10. It will develop the existing auditing regime to expand both internal and external auditing, expand safety management resources to respond to same, and to further promulgate effective use and wider commitment to SMS.

    The role will be further developed to maintain a secondary watching brief on legislative change and emerging industry best practice.

11. It will make an early appointment of a new director of safety to work alongside the present incumbent prior to his planned retirement.

12. It will expand bridge resources with the appointment of new master/s, and is concurrently investigating bi-lateral arrangements with other companies operating extensively in coastal waters.

SECTION 5 - RECOMMENDATIONS

Waverley Steam Navigation Company and **Waverley Excursions Ltd** are jointly recommended to:

2005/176 Establish proactive control measures to assure all WEL staff comply with the procedures contained in the company's safety management system.

2005/177 Review shipboard emergency procedures to ensure that timely and accurate information is given to passengers during an emergency.

Marine Accident Investigation Branch
July 2005

ANNEX A

WEL Safety Management System - Policy statement

2.1 POLICY STATEMENT

2.1.1. It is the policy of Waverley Excursions Limited, as the operators of unique coastwise excursion vessels, to provide a safe, healthy, efficient and friendly environment for their customers and employees and to ensure that all on board are protected from identified risks and are well cared for at all times. The Company also accepts its responsibilities in ensuring that the environment is protected from damage.

2.1.2. The Company recognises that it is important to create and provide a safe working environment together with commensurate working conditions and terms of employment and to this end they maintain a Health and Safety Policy.

2.1.3. The Company takes seriously its responsibilities to its passengers, employees and the community at large in respect of pollution, inadvertent oil spillage and garbage disposal and to this end maintain an Environmental Protection Policy to ensure that no such action occurs. The Company also requires that all employees execute their work with due regard to the environment.

2.1.4. The Company recognises the importance of an effective Safety Management culture and to this end have implemented the requirements of the ISM Safety Code. The system will be subject to an audit by the management on a yearly basis (or more frequently if necessary) in order to achieve continuous improvement.

2.1.5. The Company maintains its ships in accordance with statutory requirements and implements on-going improvement and planned maintenance on a systematic basis.

2.1.6. The Company as a responsible employer, accepts and implements all statutory obligations in respect of Maritime Safety and Conditions of Employment of Seafarers. In addition, the Company has and implements policies in respect of the Misuse of Drugs and Alcohol, Sexual Harrassment and the Protection of Young and other Vulnerable Persons.

2.1.7. The Company actively promotes employee participation in matters affecting safety and environmental protection and in turn requires all employees to participate when requested in training/education in order to continuously improve their safety behaviour and skills.

2.2 Core Procedures

The functional application of the above policies are contained in the appropriate Core Procedures contained in this Safety Management System Manual

WAVERLEY EXCURSIONS LIMITED

Operations Director 25/5/00

Date 28 February 2000

ANNEX B

WEL Deck department instructions

6.16 Deck Department

The following paragraphs are to be read in conjunction with the Master's Standing Orders.

Evaluation of Weather and Sea Conditions

6.16.1 It is the Master's sole responsibility to decide if the anticipated conditions for any sailing are such that it is safe to sail.

The Master must consider official weather forecasts for all areas of operation in any particular schedule, noting the requirements of Passenger Certificate(s) in use.

Using his local knowledge, anticipated tidal conditions, advice in Navigational Publications and knowledge of the characteristics of his vessel, he must then decide if it is safe to commence the intended voyage. If not then the entire day's schedule may be cancelled, or an alternative sailing substituted in suitable conditions.

The decisions taken, along with the reasoning behind these decisions, must be entered in the Deck Logbook before the vessel departs. This procedure should be followed prior to each and every daily schedule. The Master should bear in mind when evaluating conditions, that the vessels operated by Waverley Excursions Ltd. may only operate to sea in sea conditions that cause no more than moderate rolling and pitching.

Conditions must be continuously monitored throughout the voyage and regular weather entries made in the Deck Logbook.

