Report of investigation into a fatal accident on the Hong Kong registered general cargo ship "*THORCO RAFFLES*" in Ehoala, Madagascar on 25 July 2019

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

27 April 2021

Purpose of Investigation

The purpose of this investigation, conducted by the Marine Accident Investigation Branch (MAIB) 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 MAIB has no involvement in any prosecution or disciplinary action that may be taken by the Marine Department resulting from this incident.

Table of contents **Page**

Summary

On 25 July 2019, a fatal accident of falling from height happened on board the Hong Kong registered general cargo ship "*THORCO RAFFLES*" (*the vessel*) in the loading port of Ehoala, Madagascar.

To prepare the loading to No. 1 cargo hold (No. 1 C/H) of *the vessel*, the tween-deck pontoons of the No. 1 C/H should be lifted away and stacked on the No. 2 C/H hatch covers temporarily. An able seafarer deck (AB) was tasked to hold a pontoon control lanyard to control the movement of the pontoon during the lifting. He stood on top of a hoisting spreader at the starboard which was close to and level with the No. 1 C/H hatch opening. When the pontoon was lifted up, *the vessel* rolled suddenly. Under the movement of *the vessel* and the suspended pontoon, the AB was forced to move inboard towards the No. 1 C/H hatch opening. After hearing a yell and a thump, the other crew found the AB lying on the bottom plate of No. 1 C/H. The AB was declared dead by the shore medical brigade on the same day.

The investigation revealed that the lifting operation carried out in an unsafe manner with poor supervision was the main contributory factor to the accident. The investigation also identified that the AB was probably lack of situation awareness failing to release the control lanyard or to keep his body clear from it resulting in his fatal falling when he was subjected to a pulling force.

1. Description of the vessel

Ship name	:	*THORCO RAFFLES* (Figure 1)
Flag	:	Hong Kong, China
Port of registry	:	Hong Kong
IMO number	:	9538880
Type	:	General Cargo Ship
Year built, shipyard	:	2011, Wuhu Xinlian Shipbuilding, China.
Gross tonnage	:	14,859
Net tonnage	:	6,300
Summer deadweight	:	17,884 tonnes
Length overall	:	154.51 metres
Breadth	:	25.19 metres
Engine power, type	:	9,960 kW, MAN B&W 6S50MC-C8
Classification society	:	Lloyd's Register
Registered owner	:	Radiant Shipping Corp. Limited
Management company	:	JP Alliance Ship Management Co., Inc.

Figure 1 *The vessel*

2. Sources of evidence

2.1 Information provided by the Master, the crew and the management company of *the vessel*.

3. Outline of events

(All times were local time UTC + 3 hours)

3.1 On 23 July 2019, *the vessel* arrived in Ehoala, Madagascar and berthed around 0800 hours on 24 July 2019 for loading 10,000 metric tonnes of ilmenite sand. By means of conveyor discharge spout, the cargo loading was commenced at No. 3 cargo hold (C/H) around 1450 hours on that day.

3.2 On 25 July 2019, a toolbox meeting was held among the Master, the Chief Officer (C/O), Second Officer (2/O), Third Officer (3/O), Bosun, three able seafarers deck (including the later deceased AB) and an ordinary seaman from 0700 to 0730 hours. They discussed the loading operations and the lifting of tween-deck pontoons of Nos. 1, 2 & 3 C/Hs.

3.3 In the afternoon of 25 July 2019, the conveyor discharge spout failed to turn and caused the cargo piling up on port side of No. 3 C/H. As a result, *the vessel* listed to port side. At about 1425 hours, the cargo loading was suspended.

3.4 At about 1545 hour, for pre-loading inspection with the shipper representative, the crew opened No. 1 C/H hatch covers. At about 1620 hours, upon the condition of No. 1 C/H was accepted for cargo loading, a team of four members comprising the Master, the 2/O, the Bosun and the AB commenced to lift the No.1 C/H tween-deck pontoons onto the No. 2 C/H hatch covers for temporary stowage.

