Report of investigation into the collision between the Hong Kong registered ro-ro cargo ship “Spring Amir” and the Chinese fishing vessel “Lu Jiao Yu 60062” on 20 December 2017

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

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Purpose of Investigation

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 enhancing the safety of life at sea and avoiding similar incidents in future.

It is 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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Summary

At about 0500 hours on 20 December 2017 when the Hong Kong registered ro-ro cargo ship “Spring Amir” (the vessel) was en-route from Dalian, China to Shanghai, China for loading cargo, she collided with the Chinese fishing vessel “Lu Jiao Yu 60062” (“60062”) at position 35°29.73’N/122°56.28’E. Consequently, “60062” sank and all eight fishermen on board went missing. No pollution was reported.

At the time of the accident, the weather was fair with south-westerly wind Beaufort force four to five. The sea condition was smooth and the visibility was about seven nautical miles (nms).

The investigation revealed that the vessel and “60062” did not at all times maintain a proper look-out in compliance with Rule 5 “Look-out” of the Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS). The officer on watch of the vessel failed to determine the risk of collision and did not take action to avoid collision accordingly. Furthermore, the duty chief officer was the sole look-out on the bridge at the time of the accident and he carried out another task not relevant to his look-out duty. The navigational watchkeeping arrangements of the vessel were not adequate for maintaining a safe navigational watch during hours of darkness as per the requirements of the Seafarers’ Training, Certification and Watchkeeping Code (the STCW Code).

The investigation also revealed that the vessel’s Safety Management System (SMS) was not implemented effectively. Also, the manning of “60062” did not comply with the minimum safe manning requirements of the local administration (i.e. short of one qualified Grade 2 master and one qualified Grade 2 officer.).
1. **Description of the vessels**

1.1 *The vessel* (Figure 1)

- **Ship name**: *Spring Amir*
- **Flag**: Hong Kong, China
- **Port of registry**: Hong Kong
- **IMO number**: 9403803
- **Type**: Ro-ro cargo ship
- **Year built, shipyard**: 2007, Kegoya Dock Co., Ltd.
- **Gross tonnage**: 9,981
- **Net tonnage**: 4,573
- **Summer deadweight**: 13,325.46 metric tonnes (mt)
- **Length overall**: 124.55 metres
- **Breadth**: 20.50 metres
- **Engine power, type**: 4,200 kW, Hanshin B&W 6S35MC
- **Classification society**: Nippon Kaiji Kyokai (NKK)
- **Registered owner**: Spring Amir Shipping Limited
- **Ship management company**: Dalian Chun An Ship Management Co., Ltd.

![Image of the vessel](image-url)  
*Figure 1  The vessel*
1.2 “60062” (Figure 2)

<table>
<thead>
<tr>
<th>Ship name</th>
<th>Lu Jiao Yu 60062 (鲁胶漁 60062)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flag</td>
<td>China</td>
</tr>
<tr>
<td>Port of registry</td>
<td>Jiaozhou Dongying</td>
</tr>
<tr>
<td>Type</td>
<td>Domestic fishing boat</td>
</tr>
<tr>
<td>Material of hull</td>
<td>Steel</td>
</tr>
<tr>
<td>Gross tonnage</td>
<td>133</td>
</tr>
<tr>
<td>Length overall</td>
<td>35.60 metres</td>
</tr>
<tr>
<td>Breadth</td>
<td>6.00 metres</td>
</tr>
<tr>
<td>Depth</td>
<td>2.60 metres</td>
</tr>
<tr>
<td>Registered owner</td>
<td>Song xigang</td>
</tr>
<tr>
<td>Built place/year</td>
<td>Wendeng Haitong Shipbuilding Limited Company / 2017</td>
</tr>
<tr>
<td>Main engine, power</td>
<td>1 x YC6TK260C, 192 kW</td>
</tr>
</tbody>
</table>

Figure 2 “60062”
2. **Sources of evidence**

2.1 Information provided by the ship management company of *the vessel* (the Company).

2.2 Information provided by the Maritime Safety Administration (MSA) of the People's Republic of China (China MSA).
3. **Outline of events**

(All times were local time UTC + 8 hours unless otherwise specified.)

**Account of the vessel**

3.1 At 1006 hours on 19 December 2017, *the vessel* was loaded with 557.39 mt of steel products and departed from Dalian to Shanghai with 18 crew including the master.

3.2 At 0340 hours on 20 December 2017, the chief officer came on the bridge and took over the navigational watch. *The vessel* was on her planned south bounding course 180° with a speed of 12.8 knots. The wind was south-westerly with Beaufort force four to five. Visibility was good at about seven nms. The navigational lights, both VHF radio installations and both radars were switched on and worked normally.

