Report of Investigation
into the Hong Kong registered high-speed passenger ferry *Urzela* contacted with the No.5 Buoy of Macau Channel at 1227 on 29 December 2012

The Hong Kong Special Administrative Region
Marine Department
Marine Accident Investigation Section

10 Nov. 2014
Purpose of Investigation

This incident is investigated in accordance with the Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (the Casualty Investigation Code) adopted by IMO Resolution MSC 255(84).

The purpose of this investigation conducted by the Marine Accident Investigation and Shipping Security Policy Branch (MAISSPB) of Marine Department, in pursuant to the Merchant Shipping Ordinance Cap. 281, the Shipping and Port Control Ordinance (Cap. 313), or the Merchant Shipping (Local Vessels) Ordinance (Cap. 548), as appropriate, 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.
# Table of Contents

<table>
<thead>
<tr>
<th></th>
<th>Summary</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Description of the vessel</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Sources of information</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Outline of events</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Analysis</td>
<td>9</td>
</tr>
<tr>
<td>5</td>
<td>Conclusions</td>
<td>14</td>
</tr>
<tr>
<td>6</td>
<td>Recommendations</td>
<td>15</td>
</tr>
<tr>
<td>7</td>
<td>Submissions</td>
<td>16</td>
</tr>
</tbody>
</table>
1. Summary

1.1 At 1218 local time (UTC+8) on 29 December 2012, the Hong Kong registered high-speed passenger ferry *Urzela* departed Macau berth No.6 with 177 passengers and 8 crewmembers onboard and bound for Hong Kong. It was raining with light breeze. The visibility was originally about 4 nautical miles (nm) but deteriorated rapidly to about 0.5nm. It was the vessel’s fourth voyage of the day. Everything was normal for the last three voyages.

1.2 After passing underneath the Macau Friendship Bridge, at 1225, the vessel’s speed was increased to about 35 knots. Before the vessel sailing to pass through the fairway between the No.5 and No.6 buoys in the Macau channel as originally planned, the rain patch appeared in the vicinity and affected the visibility seriously. The chief officer, who was at the wheel, lost the sight of the No.6 buoy for a short while. When the chief officer sighted a buoy ahead again, he assumed it was the No. 6 buoy and steered a course to pass the buoy on the starboard side of the vessel.

1.3 Shortly afterwards, Macau Vessel Traffic Service (VTS) alerted *Urzela* to pay attention to the course. The chief officer realized that the assumed No.6 Buoy was in fact the No.5 Buoy on the starboard bow and the vessel was actually proceeding towards the outer limit of the Macau Channel. He instinctively put the helm to starboard intending to bring the vessel back to the track but the action caused the vessel striking onto the No.5 Buoy at 1227.

1.4 As a result, the bulbous bow of the vessel and the forward strut and foil were damaged. 27 passengers and 4 crewmembers were injured. The vessel was towed back to the No.1 berth of Macau terminal. The injured persons were sent to the hospital.

1.5 The investigation revealed the following contributing factors:

i. The vessel did not sail at a safe speed under restricted visibility and failed to comply with Rule 19 (Conduct of Vessels in Restricted Visibility) of the COLREGS\(^1\); and

ii. The vessel’s course and position had not been checked at sufficiently frequent intervals, to ensure the vessel to follow the planned course. Therefore the vessel did not comply with the requirement under 5(2) “Performing the navigational watch” in Part 3 of Schedule 1 of the Merchant Shipping (Seafarers) (Certification and Watchkeeping) Regulation Cap. 478T.

---

\(^1\) COLREGS - International Regulations for Preventing Collisions at Sea, 1972, as amended.
2. Description of the vessel

2.1 Urzela (鐵星)

2.1.1 Ship Information

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port of Registry</td>
<td>Hong Kong, China</td>
</tr>
<tr>
<td>Category</td>
<td>High Speed Passenger Craft</td>
</tr>
<tr>
<td>IMO No.</td>
<td>7932898</td>
</tr>
<tr>
<td>Call Sign</td>
<td>VRMN</td>
</tr>
<tr>
<td>Ship Type</td>
<td>Jetfoil</td>
</tr>
<tr>
<td>Year of Built</td>
<td>1976</td>
</tr>
<tr>
<td>Gross Tonnage</td>
<td>267</td>
</tr>
<tr>
<td>Length (Overall)</td>
<td>23.93 m</td>
</tr>
<tr>
<td>Breadth</td>
<td>9.5m</td>
</tr>
<tr>
<td>Main Engine</td>
<td>Twin Gas Turbine</td>
</tr>
<tr>
<td>Engine Power</td>
<td>total 7560 HP</td>
</tr>
<tr>
<td>Service speed</td>
<td>42 knots</td>
</tr>
<tr>
<td>Classification Society</td>
<td>American Bureau of Shipping</td>
</tr>
<tr>
<td>Shipbuilder</td>
<td>Boeing Marine Systems, Seattle, USA</td>
</tr>
<tr>
<td>Owner</td>
<td>Sinocross International Limited</td>
</tr>
<tr>
<td>Management Company</td>
<td>Shun Tak – China Travel Ship Management Ltd.</td>
</tr>
</tbody>
</table>

