

Final Report

DEATH OF SEAFARER AFTER FALLING FROM HEIGHT ONBOARD XING XI HAI IN SOUTH ATLANTIC OCEAN ON 13 FEBRUARY 2024

TIB/MAI/CAS.157

Transport Safety Investigation Bureau
Ministry of Transport
Singapore

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The Transport Safety Investigation Bureau of Singapore

The Transport Safety Investigation Bureau of Singapore (TSIB) is the air, marine and rail accidents and incidents investigation authority in Singapore. Its mission is to promote transport safety through the conduct of independent investigations into air, marine and rail accidents and incidents.

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ABBREVIATIONS

ASD	Able Seafarer Deck
CPR	Cardio-pulmonary resuscitation
CO	Chief Officer
H	Hour
kW	Kilowatt
m	Metre
min	Minute
mm	Millimetre
MLC	Maritime Labour Convention
MSA	Maritime Safety Administration
MT	Metric Tonne
NOK	Next of Kin
PA	Public Address
PPE	Personal Protective Equipment
PRC	People's Republic of China
P&I	Protection and Indemnity Insurance ¹
SMS	Safety Management System
STCW	Standards of Training, Certification, and Watchkeeping for Seafarers
XXH	Xing Xi Hai

¹ Mutual maritime insurance provided by a P&I Club.

SYNOPSIS

On 13 February 2024 the bulk carrier Xing Xi Hai, was on a loaded voyage sailing in the South Atlantic Ocean and was bound for the discharging port Leixões, Portugal.

The deck crew members were tasked to paint the bulkheads of no. 4 cargo hold and clean oil traces on the surfaces of steel coils cargo stored in the no. 4 cargo hold. During the preparation for the tasks, one of the crew members, Able Seafarer Deck 4 (ASD4), was seen to have fallen off from the no. 4 deck crane's post external ladder at a height of about 8m. Medical first aid was immediately rendered but could not save the ASD4.

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

The investigation determined that there was no task planned for the no. 4 deck crane and the tasks of painting the bulkheads and cleaning of oil traces on the cargo of steel coils surface did not require the ASD4 to be at the no.4 deck crane. The investigation revealed that the ASD4 had climbed the external ladder² of the no. 4 deck crane without the knowledge of the other crew members.

The investigation could not determine the reason for the ASD4 to be at the no.4 deck crane and how he had fallen from the deck crane.

² The external ladder was meant for emergency access in an event where the internal ladder of the no. 4 deck crane could not be used.

VIEW OF VESSEL



Figure 1 – Xing Xi Hai (Source: the Company)

DETAILS OF VESSEL

Name	Xing Xi Hai ³ (XXH)
IMO Number	9767065
Classification society	Nippon Kaiji Kyokai (ClassNK)
Ship type	Bulk Carrier
Year Built	2017
Owner / ISM Manager ⁴	SPDBFL No. One Hundred and Eighty-Three (Tianjin) Ship Leasing Co Ltd / Searise Shipmanagement Pte. Ltd.
Gross tonnage	34624
Length overall	199.99m
Breadth	32.25m
Designed Draft	12.92m
Summer Freeboard	5608mm
Main engine(s)	Mitsui 6550ME-B9.3 (1 x 7800kW)

³ XXH was flagged in Singapore at the time of the occurrence. She has been reflagged in Hong Kong, SAR of China, on 14 March 2024 after the occurrence.

⁴ The “ISM Manager” is hereafter referred to as the Company in this investigation report.

1 FACTUAL INFORMATION

All times used in this report are the Ship's Mean Time (SMT) unless otherwise stated. The SMT is one hour ahead of Coordinated Universal Time (UTC).

In the conduct of marine safety investigation into the circumstances surrounding this death occurrence, the investigation team reviewed information obtained from the Master, crew, and the Company.

1.1 Sequence of events

- 1.1.1 On 13 February 2024, XXH, laden with steel coils cargo, sailing in the South Atlantic Ocean (see **figure 2**), was heading for the discharging port Leixões, Portugal.

