# Report of investigation into a fatal accident on board the Hong Kong registered bulk carrier "*Tiger East*" at Sea on 23 December 2022


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

4 July 2023

## 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.

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## Summary

On 20 December 2022, the Hong Kong registered bulk carrier "Tiger East" (*the vessel*) departed from Weda, Indonesia under ballast condition to her next port for loading coal in Balikpapan, Indonesia.

On 23 December 2022, the deck crew of *the vessel* was divided into three groups to wash No.6 cargo hold (*the hold*) by using fire hoses with seawater (*the hold cleaning*) during the voyage. Before *the hold cleaning*, the Chief Officer (*the C/O*) conducted a toolbox meeting which included issues on risk assessment for *the hold cleaning*, briefing of safety control measures when working aloft, and issue of a permit for working aloft by the Master (*the Master*).

At about 0848 hours, two Able-bodied Seamen (AB), i.e. the No.2 AB (*the AB2*) and the No.3 AB (*the AB3*), as members of the No.3 group, were on the athwartships forward Permanent Means of Access (PMA) platform[1] (*the fore platform*) to wash the forward upper part of *the hold*. When *the AB3* walked to the port side of *the hold* on *the fore platform* with a pressurized fire hose, the grating detached from its support frame where *the AB3* was standing. As a result, *the AB3* lost his balance and together with the detached grating fell onto the tank top from a height of about 15.8 meters. The Bosun (*the Bosun*) immediately reported the accident to *the C/O and the Master*. *The Master* then assembled the rescue team to provide first aid to *the AB3* and altered the ship's course heading to Kota Manado to seek shore emergency medical assistance. Afterwards, *the AB3* was transferred to a local hospital by a patrol boat of the Indonesian Coast Guard for further medical treatment. Unfortunately, he was certified dead on the same day.

The investigation identified that the contributory factors leading to the accident were that the crew failed to (i) follow the requirements of the shipboard Safety Management System (SMS) to effectively carry out a risk assessment onboard before *the hold cleaning* including identifying the risk of the dislocation of the grating of *the fore platform*; (ii) wear a safety belt when working aloft during *the hold cleaning*; (iii) supervise *the hold cleaning* on the spot while working aloft; (iv) carry out proper

[1] *The vessel* was fitted with two athwartships PMA platforms at the fore and aft positions inside the cargo hold for inspection and maintenance purposes.

maintenance of *the fore platform* in *the hold*; (v) identify the defective *fore platform* in the last detailed inspection of *the hold*; and (vi) check the condition of *the fore platform* in *the hold* before entry for *the hold cleaning*. The accident also revealed that the shipboard training on working aloft for the crew was ineffective.

## 1. Description of *the vessel*

| | | |
|---|---|---|
| Ship name | : | *Tiger East* (Figure 1) |
| Flag | : | Hong Kong, China |
| Port of registry | : | Hong Kong |
| IMO number | : | 9619842 |
| Type | : | Bulk Carrier |
| Year built, shipyard | : | 2013, Shanghai New Shipbuilding Qinhuangdao, China |
| Gross tonnage | : | 42,114 |
| Net tonnage | : | 25,821 |
| Length overall | : | 225.00 meters |
| Breadth | : | 32.26 meters |
| Engine power, type | : | 9108 kW, Wartsila 5RT-FLEX58T-D Tier II |
| Classification society | : | Det Norske Veritas (DNV) |
| Registered owner | : | Bless Industrial Ltd. |
| Management company | : | Greathorse International Ship Management Co., Ltd. |


Figure 1: *Tiger East*

## 2. Sources of evidence

2.1 Information provided by the management company of *the vessel* (*the Company*).

## 3. Outline of events

(All times were local time UTC + 8 hours)

3.1 On 20 December 2022, *the vessel* departed from Weda, Indonesia, under ballast condition to her next port for loading coal in Balikpapan, Indonesia.

