



Preliminary Inquiry No.1 of 2008

Report of Investigation
into the Collision between
two Hong Kong registered
high-speed passenger ferries

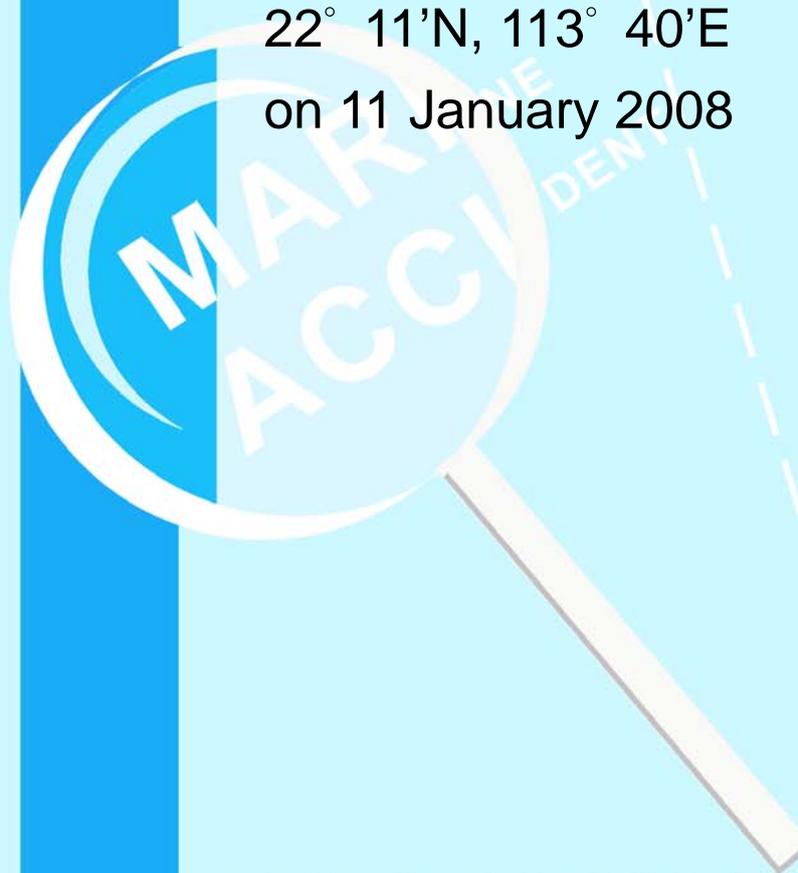
Funchal

and *Santa Maria*

in Position about

22° 11'N, 113° 40'E

on 11 January 2008



Preliminary Inquiry No. 1 of 2008

In accordance with Section 51 (1) of the Merchant Shipping Ordinance (Chapter 281), on 14 January 2008, the Director of Marine appointed Mr. LI San-tai, Surveyor of Ships (Nautical) to carry out a Preliminary Inquiry into the circumstances attending the casualty.

Purpose of Investigation

This incident is investigated, and published in accordance with the IMO Code for the Investigation of Marine Casualties and Incidents promulgated under IMO Assembly Resolution A.849(20). The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department is to determine the circumstances and the causes of the incident with the aim of improving the safety of life at sea and avoiding similar incident in future.

The conclusions drawn in this report aim to identify the different factors contributing to the incident. They are not intended to apportion blame or liability towards any particular organization or individual except so far as necessary to achieve the said purpose.

The MAISSPB has no involvement in any prosecution or disciplinary action that may be taken by the Marine Department resulting from this incident.

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1. Summary

1.1 At about 2028 on 11 January 2008, the Hong Kong registered jetfoil passenger ferries *Santa Maria* and *Funchal* collided in the position 22°11.5'N 113°40.5'E. The weather was overcast with a southeasterly gentle breeze. The visibility was about one nautical mile (n.m.). *Santa Maria* sustained structural damage to its port bow while *Funchal* sustained structural damage to its starboard bow. After the collision, both jetfoils were able to return to Macau Ferry Terminal in Macau under their own power. As a result of the collision, 133 persons including passengers and crew members on board the two jetfoils were injured. Among the injured persons, 43 of them were in serious condition. The injured persons were sent to hospital after the vessels had berthed alongside Macau Outer Harbour Ferry Terminal.