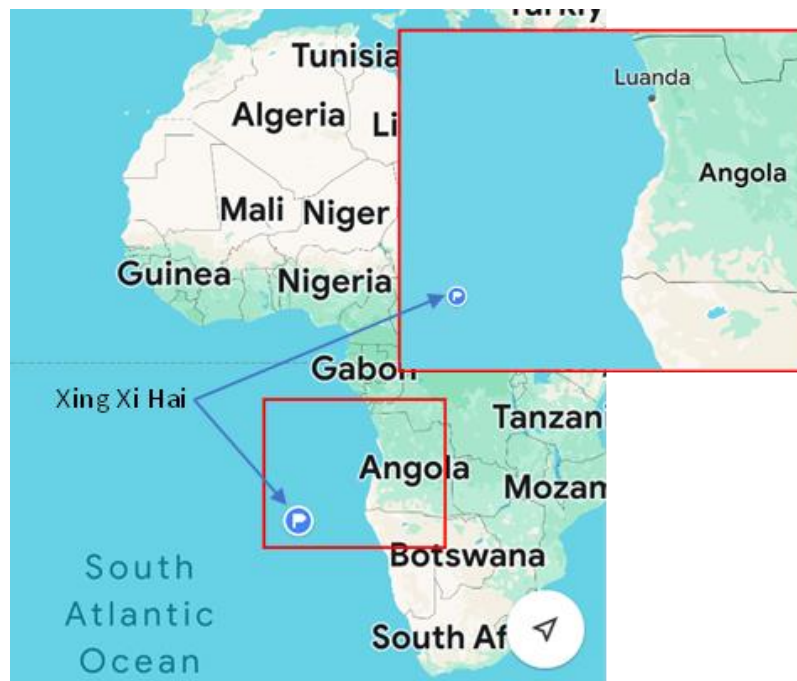


Figure 2 – XXH was about 750nm away from Luanda, Angola (Source: TSIB)

- 1.1.2 At about 0700H, the Bosun met with the Chief Officer (CO) who was keeping a navigational watch on the bridge. After having a toolbox meeting, the CO assigned the daily tasks to the Bosun for painting the bulkheads of no. 4 cargo hold, and cleaning oil traces (see **figure 3**) on the cargo (steel coils) surfaces stored in the same cargo hold. At about 0730H, after the meeting, the Bosun met four ASDs at the changing room and shared the job orders given by the

CO and instructed them to work together with him. In preparation for the tasks, the Bosun, together with the ASD1 and ASD3 went to the paint store to collect painting and cleaning tools⁵. The ASD2 was tasked to open the no. 4 hatch cover⁶. The ASD4 did not join the crew at the paint store, the Bosun assumed the ASD4 had gone on deck to the no. 4 hatch.



Figure 3 – Re-enactment of cleaning oil traces on the steel coil (*Source: the Company*)

- 1.1.3 At about 0740H, the Bosun and ASD1 were pushing a trolley with painting and cleaning tools on the upper deck port side from the paint store to the no. 4 hatch. The ASD3 returned to the accommodation to collect his water bottle which he had forgotten to bring along.
- 1.1.4 When the Bosun and ASD1 arrived at the location between the no. 4 and no. 5 hatch they heard a loud thumping sound from the direction of no. 4 deck crane. They quickly ran towards the no. 4 deck crane to investigate the source of the

⁵ The painting and cleaning tools consisted of a sack of used clothing rags, one empty 20-litre bucket, one 20-litre paint drum, two goose-neck scrappers, two 6-inch paint rollers, two safety harnesses, two extension poles for the pain rollers and a drum of paint thinner.

⁶ For natural ventilation of the cargo hold before entry.

sound. While ASD2 was on his way back to the Bosun’s store to stop the hydraulic pump after opening the no. 4 hatch cover, ASD2 saw the Bosun and ASD1 running towards the no.4 deck crane. ASD2 then headed in the same direction behind the Bosun and ASD1. Upon arriving at the no. 4 deck crane, the Bosun and ASD1 saw the ASD4 lying on deck next to no. 4 deck crane (see figure 4).