3.2 During the voyage, all cargo holds were required to be cleaned for loading coal in the next port. By 22 December 2022, the deck crew washed and cleaned all cargo holds except *the hold*. *The hold* continued to be washed by the deck crew on the next day (i.e. 23 December 2022).

3.3 At 0800 hours on 23 December 2022, *the C/O* held a toolbox meeting with the deck crew at the ship office. During the meeting, a risk assessment for *the hold cleaning* was carried out, and the deck crew were briefed to wear personal protection equipment, including a safety belt, when working aloft. A permit to work aloft was issued by *the Master* before *the hold cleaning*.

3.4 At about 0810 hours, *the Bosun* supervised *the hold cleaning* on the spot. Three groups of deck crew were assigned to carry out *the hold cleaning* (Figure 2). The No.1 group comprised the No.4 AB (*the AB4*) and one ordinary seaman (*the OS*). They were assigned to wash the tank top of *the hold*. The No.1 AB (*the AB1*) and one deck cadet, as members of the No.2 group, were assigned to wash the aft upper part of *the hold* on the aft PMA platform. The No.3 group comprised *the AB2* and *the AB3*, who were assigned to wash the fore upper part of *the hold* on *the fore platform*.

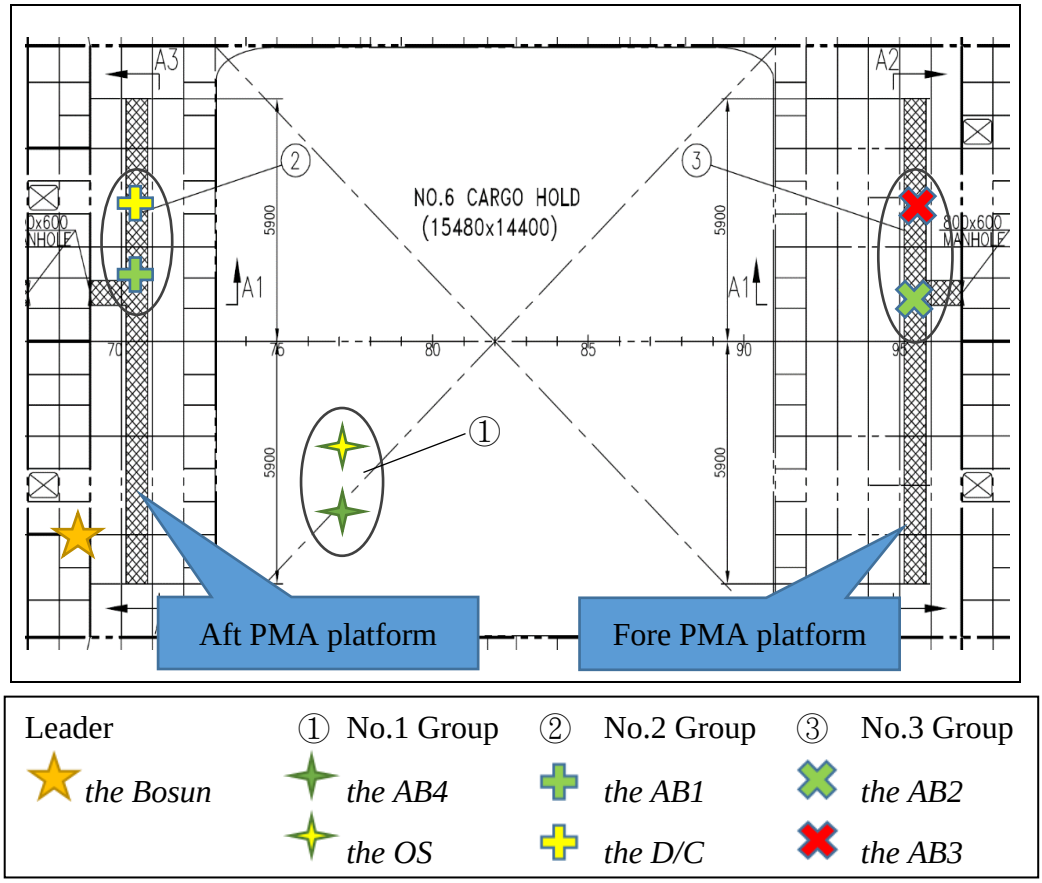


Figure 2: location of the team members for *the hold cleaning*

3.5 During *the hold cleaning*, *the hold* was swept first and then washed using a fire hose with high-pressure seawater by each group at their designated locations (Figure 3). The hatch cover of *the hold* was fully opened with natural ventilation and daylight.

