Report of investigation into the fatal accident on board Hong Kong registered cargo ship *"SPRING SALIM"* on 25 October 2016

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

19 March 2019

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 improving the safety of life at sea and avoiding similar incident 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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1. Summary

1.1 On 25 October 2016 at about 1345 hours, a fatal accident happened on board the Hong Kong registered general dry cargo ship "*SPRING SALIM*" (*the vessel*) in Banda Sea, during the transit from Kendari to Gresik, Indonesia.

1.2 After discharging cargo in the port of Kendari, Indonesia in the morning on 24 October 2016, the No. 2, 3 and 4 panels of a total of six tween deck hatch panels of No. 1 cargo hold had not been put back in place. When *the vessel* was sailing in Banda Sea in the afternoon on 25 October 2016 after departure, the bosun walked on the No. 1 tween deck hatch panel of the No. 1 cargo hold with torchlight through the darkness towards *the vessel's* aft. He fell from a height of about 6.2 metres at the edge of that tween deck hatch panel to the bottom of No. 1 cargo hold and sustained severe head injuries.

1.3 When the bosun was on the No.1 tween deck hatch panel, the chief officer and the No. 1 mechanic were standing on the No. 5 and 6 tween deck hatch panels at the aft part of the No. 1 cargo hold to inspect the upper deck hatch covers for water leakage. They heard a "pop" sound emitted from the front end of the No. 1 cargo hold and then they saw a person lying on the bottom of the No.1 cargo hold through the torch light.

1.4 They immediately went down to the cargo hold bottom and found the bosun with severe head injuries. The No. 1 mechanic then informed the duty officer on the bridge by walkie-talkie. An emergency rescue team rushed to the scene with first aid appliances. They had tried in vain to save the bosun.

1.5 The investigation had identified the following safety issues:

(a) none of the basic safety requirements/procedures under the company's safety management system in relation to the enclosed spaces entry and the work on hatch covers or panels had been followed;

(b) the crew lacked personal safety awareness and was unfamiliar with the procedure of entry into enclosed spaces. They did not follow the requirements of the company's "permit to work" system when entering the fully covered cargo hold. Furthermore, the bosun entered the forward part of the No. 1 cargo hold alone without wearing his safety helmet properly, preparing portable lighting and notifying his colleagues; and

(c) the crew did not carry out any measures to keep persons away from the tween deck opening when any hatch panel was removed.

2. Descriptions of the vessel

2.1 *The vessel* (Figure 1)

2.1.1 Particulars of *the vessel*

Ship name	:	Spring Salim
Flag	:	Hong Kong, China
Port of registry	:	Hong Kong
IMO No.	:	9505895
Type	:	General Dry Cargo Ship
Keel laid	:	9 July 2007
Ship yard	:	Yichang Shipyard, China
Gross tonnage	:	7,460
Net tonnage	:	3,295
Length overall	:	122.2 metres
Breadth	:	19.8 metres
Engine output, make/ type	:	3,300 kW, Pielstick 6PC2-6/2L
Classification society	:	China Classification Society (CCS)
Registered owner	:	Spring Salim Shipping Limited
Management company	:	Dalian Chun An Ship Management Co., Ltd.

2.1.2 *The vessel* is a tween-decker general dry cargo with typical construction feature to provide two cargo compartments within each cargo hold. The two cargo compartments are separated by tween deck. In general, each cargo hold is covered by removable hatch covers and the tween deck within the cargo hold is covered by six removable tween deck hatch panels.

2.1.3 *The vessel* was registered in Hong Kong on 19 April 2016 and manned by 18 crew members. 14 of them had been working on board for about 6 months before the accident.

Figure 1 *The vessel*

3. Sources of evidence

3.1 The statements of the crew of *the vessel*.

3.2 The information provided by the management company.

4. Outline of events

(All times are local time UTC + 8 hours.)