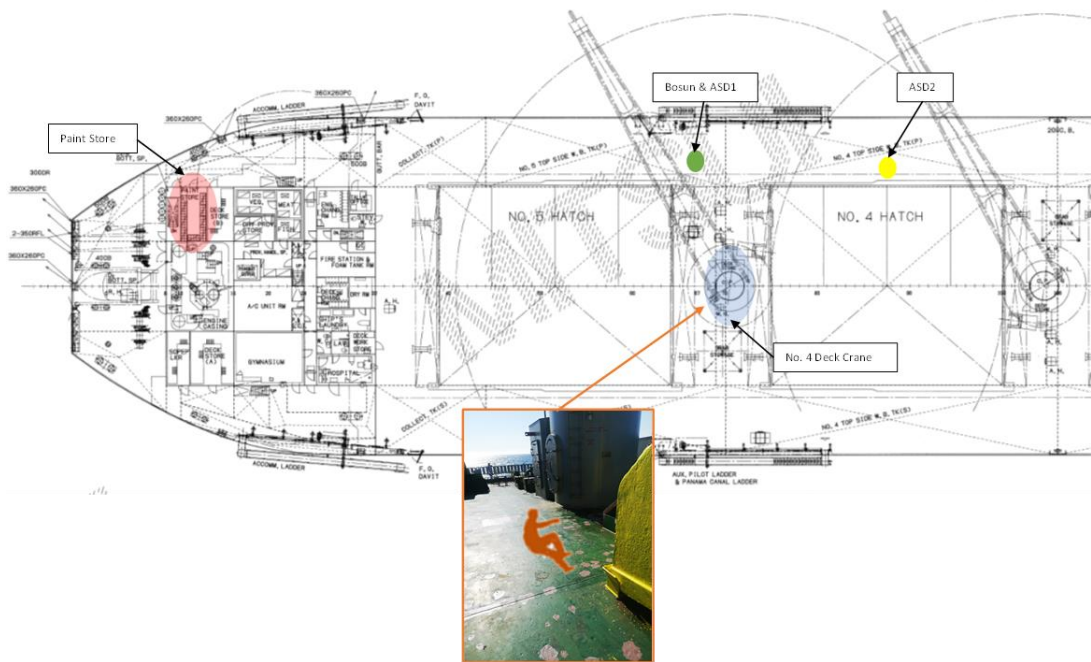


Figure 4 – The General Arrangement Plan showing the locations of the ASD4, paint store, no.4 deck crane, ASD2 and the location of the Bosun and ASD1 when the thumping sound was heard. (Source: the Company, colour shaded by the TSIB)

1.1.5 Separately, at about the same time (0802H), the Master, who was on the bridge saw⁷ a person fall off from the no. 4 deck crane’s post (see figure 5). The Officer of the Watch a third officer immediately made an announcement through the ship’s PA system requesting the CO to check on the fallen person after instructed by the Master. The CO, who was at the ship’s mess room quickly made his way to the location of the no. 4 deck crane after hearing the announcement.

⁷ The Master at the time could not ascertain who the person was and from which point on the no. 4 deck crane’s steel rung ladder the person had fallen. The Master could only estimate that the person had fallen from about three quarter’s height of the steel rung ladder.

