Final Report

Missing of Fitter
From SRS RTM Zheng He
At Sea
On 26 December 2024

TIB/MAI/CAS.187

Transport Safety Investigation Bureau
Ministry of Transport
Singapore

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The Transport Safety Investigation Bureau of Singapore

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ABBREVIATIONS

2E	Second Engineer
3O	Third Officer
ASD	Able Seafarer Deck
BSN	Bosun
CDWT(P)	Clean Dirty Water Tank port side
CE	Chief Engineer
CO	Chief Officer
DC	Deck Cadet
DTSM	Deck Trainee Seaman
E/R	Engine Room
FTR	Fitter
ISM Code	International Safety Management Code
MRCC	Maritime Rescue Coordination Centre
OS	Ordinary Seaman
PTW	Permit to Work
RA	Risk Assessment
RZH	RTM Zheng He
SAR	Search-and-Rescue
SMS	Safety Management System
TBT	Toolbox Talk

SYNOPSIS

On 26 December 2024, the Singapore registered Cape-sized bulk carrier RTM Zheng He was underway transiting through the Sulu Sea on a ballast voyage from Huang Hua (China) to Dampier (Australia).

The Fitter (FTR) went missing after agreeing to part ways with his assistant, the Deck Trainee Seaman (DTSM), when they were walking towards the Bosun Store to collect the newly prefabricated parts (rest pads) required for an assigned task at the port side gangway. Once the FTR was found to be missing, a search was promptly initiated onboard, and search and rescue efforts were carried out over nearly three days involving vessels in the vicinity, the FTR was not located and remained missing.

The Transport Safety Investigation Bureau of Singapore classified the occurrence as a very serious marine casualty.

It was reported that no shipside railings, branches or chains were found opened at the port side gangway area and on the main deck. The rest pads that the FTR was to collect remained in the Bosun Store.

The investigation revealed that the FTR was reportedly to be in a positive mood and did not display any signs of abnormality prior to his disappearance and there was no indication of unusual activity in his cabin. It is thus deemed the FTR had unlikely gone missing intentionally.

The investigation team reviewed the circumstances surrounding the FTR's disappearance, and in the absence of evidence and eyewitnesses, the investigation team is not able to determine how the FTR had gone missing.

Nevertheless, the investigation team noted an incidental finding that while the repair work at the gangway did not entail the donning of safety harness, it is noted in general, working near or at the shipside with an open gap when the ship was underway presents a potential risk of failing overboard. This incidental finding is made in the context of general safety practice and does not imply the determination of cause for this occurrence.

VIEW OF VESSEL

RTM Zheng He (*Source*: MarineTraffic)

DETAILS OF VESSEL

Name	RTM Zheng He (RZH)
IMO number	9591337
Classification society	Nippon Kaiji Kyokai
Ship type	Bulk carrier
Year built	2012
Owner / ISM Manager (Company)	Rio Tinto Shipping Asia Pte Ltd / Anglo Eastern Maritime Services Pte Ltd
Gross tonnage	106,796
Length overall	299.9m
Breadth	50m
Designed Draft	18.39m
Summer Freeboard	6.515m
Main engine(s)	MAN 6S70ME C-8
Propellers	1 fixed pitch

1 FACTUAL INFORMATION

All times used in this report are Ship Mean Time (SMT) unless otherwise stated. The SMT is eight hours ahead of Coordinated Universal Time (UTC + 8H).

1.1 Narrative

1.1.1 On 18 December 2024, the Singapore registered bulk carrier, RZH, departed from Port of Huanghua (China) on a ballast voyage to the Port of Dampier (Australia) with an estimated time of arrival on 2 January 2025.

1.1.2 On the morning of 26 December 2024, RZH was transiting through the Sulu Sea at about 13.5 knots. The saltwater drafts were 7.29m (forward), 8.02m (midship) and 9.08m (aft). The saltwater freeboards were 22.12m (forward), 16.89m (midship) and 15.83m (aft).

1.1.3 From 0800H to 0815H, the Chief Officer (CO) conducted a Toolbox Talk (TBT) for the deck crew[1] for five tasks (**Figure** 1a) to be carried out and the locations of their tasks (**Figure** 1b).