2.1.2 Urzela was a jetfoil passenger ferry with a carrying capacity of 243 passengers and 12 crew members. The minimum safe manning requirement for the crew was 8 (need additional 1 night vision officer for night service). The total number of persons permitted on board was 255. The operation area of the vessel was River Trade Limits.

2.1.3 The shipboard navigation and communication equipment included 1 radar, 1 Difference Global Positioning System (DGPS) with Electronic Chart Display Information System (ECDIS), 2 standard compasses, 1 Gyro compass, 1 echo sounder, 1 Automatic Identification System (AIS), 2 Very High Frequency (VHF) radios and 1 intercom system.
Figure 1 – Urzela (鐵星)
3. **Sources of Information**

3.1 The master, the chief officer, the chief engineer of *Urzela*.

3.2 Some passengers of *Urzela*.

3.3 The management company of *Urzela*.

3.4 Macau Marine and Water Bureau.
4. Outline of Events

4.1 Account of Urzela

4.1.1 At 1218 on 29 December 2012, the Hong Kong registered high-speed passenger ferry *Urzela* departed Macau No. 6 berth with 177 passengers and 8 crewmembers onboard and bound for Hong Kong. The navigational team included the master, chief officer and chief engineer. Prior to departure, pre-departure check had been carried out according to the working procedures of the management company. It was the vessel’s fourth voyage of the day. All equipment were normal and fit for the voyage.

4.1.2 During the departure, the master of the vessel made a broadcast to remind all passengers to fasten their seat belts. He stationed near the port side seat and maintained look-out duty. The chief officer took the control of the wheel. The chief engineer communicated with Macau VTS and then checked the ship’s position at the bridge wing. After the vessel clear of the berth, the chief engineer came back to his seat to monitor the machinery console, while the master stood in front of the slave radar. It was raining with light breeze. The visibility was about 4 nm but deteriorated rapidly.

4.1.3 At 1223 the vessel passed underneath the Macau Friendship Bridge and commenced to take off and it was completed in 1 minute. The vessel was then operated on foil borne mode and her speed was about 35 knots. At 1225 when the vessel was abeam of the No.9 Buoy (figure 2 & 3), the master visually observed the No.6 Buoy on the port bow and informed the chief officer. The chief officer acknowledged and further confirmed that he had visually observed the No.5 Buoy and the No.6 Buoy.

4.1.4 At 1226 the vessel passed the No.7 Buoy and the chief officer altered course to port in order to follow the planned course. At that time, the visibility was seriously deteriorated due to a rain patch. The chief officer had lost the sight of the No.6 Buoy for a short while. When the chief officer sighted a buoy ahead again, he assumed it was the No.6 Buoy and steered a course to pass the buoy on starboard side of the vessel.

4.1.5 Shortly afterwards, Macau VTS alerted *Urzela* to pay attention to the course, the chief engineer acknowledged receipt of the information. The chief officer at that moment realized that the assumed No.6 Buoy was in fact the No.5 Buoy on the port bow of the vessel. The vessel was actually proceeding towards the outer limit of the Macau Channel. He instinctively put the helm to starboard intending to bring the vessel back to the track. The master also noticed the situation immediately but judged that there was insufficient sea room from the No.5 Buoy for such maneuvering. At that time, both the master and the chief engineer cried out to the chief officer not to turn to
starboard but to go straight ahead. Although the chief officer heard the master’s instruction at that critical moment, he was over concentrated on the rapid starboard turn and did not respond to the master’s instruction. Consequently, at 1227 the vessel struck onto the No. 5 Buoy while she was turning to starboard.