3.3 At about 0430 hours, the chief officer noticed a fishing vessel (target A) right ahead of *the vessel* with a distance of three nms, and a wreck symbol on the starboard side of the planned course line displayed on the radar screen. He also noticed three radar echoes shown on the radar screen at about 10° on the port bow with a distance of about five to six nms. One of these radar echoes showed the name “LUJIAOYU60788” (confirmed to be “60062” later) which was sourced from the onboard Automatic Identification System (AIS). He thought that the three radar echoes were all fishing net marker buoys (Figures 3 and 6).
3.4 To give a wider berth to target A, the chief officer altered course by adjusting the autopilot input order from 180° to 172°. He then performed another duty which was not relevant to navigational watch.

3.5 At about 0500 hours, the chief officer heard an impact sound and felt the vibration of the vessel. He then observed a white flashing light and a red flashing light passing by the port side of the vessel at a distance of about five to ten metres. He checked the radar and was still able to see the three echoes showing on the radar screen, including the one showing the name “LUJIAOYU60788”. He thought that the vessel had contacted fishing buoys and nets. He immediately reported the incident to the master.

3.6 At 0502 hours, the master came on the bridge and instructed the chief officer to inspect the vessel’s bow by torch. It was found that there was slight damage on the bulbous bow and some paint flakes on the port side of the bulbous bow.
3.7 At 0530 hours, the master reported the incident to the Company. *The vessel* was instructed by the Company to return to the location of the incident for investigation.

3.8 At about 0630 hours, *the vessel* arrived at the location of the incident. It was still dark and without any abnormal trace on the sea surface. According to the Company’s instruction, *the vessel* continued to search for any suspicious floating objects.

3.9 At daybreak, other than some oily traces on the sea surface, there were no floating object or fishing vessel in the vicinity. A slight dent was found on the bulbous bow of *the vessel*. The crew took a photograph and sent it to the Company (Figure 4).

3.10 At about 0900 hours, some fishing vessels were conducting search around the incident area. *The vessel* was informed by one of the fishing vessels that *the vessel* might have collided with a fishing vessel and the fishermen on board were missing. The master then reported to the Company and attempted to gather more information from the fishing vessels in the vicinity but in vain.

3.11 Considering that there might have been a collision, the Company reported to the nearest maritime authorities, i.e. the Qingdao Maritime Search and Rescue Center (Qingdao MRCC) and the Qingdao MSA. *The vessel* was then instructed to remain at the site by the Qingdao MSA.
3.12 At 1940 hours, *the vessel* was instructed to proceed to Qingdao and arrived at the inner anchorage of Qingdao at 0817 hours on 21 December 2017 for investigation.

3.13 According to the investigation by Qingdao MSA, it was later deduced that *the vessel* had collided with “60062”, resulting in the sinking of “60062” and the missing of all eight fishermen.

**Account of “60062”**

3.14 On 20 October 2017, “60062” departed from Dongying fishing port of Jiaozhou, Shandong with eight fishermen on board.
According to the tracking records from the Fishery BeiDou Navigation Satellite System\(^1\) (BDS), “60062” was at position 35°29.22’N 122°59.13’E at 0048 hours on 20 December 2017 with a course of 268° and a speed of 11.47 knots. Since then, “60062” sailed eastbound and westbound repeatedly at different speeds. BDS received and updated such information every hour.

At 0406 hours, the last information transmitted from “60062” was at position 35°29.75’N/122°56.38’E. BDS received no more tracking information from “60062” afterwards.

One of the nearby fishing vessels claimed that “60062” was at anchor at the time of the collision.

**Search and Rescue operation (SAR)**

After receiving the report from the Company on 21 December 2017, Qingdao MRCC initiated the SAR. After several days of intensive search, none of the missing fishermen was found. Navigational warning was issued by Qingdao MSA and nearby merchant vessels and fishing vessels were requested to conduct sea surface search but without any finding.

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\(^1\) A system for the applications of fishing vessel navigation, fishery administration, fishing port management, marine disaster warning, short message communication for fishermen etc. It is normally operated by fishery companies and/or the Ministry of Agriculture and Rural Affairs of the People’s Republic of China, to monitor and store the position of fishing vessels by receiving BDS position information transmitted from fishing vessels on a scheduled time, with playback function for historical tracks.
4. **Analysis**

**Manning of the vessel and the crew’s working experience**

4.1 *The vessel* was manned by 18 Chinese and Bangladesh crew, including the master.

4.2 The master held a valid Class 1 Licence for deck officer issued by the Hong Kong Marine Department (HKMD). He had served as a master since 2008 and joined *the vessel* on 6 December 2017.