	TASKS TO BE CARRIED OUT	*Personnel assigned*
1	Painting of CDWT P	BSN, AB1,AB3
2	Hydroblasting on No. 7 and No. 4 Hatch sides and coamings	Painters
3	Pumping out bilges and changing burlap	Bsn,ab1,ab3, OS
4	Painting of No. 7 and No. 4 Hatch sides and coamings	Painters, DTSM,AB2
5	Replacing rest pads for port side gangway	FTR,OS, DTSM

Figure 1a – List of tasks to be carried out on 26 December 2024
(*Source:* the Company, annotated by TSIB)

[1] DC, BSN, FTR, ASD1 (AB1), ASD2 (AB2), ASD3 (AB3), OS, DTSM, Painter 1 and Painter 2

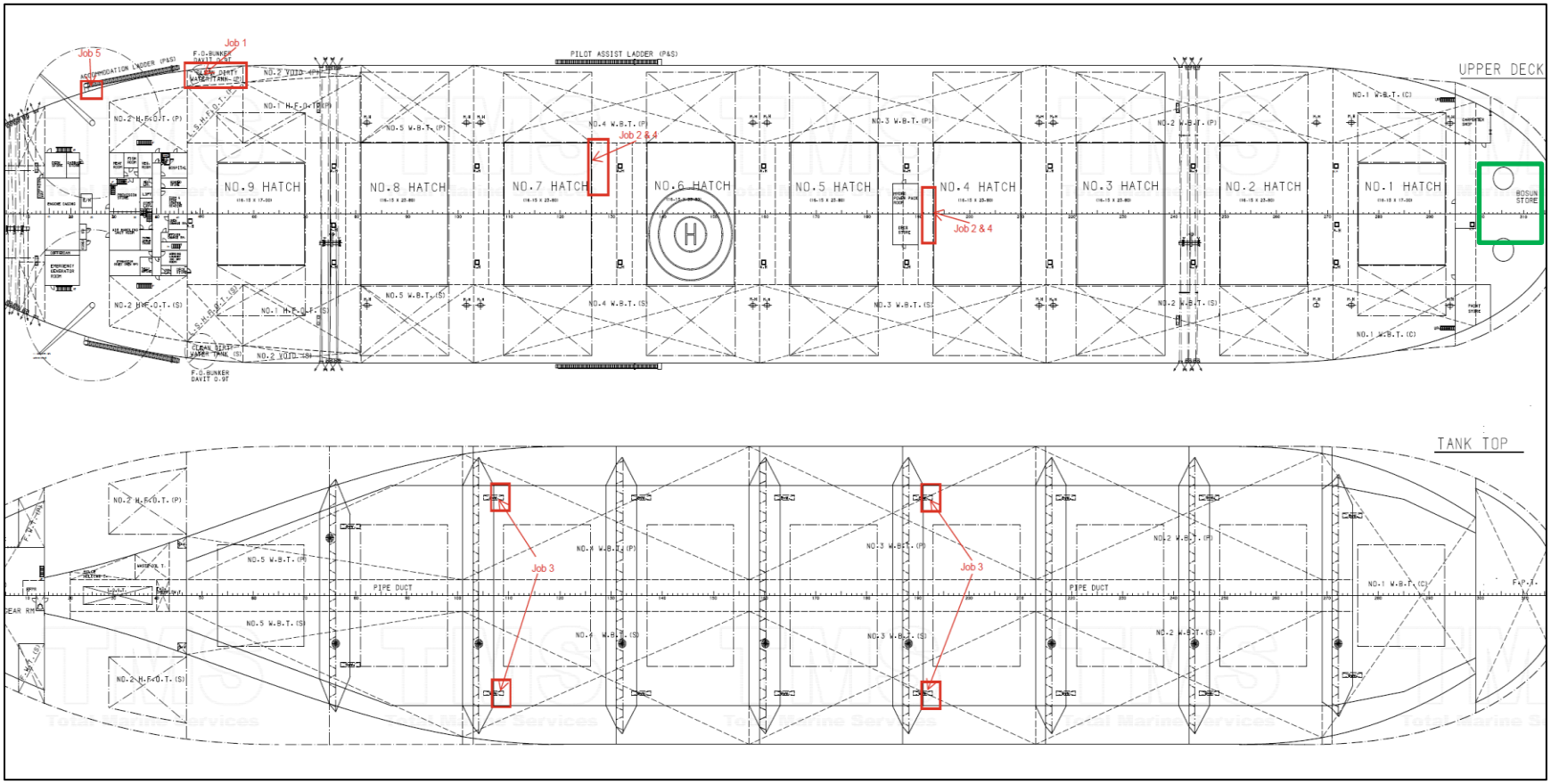

Figure 1b – Location of tasks assigned to deck crew in red annotations.
(*Source*: the Company. Green annotation of Bosun Store by TSIB)

1.1.4 According to the deck crew, during the daily TBT, the CO explained to the crew on the nature of their tasks assigned and emphasised on the importance of personal safety while performing these tasks.

