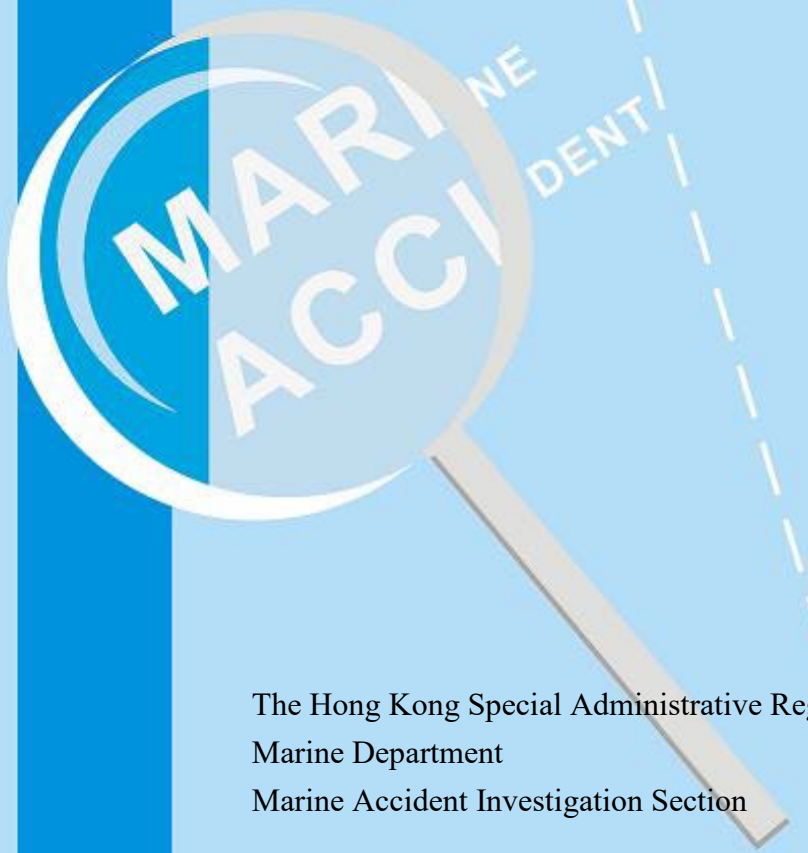
Report of investigation into the fatal accident on board the Panama registered container ship "*MCC Tokyo*" at Hong Kong on 28 April 2021



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

27 August 2022

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

At about 0140 hours on 28 April 2021, a fatal accident happened on board a Panama registered container ship "MCC Tokyo" (*the vessel*) while berthing at the Kwai Tsing Container Terminal, Hong Kong. An ordinary seaman (OS) was hit by a shackle (*the shackle*), which was connected to the cargo block of the No.3 ship crane (*the cargo block*) through a plastic-coated wire loop (*the wire*) secured with the bulldog grips, falling from a height of about 20 metres above him. The OS suffered a head injury resulting in his death.

On 28 April 2021, the cargo operation of *the vessel* was completed and was being prepared for departure from the Kwai Tsing Container Terminal. The OS was assigned to assist in securing the No.3 ship crane (*the crane*) with the lashing ropes onto the lashing bridge[1] before sailing. After linking the lashing ropes to *the cargo block*, an able seafarer deck (AB) operated *the crane* to lift the cargo block until the lashing ropes were in tension. All of a sudden, *the wire* slid out of the bulldog grips and dropped from a height of about 20 metres. *The shackle* connected to the lashing rope with the bulldog grip hit the OS who was working on the lashing bridge underneath *the crane*. The OS was evacuated to a local hospital for emergency medical treatment, but he was declared dead on the same day.

The investigation had identified the contributory factors leading to this accident were: failure to follow the requirements specified in the manufacturer's manual to the lashing arrangement of the ship crane; lack of safety awareness and underestimating the risk of the object falling from height while working on the lashing bridge underneath the ship crane; and lack of knowledge of using proper wire in compliance with the requirements of the Code of Safe Working Practices for Merchant Seafarers[2](*the Code*).

[1] A strong steel structure is installed between hatches to permit the stowage of an additional tier of containers or heavier containers in the upper tier.

[2] The Code is published by the Maritime and Coastguard Agency (MCA) as best practice guidance for improving the health and safety of the shipboard crew.