1.2 The investigation has established that the main causes of the accident were:

- (i) The failure of the Master and Chief Officer of *Santa Maria* to observe Rule 5 of COLREGS to maintain a proper lookout; and
- (ii) The failure of the Master of *Funchal* to observe Rule 8 of COLREGS by not reducing the speed of the vessel to allow more time to assess the situation.

2. Description of the vessels

2.1 *Santa Maria* (金星)

Call Sign	:	VRVI7
Port of Registry	:	Hong Kong
IMO No.	:	7523910
Type	:	High Speed Passenger Craft
Length	:	23.93 m
Breadth	:	8.53 m
Moulded Depth	:	2.59 m
Gross Tonnage	:	267
Year of Built	:	1973
License to carry	:	243 passengers & 12 crew
Engine	:	2 x DETROIT DIESEL ALLISON 501-K20A Gas Turbine
Engine Power	:	5,590 kW
Service speed	:	42 knots

2.1.1 *Santa Maria* is an aluminum alloy high speed passenger craft. It was built with 2 sets of water jet propulsion unit cruising at a maximum speed of 42 knots.

2.1.2 The vessel is equipped with navigational equipment consisting of two radars, one set of VHF DSC radiotelephone and one set of VHF radiotelephone, GPS, AIS, gyro and magnetic compass, echo sounder and electronic chart.



Figure. 1- Port bow damage of *Santa Maria* (金星)

2.2 *Funchal* (天皇星)

Call Sign	:	VRVI6
Port of Registry	:	Hong Kong
IMO No.	:	7923249
Type	:	High Speed Passenger Craft
Length	:	23.93 m
Breadth	:	8.53 m
Moulded Depth	:	2.59 m
Gross Tonnage	:	267
Year of Built	:	1978
License to carry	:	243 passengers & 12 crew
Engine	:	2 x DETROIT DIESEL ALLISON 501-K20A Gas Turbine
Engine Power	:	5,590 kW
Service speed	:	42 knots

2.1.1 *Funchal* is an aluminum alloy high speed passenger craft. It was built with 2 sets of water jet propulsion unit cruising at a maximum speed of 42 knots.

2.1.2 The vessel is equipped with navigational equipment consisting of two radars, one set of VHF DSC radiotelephone and one set of VHF radiotelephone, GPS, AIS, gyro and magnetic compass, echo sounder and electronic chart.



Figure. 2- Starboard bow damage of *Funchal* (天皇星)

3. Sources of Evidence

- 3.1 Masters, Chief Engineers, Chief Officers and Night Vision Officers of *Santa Maria* and *Funchal*;
- 3.2 Shun Tak – China Travel Ship Management Limited;
- 3.3 Seven passengers on board *Santa Maria* and *Funchal*; and
- 3.4 Macau Maritime Administration.

4. Outline of Events

4.1 Account of *Santa Maria*

- 4.1.1 At about 2010 on 11 January 2008, the jetfoil *Santa Maria* departed from Macau to Hong Kong with 206 passengers and 10 crew members on board. Pre-flight check and pre-departure check had been carried out according to laid down night service procedures set by the Company i.e. Shun Tak – China Travel Ship Management Limited. All equipment was found in normal condition and the tape recorder was switched on and found operating normally. The journey would take about one hour at a normal cruising speed of 42 knots. The weather was overcast with an easterly light/gentle breeze. There was a slight sea and low swell and visibility at Macau Channel was fair between about 0.6 to 1 nautical mile (n.m.).
- 4.1.2 Four crew members consisted of the Master, Chief Officer, Night Vision Officer and Chief Engineer were on the bridge. The Master who was in command was steering the vessel using the steering wheel. The Chief Officer was seated on the port side of the jetfoil keeping a visual lookout and radar watch as well as to report targets to the Master and monitor vessel's position. The Chief Engineer was seated on the port side of the Master monitoring the machinery console. The Night Vision Officer was seated on the starboard side of the jetfoil controlling the Night Vision Equipment.
- 4.1.3 After leaving Macau Channel and clearing Macau Channel Landfall Light Buoy at about 2021 in foilborne mode, *Santa Maria* altered course to starboard to about 149°T and reduced speed to bring the vessel on hull in order to keep clear of two targets ahead. After clearing the two targets ahead, *Santa Maria* altered course to port to about 079°T then 064°T. The speed was gradually increased to bring the vessel to foilborne mode at 2023. The course was later adjusted to 050°T and an unknown small target was observed on the starboard side on the radar. *Santa Maria* altered course to starboard to 090°T intending to enter the Qing Zhou Traffic Separation Scheme (TSS) between the small target and Qing Zhou No. 2 Light Buoy.
- 4.1.4 While the vessel was turning to starboard to 090°T, the Master of *Santa Maria* observed a high speed craft visually at a range of about 0.4 n.m. on the port bow. Knowing that there was a risk of collision with the approaching high speed craft, the Master took avoiding action by immediately putting the helm to hard to starboard and reducing the speed to land the jetfoil on hull. Despite the above avoiding actions, the port bow of *Santa Maria* struck the starboard bow of the approaching high speed craft which was later identified to be *Funchal*. There were no light or sound signals given by *Santa Maria* before the collision.