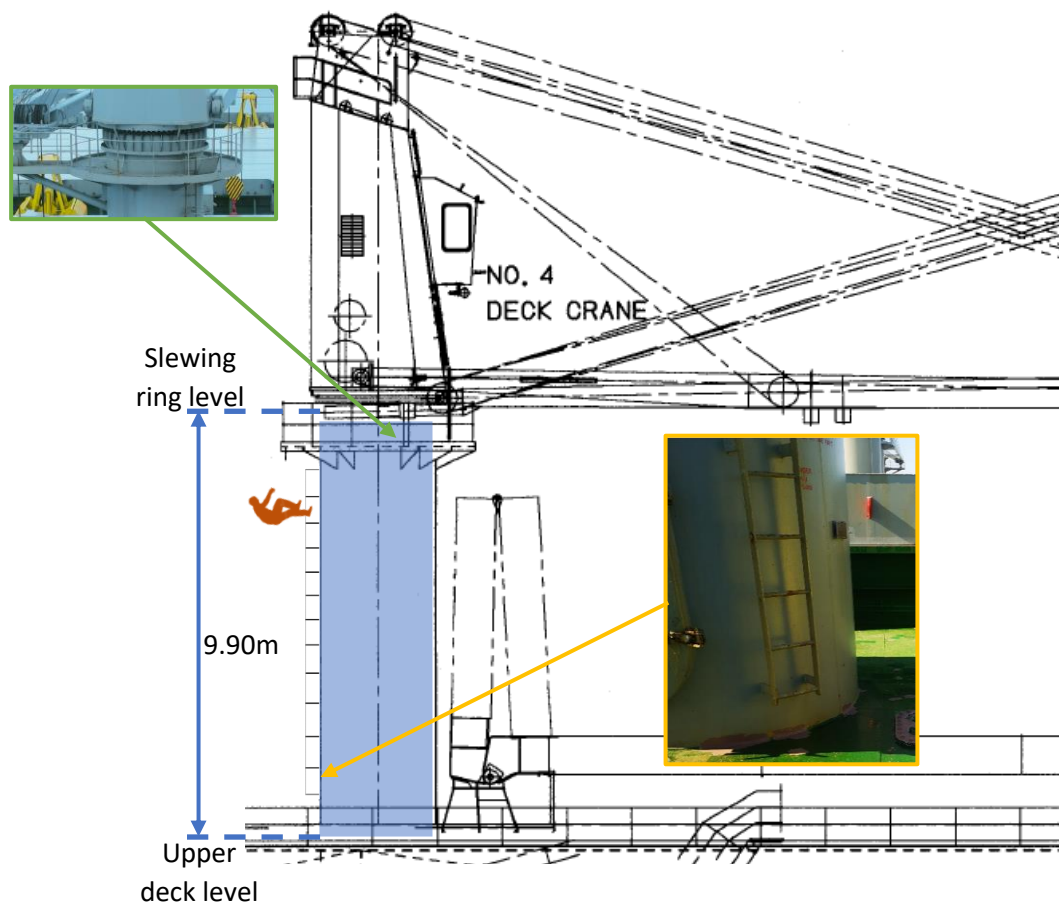


Figure 5 – Drawing of the no. 4 deck crane with the crane post shaded in blue⁸ (Source: the Company and annotated by the TSIB)

- 1.1.6 Upon arriving at the scene, the CO noticed that the Bosun, ASD1 and ASD2 were already there. The CO observed that the ASD4 had a fracture on his right ankle and was bleeding from his injured head and reported the ASD4's condition to the Master.
- 1.1.7 At about 0820H, the CO and crew transferred the ASD4 to the ship's infirmary with a stretcher. The Master reported the incident to the Company⁹ and the

⁸ Indicating a height of 9.90m from the upper deck to the slewing ring level of the no. 4 deck crane's post (shaded blue). A steel rung ladder (inset photo in yellow box) is affixed to the no. 4 deck crane's post, the steel rung ladder goes vertically upwards from the upper deck to the no. 4 deck crane's landing platform (inset photo in green box).

⁹ The Master also made a request for arranging a helicopter medical evacuation from the Company. The helicopter medical evacuation request was made but not confirmed by the P&I Club, likely because XXH was about 750nm from shore and the normal range of a helicopter was about 400nm.

Company in turn notified the P&I Club. While at the infirmary, the ship's crew administered first aid treatment to the ASD4 by cleaning the wound and attempting to stop the bleeding. During the administering of first aid, the ASD4 was conscious and in pain.

- 1.1.8 At about 0930H, the Master sought medical advice¹⁰ via teleconsultation from doctors ashore and continued monitoring the ASD4's condition and administering first aid treatment.
- 1.1.9 At about 1050H, after consulting the Company, the Master deviated the ship's course to the nearest port, Luanda, Angola to seek shore medical assistance.
- 1.1.10 At about 1330H, the ASD1 noticed that ASD4 was silent and had stopped his body movements¹¹. The ASD1, who was taking care of the ASD4, immediately notified the Master. When the Master, CO and Second Officer arrived at the infirmary, the Bosun was performing CPR on the ASD4 together with the ASD1, noting that the ASD4 was not breathing. Medical oxygen¹² was provided to the ASD4 while the crew were administering CPR to the ASD4.
- 1.1.11 At about 1350H, the ASD4 continued to show no vital signs and his body became stiff. The Master reported the ASD4's condition to the Company and was advised to resume the ship original route to Leixões, Portugal. The body of the ASD4 was placed in the ship's cold room.
- 1.1.12 On 29 February 2024, the ASD4's body was offloaded ashore at Leixões, Portugal after the vessel arrived.
- 1.2 The crew
 - 1.2.1 There were 21 crew from PRC onboard XXH at the time of the incident. Details of relevant persons are listed in **table 1**.