4.1.6 At the time of striking, the port engine was automatically shut down and the vessel was operated on the hull borne mode. The port side hydraulic system warning lamp illuminated which meant that something was wrong on the machineries. Both the generators switchboard tripped. The master fell on to the deck and his nose was injured. He stood up and immediately took over the vessel’s maneuvering controls, informed Macau VTS and broadcasted to the passenger of the accident. The chief engineer carried out damage inspection of the vessel and reported to the master that no apparent damage was found and the water integrity was maintained. The chief officer was sent to inspect the passenger cabins and reported to the master that 4 passengers were injured. The master sought medical assistance from the passengers, informed Macau VTS of the passenger injury and requested ambulance service to standby at the terminal. He also requested the Macau Operation Control Center to arrange tug boat for assistance. The vessel then proceeded to Macau “C” Buoy with the starboard main engine only to keep clear of the Macau Channel and to avoid the risk of grounding. Shortly afterward, the hydraulic oil low level alarm was sounded, the chief engineer stopped the operation of the starboard main engine and both diesel generators to prevent fire hazard.

4.1.7 The master informed passengers that there was no imminent danger to the vessel and asked all passengers to remain seated. The cabin attendants and the sailors applied first aid to the injured passengers. A passenger claimed that he was a physician and assisted in taking care of the injured passengers. The chief officer inspected the passenger cabins the second time and was informed by the cabin attendant that 14 passengers were injured. All injured passengers appeared to be sustained minor injury such as waist sprain and head bruised. The master updated Macau VTS the number of injured persons onboard.

4.1.8 At about 1258 tug STDM 12 and tug STDM 39 arrived. STDM 12 was made fast on the starboard bow and commenced to tow the vessel back to the terminal while STDM 39 was escorting alongside the vessel. On the way, the master kept passengers informed of the vessel situation and the estimated arrival time of the terminal. The cabin attendants noted that some passengers had donned lifejackets and advised the passengers that there was no imminent danger to the vessel.

4.1.9 With the assistance provided by the tug boats, at 1322 the vessel was secured alongside the Macau berth No.1. A total of 27 passengers and 4 crew members were
injured. Soon the ambulances arrived and transferred the injured to the hospital.

4.1.10 At 1430 on 29 December 2012, the damage inspection was carried out and confirmed that the watertight integrity of the vessel was maintained but the forward strut and foil were lost. Macau Marine and Water Bureau deployed STDM tugs to carry out a wire sweeping survey and found the forward strut at about 30 meters southwest of the No.5 Buoy.

4.1.11 On 30 December 2012 the lost forward strut and foil were recovered.

Figure 2 –the track of Urzela
Figure 3- the Radar plot by Macau VTS
5. Analysis

5.1 Manning of Urzela

5.1.1 The Minimum Safe Manning Certificate of Urzela required the vessel to be operated by a minimum of 8 persons holding appropriate qualifications.

5.1.2 At the time of the accident, a crew of 8 members was on board Urzela. They were the master, chief engineer, chief officer, three sailors and two cabin attendants. The master, chief engineer and chief officer hold valid and appropriate Certificate of Competency (COC) to operate the vessel. The manning of Urzela complied with the requirement of the vessel’s Minimum Safe Manning Document.

5.2 Certification and Experience of Personnel

5.2.1 The master of Urzela held a valid COC as a Deck Officer (River Trade) Class 1 which was issued in 2001 under Merchant Shipping (Seafarers) Ordinance (Cap. 478) by the Hong Kong Marine Department (HKMD) and his COC validity extended until 29 May 2016. He had been working as a master on high-speed passenger ferry since 1988.

5.2.2 The chief engineer held a valid COC as a Marine Engineer Officer Class 2 which was issued in 2001 under Merchant Shipping (Seafarers) Ordinance (Cap. 478) by HKMD and his COC validity extended until 02 May 2016. He had been working as a chief engineer on high-speed passenger ferry since 1990.

5.2.3 The chief officer of Urzela held a valid COC as a Deck Officer (River Trade) Class 2 which was issued in 2001 under Merchant Shipping (Seafarers) Ordinance (Cap. 478) by HKMD and his COC validity extended until 25 Nov 2013. His seafarer experience was started with deck trainee in 1974 on the ocean going vessel and he worked as chief officer from 1992 to 1997 for the ocean going vessels. After 1997 he joined river trade industry and worked continuously as a chief officer on high-speed passengers ferry.

5.3 Certification of the vessels

5.3.1 All statutory certificates of Urzela were issued by HKMD and were valid at the time of the accident.

5.3.2 The master, the chief officer and the chief engineer had checked and confirmed that the navigation equipment, the steering gear and the engines of Urzela were normal prior to the accident.
5.4 Weather Conditions

5.4.1 According to the Macau Observatory, the visibility was deteriorated rapidly from about 4 nm at time of the vessel’s departure to about 0.5 nm at time of the incident (table 1).

