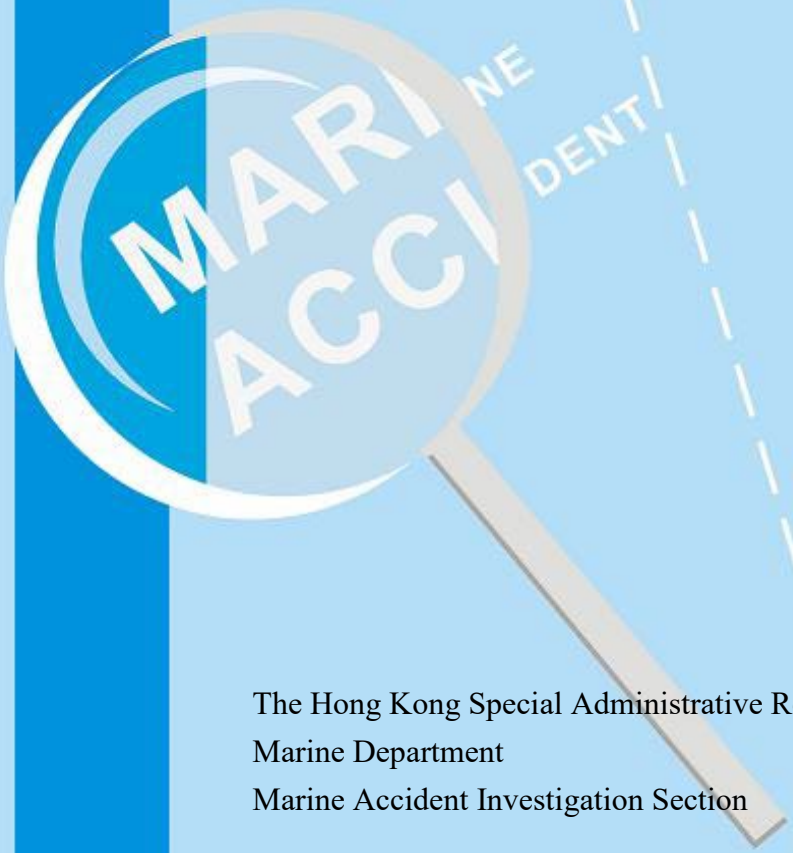
Report of investigation into a fatal accident on board the Hong Kong registered container vessel "*Wan Hai 172*" at sea on 1 December 2022



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

2 May 2023

Purpose of Investigation

The purpose of this investigation, conducted by the Marine Accident Investigation Branch (MAIB) of Marine Department, is to understand the causes of the incident by investigating the circumstances leading to its happening with the aim of enhancing the safety of life at sea and preventing similar incidents from occurring 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.

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Summary

At 1948 hours on 26 November 2022, the Hong Kong registered container vessel "Wan Hai 172" (*the vessel*) departed Laem Chabang port, Thailand, for the destination port of Kaohsiung, Taiwan (*the destination port*) with an estimated time of arrival on 2 December 2022.

The weather became worse in the morning of 1 December 2022 and *the vessel* rolled and pitched heavily. At 0833 hours on 1 December 2022, the Electro-technical Officer (ETO) conducted a routine inspection of the provision store compressor machine room[1] (*the room*) located at the port side of the accommodation block with access door on the main deck. At 0835 hours, the bosun found that the life raft on the port side of the accommodation deck (*A-deck*) shifted away from its bestowed position after being hit by heavy swells. He then went to secure the life raft after obtaining permission from the Master. At 0844 hours, after securing the life raft, the bosun found the ETO lying unconsciously on the port side of the main deck near the gangway with weak breath. The ETO was shifted to the ship hospital and was applied first aid under shore medical treatment instruction, including Cardiopulmonary Resuscitation (CPR) and Automated External Defibrillator (AED). The ETO had arm and leg injuries, and blood in his ear, nose and head. Afterwards, the ETO was sent to a local hospital at *the destination port* for medical treatment by helicopter under the arrangement of the management company (*the Company*). Unfortunately, the ETO was declared dead on the same day at the hospital.