¹⁰ A teleconsultation service from the ETIC was arranged by the Company for its ship's masters to consult. The ETIC provides amongst others medical teleconsultation, discussion with masters and crew and medical repatriation on commercial flights or organising and chartering of emergency medical flights, dedicated to the shipping community in France and Africa. The medical advice included stopping the bleeding and appropriate actions to be taken if there was arterial bleed and cleaning and bandaging the wounds.

¹¹ Between 1130H and 1330H while monitoring the ASD4, the ASD1 saw the ASD4 moved his body slightly and heard the ASD4's groaning sound occasionally.

¹² 'Medical oxygen' or 'supplemental oxygen' is used for caring of patients in surgery, trauma, heart failure, asthma, pneumonia and maternal and childcare.

Rank Age	Master 51	CO 53	Bosun 41	ASD1 35	ASD2 37	ASD3 34	ASD4 44
Certificate held issued by MSA, PRC	STCW II/2 ¹³	STCW II/2	STCW II/5 ¹⁴	STCW II/5	STCW II/4 ¹⁵	STCW II/4	STCW II/4
Experience in rank (years)	7.3	10	0.33	3.2	1.1	0.6	0.4
Experience on similar type ship (years)	7.3	4	0.33	3.2	1.1	0.6	1.3
Service with company (years)	27.6	33	7.7	5.9	2.7	1.4	3.3
Service onboard (months)	5.5	4	4	7.5	4	7.5	5.4

Table 1 – (Source: the Company)

1.2.2 Prior to the occurrence, the work / rest hour records onboard XXH indicated that the Master and crew’s rest hours, in the past 24-hour and in the last 7-day period, were in compliance with the requirements of the STCW¹⁶ and MLC¹⁷ (tabulated in **table 2**).

¹³ STCW Code - A-II/2 Mandatory minimum requirements for certification of masters and chief mates on ships of 500 gross tonnage or more.

¹⁴ STCW Code - A-II/5 Mandatory minimum requirements for certification of ratings as able seafarer deck. Competence to perform the functions: Navigation at the support level, Cargo handling and stowage at the support level, Controlling the operation of the ship and care for persons on board at the support level and Maintenance and repair at the support level.

¹⁵ STCW Code - A-II/4 Mandatory minimum requirements for certification of ratings forming part of a navigational watch. Competence to perform the functions: Navigation at the support level.

¹⁶ STCW Code - A-VIII/1 Fitness for duty. 2 All persons who are assigned duty as officer in charge of a watch or as a rating forming part of a watch and those whose duties involve designated safety, prevention of pollution and security duties shall be provided with a rest period of not less than: .1 a minimum of 10 hours of rest in any 24-hour period; and .2 77 hours in any 7-day period.

¹⁷ Maritime Labour Convention, 2006 - Regulation 2.3 – Hours of work and hours of rest. The limits on hours of work or rest shall be as follows: (a) maximum hours of work shall not exceed: (i) 14 hours in any 24-hour period; and (ii) 72 hours in any seven-day period; or (b) minimum hours of rest shall not be less than: (i) ten hours in any 24-hour period; and (ii) 77 hours in any seven-day period.

Rank	Rest hours in 24-hour prior to the occurrence	Rest hours in 7-day prior to the occurrence
Master	15	110.5
CO	12.5	102.5
Bosun	16	111.5
ASD1	16	111.5
ASD2	16	111.5
ASD3	16	112
ASD4	16	111.5

Table 2 – (Source: the Company)

1.2.3 A Table of Shipboard Working Arrangement provided onboard indicated the Master and crew scheduled daily work hours, at sea and in port (see **figure 6**).