1.1.5 Although not captured in **Figure 1a**, according to the CO, the DTSM was assigned two tasks. The DTSM's primary assignment was first to assist the FTR with task 5 and take instructions from the FTR regarding task 5. The CO also assigned the DTSM to support task 1 by maintaining a lookout at the entrance of the Clean Dirty Water Tank port side [CDWT(P)].

1.1.6 The DTSM's involvement in task 1 was conditional and to be undertaken only after the FTR required no further assistance from the DTSM for task 5.

1.1.7 For task 5, the FTR was assigned to crop and renew the damaged rest pads used for the port side gangway (**Figure** 2) with the assistance from the Ordinary Seaman (OS) and DTSM. The OS was to help with keeping a fire watch, while the DTSM was to assist the FTR in gathering tools for the task.

Figure 2 – Location of the rest pads at the port side gangway with annotation (*Source*: the Company)

1.1.8 The deck crew, Able Seafarer Deck (ASD)1 and ASD3, before commencing their assigned tasks, assisted the DTSM in connecting an air motor[2] to the port

[2] The port side gangway was operated by air driven motor.

side gangway while the FTR was preparing the working tools.

1.1.9 The ASD1 also assisted the DTSM to transfer the gas bottles to the port side gangway for welding. After connecting the air motor, the ASD1 and ASD3 left the port side gangway and went to the Bosun Store (at the forecastle area) to cut burlaps[3] for cargo hold 1, while awaiting the CDWT(P) tank to be ventilated for their later entry for painting works.

1.1.10 Upon arrival at the Bosun Store, the ASD1 and ASD3 found the OS[4] inside and already engaged in cutting the burlaps.

1.1.11 According to the CO, ASD3 and DTSM, there were no shipside railings, branches, or chains opened at the port side gangway area while the crew swung out the gangway.

1.1.12 Back at the port side gangway, the FTR and DTSM then proceeded to remove the lashings[5] secured on the port side gangway before lowering the gangway from its stowed position. The investigation team spoke with the DTSM, and he recalled that the gap was approximately half metre.

1.1.13 This half metre gap would provide the FTR with access to weld the new rest pad by standing on a step stool from the inboard side. The DTSM shared with the investigation team that the step stool was a two-step design, but it was not prepared and brought on-site on the morning of 26 December 2024.

1.1.14 According to the Company, the gangway was swung approximately 10 degrees outward from its stowed position, (**Figure** 3) against the rest pad.

[3] Burlaps can be used to separate the cargo, or place above the bilge to prevent coarser cargo particles from entering the bilge well and blocking the bilge system.
[4] According to the OS, the DTSM would call him through walkie-talkie to replace the DTSM for assisting the FTR for the rest pads welding as he was the usual buddy of the FTR and had experience of following FTR for repair work. The DTSM was inexperience for repair work.
[5] Ratchet straps.

Figure 3 – View of the gap after the port side gangway was swung out.
(*Source*: the Company)

1.1.15 After the port side gangway was swung out, the FTR and DTSM proceeded to the Bosun Store to collect the new rest pads.

1.1.16 Concurrently on the main deck between 0815H and 1000H, two Painters (Painter 1 and Painter 2), with full face shield and ear protection, were carrying out hydro-blasting on deck port side in way of cargo hold 7 and cargo hold 4 cross-deck respectively.

1.1.17 At approximately 0851H, a Deck Cadet (DC) who was standing by at the entrance of the CDWT(P), heard water dripping inside the CDWT(P). Knowing that the DTSM was nearby at the port side gangway, the DC called the DTSM via walkie-talkie to assist in investigating the leak in the CDWT(P). By this time, the FTR and DTSM were between cargo hatch 7 and 8 [near the CDWT(P)] when the DTSM received the call from the DC.

1.1.18 According to the DTSM, he informed the FTR about the DC's request for assistance and asked if the FTR required further assistance from the DTSM for task 5 (**Figure** 1a). The FTR agreed for the DTSM to assist the DC and to assist with task 1 (**Figure** 1a). The FTR then continued towards the Bosun Store alone. That was the last physical interaction anyone had with the FTR.