The investigation identified that the contributory factors leading to the accident were: shipboard toolbox meeting failed to follow the requirements of the "Code of Safe Working Practices for Merchant Seafarers" [2] (*the Code*) to identify the hazards and associated risks for the routine inspection of *the room*; the ETO failed to follow the instruction of the toolbox meeting of not to go outside the accommodation block to inspect *the room* under adverse weather unless obtaining permission from

[1] A space on board where refrigerator machines were installed to maintain food/provision stores at a set temperature.

[2] *The Code* is a publication required to be carried onboard Hong Kong ships pursuant to the Merchant Shipping (Seafarers) (Code of Safe Working Practices) Regulation (Cap. 478M).

the Master; the ETO failed to follow the requirements of *the Code* and shipboard "Safety Management Manual" (SMM) when working in adverse weather; the shipboard training for the ETO on the SMM procedures, especially familiarizing the procedure for "Work on Deck in Heavy Weather" was ineffective; and the ETO lacked safety awareness for working outside accommodation block in adverse weather.

1. Description of *the vessel*

Ship name	:	Wan Hai 172 (Figure 1)
Flag	:	Hong Kong, China
Port of registry	:	Hong Kong
IMO number	:	9380269
Type	:	Container Carrier
Year built, shipyard	:	2008, CSBC CORPORATION, TAIWAN KEELUNG YARD.
Gross tonnage	:	16,471
Net tonnage	:	7,615
Length overall	:	172.10 meters
Breadth	:	27.30 meters
Depth	:	13.50 meters
Engine power, type	:	15806 kW, KAWASAKI-MAN B&W7S60MC-C
Classification society	:	American Bureau of Shipping
Registered owner	:	WAN HAI LINES (H.K.) LTD.
Management company	:	WAN HAI LINES (SINGAPORE) PTE LTD.

Figure 1: Wan Hai 172

2. Sources of evidence

2.1 Information provided by the Master, the crew members and *the Company* of *the vessel*.

3. Outline of events

(All times were local time UTC + 8 hours)

3.1 At 1948 hours on 26 November 2022, *the vessel,* with drafts of 8.7 meters fore and 9.8 meters aft, departed from Laem Chabang port, Thailand and was estimated to arrive at *the destination port* on 2 December 2022.

3.2 At about 1700 hours on 30 November 2022, the force of wind *the vessel* encountered increased, and the sea condition was from moderate to rough. The weather became worse in the morning of 1 December 2022, and *the vessel* rolled and pitched heavily.

3.3 At 0800 hours on 1 December 2022, about 120 nautical miles off *the destination port*, toolbox meetings were carried out on board *the vessel* by the deck and engine departments separately. It had been emphasized in the toolbox meetings that the crew were not allowed to work on deck without permission from the Master in heavy weather condition.

3.4 At 0833 hours, the ETO went alone to conduct routine inspection to *the room* through the access door at the port side of main deck (Figure 2 & 3). At 0835 hours, the bosun found that the life raft on port side of *A-deck* was shifted away from its bestowed position due to heavy swells, and proceeded to secure the life raft after obtaining permission from Master.

3.5 At 0844 hours, after securing the life raft, the bosun found the ETO, wearing a coverall, safety shoes and ear muff, lying unconsciously on the main deck near the gangway (Figure 2, 3 and 4). The bosun immediately reported the incident to the Chief Officer (C/O).