5.4.2 Right before the accident, due to the passing rain patch the visibility was deteriorated and the chief officer had lost the sight of the No.6 Buoy for a short while. When the chief officer observed a buoy ahead he assumed it was the No.6 Buoy. He intended to pass the buoy on the starboard side and thus he steered a wrong course. So the poor visibility was considered to be one of the contributory causes of the accident.

Table 1

<table>
<thead>
<tr>
<th>Time</th>
<th>Visibility (kilometer)</th>
<th>Visibility (nautical mile)</th>
<th>Speed in knots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1218</td>
<td>8.01</td>
<td>4.33</td>
<td>0</td>
</tr>
<tr>
<td>1219</td>
<td>7.70</td>
<td>4.16</td>
<td>0</td>
</tr>
<tr>
<td>1220</td>
<td>6.83</td>
<td>3.69</td>
<td>2.0</td>
</tr>
<tr>
<td>1221</td>
<td>5.53</td>
<td>2.99</td>
<td>2.0</td>
</tr>
<tr>
<td>1222</td>
<td>4.74</td>
<td>2.56</td>
<td>8.0</td>
</tr>
<tr>
<td>1223</td>
<td>3.92</td>
<td>2.12</td>
<td>10.0</td>
</tr>
<tr>
<td>1224</td>
<td>1.68</td>
<td>0.91</td>
<td>16.0</td>
</tr>
<tr>
<td>1225</td>
<td>1.29</td>
<td>0.70</td>
<td>26.5</td>
</tr>
<tr>
<td>1225</td>
<td>1.29</td>
<td>0.70</td>
<td>36.0</td>
</tr>
<tr>
<td>1226</td>
<td>1.50</td>
<td>0.81</td>
<td>35.0</td>
</tr>
<tr>
<td>1227</td>
<td>0.99</td>
<td>0.53</td>
<td>35.0</td>
</tr>
<tr>
<td>1227</td>
<td>0.99</td>
<td>0.53</td>
<td>17.5</td>
</tr>
</tbody>
</table>

5.5 Action taken by Urzela

5.5.1 After passing underneath the Macau Friendship Bridge, the vessel soon took off and increased the speed to about 35 knots. The speed of the vessel and the visibility at different times were recorded in table 1.

5.5.2 At about 1225 when the vessel was abeam the No.9 Buoy, the master visually observed the No.6 Buoy on the port bow and informed the chief officer. The chief officer acknowledged and further confirmed that he had visually observed the No.5 Buoy and the No.6 Buoy. At about 1226 hours the vessel passed the No.7 Buoy and the chief officer altered course to port in order to follow the planned course. Then the vessel was steered on the wrong course (Figure 2 & 3). The visibility at that moment was poor and the chief officer had once lost the sight of the buoy. However, should the vessel’s position and course had been properly checked by other available means,
such as DGPS, ECDIS and Radar, the vessel should be able to take appropriate action, i.e. to steer a correct course and the contact with the buoy could be avoided. Therefore the vessel did not comply with the requirement under 5(2) “Performing the navigational watch” in Part 3 of Schedule 1 of Merchant Shipping (Seafarers) (Certification and Watchkeeping) Regulation Cap. 478T which requires “During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the vessel follows the planned course”.

5.5.3 At about 1226, shortly after passing the No.7 Buoy and the chief officer altered course to port, Macau VTS alerted Urzela to pay attention to the course. The chief officer immediately realized the misidentifying of the buoy and the vessel was actually proceeding towards the outer limit of the Macau Channel. He instinctively put the helm to starboard intending to bring the vessel back to the track but it was too late. The contact happened in less than one minute (Figure 2 & 3). Should the vessel proceed with safe speed, she should be able to go back to the planned course or to be stopped within a distance appropriate to such restricted visibility condition at that time. The vessel did not comply with Rule 19 (Conduct of Vessels in Restricted Visibility) of the COLREGS.

5.6 Alcohol impairment and fatigue

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

5.6.2 The master, the chief officer and the chief engineer of Urzela stated that they had sufficient rest prior to assuming duty on 29 December 2012.

5.7 Seat belt

5.7.1 Seat belt was provided for each passenger seat on the vessel and the master did advise all passengers to wear the seat belt. However, many passengers ignored the advice and were injured in the accident. It was observed that those passengers who did wear seat belt were not injured. It was important that the crew of the vessel to remind and check the passengers to wear the seat belt during the passage.