Position/Rank	Scheduled daily work hours at sea		Scheduled daily work hours in port	
	Watch keeping (from - to)	Non Watch keeping duties (From - to)	Watch keeping (from - to)	Non Watch keeping duties (From - to)
Master		0800-1200 1300- 1700		0800-1200 1300- 1700
Chief officer	0400-0800 1600-2000			0800-1200 1600-2000
Second officer	0000-0400 1200-1600		0000-0600 1200-1600	
Third officer	0800-1200 2000-2400		0600-1200 2000-2400	
Bosun		0800-1200 1300-1700		0800-1200 1300-1700
AB-1	0000-0400 1200-1600		0000-0400 1200-1600	
AB-3	0400-0800 1600-2000		0400-0800 1600-2000	
AB-2	0800-1200 2000-2400		0800-1200 2000-2400	
AB-4		0800-1200 1300-1800		0800-1200 1300-1700

Figure 6 – Master and crew (AB refers to the ASD) scheduled daily work hours (Source: the Company)

1.2.4 A Medical Certificate for Seafarer issued by MSA, People’s Republic of China

on 18 October 2022 indicated the ASD4 was duly qualified¹⁸ for sea service.

1.2.5 The Bosun and other ASDs had described the ASD4 as a quiet person who always kept to himself. They had not noticed any abnormal behaviour from the ASD4 prior to the incident.

1.2.6 The investigation team noted from the NOK of ASD4 that the ASD4 did not appear to have any issues relating to work or interactions with fellow crew members onboard. The ASD4 was keeping in touch with the NOK through messaging via a mobile chat and exchanging New Year greetings when he was off work during the period onboard XXH.

1.3 Cause of death

1.3.1 A death certificate issued by the Portugal's Civil Registry office did not indicate the cause of death. The ASD4's body was cremated on 15 March 2024 at Leixões, Portugal.

1.4 The vessel

1.4.1 XXH was a handymax size¹⁹ bulk carrier in tramp service plying between the Far East and Europe. XXH was capable of carrying solid bulk cargo (e.g. coal, iron ore, cement clinkers) and cargo units²⁰ (e.g. wire coils, steel coils).

1.4.2 XXH was issued a Certificate of Compliance by ClassNK on 21 December 2023 for the carriage of solid bulk cargoes, the Certificate was valid until 17 January 2027. Other statutory certificates required were also valid at the time of occurrence. XXH was also issued a Cargo Securing Manual (CSM) for the carriage of cargo units, endorsed by ClassNK on 25 October 2016.

1.5 No. 4 deck crane

1.5.1 The no. 4 deck crane onboard XXH was a hydraulic deck crane of 30MT maximum hoisting load (hook handling) with a 26m maximum working radius.

¹⁸ Meeting the requirements of the Maritime Labour Convention, 2006 - Regulation 1.2 – Medical certificate and STCW Code - A-I/9 Medical standards.

¹⁹ A way of categorising bulk carriers basing on ship's capacity, a handymax sized ship is typically about 35000MT-59000MT deadweight (DWT).

²⁰ Cargo unit is all other cargoes other than solid and liquid bulk cargoes – ClassNK.

It had 360 degrees slewing angle and served the no. 4 and no. 5 cargo holds for cargo loading / discharging.

1.5.2 The controls of the crane were in the deck crane cabin²¹ and was accessible through internal vertical ladder (ordinary access) located inside the deck crane's post. In an event of an emergency, where internal ladder could not be used, the crane operator could evacuate from the deck crane cabin to the upper deck, via series of external vertical steel rung ladder (emergency access) fitted (see **figure 7**). The crew onboard XXH were aware that the external vertical ladder was only for emergency use.