4.1 On 24 October 2016 at 1000 hours, *the vessel* finished the discharge of cargo at the port of Kendari, Indonesia. For cleaning and sweeping purposes, the No. 2, No. 3 and No. 4 tween deck hatch panels of the No. 1 cargo hold were not put back in place thus leaving a big opening in the middle section of the tween deck (Figure 2).

4.2 On 25 October 2016 at 0214 hours, *the vessel* set sail for her next port of Gresik, Indonesia for loading cargo.

4.3 From 0800 hours to 1130 hours on 25 October 2017, the bosun led a team of deckhands to clean the accommodation and the bilge wells in the No. 2 cargo hold. Furthermore, a team of engine room staff was assigned to clean the bilge wells in the No. 1 cargo hold.

4.4 During cleaning of bilge wells in the No. 1 cargo hold, the No. 1 mechanic found water leakage from the upper deck starboard aft hatch cover and reported his finding to the chief officer at 1330 hours. Considering *the vessel* was underway, the chief officer instructed the bosun to carry out repair to stop the leakage at the anchorage of next port. At about 1340 hours, the chief officer and the No. 1 mechanic entered the No. 1 cargo hold via the aft access and stood on the No. 6 tween deck hatch panel to inspect reported water leakage by using torch. As the cargo hold hatch covers were not removed, the cargo hold was in total darkness.

4.5 During the inspection, they noticed that a member with a torch also entered into the No. 1 cargo hold from the fore access and walked on the No. 1 tween deck hatch panel. After a while, they heard a “pop” sound emitted from the front end of the No. 1 cargo hold. Through the torchlight, they saw a person lying on the bottom of the No. 1 cargo hold.