1.1.19 The DTSM informed the investigation team that there was no follow up from

the FTR for the DTSM to return to assist the FTR after investigating the leak in the CDWT(P).

1.1.20 At approximately 0855H, the DTSM was unable to find the source of the leak and requested the Bosun's (BSN) assistance via walkie-talkie. At this time, the BSN was assisting the Painters to troubleshoot the power trip of a hydro-blaster. Before the BSN could respond, the FTR intervened via walkie-talkie and suggested that the leak could be originating from the dump valve[6].

1.1.21 No crew saw the FTR on the main deck or in the Engine Room (E/R) or heard a walkie-talkie call from the FTR from 0855H onwards on 26 December 2024.

1.1.22 After the hydro-blaster was repaired, the BSN proceeded to the CDWT(P) to assist the DTSM with locating the leak. Around the same time, the CO was alerted by the DC about the leak and went to the CDWT(P). The leak was then stopped by tightening the dump valve located slightly ahead of the CDWT(P) on the main deck. The CO and DC then returned to the accommodation, while the BSN proceeded to supervise other ongoing tasks on the main deck.

1.1.23 At approximately 0922H, the ASD1 and ASD3 entered the CDWT(P) for painting. Noting the last communication with the FTR, around 0851H, where the FTR reportedly did not need further assistance from the DTSM, the DTSM proceeded to the additional task (task 1) of keeping a lookout[7] for both the ASD1 and ASD3 at the entrance of CDWT(P).

1.1.24 At approximately 1007H, the ASD1 and ASD3 completed their painting and came out of the CDWT(P) and went for their routine morning coffee break[8], together with the DTSM, before returning to the main deck at about 1034H.

1.1.25 At approximately 1034H, as the lookout task had ended, the DTSM went to look for the FTR for further instructions as there had been no communications about calling the OS to commence the hot work on the port side gangway rest pads.

1.1.26 The DTSM went to the port side gangway to look for the FTR but was unable to locate him. The DTSM attempted to contact the FTR via walkie-talkie but received no response. The DTSM informed the BSN who was also trying to

[6] The dump valve allows seawater in the ballast tanks to be discharged to the sea by gravity without using the ballast pump.
[7] Lookout designated to man the entrance to the space as stated in the Company's PTW for entry to an enclosed space.
[8] From 1000H to 1030H.

contact the FTR via walkie-talkie to no avail.

1.1.27 Between 1035H and 1113H, the DTSM searched the main deck area, Bosun Store and E/R workshop but was unable to locate the FTR. The DTSM updated the BSN before proceeding to check the FTR's cabin.

1.1.28 At approximately 1113H, the DTSM reported to the CO that the FTR was missing. The CO tried calling the FTR via walkie-talkie but there was no response. At about 1120H, the CO went to the bridge asking the Third Officer (3O) if he saw the FTR. The 3O replied that he did not see the FTR since the morning.

1.1.29 At approximately 1124H, the CO then informed the Master that the FTR was missing after searching around the port side gangway, main deck, E/R workshop and accommodation.

1.1.30 At approximately 1127H, the Master came to the bridge. After confirming with the Chief Engineer (CE) that the FTR was not inside the E/R, the Master raised the general alarm and at approximately 1200H turned the ship on a reciprocal course towards the last reported position where the FTR was heard from the walkie-talkie.

1.1.31 At the same time, all crew mustered and formed teams to conduct a thorough search of the vessel as per the Company's procedures (Vessel Search Checklist). The Company was informed about the missing of the FTR. The search was ended at approximately 1415H, the FTR could not be located.

1.1.32 Search teams on the main deck looked for signs of missing tools or other evidence indicating a person may have fallen overboard but found nothing. There were no traces of any foot trails. No railings were bent or damaged along the way to the forward of port side main deck. The walkie-talkie used by the FTR was not found during the search on the main deck.

1.1.33 The CO informed the investigation team during the interview that an inventory of items in the Bosun Store was taken at approximately 1333H, the newly prefabricated rest pads to be used for the portside gangway remained in the Bosun Store.

1.1.34 At approximately 1755H, the Master, CE, BSN and DC entered the FTR's cabin, the FTR's walkie-talkie was not there and there were no abnormalities

found.