1. Description of the vessel

Ship name	:	*MCC Tokyo* (Figure 1)
Flag	:	Panama
Port of registry	:	Panama
IMO number	:	9823728
Type	:	Container ship
Year built, shipyard	:	2018, Tsuneishi Group (Zhoushan) Shipbuilding Inc.
Gross tonnage	:	32,828
Net tonnage	:	12,452
Summer deadweight	:	37,621 tonnes
Length overall	:	185.99 metres
Breadth	:	35.6 metres
Engine power, type	:	16,080kW, MAN B&W 6G60ME-C9
Classification society	:	NK
Registered owner	:	Green Spanker Shipping S.A /Kyowa Kisen Co., Ltd
Management company	:	Seoyang Shipping Co., Ltd

Figure 1 MCC Tokyo

2. Sources of evidence

2.1 Information provided by the Master, the crew members and the management company (the Company) of *the vessel*.

3. Outline of events

(All times were local time UTC + 8 hours)

3.1 On 27 April 2021, *the vessel* arrived in Hong Kong and berthed alongside Kwai Tsing Container Terminal for cargo operation at its port side. The ship cranes were slewed and rested at its seaward side, i.e., starboard side of *the vessel* to avoid obstructing the cargo operation by the shore cranes.

3.2 At about 0124 hours on 28 April 2021, the cargo operation of *the vessel* was completed. The able seafarer deck (AB) and ordinary seaman (OS) were assigned to secure *the crane* before sailing. The AB proceeded to the control cabin of *the crane* (the control cabin), and the OS proceeded to the lashing bridge in between Bay 22 and Bay 26 (the lashing bridge), preparing to secure the lashing ropes on the cargo block (Figure 2).

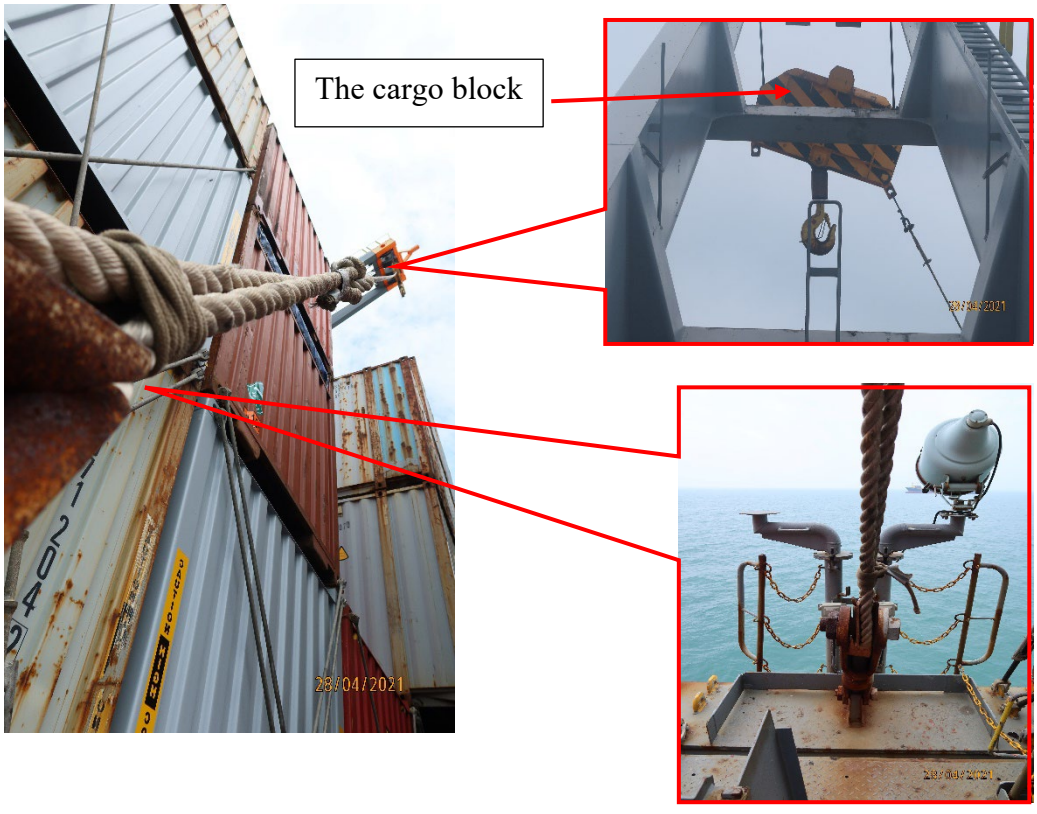

Figure 2 The port side lashing arrangement of the No.3 ship crane.

3.3 The AB slewed *the crane* to the jib rest position, facing the ship

forward, and lowered the cargo block with a hook. When it was lowered to a suitable height, the OS linked the port and starboard lashing ropes to the cargo block and informed the AB of the completion of the lashing operation. After that, the AB lifted the cargo block to the secure position at the height of about 20 meters, and the OS stayed at the lashing bridge to check the conditions of the lashing ropes.

3.4 Upon the OS informing the AB that the lashing ropes were in tension, the AB stopped lifting the cargo block and turned off the power of the ship crane and then left the control cabin. At the same time, the OS on the lashing bridge intended to proceed to the mooring station preparing for mooring operation.