5.8 Damage Survey to the vessel

5.8.1 Another damage survey was conducted on 3 January 2013 when the vessel was in dock and the following damages were found:

a) Forward strut and foil: forward strut and foil assembly was detached from the
vessel. Two areas of twisted, one small groove and some minor scratches were found on the foils (Figure 4).

b) Kingpost: bearing was damaged.

c) York assemble: the frame and supporting brackets were twisted and damaged.

d) Hydraulic system: some of the hydraulic pipes were lost.

e) Energy absorber: both absorbers were released and damaged.

f) Aft strut foils: port side strut and foil found with scratches and the forward cover of the port strut was damaged (Figure 5).

g) Bulbous bow: damaged and holed (Figure 6).

Figure 4 – Twist, scratch & groove at forward foil
Figure 5 – Aft strut and foil at the port side were found with scratches and dent.

Figure 6 – Bulbous bow damage and holed.
6. **Conclusions**

6.1 At 1218 on 29 December 2012, the Hong Kong registered high-speed passenger ferry *Urzela* departed Macau berth No.6 with 177 passengers and 8 crewmembers onboard and bound for Hong Kong. It was raining with light breeze. The visibility was originally about 4 nm but deteriorated rapidly to about 0.5nm. It was the vessel’s fourth voyage of the day. Everything was normal for the last three voyages.

6.2 After passing underneath the Macau Friendship Bridge, at 1225, the vessel’s speed was then increased to about 35 knots. Before the vessel sailing to pass through the fairway between the No.5 and No.6 buoys in the Macau channel as originally planned, the rain patch appeared in the vicinity and affected the visibility seriously. The chief officer, who was at the wheel, lost the sight of the No.6 buoy for a short while. When the chief officer sighted a buoy ahead again, he assumed it was the No. 6 buoy and steered a course to pass the buoy on the starboard side of the vessel.

6.3 Shortly afterwards, Macau VTS alerted *Urzela* to pay attention to the course. The chief officer then realized that the assumed No.6 Buoy was in fact the No.5 Buoy on the starboard bow and the vessel was actually proceeding towards the outer limit of the Macau Channel. He instinctively put the helm to starboard intending to bring the vessel back to the track but the action caused the vessel striking onto the No.5 Buoy at 1227.

6.4 As a result, the bulbous bow of the vessel and the forward strut and foil were damaged. 27 passengers and 4 crewmembers were injured. The vessel was towed back to the No.1 berth of Macau terminal. The injured persons were sent to the hospital.

6.5 The investigation revealed the following contributing factors:

i. The vessel did not sail at a safe speed under restricted visibility and failed to comply with Rule 19 (Conduct of Vessels in Restricted Visibility) of the COLREGS; and

ii. The vessel’s course and position had not been checked at sufficiently frequent intervals, to ensure the vessel to follow the planned course. Therefore the vessel did not comply with the requirement under 5(2) “Performing the navigational watch” in Part 3 of Schedule 1 of Merchant Shipping (Seafarers) (Certification and Watchkeeping) Regulation Cap. 478T.
7. **Recommendations**

7.1 The owner/management company of *Urzela* should be advised to issue notice/circular to draw the attention of their masters and chief officers the findings of the investigation and remind them the following:

i. At all times the vessel shall comply with the COLREGS, in particular, Rule 19, to proceed at a safe speed appropriate to the prevailing circumstances and conditions.

ii. During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using all available navigational aids, to ensure that the vessel follows the planned course in accordance with the requirement under 5(2) “Performing the navigational watch” in Part 3 of Schedule 1 of Merchant Shipping (Seafarers) (Certification and Watchkeeping) Regulation Cap. 478T.

iii. Arrangement should be made to alert/remind all passengers to wear their seat belts during the passage, such as using the vessel’s existing voice and video playback devices, to make periodic announcement of "fasten your seat belt".

7.2 The management company/ship owner should inform the Shipping Division and the Marine Accident Investigation Section of Marine Department of the action taken on the implementation of the corrective actions in accordance with the findings of this accident investigation.
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 of the report, in part or in its entirety, to that person or organization for their comments.

8.2 The draft of the safety investigation report was sent to the following parties:

i. The owner/management company of *Urzela*.

ii. The master, the chief officer of *Urzela*.

iii. Macau Marine and Water Bureau.

iv. The Shipping Division of Hong Kong Marine Department.

8.3 Submissions had been received from the master and the management company of *Urzela*. The draft investigation report was amended as appropriate according to their submissions.