1.1.35 Whilst RZH was on the reciprocal course to search for the missing FTR, a mayday Man Overboard broadcast was made on VHF Ch. 16 and Sat-C at about 1201H and 1257H respectively. Subsequently, Search-and-Rescue (SAR) efforts for the missing FTR were coordinated by the Maritime Rescue Coordination Centre (MRCC) Philippines and assisted by vessels in the vicinity. Several distress messages and alerts were being sent out by RZH through RZH's shipboard Global Maritime Distress and Safety System (GMDSS) equipment (VHF and Sat-C).

1.1.36 The MRCC Philippines and vessels in the vicinity assisted in the SAR operation for the missing FTR from 26 December 2024 to 29 December 2024.

1.1.37 On 29 December 2024 at about 1124H, RZH terminated its SAR operations and resumed its voyage, following instructions from MRCC Philippines. The FTR remained missing.

1.2 The vessel

1.2.1 RZH was a Cape-sized bulk carrier built in 2012 and has been under the same ISM Manager (Company) since its delivery. RZH was primarily trading between Australia and China.

1.2.2 According to the Company, the distance between the CDWT(P) entrance (where the DTSM was keeping the lookout at the time), and the Bosun Store was about 250m (**Figure** 4a). The Company and the DTSM shared that the view of the Bosun Store from the CDWT(P) was blocked by deck structures.

1.2.3 The Company also shared that the distance from the port side gangway to the CDWT(P) entrance was about 23m (**Figure** 4b) and the DTSM was likely unable to clearly see the port side gangway from his position at the CDWT(P) as his line of sight was obstructed by the accommodation structure.

1.2.4 However, according to the DTSM, he should be able to see the port side gangway from his position at the CDWT(P) entrance, had the FTR returned to the port side gangway

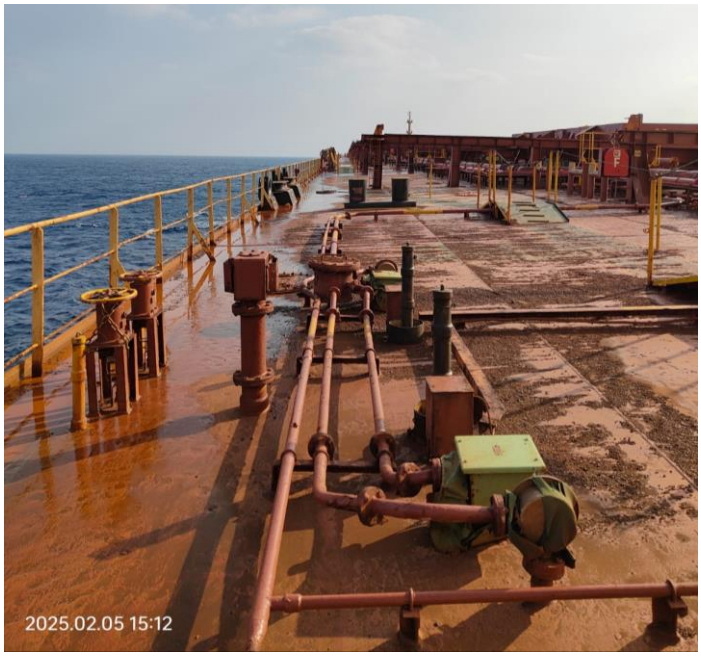

Figure 4a – View of the Bosun Store, located at the far end of the picture, from the CDWT (P) was blocked by deck structures. (*Source*: the Company)