3.5 During the pontoon lifting operation, the Master stood on the No. 2 C/H hatch cover forward as the person-in-charge. The Bosun operated the crane at port aft of No. 1 C/H to lift the pontoons inside

No. 1 C/H.

3.6 The 2/O stood on the main deck port side of No. 1 C/H, while the AB stood on the top of a hoisting spreader that was 1.73 metres high above the main deck and laid at the starboard side next to the No. 1 C/H hatch coaming. In the course of the lifting, both the 2/O and the AB were assigned to control the movement of the pontoon by holding the control lanyards tied to both sides of the pontoon.

3.7 At about 1630 hours, when the crane hooked with the first piece of the No. 1 C/H tween-deck pontoon and was about to slew towards the No. 2 C/H (refer to 'P4' in figure 2 and figure 3), the AB fell into the No. 1 C/H.

3.8 Nobody witnessed the AB's falling that happened in the blink of an eye. The team members only heard a yell and a thump in the material time. Subsequently, the AB was found lying on the bottom plate of the No. 1 C/H.

3.9 The Master immediately called the ship's agent for urgent medical assistance. At about 1650 hours, the medical brigade came onboard. First aid treatment was then applied to the AB on site. At about 1730 hours, the AB was transferred to the ambulance at the shipside for further treatment. Until about 1805 hours, the AB was declared dead by the medical brigade.

4. Analysis

Manning of the vessel

4.1 *The vessel* was manned by 15 Filipino crew, including the Master. The manning scale complied with the Minimum Safe Manning Certificate.

4.2 The Master had served as a shipmaster for more than 4 years. He possessed a Class 1 Licence (Deck Officer) issued by the Maritime Industry Authority of the Philippines. He signed on *the vessel* as a master about 5 months before the accident.

4.3 The Chief Officer (C/O) had served as a chief officer for more than 4 years. He possessed a Class 2 Licence (Deck Officer) issued by the Maritime Industry Authority of the Philippines. He signed on *the vessel* as a chief officer about 7 months before the accident.

4.4 The Second Officer (2/O) had served as a second officer for more than 2 years. He possessed a Class 3 Licence (Deck Officer) issued by the Maritime Industry Authority of the Philippines. He signed on *the vessel* as a second officer about 2 months before the accident.

4.5 The Bosun had served as a bosun for about 14 years. He possessed a valid certificate of proficiency (CoP) issued by the Maritime Industry Authority of the Philippines as able seafarer deck on ships of 500 gross tonnage or more. He signed on *the vessel* as a bosun about 8 months before the accident.

4.6 The AB had served as an able-bodied seaman for about 22 months. He possessed a valid CoP issued by the Maritime Industry Authority of the Philippines as able seafarer deck on ships of 500 gross tonnage or more. He signed on *the vessel* as an able-bodied seaman for about 6 months before the accident.

4.7 There were no abnormalities noted with regard to the certification and experience of the crew concerned.

Working hours and alcohol abuse

4.8 There was no evidence showing that any crew on board, including the AB, suffered from fatigue or alcohol and drug abuse.

Weather and sea conditions

4.9 On the day of the accident, the weather was cloudy with a northeasterly moderate breeze (Beaufort Wind Scale force 4). The sea had small waves, fairly frequent whitecaps and moderate swell. The visibility was about 8 nautical miles. Under such weather conditions, *the vessel* might roll intermittently, thus possibly causing the suspended tween-deck pontoon to swing slightly.