3.5 Meanwhile, the chief officer (C/O) patrolled on the port side main deck passageway to check the lashing arrangement of the containers before sailing. He also noticed the OS was walking to the port side on the lashing bridge.

3.6 At about 0140 hours on 28 April 2021, when the OS arrived at a location about one metre away from the port side hatch cover of the lashing bridge, the port side lashing rope with *the shackle* suddenly fell from a height of about 20 metres and hit the OS. The C/O at the passageway heard an abnormal sound from the lashing bridge and saw the OS falling on the lashing bridge. He realized that the OS suffered an injury and announced the accident via his portable radio. The C/O immediately rushed to the scene to check the condition of the OS. The OS was found lying on the lashing bridge with breathing but unconscious. The master on the bridge conveyed the message to the pilot on board and requested emergency medical assistance from ashore.

3.7 At about 0217 hours, the shore paramedics arrived onboard and provided first aid treatment to the OS. The OS was transferred to a local hospital for further medical treatment, but he was declared dead on the same day.

4. Analysis

The vessel's certificates and manning

4.1 The statutory trading certificates of *the vessel* were valid and in order. *The vessel* was manned by 20 crew members, including the master. The manning scale complied with the Minimum Safe Manning Certificate of *the vessel*.

4.2 The master had about 13 years of experience as a master and joined *the vessel* on 3 March 2021. He possessed a Class I Certificate of Competency issued by the Republic of Korea valid until 10 May 2023.

4.3 The AB had worked in the Company for about 1 year and joined *the vessel* on 9 February 2021. He had about one year of experience as an able seafarer deck.

4.4 The OS had worked in the Company for about 2 years and joined *the vessel* on 5 April 2021. He had about one and a half years of experience as an ordinary seaman.

4.5 There was no abnormality noted with regard to the certification and experience of the crew concerned.

Fatigue, alcohol, and drugs abuse

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

Weather and sea conditions

4.7 On the day of the accident, the weather was fine with easterly wind of Beaufort Wind Scale force 1. The weather and the sea conditions were not considered to be the contributory factors to the accident.

Cause of death

4.8 In accordance with the autopsy report issued by the Department of Health, Hong Kong SAR Government, there was an area of comminuted fractures with two radiating fractures on the skull of

the deceased. The cause of death was fatal head injuries which was consistent with the accident.

Ship crane securing arrangement

4.9 According to the manufacturer's manual of the ship crane (*the manufacturer's manual*), the ship crane should be secured after the finish of an operation. It should be turned to the rest direction, facing the ship forward, and lowered the jib to a rest position. The cargo block should be hoisted up until it touches the jib block. After *the cargo block* was held in position, the hoisting and luffing wire should be in tension to prevent *the cargo block* and the jib from falling. The ship crane jib of *the vessel* should be secured through fixing its cargo block by two lashing ropes affixed respectively at the port and starboard sides of the lashing bridge (Figure 3 & 4). *The manufacturer's manual* also showed that the lashing arrangement consisting of the lashing rope, rigging screw and shackle should be approved by the design section of the manufacturer (Figure 5).