4.3 The chief officer held a valid Class 2 Licence for deck officer issued by the HKMD. He had served as a chief officer since 2015 and joined *the vessel* on 12 July 2017.

4.4 The manning of *the vessel* and the experience of the crew met the mandatory requirements.

**Manning of “60062”**

4.5 “60062” was manned by 8 Chinese fishermen, including the master.

4.6 According to the minimum safe manning requirements of the “Measures of the People’s Republic of China for the Administration of Seaman in the Fishery Industry”, with a length of 35.6 metres, “60062” should be manned by a Grade 2 master and a Grade 2 officer.

4.7 The investigation revealed that the certificate of competency held by the master of “60062” was only valid for a fishing vessel with a length of less than 24 metres. He was not qualified to work onboard “60062”, which had a length of 35.6 metres. Besides, there was no Grade 2 officer onboard to meet the requirement as mentioned in paragraph 4.6 above. Therefore, the manning of “60062” did not meet the minimum safe manning requirements of the local fishery administration.
Statutory certificates

4.8 The statutory certificates of both the vessel and “60062” were valid and in order.

Weather, visibility and tidal stream conditions

4.9 At the time of the collision, the weather was fair with Beaufort force four to five southwesterly wind and the visibility was about seven nms. The weather conditions were not considered to have any bearing on the occurrence of the accident.

Damage of both vessels

4.10 According to the Company’s damage survey report, the bulbous bow of the vessel was dented (Figure 5). “60062” was sunk after the collision without knowing the damage occurred to her.

Figure 5 Damage to the vessel’s bulbous bow
Watchkeeping practices on board the vessel

4.11 The STCW Code and the International Chamber of Shipping Bridge Procedures Guide (ICSBPG) address watchkeeping arrangements at sea and set out certain principles to be observed in keeping a navigational watch, including the keeping of a look-out. The STCW Code requires the master of every ship to ensure that watchkeeping arrangements are adequate for maintaining a safe navigational watch. Under certain circumstances of clear daylight, the officer in charge of the navigational watch may be the sole lookout in daylight provided that on each such occasion, the situation has been carefully assessed and it has been established without doubt that it is safe to do so; full account has been taken of all relevant factors such as traffic density; and that assistance is immediately available to be summoned to the bridge when any change of the situation so requires. ICSBPG also states that “the Officer-On-Watch (OOW) should not be the sole look-out during hours of darkness”. Apparently, in the hours of darkness with extensive fishing activities in the vicinity at the material time, the chief officer, being the sole look-out on the bridge, was in breach of the STCW Code requirements and failed to observe ICSBPG.

4.12 The master had in fact also given night order on 19 December 2017 pointing out that there were “many fishing boats in passage line” to remind duty officers to pay attention to fishing vessels’ activities.

4.13 The chief officer observed three stationary radar echoes on the radar screen, and AIS data shown on one of the echoes indicated a fishing vessel in the name of “LUJIAOYU60788”. However, the chief officer did not make further assessment of the situation and the risk of collision; neither had he conducted a continuous lookout nor summoned assistance as per the STCW Code requirements. Instead, he hastily concluded that all these three radar echoes
were marker buoys for fishing net and carried out another duty on the bridge which were not related to safe navigation.

4.14 Rule 5 of the COLREGS requires that at all times a proper look-out shall be maintained by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and the risk of collision. The chief officer failed to keep a proper look-out and monitor the three radar echoes. Accordingly, he failed to assess the risk of collision and did not take action to avoid collision.

4.15 The chief officer failed to comply with the requirements of the STCW Code, COLREGS and the master’s night order to give full attention to the keeping of a proper look-out.

**Watchkeeping practices on board “60062”**

4.16 Since the crew of “60062” were missing, no information could be gathered to assess the operation of “60062” before the collision. According to the information provided by the local administration and the fishermen of other fishing vessels in the vicinity, “60062” normally operated two sets of gillnets each about 10 nms long, with a distance of about one nm from each other. Marker buoys outfitted with a red flashing light and a portable AIS device were attached to each end of the gillnets to indicate its position on the sea surface. (Figure 6).
In addition, “60062” normally commenced net hauling operation for about 4 hours every day, from about 1700 hours to 2100 hours, and then dropped anchor between the two fishing nets (Figure 6). The operation repeated at 2300 hours. “60062” would anchor at about 0300 hours again after the net hauling operation and would wait until the daybreak for another round of operation.

There was no information indicating that “60062” had taken any action to avoid collision in the accident. The radar screen of the vessel indicated that “60062” was stationary. It was deduced that “60062” was at anchor to keep her in
position in between the fishing nets as a routine operation. There was no evidence to show that her crew had taken proper look-out to prevent the collision.