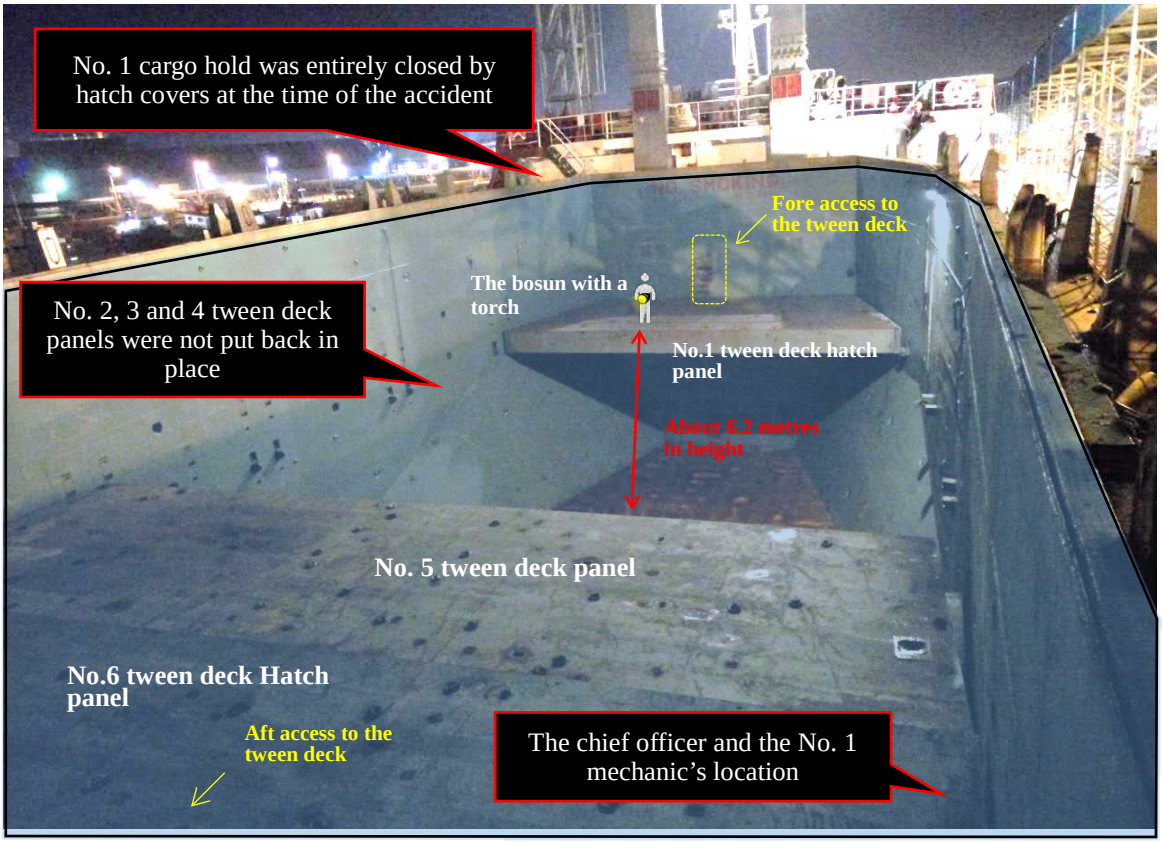

Figure 2 No. 1 cargo hold

4.6 The chief officer and the No. 1 mechanic rushed to the bottom of the No. 1 cargo hold. They found that the bosun had sustained severe head injuries with his face bleeding and an outflow of brain fluids. The No. 1 mechanic immediately reported the accident to the duty officer on the bridge via his walkie-talkie and the chief officer ran to the bridge to brief the master of the accident.

4.7 At about 1350 hours, the duty officer broadcast the accident via public address system, and asked the crew to muster for rescue operation. He then logged *the vessel*'s current position of 05°22.0S, 123°16.3E as well as the weather conditions. The weather was overcast with drizzle, and the wind was north-east force 3 of Beaufort scale. The sea was crest glassy. *The vessel* was sailing steadily on a course of 190° at a speed of 12 knots. Being led by the chief officer, an emergency rescue team was immediately sent to the spot with first aid appliances for the rescue.

4.8 At 1401 hours, the master notified *the vessel*'s management company regarding the accident. The management company then contacted the China's Maritime Rescue Coordination Centre (MRCC) Search and Rescue Centre Beijing (SAR Centre) for help with emergency telemedicine guidance, and also tried to contact the Indonesia MRCC to provide emergency services for *the vessel*.

4.9 Telecommunication was established between the SAR Centre and the master for medical advice. Having described the bosun's condition by the master, the shore medical adviser determined that the bosun might have already died. The attempt to contact the Indonesia MRCC was subsequently not successful.

4.10 At about 1445 hours, the chief officer reported to the master that the bosun had no pulse or breath and his limbs were cold. The master informed the management company of the latest situation of the bosun.

4.11 At about 1609 hours, the master received instructions from the management company that *the vessel* had to sail to the nearest port Baubau for an investigation by the port authority.

4.12 At 0740 hours on 26 October 2017, *the vessel* dropped anchor at the inner anchorage of Baubau. The local agent and officers from the relevant local port authority boarded *the vessel* and visited the scene of the accident for investigation (Figure 3).

4.13 The officers of local authority left *the vessel* after completing the inspection in the afternoon. The body of the bosun was removed from *the vessel* to shore. At 1830 hours, *the vessel* continued her voyage to the loading port.