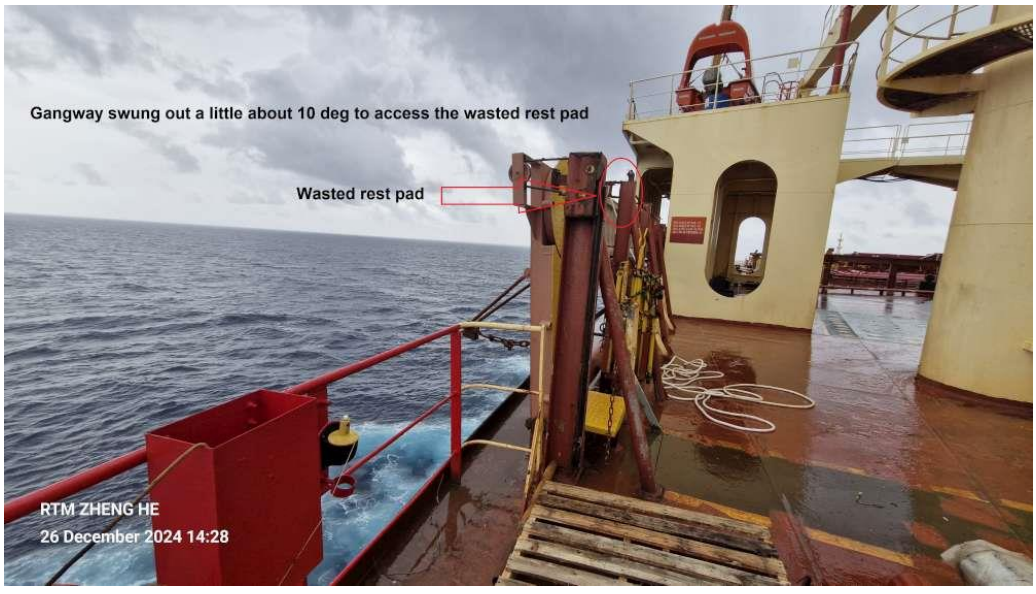

Figure 4b – View from the port side gangway looking forward to the CDWT(P). (*Source*: the Company)

1.3 The Company's Safety Management System (SMS) procedures

1.3.1 The Company's SMS procedures defined working at heights as any height of 1.8m and above where there would be a risk of fall injury.

1.3.2 A Permit to Work (PTW) was not required for using stairways, gangways, accommodation ladders, for access or egress. However, if working at height on any of these structures, there was a procedure to be followed.

1.3.3 The Company's SMS procedures defined working overside as any work being carried out overside or in an exposed position where there would be a risk of falling overboard into water. Should working overside be required, a corresponding PTW was required, and the PTW procedures were to be followed.

1.4 FTR's task on the port side gangway

1.4.1 The replacement of wasted rest pads for the port side gangway with the newly prefabricated rest pads required PTW for hot work which the Master was approved by the Company on 25 December 2024. The Company highlighted in its approval that the hot work was to take all precautionary measures stated in the Risk Assessment (RA), amongst others, was for the FTR to wear a safety harness, if required.

1.4.2 Additionally, the PTW for hot work and RA prepared by the CO and Second Engineer (2E) for the hot work on 26 December 2024 were acknowledged and signed by all the deck crew including the FTR.

1.4.3 A PTW for working at height was deemed not required and not issued on the occurrence day as the working height for repairing the damaged rest pads on the port side gangway was less than 1.8m.

1.4.4 On the morning of 26 December 2024, the CO recalled that at the TBT he highlighted the donning of safety harness to the FTR as the vessel was underway (moving). The safety harness was not prepared on-site on 26 December 2024, and the FTR was not wearing any additional fall prevention safety equipment.

1.4.5 Based on RZH's records, the FTR had carried out a similar task of replacing rest pads at the starboard side accommodation ladder (used by pilot) on 11

December 2024, and a PTW for hot work was issued. This task was neither considered working at height nor working overside. There was no PTW for working at height issued for the replacement of rest pads on 11 December 2024 as the height was less than 1.8m.

1.4.6 According to the CO, there were no issues faced and reported by the FTR in replacing the rest pads on the starboard side accommodation ladder on 11 December 2024.

1.5 About the FTR

1.5.1 The FTR was seen in good spirits, and none of the crew members noticed any indication of distress during the Christmas Eve party on 24 December 2024. The FTR was a happy person and had a good relationship with the ship's crew.

1.5.2 Past performance records of the FTR in 2023 and 2024 indicated that the FTR was hardworking, sincere and diligent, with an initiative to improve the work process. While technically sound and efficient, there was room for improvement in his fabrication, repair tasks, welding skills and quality.

1.5.3 The interviews with relevant deck officers and deck crew revealed that the FTR and deck crew got along without any issues; there was no indication of animosity among them.

1.5.4 On the occurrence day, the FTR was reported to be in a pleasant mood by the deck crew during the TBT.

1.5.5 There was no evidence of medication found in the FTR's cabin during the inspection conducted by the Master and accompanying crew members.

1.5.6 The medical report issued to the FTR on 13 September 2024 indicated the FTR was fit for sea service without limitations or restrictions.