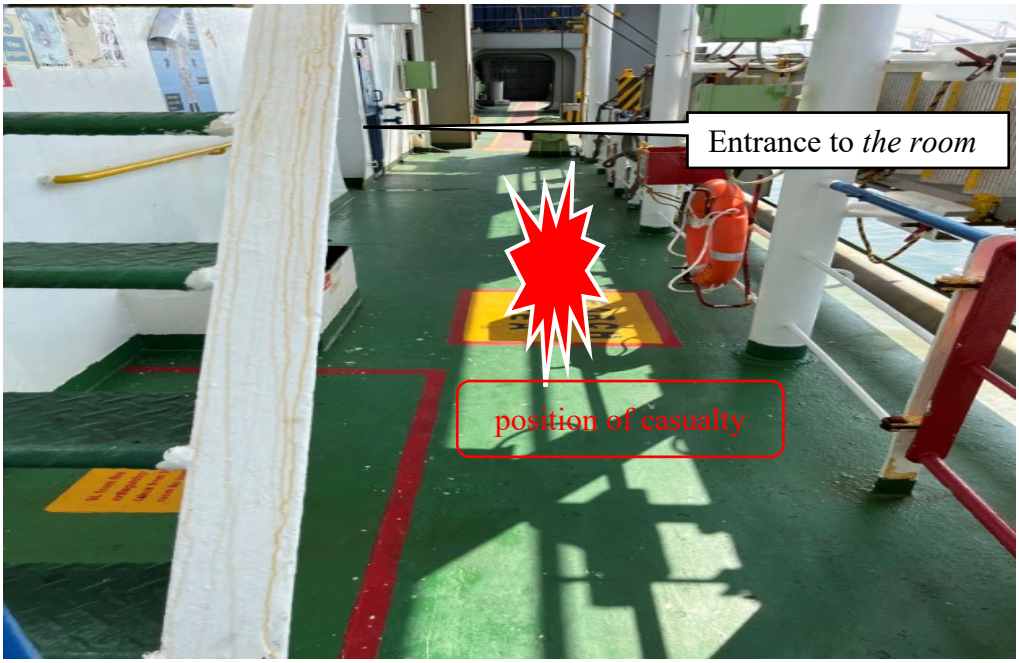

Figure 2: the port side gangway area

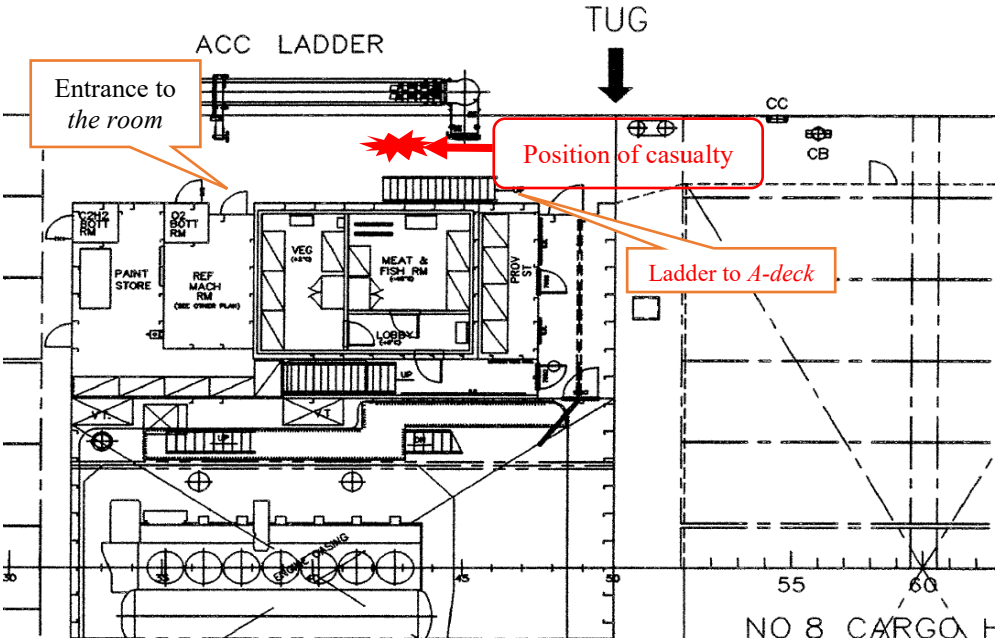

Figure 3: position of casualty

Figure 4: the accident scene simulation

3.6 At 0846 hours, the first aid team of *the vessel* reached on-site and shifted the ETO to the hospital of *the vessel* for first aid treatment. The ETO was found breathing with difficulty, his right arm fractured, open wounds, bruises on his left leg, and blood in his nose, ear and head.

3.7 At 0914 hours, CPR was applied to the ETO as he had no breathing, followed by AED according to radio medical advice. Simultaneously, *the Company* arranged helicopter service for transferring the ETO to shore for medical treatments.

3.8 At 1226 hours, a helicopter arrived at *the vessel,* and the ETO was transferred to a hospital at *the destination port* at 1337 hours. Unfortunately, the ETO was declared dead by the hospital on the same day.