- 4.1.5 After the collision, both main engines shut down automatically and the Master instructed the Chief Engineer to restart both main engines but in vain. The Master reported the collision to the Macau Traffic Control Center and then made an announcement informing the passengers that a collision had occurred but without immediate danger. All passengers were requested to stay calm and remain seated. Medical assistance was given to injured passengers by the crew members and two doctors who were passengers on board the vessel. The Master informed the Company that the engine could not be started and tug assistance was required.
- 4.1.6 At 2137 a tug arrived and the main engines were started. The navigational equipment was checked and found in normal condition. The compartments were checked by the Chief Engineer and were found intact. The vessel was escorted by tug to return to Macau under its own power. At 2202 the vessel was secured alongside Macau Outer Harbour Ferry Terminal and injured crew and passengers were sent to hospital for medical treatment.

4.2 Account of *Funchal*

- 4.2.1 At about 1946 on 11 January 2008, the jetfoil *Funchal* departed from Hong Kong to Macau with 229 passengers and 14 crew members on board. Pre-flight check and pre-departure check had been carried out according to laid down night service procedures set by the Company. All equipment was found in normal condition and the tape recorder was switched on and found operating normally. The journey would take about one hour at a normal cruising speed of 42 knots. At the time of the accident, the weather was overcast with a southeasterly gentle breeze. There was a slight sea and low swell. The visibility was about 1 nautical mile.
- 4.2.2 Five crew members consisted of the Master, Chief Officer, Night Vision Officer, Night Vision Officer Trainee and Chief Engineer were on the bridge. The Master who was in command was steering the vessel using the steering wheel. The Chief Officer was seated on the port side of the jetfoil keeping a visual lookout and radar watch as well as to report targets to the Master and monitor vessel's position. The Chief Engineer was seated on the port side of the Master monitoring the machinery console. The Night Vision Officer was seated on the starboard side of the jetfoil controlling the Night Vision Equipment. The Night Vision Officer Trainee was under training on the bridge.
- 4.2.3 After leaving Hong Kong, *Funchal* followed various courses and when the Qing Zhou No. 1 Light Buoy was abeam to port, the vessel entered the westbound traffic lane of Qing Zhou Traffic Separation Scheme and steered on a course of 258°T. At about 2023

the Chief Officer reported to the Master that there was a northbound high speed craft bearing 10° on the port bow. The Master observed from the radar that the range of the target was about 2 n.m. and the flashing light of the target was observed visually bearing about 10° on the port bow. It was found that own vessel was north of the pre-determined track and the course was altered to port to 254°T in order to pull the vessel back on track. Then the Chief Officer reported to the Master that the target i.e. *Santa Maria* bore 5° on the starboard bow and was at a range of 1.7 n.m. and another unknown target was southbound and bearing dead ahead at a range of 1.2 n.m.

4.2.4 The Master found that there was a risk of collision with the unknown southbound target and altered course to starboard to 258°T to avoid collision. After course alteration, the Chief Officer reported to the Master that the target of the high speed craft bore 10° on the starboard bow and was at a range of 1 n.m. The target was still heading north and its green sidelight was observed visually by the Master. According to the movement of the target, the bridge team assessed that the target would pass clear on the starboard side and then turned round the stern of *Funchal*. Although the Master found that there was no risk of collision with the target, he altered course 5° to port in order to allow a greater passing distance between the two vessels.