1.6 The other crew qualifications and roles

1.6.1 RZH had a total of 25 crew[9] including the Master at the time of the occurrence.

[9] 12 from India, 12 from the Philippines, one from Ukraine

Rank	Nationality	Age	STCW Qualification	Duration on board (months)	Experience on bulk carrier (years)	In-rank service (years)	Time with Company (years)
Master	Indian	38	II/2.1	1.0	16	1.25	17
CO	Ukrainian	55	II/2	3.9	12	9.75	16
BSN	Filipino	46	II/5, II/4	0.3	9.5	1.81	10
FTR	Filipino	43	III/5, II/4, NC II	2.8	5.6	3.6	9.74
OS	Filipino	26	II/4	0.3	0.1	0.26	0.75
DTSM	Filipino	22	BT COP[10]	7.3	0.6	0.6	0.6

Table 1 – Crew qualifications

1.6.2 The deck crew were Filipinos, except for the two Painters who were of Indian nationality. According to the deck officers, communications on walkie-talkie among the deck crew were often in their native language and Tagalog was heard over on the bridge on the morning of the occurrence.

1.6.3 English was used when speaking to deck officers. Based on the tone of the deck crew's voices on the morning of the occurrence day, the CO and 3O informed the investigation team that they did not notice any animosity or signs of conflict among the deck crew in their communications.

1.6.4 According to the crew interviewed, the communications among officers and crew were well understood, and they had a cordial relationship with the officers. The relationship onboard was pleasant, and all the crew got along well.

1.6.5 Ship's records indicated that the work / rest hours of all crew including the FTR were in compliance with the MLC and STCW requirements.

[10] BT COP – Certificate of Proficiency in Basic Training

1.7 Meteorological information

1.7.1 The Bridge logbook recorded that, on the morning of occurrence day, between 0800H and 1200H, the wind was north-east to north by east of about 7 to 10 knots (Beaufort Force 3), calm seas, gentle breeze, low swell (less than 1m), partly cloudy sky and good visibility.

1.7.2 According to the bridge watchkeeping officer, there was no experience of rolling or pitching encountered in the morning on the occurrence day.

1.7.3 Over the course of SAR operation from the afternoon of 26 December 2024 to the time of terminating the SAR operations and resuming RZH's voyage on 29 December 2024, the Bridge logbook recorded a change of weather, i.e. north-east to north-westerly winds between 7 and 16 knots (Beaufort Force 4), moderate breeze, slight sea. Visibility remained good. The seawater temperature was at approximately 31°C.

1.8 Additional information

1.8.1 The Company informed the investigation team that the FTR's NOK was notified of his missing occurrence on 26 December 2024. The NOK shared that the FTR spoke with her the day prior on 25 December 2024 and was in a positive mood. She did not observe any signs suggesting the FTR was distressed or displaying irregular behaviour during the call with the FTR.

1.8.2 The investigation team noted from interview with the crew that the FTR's disappearance caused an emotional impact as they were unable to understand the rationale behind the FTR's disappearance as he was always in a pleasant mood. The Company subsequently arranged for a counselling session for the crew when the vessel was in port in January 2025.

1.8.3 The Company shared that they were also implementing guidelines aimed to enhance crew welfare and provision of support and resources to the seafarers.

2 ANALYSIS

There were no witness accounts on how the FTR had gone missing on board RZH. Nevertheless, the investigation team analysed the likelihood of the missing occurrence as an intentional act or work-related.

2.1 Intentional act

2.1.1 The FTR was medically fit for sea service without limitations or restrictions. He was reportedly having a good working relationship with the officers and other crew members. Based on the NOK's account, the FTR was in positive mood when having a call home the day before Christmas Day. The FTR was also reportedly to be in a pleasant mood during the morning TBT and did not display any signs of distress prior to his disappearance. There was also no indication of unusual activity in his cabin during the inspection. Thus, the possibility of the FTR's disappearance being an intentional act appeared unlikely.

2.2 Work-related

2.2.1 The FTR was alone and last seen walking towards the Bosun Store after the DTSM separated from him to assist the DC. Thereafter, the FTR was not seen by any other crew.

2.2.2 After parting ways with the DTSM, the FTR was last heard via the walkie-talkie providing inputs on the possible cause of leak in the CDWT(P) to the DTSM at about 0855H. When the DTSM was trying to locate the FTR after the coffee break at about 1034H, the FTR was nowhere to be found. Hence, the FTR likely went missing between 0855H and 1034H.