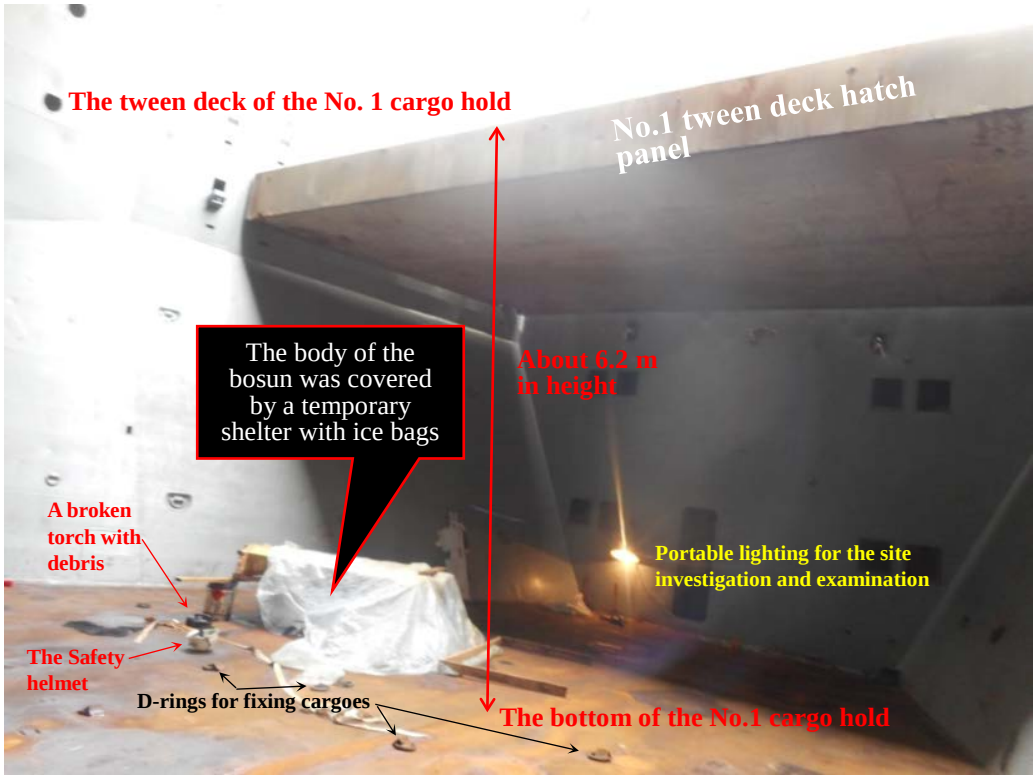

Figure 3 The scene of the accident

5. Analysis

Certification, training and experience

5.1 The master held a Class 1 Licence of the Deck Officer issued by the Hong Kong Marine Department (HKMD). He had 38 years of seagoing experience with about 20 years in the capacity of master and joined *the vessel* on 19 April 2016.

5.2 The chief officer held a Class 2 Licence of the Deck Officer issued by HKMD. He had 14 years of seagoing experience with about 6.5 years in the capacity of chief officer and joined *the vessel* on 1 April 2016.

5.3 The No. 1 mechanic started working as a seafarer in 2010. He took up his present post since 2012 and joined *the vessel* on 19 April 2016.

5.4 The bosun started to work for the shipping company in 2009. He had about 50 months of seagoing experience in the capacity of bosun at the time of the accident. He joined *the vessel* on 19 April 2016 and was considered a seasoned deckhand.

Physical fitness and fatigue at work

5.5 The bosun was 44 years old and passed the medical examination before joining *the vessel*. He did not smoke or drink. In addition, there was no evidence to show that the bosun was sick or taking medicine due to illness before the accident.

5.6 During the port stay in Kendari, the bosun took the daytime work only. On 25 October 2016, the bosun assisted in heaving up anchor from 0200 hours to 0300 hours for departure. From 0800 hours to 1130 hours, the bosun was the team leader of deckhands to clean accommodation and bilge wells in the No. 2 cargo hold. He continued his work after lunch. There was no deviation found with respect to the hours of rest as stipulated under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers. Fatigue at work was not considered as the contributory factor leading to the accident.

Weather and sea condition

5.7 When the accident happened, the weather was overcast with drizzle, and the wind was north-east force 3 of Beaufort scale with crest glassy at sea. *The vessel* was sailing steadily on a course of 190° at a speed of 12 knots. Neither rolling nor pitching of *the vessel* was experienced by the crew. The weather condition was not considered as a contributory factor of the accident.

Cause of death

5.8 In the light of the chief officer's and the No. 1 mechanic's descriptions of what they witnessed at the scene of the accident, it seemed rational to deduce that the cause of the bosun's death was fallen from height resulting in skull rupture and brain damage.