4.2.5 About half a minute later, the target i.e. *Santa Maria* suddenly made a large alteration of course to starboard when it bore 20° to 30° on the starboard bow of and was at a range of 0.5 n.m. from *Funchal*. Knowing that there was an imminent danger of collision with the target, the Master of *Funchal* tried to minimize the collision impact by making a large alteration of course to port and reducing speed at the same time. Despite the above avoiding actions, collision took place between *Santa Maria* and *Funchal*. Upon collision, the Master and officers i.e. the Chief Officer, Night Vision Officer, Night Vision Officer Trainee and Chief Engineer were thrown forward against the instrument panel and became unconscious.

4.2.6 The Night Vision Officer who after regained his conscience stopped the vessel by putting both engine throttles to neutral position and reported the collision to Macau Operation Control Centre. Fortunately, a team of jetfoil officers was on board the vessel for reporting duty on board another jetfoil scheduled to leave Macau for Hong Kong at about 2130. The team took over the control of the vessel. They conducted crowd control and rendered first-aid treatment to injured passengers. At about 2110, the engines were started and the vessel was under the control of the above team and proceeded slowly to return to Macau. At 2139 the vessel was secured alongside Macau Outer Harbour Ferry Terminal and all injured crew and passengers were delivered to the hospital by ambulances.

5. Analysis of Evidence

5.1 Certification and Experience of Personnel

- 5.1.1 Both the masters of *Santa Maria* and *Funchal* hold seagoing or river-trade Certificate of Competency as Master and a type rating certificate as a Master on Boeing Jetfoil. All their certificates are valid and were issued by the Marine Department of the Hong Kong Special Administrative Region. The Master of *Santa Maria* has been working on board jetfoils for night service plying Hong Kong and Macau as Master for about 12 years and 5 years in the case of the Master of *Funchal*.
- 5.1.2 Both the chief officers of *Santa Maria* and *Funchal* hold river-trade Certificate of Competency as Master or Chief Officer and a type rating certificate as a Chief Officer on Boeing Jetfoil. All their certificates are valid and were issued by the Marine Department of the Hong Kong Special Administrative Region. The Chief Officer of *Santa Maria* has been working on board jetfoils for night service plying Hong Kong and Macau as Chief Officer for about 3 years and 6 years in the case of the Chief Officer of *Funchal*.
- 5.1.3 Both the night vision officers of *Santa Maria* and *Funchal* hold seagoing or river-trade Certificate of Competency as Officer in charge of a navigational watch and a type rating certificate as a Night Vision Officer on Boeing Jetfoil. All their certificates are valid and were issued by the Marine Department of the Hong Kong Special Administrative Region. The Night Vision Officer of *Santa Maria* has been working on board jetfoils plying Hong Kong and Macau as Night Vision Officer for about 12 years and 9 years in the case of the Night Vision Officer of *Funchal*.
- 5.1.4 All the masters and chief officers have attended the Radar Simulator (High Speed Craft) Course at the Hong Kong Polytechnic University.
- 5.1.5 It was considered that the operating personnel of both vessels were properly certificated with appropriate experience.

5.2 Certification of the vessels in collision

5.2.1 The statutory trading certificates of both vessels were issued by the Marine Department of the Hong Kong Special Administrative Region and their statutory trading certificates were valid and in order.

5.2.2 There was no indication that there were equipment and/or engine failures as both the vessels could return to Macau under their own power.

5.3 Weather and Visibility

5.3.1 According to the statements of the masters of both vessels, the weather at the time of collision was overcast with an easterly/southeasterly gentle breeze. The visibility was about 1 nautical mile.

5.4 Actions taken by *Santa Maria*

5.4.1 According to the record of the VTS system of Macau Maritime Administration, at about 2023 *Santa Maria* altered course to port to 064°T and increased to foilborne speed of about 40 knots at about 2024. Then the vessel made a slight alteration of course to starboard to 069°T at about 2025. At about 2026, *Santa Maria* altered course to port to about 050°T with an intention to keep clear and pass the stern of an unknown southbound vessel as indicated in the radar plot. At about 2027, *Santa Maria* commenced a turn to starboard intending to enter the Qing Zhou Traffic Separation Scheme. However, the vessel collided with *Funchal* at about 2028 (Figure 3).