Should the sea state be worse than forecast or anticipated, such as to make it unsafe for the vessel to continue, then the voyage should be terminated or otherwise amended. All decisions relating to such a circumstance should be carefully recorded in the Deck Logbook.

In the interests of passenger safety and comfort, the Master may exercise sole discretion with regard to procuring alternative transport arrangements for the return of passengers to their point of departure or other destination.

Navigation

6.16.2 The International Regulations for the Prevention of Collisions at Sea are to be complied with at all times. The requirements of Traffic Separation Schemes and Official Routing Instructions are to be strictly observed.

6.16.3 Notices to Mariners and Local By-Laws are to be observed where applicable.

Watchkeeping and Lookout

6.16.4 The Master will take personal charge of the bridge if, at any time, there is doubt as to the safety of the ship.

6.16.5 When the Master takes charge of the bridge he will clearly tell the Officer of the Watch (OOW) that he is doing so. If he does not do so, then the OOW will remain in charge of the bridge regardless of the Master's presence thereon.

6.16.6 When the Master hands over charge of the bridge to the OOW, he shall do so clearly and unambiguously.

6.16.7 The bridge must at all times be under the charge of a certificated Watchkeeper when the vessel is underway.

6.16.8 The OOW shall keep his watch on the bridge which post he shall not leave until properly relieved. He shall keep a sharp lookout at all times and shall take such action as he deems necessary and in accordance with the Master's Orders, to prevent any potentially hazardous situations developing.

6.16.9 In addition to the OOW and the quartermaster, a lookout is to be posted when in, or in close proximity to, restricted visibility.

Passage Planning

6.16.10 Passage Plans shall be prepared for all Company vessels making a voyage between operational districts or operating excursions over long distances or in exposed waters. When on passage the vessel's position has to be constantly monitored by utilisation of all appropriate navigational aids. The OOW must accurately determine the position of the vessel and establish any leeway or tidal drift which may give cause for concern; this information should be communicated to the Master.

Radar and Electronic Aids to Navigation

6.16.11 Masters and Deck officers should ensure that all equipment is functioning correctly and be fully aware of the limitations of the electronic aids to navigation fitted on their vessels. They should also be conversant with radar parallel indexing techniques.

Floating Navigational Marks

6.16.12 Masters and Deck Officers should be alert to the possibility of floating navigational marks such as buoys and light floats not being in their charted positions. When in Pilotage or restricted waters, the evidence of fixed marks shall take precedence over that of floating marks.

Compass Error

6.16.13 Magnetic compass error should be determined on a regular basis by suitable available means and the results entered in the Compass Error Record Book.

Taking Over the Watch

6.16.14 The OOW shall not hand over the watch to his relief if he has any doubts as to the latter's ability to carry out his duties properly. If he has, then the Master must be immediately informed.
The relieving OOW shall satisfy himself as to the continued safety of the vessel, including the following, before taking over the watch:-

- Vessel's position and speed
- Compass courses
- Visibility
- Tidal effect and compensatory allowances being made
- Position and movement of other traffic and any close quarter avoiding action which may be required
- Any specific orders which are additional to the Master's Standing Orders

Restricted Visibility

6.16.15 When visibility is restricted or it is thought to be imminent, the following shall apply:-

- The Master shall take charge of the Bridge but may, after carefully assessing the situation, hand back to the OOW in the prescribed manner.
- Lookouts are to be posted.
- Appropriate sound signals are to be made.
- International Regulations for the Prevention of Collisions at Sea (and especially Rule19) are to be observed.
- Radar watch is to be maintained with plotting as necessary.

Calling the Master

6.16.16 The Master must be informed immediately of any of the following situations:-

- When the safety of the vessel, passengers or crew is, or is likely to be, prejudiced when restricted visibility is encountered or anticipated.
- When the movement of other vessels or traffic is causing concern.
- When difficulty is experienced in maintaining speed and course.
- In the event of a breakdown of main engines, steering gear or navigational equipment or if there is a loss of electrical power.
- When heavy weather is encountered.
- When a navigation mark has not been sighted or a landfall made at the expected time.
- In any other situation about which the OOW is in doubt.