Figure 3: *the hold cleaning* operation onboard

3.6 *The AB2* and *the AB3* entered *the hold* through the forward manhole on the main deck to *the fore platform* to clean *the hold*. At 0848 hours, *the AB3* brought a pressurized fire hose and walked on *the fore platform* to the port side without wearing a safety belt. When he stepped on the third grating counted from the port side (Figure 4), the grating detached from its support frame. *The AB3* lost his balance and fell on the tank top from a height of about 15.8 meters, together with the detached grating.

Figure 4: the detached grating of *the fore platform*

3.7 The deck crew working in *the hold* heard a clear clash sound and saw *the AB3* laying on the tank top. They immediately reported the accident to *the Bosun*, who was working on deck. *The Bosun* ran to the ship office and reported the accident to *the C/O* and *the Master*.

3.8 *The C/O* and *the Master* arrived at the scene after receiving the report and assembled the rescue team to provide first aid to *the AB3*. *The AB3*'s head and neck were found bleeding, and his right shank bone was fractured. *The AB3* was in a conscious state, but his condition became worse as time passed.

3.9 At 0910 hours, *the Master* reported the accident to *the Company*, altered the ship's course, and increased her speed heading to Kota Manado, the nearest port from *the vessel*'s position at that moment,

to seek shore emergency medical assistance to *the AB3*.

3.10 At 1445 hours, the shore doctor boarded *the vessel* and transferred *the AB3* to a local hospital by a patrol boat of the Indonesian Coast Guard for medical treatment. Unfortunately, *the AB3* was certified dead on the same day.

## 4. Analysis

### *Certificates and manning*

4.1 The statutory trading certificates of *the vessel* were valid at the time of the accident. *The vessel* was adequately manned by 19 crew members of Chinese and Vietnamese nationalities and fulfilled the requirements stipulated in the Minimum Safe Manning Certificate of *the vessel* issued by the Hong Kong Marine Department (HKMD).

4.2 *The Master* had about five years of sea experience as a Master. He possessed a Class 1 Certificate of Competency issued by the People's Republic of China and endorsed by the HKMD, valid until 17 December 2025.

4.3 *The C/O* had about 10 years of sea experience as a chief officer. He possessed a Class 2 Certificate of Competency issued by the People's Republic of China and endorsed by the HKMD, valid until 17 March 2026.

4.4 The Second Officer of *the vessel* had about one year of sea experience as a second officer. He possessed a Class 3 Certificate of Competency issued by the Vietnam Maritime Administration and endorsed by the HKMD, valid until 19 January 2026.

4.5 The Third Officer of *the vessel* had about two months of sea experience as a third officer. He possessed a Class 3 Certificate of Competency issued by the Vietnam Maritime Administration and endorsed by the HKMD, valid until 18 November 2025.

4.6 *The Bosun* had about 21 years of sea experience as a bosun. He possessed a Certificate of Proficiency issued by the People's Republic of China, valid until 12 June 2029.

4.7 *The AB3* had two years of experience as an ordinary seaman. He possessed a Certificate of Proficiency issued by the Vietnam Maritime Administration, valid until 25 October 2026.

4.8 The Chief Engineer of *the vessel* had about one year of sea experience as a chief engineer. He possessed a Class 1 Certificate

of Competency issued by the People's Republic of China and endorsed by the HKMD, valid until 27 August 2025.

4.9 The Second Engineer of *the vessel* had about 10 months of sea experience as a second engineer. He possessed a Class 2 Certificate of Competency issued by the People's Republic of China and endorsed by the HKMD, valid until 01 August 2023.