Arrangement of the pontoons in No. 1 C/H

4.10 No. 1 C/H was the first cargo hold counting from forward of *the vessel* and was equipped with four pieces of tween-deck pontoon (namely P1, P2, P3 and P4) to form the tween-deck inside No. 1 C/H. The hatch coaming of No. 1 C/H was 2 metres high. (Figures 2 and 3)

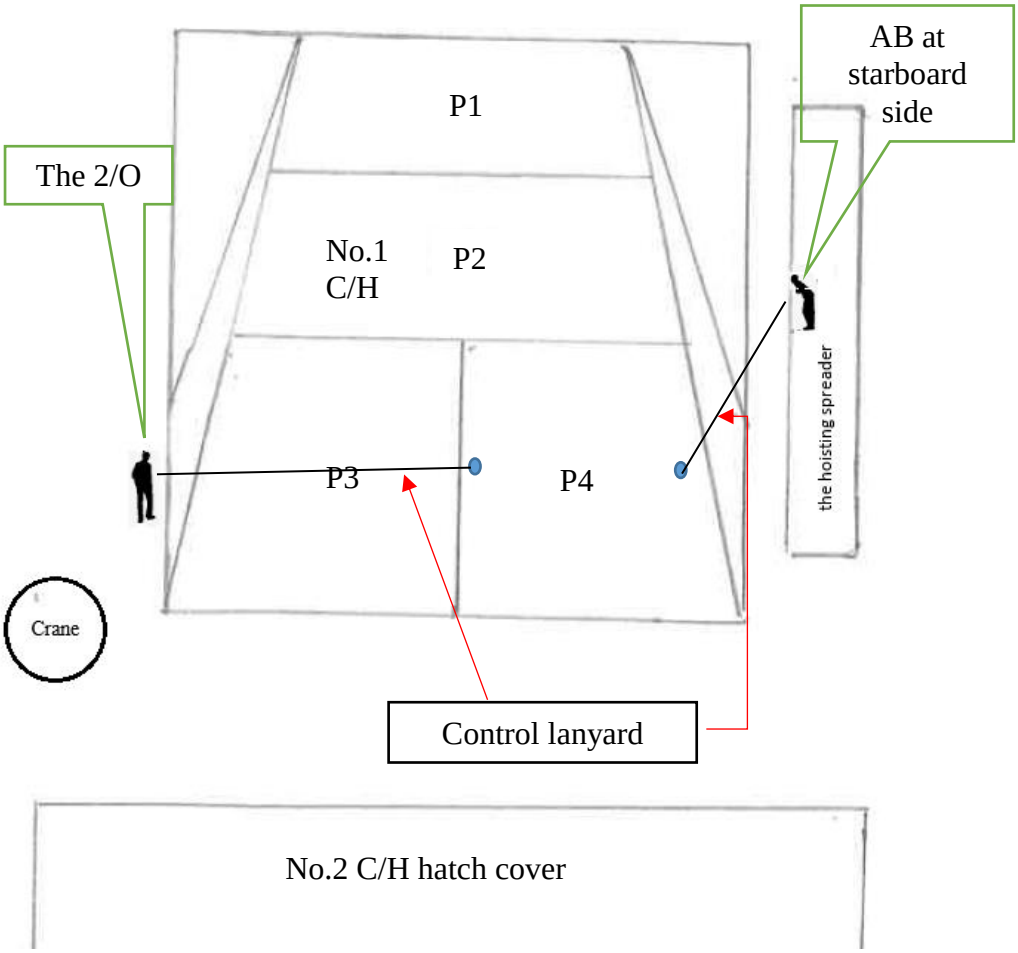

Figure 2 – Locations of the 2/O and the AB on main deck (*plan view*)