6.16.17 Nothing in the foregoing instructions should inhibit the OOW from taking such action himself which he deems to be immediately necessary for the safety of the vessel.

Deck Log Book

6.16.18 All Deck Officers should be aware that the Deck Log Book is an important legal document which, along with the Engine Room Log Book, may be required to be presented as evidence at official enquiries, court actions and other legal proceedings. The Log Book must be kept in a neat and orderly manner with all entries strictly accurate. **The Log Books shall be returned to the Head Office at the end of each operating season.**

N.B. Pages must not be removed nor entries erased.
Should a wrong entry be made in the Log Book, then a thin line should be drawn through it and the correction entered above or alongside. The correction has to be initialled by the Officer making it. All entries are to be made by blue or black ball point pens.

Testing of Bridge Equipment

6.16.19 Prior to each day's sailings the steering gear and all navigational equipment is to be tested by the Chief Officer to prove that they are functioning correctly.

6.16.20 Engine Room and Docking Telegraphs are also to be tested prior to each day's sailing and the Bridge and Engine Room clocks synchronised.

Any defects which are found, are to be reported to the Master and the Chief Engineer as appropriate.

Navigational Publications

6.16.21 The Master shall ensure that all necessary charts and sailing directions for the intended services and passages between operational districts are on board and that they are to the latest edition available and are corrected in compliance with Notices to Mariners.

Duty Officer

6.17 When in port, the Chief Officer is responsible for checking the adequacy of the moorings, gangway, lighting and general security and for instructing the watchman regarding any specific requirement. The Chief Officer shall be made aware each night of the numbers of ship's personnel who are sleeping aboard.

Night Watchman

6.18 The Night Watchman shall be instructed by the Master or Chief Officer as to his duties. He shall not leave his post without permission and shall remain vigilant and alert during his period of duty. He shall be responsible for calling personnel sleeping on board.

Soundings

6.19 Compartment bilges and tanks are to be sounded daily and the results recorded in the Deck and Engine Room Log Book.

6.19.1 All bilge main suction valves and bilge ejectors (where fitted) are to be operated every week and the results recorded in the Engine Room Log Book.

Disposal of Garbage

6.20 The Master is reminded of the need to ensure that all members of the crew, and especially catering staff, are instructed **not to dispose of garbage by throwing it overboard.** Work Procedure WEL 02/97-01 SHIPBOARD GARBAGE MANAGEMENT PLAN is to be drawn to the attention of all crew members.

Master's Inspections

6.21 As required by Statutory Instrument 1978 No 795 Reg 38(2) Merchant Shipping Crew Accommodation Regulations, a weekly inspection of the officers' and crew's accommodation is to be carried out by the Master and the result recorded in the Official Log Book. A daily inspection of all passenger accommodation, galley, serveries and toilets has also to be carried out

ANNEX C

WEL Safety Memorandum 03/04 Safe Navigation, dated 1 July 2004

WAVERLEY EXCURSIONS LIMITED

SAFETY MEMORANDUM – 03/04

From: Safety Director **1st July 2004**

To: Ships' Masters and Chief Officers

SAFE NAVIGATION

The attention of masters and watch-keeping deck officers is drawn to the Company Safety Management System Manual Section 7. (in particular, the relevant parts of Core Procedure WEL 02/97 – Marine Operations) and Section 5. – "Master's Authority & Responsibilities"

As operators of coastal excursion ships, it is part of our business to offer our passengers views of coastal scenery and other attractions that can only be seen from a ship. However, in providing this passenger facility, due regard must be given at all times to the safe navigation of the vessel.

In preparing a coastal excursion route, the largest scale chart that is available is to be consulted and consideration given to under keel clearance, hull squat and clearing distance from the coast and any off-lying danger: both above and under water. All appropriate methods of fixing the position of the vessel are to be used and radar should not be the sole method adopted. The operational limitations of any navigational aid used must be taken into account at all times when fixing a position.