2.2.3 As the newly prefabricated rest pads remained in the Bosun Store, it is likely that the FTR did not enter the Bosun Store and collect the newly prefabricated rest pads. The investigation team could not establish where the FTR had gone while he was proceeding to the Bosun Store after parting the DTSM.

2.2.4 There were reportedly no shipside railings, branches or chains found opened at the port side gangway area and on the main deck. It is noted that there was no safety harness prepared for the task of repairing the damaged rest pads. Although the Company's SMS procedures did not require a PTW for working at height for this task as the height for the damaged rest pads as the port side

gangway was less than 1.8m, working at the gangway, located at the shipside with a half metre gap (according to the DTSM's account), introduced a potential risk of falling overboard when working at the location, particularly when the ship was underway. Nevertheless, this incidental finding is made in the interest of enhancing safety practices and does not imply a determination of cause for this occurrence, which remains undetermined.

2.2.5 While the investigation team could not establish if the FTR had returned to the gangway after parting ways with the DTSM and fallen overboard, it is deemed that working near or at the shipside generally presents a potential risk of falling overboard. As a general safety measure, it would be desirable for crew working near or at the shipside to wear a safety harness to mitigate this potential risk.

2.3 Assignment of lookout duty

2.3.1 An incidental observation arising from this occurrence, although not contributing to the missing of the FTR, was the assignment of lookout for enclosed space entry.

2.3.2 As mentioned in paragraph 1.1.5, the CO had assigned the DTSM to be a lookout at the entrance of CDWT(P) while ASD1 and ASD3 performed painting work inside the CDWT(P). However, this lookout assignment was not documented in the list of tasks in **figure 1a**. In addition, this lookout assignment of DTSM was on the condition that the FTR no longer required the DTSM to assist in the repair work of the gangway.

2.3.3 The role of lookout for enclosed space entry is to ensure the safety of crew working inside. It is desirable that the crew assigned as a lookout be documented clearly to avoid ambiguity.

3 CONCLUSIONS

From the information gathered, the following findings are made. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

3.1 The FTR was tasked to repair the damaged rest pads at the port side gangway and was assisted by the DTSM. While on the way to the Bosun Store to collect the prefabricated rest pads the DTSM and FTR parted ways so that the DTSM could assist the DC to investigate the source of the leak in the CDWT(P). However, there was no evidence that the FTR had gone to the Bosun Store as the newly prefabricated rest pads were not collected.

3.2 The FTR was likely went missing sometime between 0855H and 1034H, when he was last heard over the walkie-talkie providing inputs to fix the leak in the CDWT(P) until the DTSM was looking for the FTR after the coffee break.

3.3 The FTR was reportedly to be in a positive mood when calling the NOK the day before Christmas Day. He had a good working relationship with the officers and other crew members and was in a pleasant mood during the morning TBT on 26 December 2024. He did not display any signs of distress prior to his disappearance and there was no indication of unusual activity in his cabin. It is unlikely that the FTR had gone missing intentionally.

3.4 The investigation team reviewed the circumstances surrounding the FTR's missing occurrence, and in the absence of evidence and eyewitnesses, the investigation team is not able to determine how the FTR had gone missing.

3.5 While the repair work at the gangway was less than 1.8m and did not entail the donning of a safety harness, it is noted in general, working near or at the shipside with an open gap when the ship was underway presents a potential risk of falling overboard. This incidental finding is made in the context of general safety practice and does not imply the determination of cause for this occurrence.

3.6 An incidental observation, although not contributing to the missing of FTR, was that the assignment of the DTSM as a lookout for enclosed space entry was not clearly documented.

4 SAFETY ACTIONS

Arising from discussions with the investigation team, the Company has taken the following safety actions.

4.1 The Company installed closed-circuit television (CCTV) cameras to cover vessel's main deck including shipside, E/R and steering gear spaces for continuous monitoring and recording of all activities on deck and the E/R. The installation of the CCTV cameras across its fleet of vessels was completed in the first week of April 2025.

5 SAFETY RECOMMENDATIONS

A safety recommendation is for the purpose of preventive action and shall in no case create a presumption of blame or liability.

For the Company (the ISM Manager of RZH)

5.1 To ensure that crew don a safety harness when working near the shipside, or on tasks where there is a risk of falling overboard. **[TSIB Recommendation RM-2025-004]**

5.2 To ensure that all crew assigned for tasks involving enclosed space entries be clearly identified in relevant working documentation. **[TSIB Recommendation RM-2025-005]**