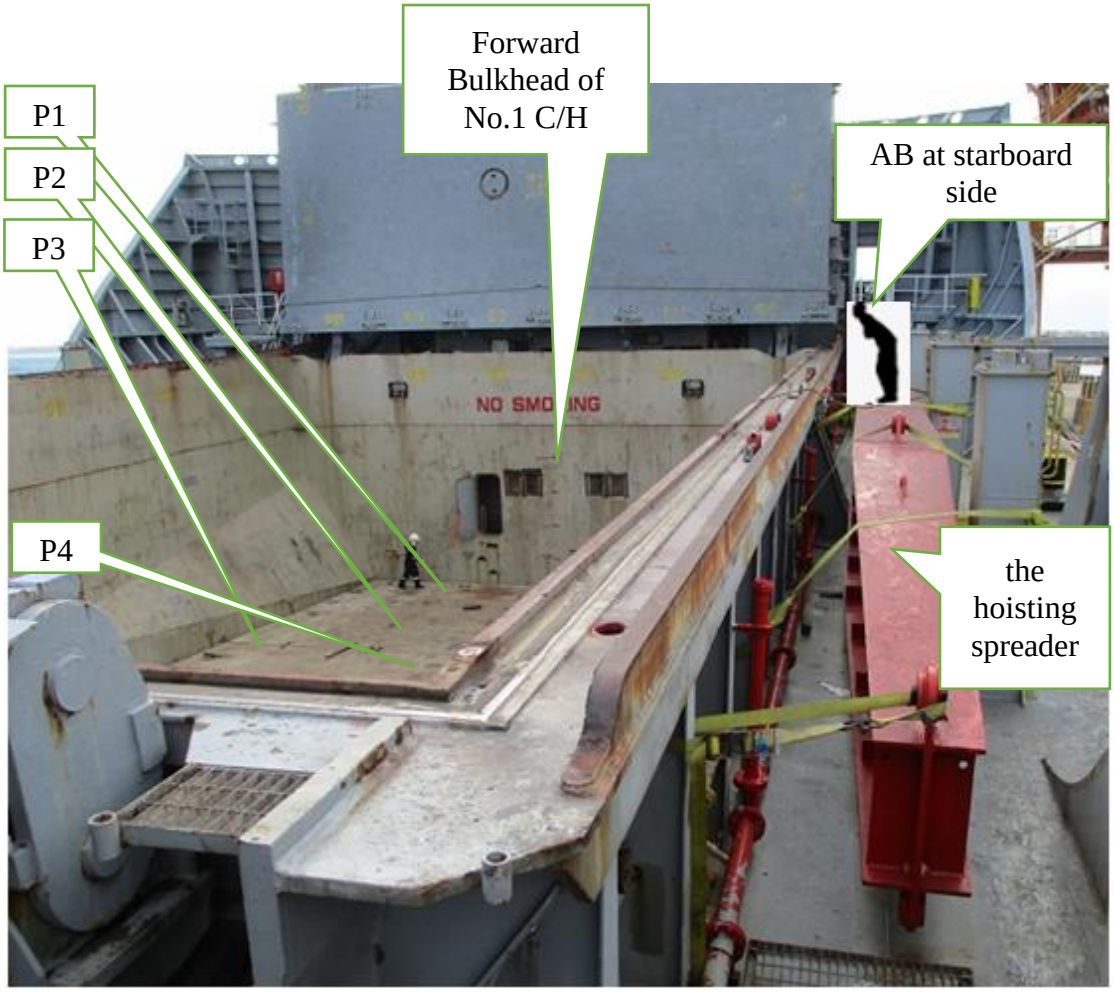

Figure 3 –No. 1 C/H

4.11 To prepare for the cargo loading of the No. 1 C/H, the team had to lift each of the pontoon separately by the crane starting from P4. The 2/O stood safely on the port side main deck holding the control lanyard and leant against the No. 1 C/H portside longitudinal hatch coaming which was about 2 metres high. On the contrary, the AB stood on the top of the hoisting spreader at a height level with the No. 1 C/H hatch opening. At that position, the risk of falling from height for the AB increased. (Figure 3)

The hoisting spreader

4.12 The hoisting spreader was temporary laid on starboard main deck along the No. 1 C/H longitudinal hatch coaming. The 87 cm width of the top flat face of the hoisting spreader provided a treading surface for the AB to walk on it. The hoisting spreader was held in position by five woven polyester lashing straps along its length. The risk of trips and falls of the AB became greater when the treading surface was fitted with straps and lifting lugs, especially when he paid his attention to hold the lanyard to control the pontoon movement.