ANNEX D

WEL Safety Memorandum 03/04 Passage Planning, dated 16 August 2004

WAVERLEY EXCURSIONS LIMITED

SAFETY MEMORANDUM – 03/04

From: Safety Director **16th August2004**

To: Ships' Masters and Chief Officers

PASSAGE PLANNING

The attention of masters and watch-keeping deck officers is drawn to Statutory Instrument 2002 No.1473 – The Merchant Shipping (Safety of Navigation) Regulations 2002 which now incorporates into British law, Chapter V of the annex to the SOLAS Convention.

Particular attention is drawn to Regulation 34 which is a new mandatory regulation concerning passage planning that is applicable to **all** ships that proceed to sea and in effect replaces and revises SOLAS V/74 Regulation 10.2 (Master's discretion for safe navigation).

The IMO and MCA's guidelines to Passage and Voyage Planning stress that it has to be berth to berth and must include pilotage waters. This is an interpretation that is likely to come out in both the Coastguard findings and in the MAIB Report when published. There is now, under this new legislation, statutory powers available to the authorities to prosecute for contravention which shall be an offence by the owner and/or master of the ship, and punishable on summary conviction by a fine not exceeding the statutory maximum and on conviction on indictment by imprisonment for a term not exceeding two years or a fine, or both.

I refer to my draft Work Procedure on "Passage Planning" that I issued for comment and would request that you give it your immediate attention and let me have your thoughts as soon as possible. The Procedure was based on the MGN on Safe Navigation and the guidelines referred to above are almost a complete copy of that earlier document. In the meantime, I must insist that with immediate effect all courses are plotted on the largest scale charts available and that the ship's position is regularly fixed and recorded - especially when operating close to known hazards.

ANNEX E

WEL Revised SMS Work Procedure - Passage Planning

Work Procedure

Passage Planning

Preamble
The Master is at all times responsible for the preparation of a passage plan but in doing so it should be discussed with and agreed by all the navigating officers responsible for its execution. . This Work Procedure which is a requirement of Solas V – Regulation 34, is based on Marine Guidance Notice 166 and should also be read in conjunction with Core Procedure WEL 02/97 – Marine Operations.

Passages between Operational Areas

Information
When a plan is being prepared for a passage between operational areas, all relevant information should be gathered and given careful consideration. This information should include, *inter alia*, the following:

1. Largest scale and most recent charts, correctly updated, and Notices to Mariners.
2. Nautical Almanac, Pilot Books, Light Lists, Tide Tables and Tidal Atlases.
3. Latest available meteorological Information.
4. Radio navigational warnings.
5. Details of traffic separation and routeing schemes.

When considering the above information, attention should be paid to;

a. tides (times, heights, direction and rate of set);

b. under keel allowance, including an allowance for squat, where shallow water areas are expected to be met;

c. advice and recommendations to be found in Admiralty and other sailing directions and pilots;

d. navigational lights (characteristics, range, arc of visibility and anticipated luminous range);

e. navigational marks (anticipating their radar and visual detection range);

f. traffic separation, and mandatory and voluntary routeing and reporting schemes;

g. applicable navigational warnings;

h. location of ferry routes, especially where high speed craft may be encountered;

i. havens of refuge and safe anchorages along the route in the event of bad weather being encountered;

j. the structural strength, parts of the structure vulnerable to the ingress of sea water, and the manoeuvring characteristics of the vessel;

When the foregoing information has been gathered, an overall assessment of the intended passage should be made by the master, in conjunction with the other navigating officers involved, in order that they are aware of all dangers and hazards likely to be encountered on the passage and any allowances that should be made during the passage.

Planning

Once all the relevant information has been carefully considered, the detailed plan of the passage is be prepared by either the master, or the officer designated with the responsibility for its production, and should cover the whole passage from berth to berth, including pilotage waters.