4. Analysis

Certificates and manning

4.1 The statutory trading certificates of *the vessel* were valid and in order. *The vessel* was manned by 23 crew members, including the Master and fulfilled the requirements stipulated in the Minimum Safe Manning Certificate.

4.2 The Master joined *the vessel* on 12 November 2022. He had about ten months of experience as a master. The Master possessed a Master Certificate of Competency issued by India, valid until 8 February 2023.

4.3 The C/O joined *the vessel* on 20 June 2022. He had about twenty months of experience as a chief officer. The C/O possessed a chief officer Certificate of Competency issued by India, valid until 30 January 2024.

4.4 The second officer (2/O) joined *the vessel* on 21 June 2022. He had about six months of experience as a second officer. The 2/O possessed a second officer Certificate of Competency issued by India, valid until 5 September 2023.

4.5 The third officer (1) (3/O (1)) joined *the vessel* on 12 November 2022. He had about one and half years of experience as a third officer. The 3/O (1) possessed a third officer Certificate of Competency issued by India, valid until 16 September 2024.

4.6 The 3/O (2) joined *the vessel* on 21 June 2022. He had about ten months of experience as a third officer. The 3/O (2) possessed a third officer Certificate of Competency issued by India, valid until 5 September 2023.

4.7 The bosun joined *the vessel* on 21 June 2022. He had about three years of experience as a bosun.

4.8 The chief engineer (C/E) joined *the vessel* on 10 October 2022. He had about three and half years of experience as a chief engineer. The C/E possessed a chief engineer Certificate of Competency issued by United Kingdom, valid until 9 October 2027.

4.9 The second engineer (2/E) joined *the vessel* on 22 June 2022. He had about one and half years of experience as a second engineer. The 2/E possessed a second engineer Certificate of Competency issued by India, valid until 21 June 2027.

4.10 The third engineer (3/E) joined *the vessel* on 20 June 2022. He had about two and half years of experience as a third engineer. The 3/E possessed a third engineer Certificate of Competency issued by India, valid until 17 December 2025.

4.11 The fourth engineer (4/E) joined *the vessel* on 21 June 2022. He had about six months of experience as a fourth engineer. The 4/E possessed a fourth engineer Certificate of Competency issued by India, valid until 3 December 2025.

4.12 The ETO joined *the vessel* on 21 July 2022. He had about five years of experience as an electro-technical officer. The ETO possessed an electro-technical officer Certificate of Competency issued by India, valid until 15 December 2024.

4.13 There was no abnormality onboard with regard to the certification and qualification of the crew concerned.

Fatigue, alcohol and drugs abuse

4.14 There was no evidence to show that the crew on board suffered from either fatigue at work or abuse of alcohol and drugs.

Weather and sea conditions

4.15 On the day of the accident, the weather was overcast with northeasterly wind of Beaufort wind scale Force 7. The sea was rough with heavy swell, and the visibility was good. The vessel rolled and pitched heavily due to rough sea condition. The weather and the sea conditions were considered to be the contributory factors to the accident.

Cause of death

4.16 In accordance with the autopsy certificate and hospital report, the ETO had no vital signs of pulse, heart beating, awareness and breathing when being examined at the hospital. The cause of death

was intracerebral bleeding, which was led by traumatic brain injury caused by strikes by a foreign object. The cause of death was head injuries, consistent with the physical condition of the ETO described in paragraph 3.6 when he was found.

Toolbox meeting

4.17 According to Section 1.2.5 of *the Code*, a toolbox meeting should be carried out to ensure all involved in work have a clear understanding and awareness of any hazards and their associated risks before the work commences.

4.18 The statement of the C/E stated that the engine department carried out a toolbox meeting in the morning of the accident day. The meeting included the work of putting No.3 auxiliary engine on standby after testing, general cleaning in the engine room, securing all loose items and not allowing crew to go outside accommodation block without the permission of Master in adverse weather. However, the routine inspection of *the room* by the ETO was not mentioned in the toolbox meeting. As such, the meeting failed to identify any hazards and associated risks before carrying out the work in adverse weather. The investigation also found that the ETO did not follow the instruction of the meeting of not to go outside the accommodation block to inspect *the room* in adverse weather unless obtaining Master's permission. Such failure revealed that the ETO lacked safety awareness for working in adverse weather.