4.13 There was no difficulty for a person stood on top of the hoisting spreader to step on the top of the No. 1 C/H hatch coaming as it was just 25 cm below the top flange of the hatch coaming. Also, there was no falling prevention fitted along the No. 1 C/H hatch coaming, e.g. fencing, lifeline, taut wire etc. Therefore, it was risky for the AB to work on the hoisting spreader where he was beside a large unfenced cargo hold hatch opening.

The lifting operation

4.14 Paragraph 19.9 of Chapter 19 "Lifting Equipment and Operations" of the Code of Safe Working Practices for Merchant Seamen (the Code)[1] requires that every lifting operation must be subject to risk assessment, properly planned, appropriately supervised, and carried out in a safe manner.

4.15 It was unlikely that a thorough risk assessment had been conducted

[1] In accordance with Section 4 of Cap. 478M "Merchant Shipping (Seafarers) (Code of Safe Working Practices) Regulation", all Hong Kong registered vessels are required to carry the "Code of Safe working Practices for Merchant Seamen" onboard.

before the lifting operation, notably the safe movement of the AB holding the control lanyard was constrained by the hoisting spreader placed on the starboard side main deck. No preventive measure was put in place to mitigate the risk.

4.16 Moreover, the crew did not adhere to the practices stipulated in the Code during the lifting operation. The AB standing at a dangerous location demonstrated that the work was not carried out in a safe manner and was in lack of supervision by the Master who was the person-in-charge of the lifting at the site.

Cause of falling

4.17 *The vessel* was inherently listed to port side because of the failure of conveyor discharge spout leading to the piling up of cargo on port side of No. 3 C/H. When the heavy pontoon P4 in starboard side of No. 1 C/H was lifted up, aggregated with the weather conditions, P4 would tend to swing towards port side of the No. 1 C/H hatch opening. As P4 was heavy, any slight movement of P4 might create a great jerk force that pulled the AB inboard towards the direction of the cargo hold hatch opening.

4.18 The situation awareness of the AB was probably inadequate. Under the sudden rolling of *the vessel* and the movement of P4 towards port side, the AB might not be able to release the control lanyard in time or to keep his body clear from the control lanyard. Without expecting the sudden rolling of *the vessel*, the AB might lose his balance in the blink of an eye and fell into No. 1 C/H.

5. Conclusions

5.1 At about 1630 hours on 25 July 2019, a fatal accident of falling from height happened on board the Hong Kong registered general cargo ship "*THORCO RAFFLES*" (*the vessel*) in loading port of Ehoala, Madagascar.

5.2 The Bosun operated the crane on the main deck at port side aft of No. 1 C/H to lift the tween-deck pontoons out of No. 1 C/H for cargo loading. During the lifting, the 2/O and the AB stood on either side of the cargo hold were holding control lanyards to keep the pontoon from swinging sideways. When the pontoon was lifted up, *the vessel* rolled suddenly. The crew found the AB lying on the bottom plate of No. 1 C/H after hearing a yell and a thump. The AB was declared dead by the shore medical brigade on the same day.

5.3 The investigation into the accident found that:

(i) the lifting was carried out in an unsafe manner, as the AB stood at a dangerous location without proper safety protection;

(ii) the Master as the person-in-charge at site failed his supervision duty to mitigate the potential risk of the lifting operation; and

(iii) the AB was probably lack of situation awareness failing to release the control lanyard held by him or to keep his body clear from the control lanyard resulting in his fatal falling when he was subjected to a pulling force.

6. Recommendations

6.1 A copy of the investigation report is to be provided to the management company and the Master of *the vessel.* The management company should issue circulars informing all masters, officers and crew of the findings and the lessons learnt from this investigation and provide them relevant safety training in order to enhance the crew's personal safety awareness of falling from height and lifting operations.

6.2 A Hong Kong Merchant Shipping Information Note should be issued to promulgate the lessons learnt from this accident.

7. Submission

7.1 The draft investigation report, in its entirety, had been sent to the management company and the Master of *the vessel* for their comments.

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