Tween deck opening at the time of the accident

5.9 The tween deck of the No. 1 cargo hold was partly covered by the No. 1, No. 5 and No. 6 tween deck hatch panels only (Figure 2). As the remaining three tween deck hatch panels were removed and placed on top of No. 5 and 6 tween deck panels, the tween deck was left with a big opening at its middle section. The master stated that it was a general practice to leave an opening in the tween deck in order to facilitate loading and unloading of cargoes as well as lifting garbage out of the cargo hold after cleaning operation. The hazard of fall from the tween deck opening existed. However, there was no safety measure in place to prevent person from falling from such opening.

Probable cause of the accident

5.10 The bosun worn an overall and a raincoat, a safety helmet and working shoes, as well as wearing gloves. He entered from the fore access to the No. 1 cargo hold and stepped on the No. 1 tween deck hatch panel with the intention to inspect water leakage. He walked on the No. 1 tween deck hatch panel to the aft but fell from the opening onto the cargo hold bottom. At the accident scene, a safety helmet with chin strap plastic buckle opened and a broken torch were found (Figure 4).

5.11 At the time of the accident, No. 1 cargo hold was in total darkness. It might not be easy for the bosun to discover the opening adjacent to the No. 1 tween deck hatch panel by torchlight. Subsequently, he fell from a vertical height of about 6.2 metres onto the bottom of the cargo hold through the opening. As his safety helmet was found intact without sign of the chin strap being torn apart, it could be deduced that the safety helmet had not been properly worn resulting in the helmet being dropped off from the bosun during the fall thus failing to protect the bosun from suffering severe head injury when hitting the bottom floor of the cargo hold.

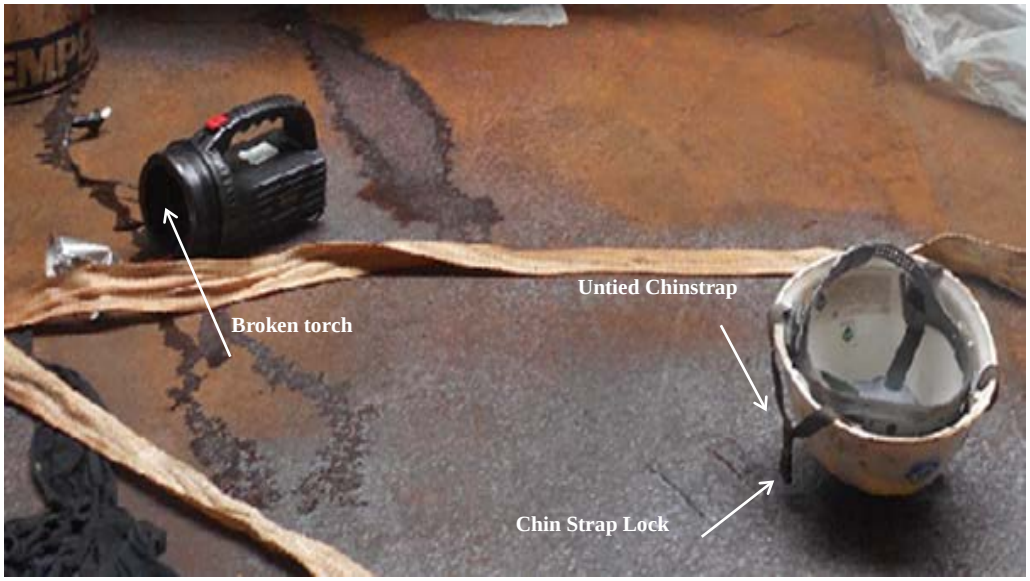

Figure 4 The safety helmet and torch of the bosun

Safety Management System

5.12 Cargo holds are classified as enclosed spaces under the company's safety management system (SMS). There are procedures and guidance in the SMS manual for entering enclosed spaces, such as providing adequate lighting, ensuring clear passageway and satisfying safety requirements of the work surroundings etc.