5.4.2 Although both the Master and the Chief Officer of *Santa Maria* claimed that before alteration of course to starboard at 2027, they had observed a high-speed craft i.e. *Funchal* respectively on the radar, they did not keep a proper lookout on the target by closely monitoring the movement of the target. After passing the stern of a southbound vessel, the Master of *Santa Maria* altered course to starboard intending to enter the Qing Zhou Traffic Separation Scheme without first assessing whether or not such alteration of course would impose a risk of collision with *Funchal*. It was doubtful whether the Master or the Chief Officer had actually observed *Funchal* on the radar before alteration of course to starboard at 2027. Had they actually observed *Funchal* on the radar, the Master would not have altered course to starboard to end up with a collision with *Funchal*. The Master stated that he only observed *Funchal* visually when

the vessel was 0.4 n.m. away and the Chief Officer stated that he did not observe *Funchal* visually before collision. Both of them had failed to maintain a proper visual and radar lookout as required by Rule 5 of COLREGS.

5.5 Actions taken by *Funchal*

- 5.5.1 According to the record of the VTS system of Macau Maritime Administration, after entering the Qing Zhou Traffic Separation Scheme at about 2023, *Funchal* maintained a course of about 262°T with a foilborne speed of about 44 knots until the time of collision with *Santa Maria* at about 2028 (Figure 3).
- 5.5.2 When the Master and the officers of *Funchal* observed the green sidelight of *Santa Maria* visually on the starboard side, they assumed that *Santa Maria* would pass clear on the starboard side and would then turn round the stern of *Funchal*. However, *Santa Maria* altered course to starboard and hit *Funchal*. In order to allow more time to assess the situation, he should follow COLREGS by reducing the speed of the vessel until *Santa Maria* was finally past and clear.