In formulating the passage plan, the following actions must be incorporated:

a) Plot the intended passage on the appropriate charts and mark clearly, on the largest scale charts applicable, all areas of danger and the intended track taking into account the margins of allowable error. Where appropriate, due regard should be paid to the need for advanced warning to be given on one chart of the existence of a navigational hazard immediately on transfer to the next. The planned, track should be plotted to clear hazards at as safe-a distance as circumstances allow. A longer route should always be accepted in preference to a shorter more hazardous route. The possibility of main engine or steering-gear breakdown at a critical moment must not be overlooked.

b) Indicate clearly in 360 degree notation the true direction of the planned track marked on the charts.

c) Take note on the charts of all radar-conspicuous objects and RACONs, which may be used in radar position fixing.

d) Mark on the charts any transit marks, clearing bearings or clearing ranges (radar) which may be used to advantage. Where a line drawn through two conspicuous clearing marks runs clear of natural dangers with the appropriate margin of safety, they should be used.
If no clearing marks are available; a line or lines of bearing from a single object may .be drawn. at a desired safe distance from the danger; provided the vessel remains in the safe segment, it will be clear of the danger. Parallel index lines should also be drawn where appropriate.

(f) Decide upon the key elements of the navigational plan. These should include, but not be limited to:

(I) safe speed, having regard to the manoeuvring characteristics of the vessel and, when restricted by draught, an allowance for increase of draught due to squat, and heel when turning;

(ii) speed alterations necessary to achieve desired ETAs en route, for example: tidal restrictions, etc.;

(iii) positions where a change in machinery status is required;

(iv) course alteration points;

(v) minimum clearance required under the keel in critical areas (having allowed for height of tide);

(vi) points where accuracy of position fixing is critical, and the primary and secondary methods by which such positions must be obtained for maximum reliability;

(vii) contingency plans for alternative action to place the vessel in a suitable sea area or proceed to an anchorage in the event of any emergency necessitating abandonment of the plan; and

(viii) reporting positions for voluntary or mandatory reporting schemes.

Depending on circumstances, the main details of the plan should be marked in appropriate and prominent places on the charts to be used during the passage. The main details of the passage plan and the waypoints to be used, should also be recorded in a bridge notebook used specially for this purpose to allow reference to details of the plan at the conning position. (Supporting information relative to the passage, such as times of high and low water, or of sunrise or sunset, should also be recorded in this notebook.) Query delete as this info is not in Deck Log at planning stage.??

Where a passage plan is likely to be used subsequently by either of the Company's vessels, it should be copied to both vessels and filed in the Passage Planning Manual. The Plan should be regularly reviewed and updated to reflect any changes in the information contained in it but the filed copy should not contain information that is date specific. Masters are reminded that they must satisfy themselves as to the validity of the passage plan at all times prior to use.

Execution of the Passgae

Having finalised the passage plan, and as soon as estimated times of arrival can be made with reasonable accuracy, the methodology of execution of the plan should be decided. The factors to be taken into account will include:

(a) the reliability and condition of the vessel's navigational equipment;

(b) estimated times of arrival at critical points for the tidal heights and flow;

(c) meteorological conditions, particularly in areas known to be affected by frequent periods of restricted visibility, e.g. North Channel and Mull of Kintyre;

(d) daytime versus night-time passing of danger points, and any effect this may have upon position-fixing accuracy; and

(e) traffic conditions, especially at navigational focal points.

At this stage it is important for the master to consider whether any particular circumstance introduces an unacceptable hazard to the safe conduct of the passage.

Monitoring the Passage

The vessel's progress along the pre-planned track must be monitored continuously and closely. The officer of the watch shall, (i) whenever any deviation from the planned track is considered to be necessary, immediately inform the master and (ii) if in doubt as to the position of the vessel or the manner in which the passage is proceeding, immediately call the master and, if necessary, take appropriate action for the safety of the vessel.