**Fatigue, alcohol and drugs abuse**

4.19 There was no evidence to show that the crew of *the vessel* had suffered from fatigue or alcohol and drugs abuse.

4.20 Furthermore, no information was available as to whether the master and fishermen of “60062” had suffered from fatigue or alcohol and drugs abuse.

**Failure of the vessel’s Voyage Data Recorder System (VDRS)**

4.21 *The vessel* had installed on board a VDRS as required under Regulations 18 and 20 of Chapter V (Safety of navigation) of the International Convention of Safety of Life at Sea. VDRS is a vital navigational equipment subject to annual performance test. Both Section 10 of the International Safety Management Code and the Company’s Safety Management System (SMS) procedures require *the vessel* and her equipment to be maintained properly, aiming at promoting the reliability of such equipment.

4.22 VDRS was found with false alarms before departure from Dalian on 19 December 2017. However, the master did not request for repair before departure. As the VDRS was malfunctioned at the time of the collision, no data was available for analysing the accident. The maintenance of VDRS was found to be insufficient to ensure that all required data was recorded and available for analysis.

**AIS target showing different name “LUJIAOYU60788”**

4.23 It was confirmed later that the AIS of “60062” was transferred from a scrapped fishing vessel “LUJIAOYU60788” without altering the identification information.
Implementation of SMS on board the vessel

Based on the findings mentioned above, the implementation of the shipboard operation procedures of the vessel’s SMS was not effective, in particular in the following aspects:

a) the master failed to ensure that the watchkeeping arrangements were adequate for maintaining a safe navigational watch by allowing the chief officer to be the sole look-out during the hours of darkness;

b) the chief officer carried out another task not relevant to his look-out duty; and

c) the master did not make proper arrangement to repair the VDRS before departure.
5. Conclusions

5.1 At about 0500 hours on 20 December 2017, when the vessel was en-route from Dalian to Shanghai, she collided with “60062” at position 35°29.73’N/122°56.28’E. Consequently, “60062” sank and all eight fishermen onboard were missing. No pollution was reported.

5.2 The investigation revealed that the main contributing factors of the accident were-

a) the vessel did not at all times maintain a proper look-out in compliance with Rule 5 of COLREGS (look-out). The OOW failed to determine the risk of collision and did not take action to avoid collision accordingly; and

b) the watchkeeping arrangements of the vessel was not adequate for maintaining a safe navigational watch as per the requirements of the STCW Code. The duty chief officer was the sole look-out on the bridge during hours of darkness, and carried out another task not relevant to his look-out duty.

5.3 The following safety issues were also identified in the investigation:

a) the manning of “60062” did not comply with the minimum safe manning requirements of the local administration, i.e. short of one qualified Grade 2 master and one qualified Grade 2 officer; and

b) the implementation of the vessel’s SMS was found to be ineffective, such as failure to ensure that watchkeeping arrangement on the bridge was adequate; failure to maintain proper look-outs at all the times during the voyage; and failure to properly maintain VDRS which was a vital recording equipment of shipboard operations.
6. **Recommendations**

6.1 A copy of this report should be sent to the Company and the master of *the vessel*; as well as the owner of “60062” to advise them of the findings of this accident investigation.

6.2 The Company is recommended to review the shipboard SMS and to carry out an internal audit to ensure that the implementation of SMS of *the vessel* is in compliance with the requirements of COLREGS and the STCW Code at all times, in particular in the following aspects:

   a) the master should ensure an adequate watchkeeping arrangement for maintaining a safe navigational watch;

   b) the officers on navigational watch should keep a proper look-out at all times to comply with the requirements of Rule 5 of COLREGS (look-out), and should not take other tasks not relevant to his look-out duty;

   c) the navigational instructions and procedures of SMS must contain guidance relating to circumstances when the officer of the watch may be the sole look-out during daylight, and the OOW should not be the sole look-out during hours of darkness; and

   d) the shipboard equipment should be maintained properly to ensure the reliability of such equipment and system including the VDRS.

6.3 The owner of “60062” should:

   a) ensure that the manning of his/her fishing vessels (if the owner has other fishing vessels) complies with the safe manning requirements of their administration;

   b) remind the masters to maintain a proper look-out in compliance with Rule 5 of COLREGS (look-out) at all times; and

   c) confirm that the identification information of AIS installed on other fishing vessels are correct.
6.4 A Hong Kong Merchant Shipping Information Note should be issued to promulgate the lessons learnt from the accident.
7. **Submission**

7.1 The draft report was sent to the following parties for their comments:

a) the Company, the master and chief officer of *the vessel*;

b) the owner of “60062”;

c) China MSA; and

d) the Ship Safety Branch of the Marine Department.

7.2 By the end of the consultation, no comment was received from the above parties.