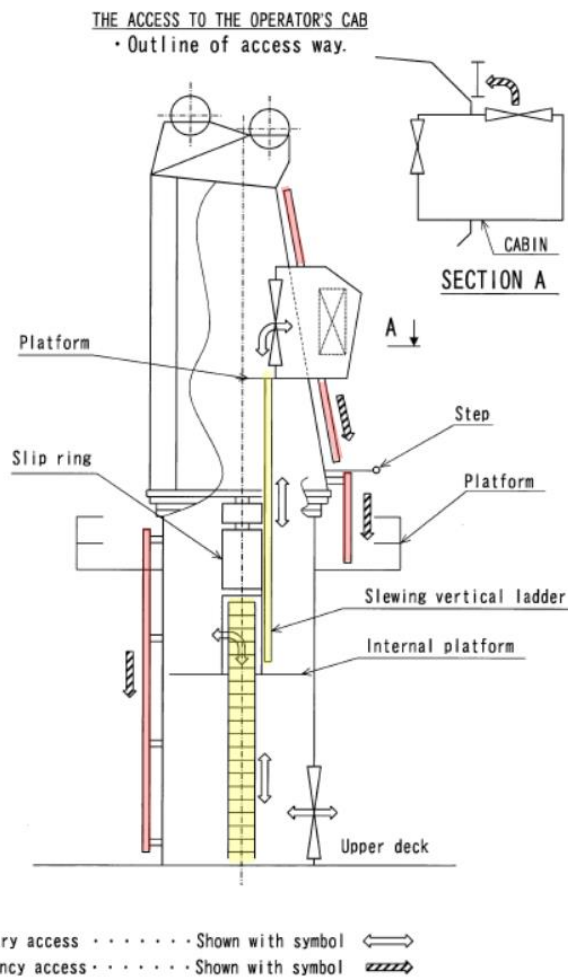


Figure 7 – Drawing of the no.4 deck crane showing the ordinary access (yellow) and emergency access (red). (Source: the Company)

²¹ The deck crane cabin is at a height of 13.4m from the upper deck.

- 1.5.3 The emergency access vertical ladder affixed externally to the no. 4 deck crane's post was 925cm long with the steel rungs (steps) spaced 34cm apart and the longitudinal side handholds spaced at 37cm apart (see **figure 8**).

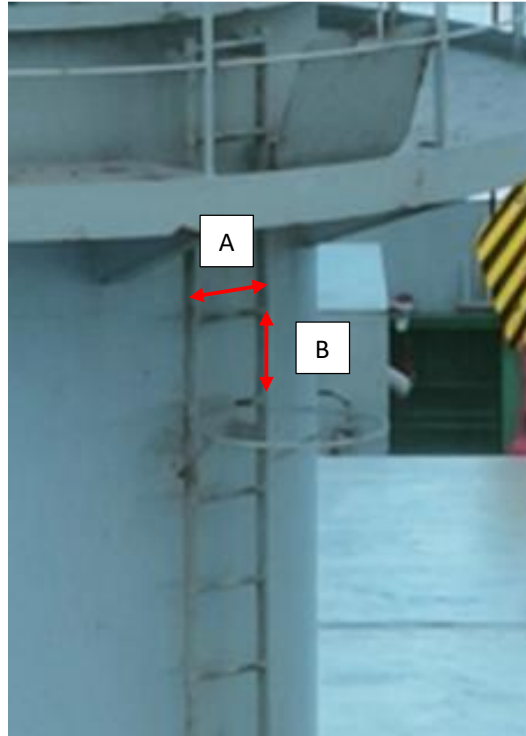


Figure 8 – External vertical steel rung ladder, with A at 37cm and B at 34cm.
(Source: the Company)

- 1.6 Additional information
- 1.6.1 According to the CO and Bosun, there were no tasks planned for the no. 4 deck crane on the occurrence day and there were no tasks carried out on the crane in the past few days. They were not able to ascertain why the ASD4 had climbed up the emergency access ladder of no. 4 deck crane's post.
- 1.6.2 According to the Bosun and ASD1 who first arrived at the scene, the ASD4 was not wearing a safety belt or harness, other than the safety helmet, gloves and safety shoes.
- 1.6.3 The vertical height from the upper deck to the slewing ring level of the no. 4 deck crane's post was 9.90m. According to the Master, the moment he saw the ASD4 fell off from the emergency access ladder, the ASD4 was at about 8m

above the upper deck (refer to **figure 5**).

- 1.6.4 At the time of occurrence, the vessel's position was about 750nm away from the nearest port of Luanda, Angola. The Master estimated the vessel would take about two days and six hours to reach at a maximum speed of 13.75 knots.
- 1.6.5 XXH's SMS procedure²² provides a section for crew to make inquiries²³ on crew welfare, well-being, and health²⁴. Another SMS procedure²⁵ provides a guideline on seafarers' psychological health. A telephone helpline²⁶ was made available to the crew if needed for psychological help.