The performance of navigational equipment should be checked prior to sailing, prior to entering restricted or hazardous waters and at regular and frequent intervals at other times throughout the passage.

Advantage should be taken of all the navigational equipment with which the vessel is fitted for position monitoring, and having regard to the following particular points:

(a) positions obtained by electronic positioning systems should be checked regularly by visual bearings and transits whenever possible;

(b) transit marks, clearing bearings and clearing ranges (radar) can be of great assistance and should be used;

(c) the echo sounder provides a valuable check of depth at the plotted position;

(d) buoys should not be used for posftion fixing but may be used for guidance when shore marks are difficult to distinguish visually; in these circumstances their positions should first be checked by other means;

(e) the functioning and correct reading of the instruments used should always be checked;

(f) account must be taken of any system errors and the predicted accuracy of positions displayed by electronic position fixing systems; and

(g) the frequency at which the position is to be fixed should be determined for each section of the passage.

On every occasion when the vessel's position is fixed and marked on the chart in use, the estimated position at a convenient interval of time in advance should be projected and plotted.
Radar can be used to advantage in monitoring the position of the vessel by the use of parallel indexing. Parallel indexing can be used in any situation where a radar-conspicuous navigation mark is available and it is practicable to monitor continuously the vessel's position relative to such an object.

Pilotage

Pilots make a significant contribution to the safety of navigation in the confined waters and port approaches of which they have up to-date knowledge. But the responsibilities of the vessel's navigational team and officer of the watch do not transfer to the pilot.

After boarding the vessel, in addition to being advised by the master of the basic details and manoeuvring characteristics of the vessel, the pilot should be clearly consulted on the

passage plan to be followed. The general aim of the master should be to ensure that the expertise of the pilot is fully supported by the vessel's bridge team.

However, all concerned should be mindful at all times of the following extract from IMO Resolution A 285 (VIII):

> *"Despite the duties and obligations of a pilot, his presence on board does not relieve the officer of the watch from his duties and obligation for the safety of the vessel. He should co-operate closely with the pilot and maintain an accurate check on the vessel's position and movements. If he is in any doubt as to the pilot's actions or intentions, he should seek clarification from the pilot and if doubt still exists, he should notify the master immediately and take whatever action is necessary before the master arrives."*

Coastal Excursions

Route Planning

In planning the route for passenger excursions in coastal and estuarial waters, as opposed to Passage Planning of coastwise passages, the following specific points should be considered in conjunction with such of the foregoing points that the master may consider to be applicable:

(i) on the day observe the wind force and whether it is on-shore or off-shore and estimate the likely sea state to be met. When compiling the plan, any restrictions on the passenger certificate are to be considered;

(ii) establish applicable tidal information on the day with an assessment as to whether it is likely to be above, below or on prediction;

(iii) be aware of the tidal streams, rate and direction, predicted for the time of day;

(iv) utilise and consult the largest scale charts available together with the most recent issues of pilot books and notices to mariners;

(v) identify the position and characteristics of prominent points and navigational markers and decide upon the safe distance off to be applied on the day;

(vi) identify the position of all underwater obstructions and establish the minimum distance off to be allowed on the day;

(vii) having regard to (v) and (vi), mark clearly on the chart the intended track and true courses to be steered to safely avoid all hazards: should any deviation from the planned track be necessary, then the master should be informed and be on the bridge to give approval;

(viii) use all available means for position fixing;

(ix) when steaming between GPS waypoints use should also be made of the cross track error function;

(x) calculate the minimum under keel clearance to be expected during passage on the day;

(xi) identify any areas of shallow water where speed is to be reduced to allow for hull squat and identify the need to inform the engine room;

(xii) attention is to be paid to meteorological and navigational warning broadcasts;

(xiii) identify emergency anchorages and havens of refuge;

(xiv) note RNLI Stations, both inshore and all-weather;

(xv) establish nearest availability of tug(s);

(xvi) attention is to be paid to traffic separation schemes, traffic routeing and port and harbour by-laws.