4.10 The Third Engineer of *the vessel* had about two years of sea experience as a third engineer. He possessed a Class 3 Certificate of Competency issued by the Vietnam Maritime Administration and endorsed by the HKMD, valid until 01 December 2025.

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

***Fatigue, alcohol and drugs abuse***

4.12 According to the working and rest record of *the AB3* in the two days before the accident, he had sufficient rest time of 16 hours per day. There was no sign of fatigue at work related to the accident.

4.13 There was no evidence to show that the crew on board suffered from abuse of alcohol and drugs.

***Weather and light conditions***

4.14 The weather was fine with northwesterly wind of Beaufort wind scale Force 4, slight swell and good visibility. The hatch cover of *the hold* was fully opened to provide sufficient natural daylight illumination and ventilation.

4.15 The weather and light conditions were not considered to be the contributory factors to the accident.

***Cause of death***

4.16 *The AB3* fell from *the fore platform* at a height of about 15.8 meters onto the tank top of *the hold*. The autopsy report stated the deceased suffered multiple blunt force traumatic injuries on his body, including forehead, neck, chest, legs, etc., which matched with the occurrence of fall from aloft. The cause of death of the

deceased was due to the blunt force at his forehead, which caused blooding under the soft membranes of the brain and filling the brain canal and damaged the brain tissue.

***Toolbox meeting and Risk assessment***

4.17 Chapter 2 of the instructions for shipboard safety management (SQI-503) of the shipboard SMS stated that a toolbox meeting should be held daily before commencing shipboard work, and the relevant record should be reviewed by the master properly.

4.18 The shipboard toolbox meeting, including the risk assessment, potential hazards and corresponding safety control measures for working aloft before carrying out *the hold cleaning*, was held in the morning on 23 December 2022 by *the C/O*, and the relevant records were further reviewed by *the Master*. A permit to work aloft was issued by *the Master* after the meeting.

4.19 The investigation found that there was no specific identification for the risk of working on the PMA platforms, including the safe condition of the gratings of the platforms. The shipboard risk assessment for *the hold cleaning* was not carried out effectively.

4.20 The instructions for work aloft and work outboard (SQI-304) of the shipboard SMS stated that the bosun should carefully check the safety of working circumstances and arrange safety control measures before working aloft. The bosun also was required to take care of safety on the spot, such as safety belts of deck crew should be fastened to the fixed parts of *the vessel* during working aloft, etc. However, *the AB3* did not wear a safety belt when carrying out *the hold cleaning* at *the fore platform* as he left his safety belt onto the air vent head of the water ballast tank nearby the access manhole of *the hold*. He failed to follow the requirements of the shipboard SMS to wear a safety belt when working aloft.

4.21 In addition, the investigation found that while *the hold cleaning* was in progress, *the Bosun* worked on the main deck thus failing to supervise *the hold cleaning* on the spot at the time of the accident. He failed to follow the requirements of the shipboard SMS to supervise *the hold cleaning* on the spot while crew members

working aloft.

***Shipboard training***

4.22 Chapter 2 of the procedure for personnel training and familiarization (SQP-02) of the shipboard SMS stated that the newly joined crew should attend the shipboard elementary safety familiarization before sailing, and the specific safety familiarization within 2 weeks. All personnel participating in the shipboard training shall be assessed by the trainer at the end and recorded properly.

4.23 In addition, the shipboard annual training plan required that safety work, including work aloft, should be trained on board *the vessel* every 3 months.

4.24 According to the shipboard training records, *the AB3* and *Bosun* had completed the elementary and special safety familiarization satisfactorily after joining *the vessel*. They were trained in "Safety of Work Aloft" on 26 November 2022 and assessed by *the Master* as satisfactory. However, the investigation revealed that the shipboard training for working aloft to *the AB3 and Bosun* was ineffective, and their safety awareness was insufficient.