5.13 Furthermore, entry into enclosed spaces is also covered by the SMS's permit to work system which requires on-site risk assessment, organized arrangement, monitoring of work and the master's or department head's authorization before entry.

5.14 With regard to shipboard personal safety, the SMS requires (1) when the crew work on the hatch cover, they have to apply guard rope to set the separation zone at least 1.5 metres away from the hatch cover edge where there is an opening in order to prevent persons from falling into the cargo hold by negligence; and (2) when the hatch covers are removed, walking on the hatch coaming is prohibited in order to prevent from falling into the cargo hold resulted from a sudden rolling of ship. In addition, no persons including stevedores are allowed to walk on the upper deck and tween deck hatch panels in case of insufficient lighting or illumination to prevent from accidental fall.

5.15 As revealed by this accident, none of the basic safety requirements/procedures under the SMS as highlighted in paragraphs 5.12 to 5.14 above had been followed.

The chief officer alleged that he did inform the duty officer on the bridge and keep contacting the duty officer via the walkie-talkie while he was carrying out the inspection work with the No. 1 mechanic in No. 1 cargo hold. However, there was no excuse whatsoever if the crew especially the senior officers failed to implement SMS effectively.

6. Conclusions

6.1 On 25 October 2016 at about 1345 hours, a fatal accident happened on board the Hong Kong registered general dry cargo ship *SPRING SALIM* during her transit from Kendari to Gresik at the position of 05°22.0S, 123°16.3E Banda Sea, Indonesia. The bosun of *the vessel* fell from a height of about 6.2 metres at the No. 1 tween deck hatch panel onto the bottom of No. 1 cargo hold resulting in his death.

6.2 The investigation revealed that there was a safety hazard of fall from height in case the opening of the tween deck was formed when some of the tween deck hatch panels were not put back in place. The risk of fall would further be increased when the No. 1 upper deck cargo hold hatch covers were put in place and the tween deck environment would be in total darkness.

6.3 The investigation had identified the following safety issues:

(a) none of the basic safety requirements/procedures under the company's safety management system in relation to the enclosed spaces entry and the work on hatch covers or panels had been followed;

(b) the crew lacked personal safety awareness and was unfamiliar with the procedure of entry into the enclosed spaces. They did not follow the requirements of the company's "permit to work" system when entering the fully covered cargo hold. Furthermore, the bosun entered the forward part of the No. 1 cargo hold alone without wearing his safety helmet properly, preparing portable lighting and notifying his colleagues ; and

(b) the crew did not carry out any measures to keep persons away from the tween deck opening when any hatch panel was removed.

7. Recommendations

7.1 The management company should issue circulars to inform all masters, officers and crew of the findings of the investigation and the lessons learnt from this accident and instruct them to:-

(a) conduct a full risk assessment before entry into enclosed spaces and issue entry permit in accordance with the requirements of SMS;

(b) provide adequate lighting for entering into and working in enclosed spaces;

(c) restrict entry into the tween deck spaces when some of their hatch panels have been removed. If it is really necessary to work in such spaces, safety measures must be in place before work begins; and

(d) arrange relevant safety training in order to enhance the personal safety awareness and familiarities of the crew with the safety management system.

7.2 The management company should conduct internal audit on *the vessel* to ensure that the crew on board strictly follow the entry into enclosed spaces procedures. Also, a company audit should be carried out by the International Safety Management Section, HKMD to ensure that the SMS is properly in place and implemented effectively.

7.3 A copy of the investigation report is to be provided to the International Safety Management Section of the Shipping Division for information and action.

7.4 A Hong Kong Merchant Information Note is to be issued to promulgate the lessons learnt from this accident.

8. Submission

8.1 The draft investigation report, in its entirety, had been sent to the management company and the master of *the vessel* as well as the International Safety Management Section of the Shipping Division for their comments.

8.2 During the consultation period, the management company, the master of *the vessel* and the International Safety Management Section of the Shipping Division replied that they did not have comments on the draft investigation report.