²² SMO-DM-10 – Instructions on Crew Welfare, Well-being, and Health.

²³ There were no inquiries made on crew welfare, well-being, and health by the ASD4 or any other crew during the period the ASD4 was working onboard XXH.

²⁴ The TSIB had issued a Safety Flyer - Psychological well-being of seafarers in 2018 with the intention of raising awareness on the importance of psychological well-being of seafarers at sea, the Safety Flyer was disseminated to flag administration and shipping association.

²⁵ SMO-OSH-04 – Guideline on Seafarers Psychological Health.

²⁶ The helpline was posted in all public place including the bridge, engine room, officer mess room and crew mess room.

2 ANALYSIS

- 2.1.1 The ASD4 was found lying next to the no. 4 deck crane with a fractured right ankle and was bleeding from his injured head as observed by the CO. While the exact cause of death of the ASD4 could not be determined as an autopsy examination report was not available, it is likely that the ASD4 had succumbed to the injuries from the fall from a height of about 8m.
- 2.1.2 Based on available evidence, the ASD4 was medically fit without limitations or restrictions for working at sea and had 16 hours of rest in the past 24-hours. The planned task for the day had not begun when the ASD4 reportedly climbed the external vertical steel rung ladder of the no. 4 deck crane.
- 2.1.3 The investigation team noted that the ASD4 had been serving onboard XXH for about five months and was a quiet person and did not exhibit signs of stress²⁷ from working onboard XXH.
- 2.1.4 There were established systems onboard XXH to take care of ship's crew mental wellness including a helpline for crew to call when the need arises.
- 2.1.5 The investigation team could not conclusively determine the reason for the ASD4 to be at the deck crane as there were no tasks planned for the deck crane and the two tasks assigned, painting the bulkheads of no. 4 cargo hold and cleaning the steel coils cargo stored in the same hold, did not require the use of the deck crane. Although the Master saw the fall of the ASD4 from deck crane, he did not know how the fall had happened. The investigation was not able to determine the cause of the fall of the ASD4 which had likely resulted in him being fatally injured.

²⁷ There are many different triggers for increase in stress and decline in mental health and wellness of seafarers. These can range from personal issues on board the vessel or at home; feelings of fatigue, isolation or loneliness, or existing mental health issues that are exacerbated by the nature of life at sea – Extracted from Rightship's 'Seafarer stress, mental health and wellness at sea' web article published on 1 January 2020.

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 two tasks assigned to the deck crew on painting the bulkheads of no. 4 cargo hold and cleaning the oil traces of the steel coils cargo in the same cargo hold did not require the use of the deck crane.
- 3.2 The ASD4 was onboard XXH for about five months and had been observed as a quiet person and did not exhibit signs of stress from working onboard XXH.
- 3.3 The ASD4 had climbed the external vertical steel rung ladder (emergency access to the deck crane's cabin) of the no. 4 deck crane without the knowledge of the other crew members. The reason for the ASD4 climbing the external vertical steel rung ladder of the no. 4 deck crane and how the fall had happened could not be determined. The ASD4 had likely succumbed to the injuries sustained from the fall from a height of about 8m.

4 SAFETY ACTIONS

Arising from discussions with the investigation team, the Company have taken the following safety action.

- 4.1 A safety meeting was held onboard XXH by the Master together with the Company's Designated Person Ashore²⁸ to discuss the incident with all crew. The crew were reminded to take care of their personal safety as well as the other colleagues. It was reiterated that unsafe acts were to be avoided by adhering to basic safety rules and common sense. Also, all crew shall not ignore hazard identification and risk assessment for safety at work and to call upon a Senior Officer on site for supervision if necessary.

²⁸ International Safety Management (ISM) Code – Part A/4 Designated Person(s) - To ensure the safe operation of each ship and to provide a link between the company and those on board, every company, as appropriate, should designate a person or persons ashore having direct access to the highest level of management. The responsibility and authority of the designated person or persons should include monitoring the safety and pollution prevention aspects of the operation of each ship and to ensure that adequate resources and shore based support are applied, as required.

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.

In view of the safety actions taken by the Company (the ISM Managers), no safety recommendations have been issued.