***Shipboard PMA Maintenance***

4.25 The "Instructions for cargo holds / tanks structure and coating inspection" (the MAINT-07) of the shipboard SMS stated that a detailed inspection of the cargo holds, including PMA platforms and their structures, should be carried out by the chief officer every 6 months and recorded properly.

4.26 The last detailed inspection of cargo holds was carried out on 17 June 2022. No defective PMA platforms, passageways, or gratings were identified and recorded during the inspection. However, according to the condition of the detached grating and its support frame of *the fore platform* (Figure 5), their metallic structures were heavily corroded and thinned. It revealed that the crew did not properly maintain *the fore platform* of *the hold* and failed to follow the ship SMS to conduct the detailed inspection of the cargo holds effectively every 6 months.


Figure 5: The condition of the detached grating and its support frame

4.27 Paragraph 7 of the MAINT-07 also stated that before every entry of cargo holds for cleaning and maintenance, the crew should check the condition of means of access before work, including the condition of PMA platforms in the holds, structural strength, damage or dislocation of gratings.

4.28 According to paragraphs 4.19, 4.20 and 4.26, there was no evidence to show that the deck crew carefully checked the condition of *the fore platform* before the entry for *the hold cleaning*.

## 5. Conclusions

5.1 On 20 December 2022, *the vessel* departed from Weda, Indonesia under ballast condition to her next port for loading coal in Balikpapan, Indonesia.

5.2 On 23 December 2022, the deck crew of *the vessel* was divided into three groups to carry out *the hold cleaning* by using fire hoses with seawater during the voyage. Before *the hold cleaning*, *the C/O* conducted a toolbox meeting which included issues on risk assessment for *the hold cleaning*, briefing of safety control measures when working at height, and issue of a permit for working aloft by *the Master*.

5.3 At about 0848 hours, *the AB2* and *the AB3*, as members of the No.3 group, were on *the fore platform* to wash the forward upper part of *the hold*. When *the AB3* walked to the port side of *the hold* on *the fore platform* with a pressurized fire hose, the grating detached from its support frame where *the AB3* was standing. As a result, *the AB3* lost his balance and together with the detached grating fell onto the tank top from a height of about 15.8 meters. *The Bosun* immediately reported the accident to *the C/O* and *the Master*. *The Master* then assembled the rescue team to provide first aid to *the AB3* and altered the ship's course heading to Kota Manado to seek shore emergency medical assistance. Afterwards, *the AB3* was transferred to a local hospital by a patrol boat of the Indonesian Coast Guard for further medical treatment. Unfortunately, he was certified dead on the same day.

5.4 The investigation identified that the contributory factors leading to the accident were that -

(A) the crew failed to:-

(a) follow the requirements of the shipboard SMS to effectively carry out a risk assessment onboard before *the hold cleaning* including identifying the risk of the dislocation of the grating of *the fore platform*;

(b) wear a safety belt when working aloft during *the hold cleaning*;

(c) supervise *the hold cleaning* on the spot while working aloft;

(d) carry out proper maintenance of *the fore platform* in *the hold*;

(e) identify the defective *fore platform* in the last detailed inspection of *the hold*; and

(f) check the condition of *the fore platform* in *the hold* before entry for *the hold cleaning*.

(B) the shipboard training on working aloft to the crew was ineffective.

## 6. Recommendations

6.1 The management company should issue 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 shipboard SMS to carry out an effective risk assessment before cargo holds cleaning and identify risks of dislocation of gratings of PMA platforms;

(b) ensure the crew wear safety belts when working aloft;

(c) enhance supervision of the person in charge on the spot during the cargo hold cleaning;

(d) ensure PMA platforms and their gratings are properly maintained and inspected;

(e) ensure the conditions of PMA platforms and their gratings to be checked before entering into the cargo holds for cleaning and maintenance; and

(f) enhance shipboard training of the crew on working aloft and their safety awareness on the use of safety belt.

6.2 The management company should conduct an internal audit on *the vessel* to ensure that the crew members strictly follow the requirements of the shipboard SMS for working aloft and the maintenance of *the vessel*.

6.3 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.