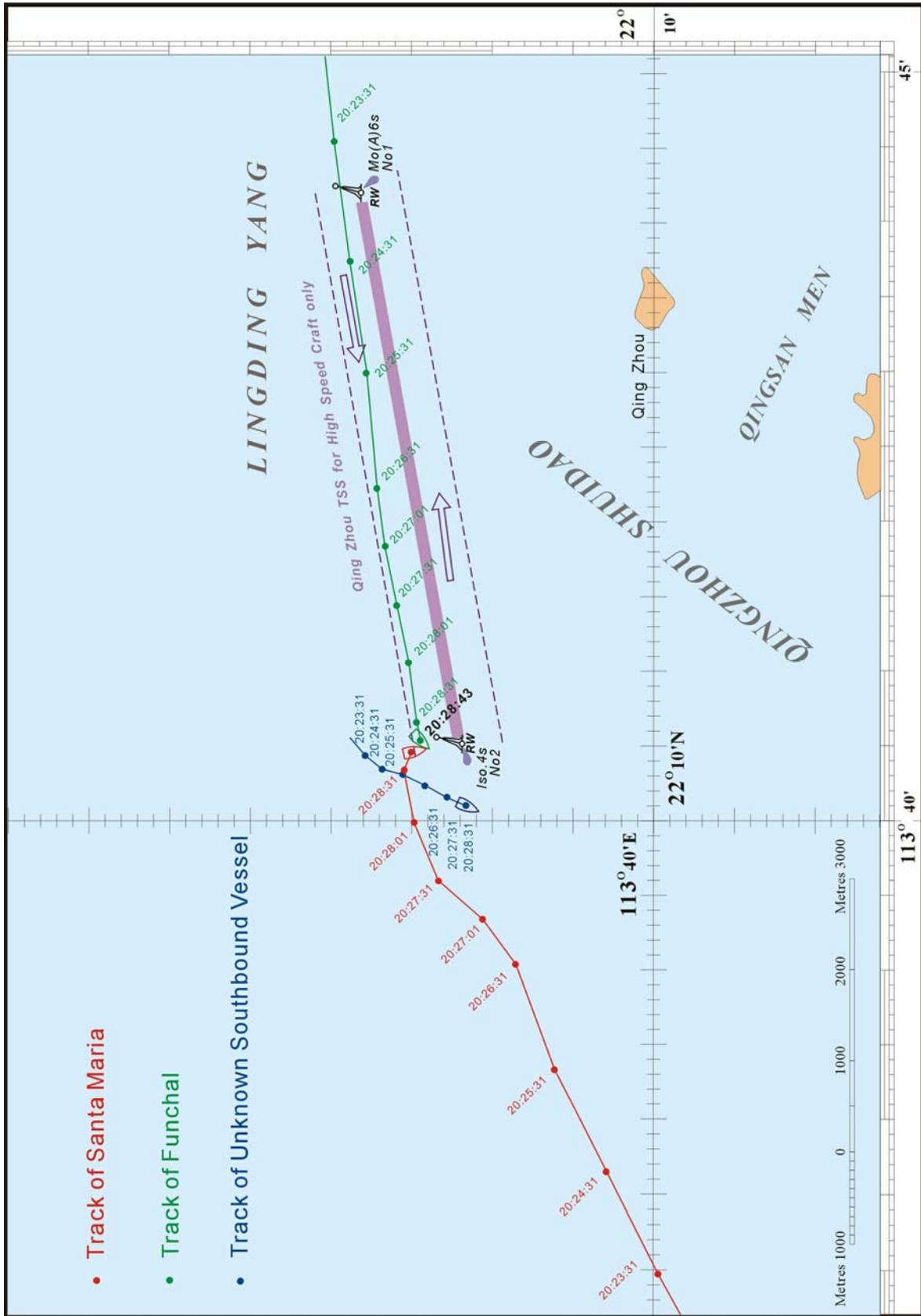


Figure 3 - Radar Plot showing the collision tracks of *Santa Maria* and *Funchal* and the track of an Unknown southbound vessel

5.6 Fatigue and alcohol impairment

5.6.1 There was no evidence to suggest that alcohol or drugs were taken by any of the crew members involved in the collision.

5.6.2 The officers on board *Santa Maria* were off duty for two days prior to reporting duty at 1745 in Hong Kong on 11 January 2008 while the officers on board *Funchal* were off duty at about 0015 and reported duty at 1726 in Macau on the same day on 11 January 2008. All the officers claimed that they had sufficiently rested prior to reporting duty. Therefore fatigue was not an issue in this accident.

5.7 Damages to vessels

5.7.1 At the time of collision, the port shoulder of *Santa Maria* struck the starboard bow of *Funchal* causing both vessels to sustain serious bow structural damages (Figures 1 & 2). Some passenger seats within the cabin of *Funchal* had deformed due to violent impact force caused by collision. Both vessels remained upright after the collision and there was no ingress of sea water into the compartments of the vessels. No oil pollution was found.

6. Conclusions

6.1 At about 2028 on 11 January 2008, two Hong Kong registered jetfoil passenger craft *Santa Maria* and *Funchal* collided in the position 22°11.5'N 113°40.5'E.

6.2 At the time of the accident, the weather was overcast with an easterly/southeasterly gentle breeze and visibility was about one nautical mile.

6.3 *Santa Maria* sustained structural damage to its port bow while *Funchal* sustained structural damage to its starboard bow. 133 persons including passengers and crew on board the two jetfoils were injured.

6.4 The investigation has established that the main causes of the accident were:

- (i) The failure of the Master and Chief Officer of *Santa Maria* to observe Rule 5 of COLREGS to maintain a proper lookout; and

- (ii) The failure of the Master of *Funchal* to observe Rule 8 of COLREGS by not reducing the speed of the vessel to allow more time to assess the situation.

7. Recommendations

- 7.1 A copy of the report should be sent to the Maritime Safety Administration of People's Republic of China and Macau Maritime Administration for their information.
- 7.2 A copy of the report should be sent to the owner/Masters of *Santa Maria* and *Funchal*. The owner should be advised to issue a notice to draw the attention of their officers to the findings of this report and remind their officers to comply with COLREGS at all times.

8. Submissions

- 8.1 In the event that the conduct of any person or organization is commented in an accident investigation report, it is the policy of the Marine Department to send a copy of the draft report to that person or organization for their comments.
- 8.2 The relevant parts of the final draft of the report were sent to the following:

Master and Chief Officer of *Santa Maria*
Master and Chief Officer of *Funchal*
- 8.3 Submission was received from the Master of *Funchal*. The text of the draft was amended as appropriate according to the submission.