The officer with responsibility for navigation at all times should keep a constant check on the course steered and on taking over the 'con' should be satisfied as to the true or estimated position and should confirm the vessel's track, course and speed.

As the passenger excursions are a core business and essential to the Company's survival, all route plans should be carefully prepared in the agreed format associated with this Work Procedure and formally recorded in the Passage Planning Manual for subsequent future use. Where the plan is likely to be of use to both of the Company's vessels, it should be copied for inclusion in both vessels' manuals.

WAVERLEY EXCURSIONS LIMITED

Safety Director 5 August 2004

ANNEX F

Chief Inspector of Marine Accidents' letter of recommendation to WEL following the grounding of mv *Balmoral*, dated 1 November 2004

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

FIRST FLOOR, CARLTON HOUSE, CARLTON PLACE, SOUTHAMPTON SO15 2DZ

SWITCHBOARD: 023 8039 5500 DIRECT LINE: 023 8039 55 FAX: 023 8023 2459 Email: maib@dft.gsi.gov.uk

Waverley Excursions Ltd
Waverley Terminal
36 Lancefield Quay
Glasgow
G3 8HA

01 November 2004

Dear Sirs

Grounding of the mv *Balmoral* on Dagger Reef on 18 October 2004

The grounding of the *Balmoral*, with 232 passengers embarked, is the second incident of this type to involve one of your vessels within the last four months. The first, the grounding of *Waverley*, with 345 passengers embarked, off Sanda Island on the Clyde, on 20 June 2004, is already the subject of a full MAIB investigation.

My Inspectors have now concluded a Preliminary Examination of the causes and circumstances of the most recent grounding of the *Balmoral*. The inspectors' initial findings include:

- The vessel was being put into unreasonable danger, in a deliberate attempt to satisfy the perceived requirements of passengers.
- There was an unplanned deviation from the passage plan, despite the recent company safety memorandum for passage planning and safe navigation.
- The vessel's position was not being monitored effectively.
- There was a lack of appropriate bridge navigation equipment for the type and area of operation of the vessel.
- There appeared to be a lack of knowledge and/or application of the fundamental principles of navigation.
- There was a unilateral decision in the engine room to de-clutch the main engine, leading to a loss of control of propulsion in an area hazardous for navigation,
- The passengers were not adequately informed of the situation.

I have therefore decided that the MAIB will conduct a full investigation into the grounding of *Balmoral*.

It is alarming to note the remarkable similarity between the issues that have come to light during this Preliminary Examination and our findings during the MAIB investigation into the grounding of the *Waverley*. The company does not seem to have taken effective action in accordance with Section 9 of the ISM Code to "establish procedures for implementation of corrective action" after an accident. In the interest

of passenger safety, it is imperative that you to take early and positive action to improve safety onboard your vessels before they re-commence carrying passengers in spring 2005.

You are therefore recommended to:

2004/243 Conduct a comprehensive risk assessment of the company's navigational policies and procedures. This risk assessment should include, but not be limited to, the company's instructions to Masters, the suitability of the navigational equipment outfit on both vessels, an assessment of the capabilities of all navigational watchkeepers, including masters, and the effectiveness of current bridge team practices. The ability of ship's staff to deal with likely emergency scenarios should also be properly evaluated, especially with respect to the care and safety of passengers. Corrective action should be completed before further passengers are carried.

In the interests of safety, we record the status of all recommendations that we issue. Accordingly, I would be grateful if you would send me, within one calendar month, your intentions with reference to implementation of this recommendation. Please use the attached form to set out your response, providing as much detail as possible. If, after completing the form, your response to the recommendation should change at any time, please notify MAIB as soon as possible of the change in circumstances.

I am copying this letter in confidence to the Maritime and Coastguard Agency, to whom you should also copy your response. It will, of course, be an MCA decision as to whether you have addressed these issues sufficiently to justify the continuation of a passenger carrying licence.

Yours faithfully

Stephen Meyer
Chief Inspector of Marine Accidents