Work in adverse weather

4.19 Section 11.12 of *the Code* states that no seafarer should be on deck in adverse weather conditions unless it is considered necessary by the master for the safety of ship and life at sea, and any seafarer required to go on deck during adverse weather should wear a lifejacket, safety harness and waterproof personal protective equipment, and seafarers should work in pairs or teams.

4.20 Section PR-0706 (i.e. Special Shipboard Operations) of the shipboard SMM states that the checklist "Work on Deck in Heavy Weather Permit" should be completed by in-charge officer and be

approved by Master before work on deck in heavy weather.

4.21 However, the investigation revealed that the ETO went to inspect *the room* alone, neither obtained the permit from Master, nor wore a lifejacket with waterproof personal protective equipment. Moreover, he did not complete the checklist "Work on Deck in Heavy Weather Permit" before working. It concluded that the ETO did not follow *the Code* and the shipboard SMM requirements when working in adverse weather.

Shipboard training

4.22 The shipboard training plan for 2022 stated that the "Knowledge of ISM Code" was planned to train with intervals of once every year. The shipboard training record indicated that the ISM training, including familiarization of shipboard SMM, was conducted on board *the vessel* to all crew on 20 January 2022. The ETO joined the vessel on 21 July 2022 and he only received pre-joining training of familiarization for basic safety training and operating shipboard equipment.

4.23 The investigation found no evidence to show that the ETO had received relevant training according to SMM procedures, especially familiarizing the procedure "Work on Deck in Heavy Weather". As such, shipboard training for the SMM procedures to the ETO was ineffective.

5. Conclusions

5.1 At 1948 hours on 26 November 2022, *the vessel* departed Laem Chabang port, Thailand, for *the destination port,* with an estimated arrival time on 2 December 2022.

5.2 The weather became worse in the morning of 1 December 2022, and *the vessel* rolled and pitched heavily. At 0833 hours on 1 December 2022, the ETO conducted a routine inspection of *the room* located on the port side of the accommodation block with access door on the main deck. At 0835 hours, the bosun found that the life raft on the port side of *A-deck* shifted away from its bestowed position after being hit by heavy swells. He then secured the life raft after obtaining permission from the Master. At 0844 hours, after securing the life raft, the bosun found the ETO lying unconsciously on the port side of the main deck near the gangway with weak breath. The ETO was shifted to the ship hospital and was applied first aid under shore medical treatment instruction, including CPR and AED. The ETO was injured on his arm and leg, and blood in his ear, nose and head. Afterwards, the ETO was sent to a local hospital at *the destination port* for medical treatment by helicopter under the arrangement of *the Company*. Unfortunately, the ETO was declared dead on the same day at the hospital.

5.3 The investigation revealed that the contributory factors leading to the accident were as follows:

(a) shipboard toolbox meeting failed to follow the requirements of *the Code* to identify the hazards and associated risks for the routine inspection of *the room*;

(b) the ETO failed to follow the instruction of the toolbox meeting of not to go outside the accommodation block to inspect *the room* in adverse weather unless obtaining permission from the Master;

(c) the ETO failed to follow the requirements of *the Code* and shipboard SMM when working in adverse weather;

(d) the shipboard training on the SMM procedures, especially

familiarizing the procedure “Work on Deck in Heavy Weather”, to the ETO was ineffective; and

(e) the ETO lacked safety awareness on working outside accommodation block in adverse weather.

6. Recommendations

6.1 The management company should issue a circular informing all masters, officers and crew members of its fleet of the investigation findings and lessons learnt from this accident to:

(a) strictly follow the requirements of *the Code* to identify the hazards and associated risks for all involved work in toolbox meeting before commencing work;

(b) strictly follow the requirements of *the Code* and shipboard SMM on working outside accommodation block in adverse weather;

(c) ensure shipboard training on the SMM procedures be conducted effectively, especially familiarizing the procedure for working on deck in heavy weather; and

(d) enhance safety awareness of the crew onboard on working outside accommodation block in adverse weather.

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

7. Submission

7.1 The draft investigation report, in its entirety, was sent to *the Company* and the Master of *the vessel* for comments.

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