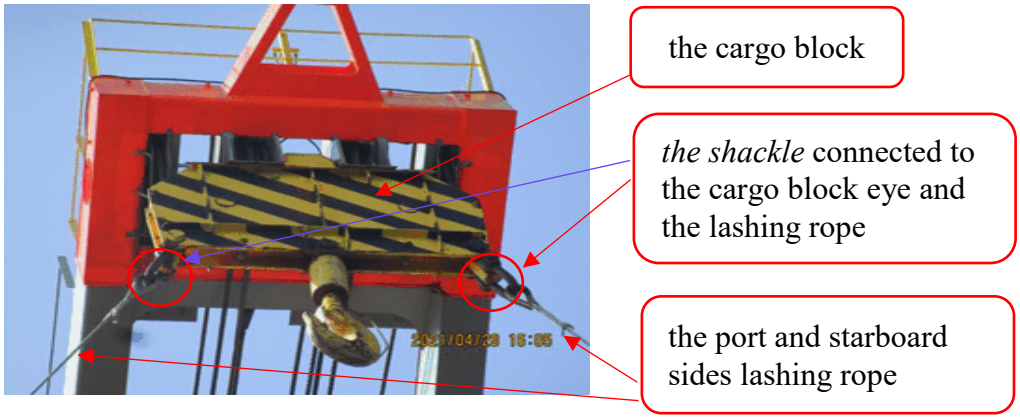

Figure 3 the correct lashing arrangement for the ship crane

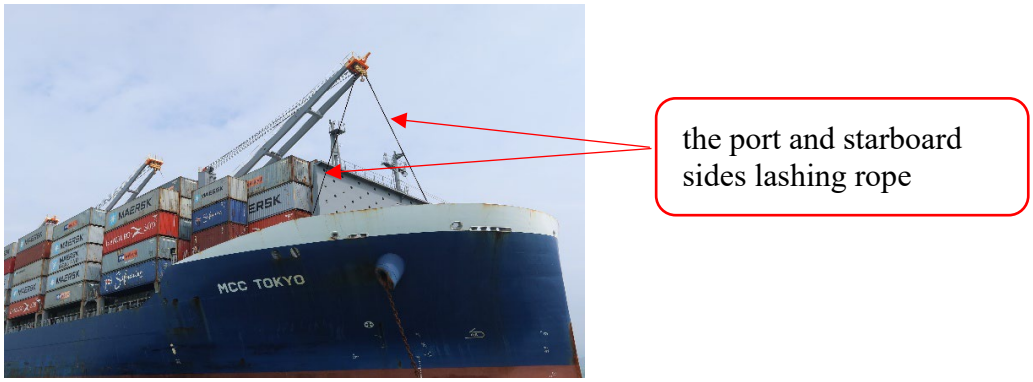

Figure 4 the lashing ropes of the ship crane

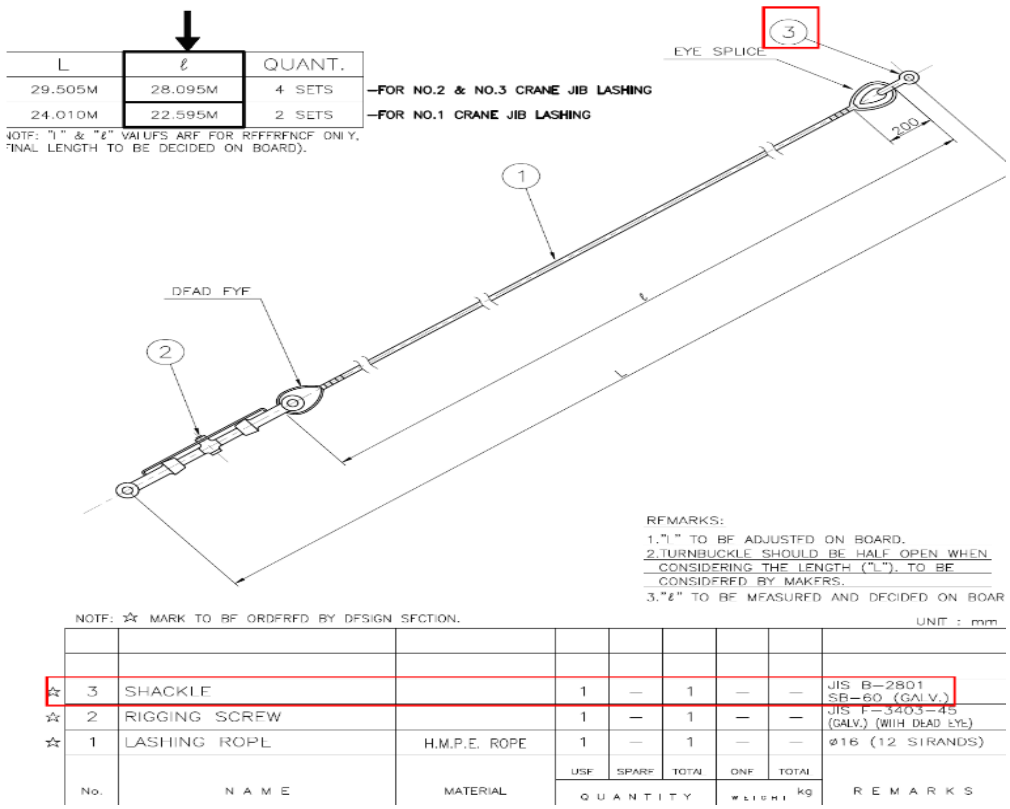

Figure 5 the requirements of the lashing arrangement

4.10 In accordance with Annex 18.2, "Bulldog grips" of *the Code*, the plastic-coated wire should not be used with bulldog grips.

4.11 *The vessel* was constructed with three ship cranes on the main deck. The cargo cranes were rested on the seaward side to avoid the obstruction of the cargo operation when containers were carried out by shore cranes in port. After completing the cargo operation, the cargo cranes would be secured before sailing.

4.12 The shipboard port side lashing rope to *the cargo block* was similar to the starboard lashing rope. *The wire* was linked with lashing rope by *the shackle* and connected to *the cargo block* as shown in Figure 6. The requirements specified in *the manufacturer's manual* to the lashing arrangement were not followed. The investigation also found that the use of a plastic-coated wire did not comply with the requirements of Annex 18.2 of *the Code*.

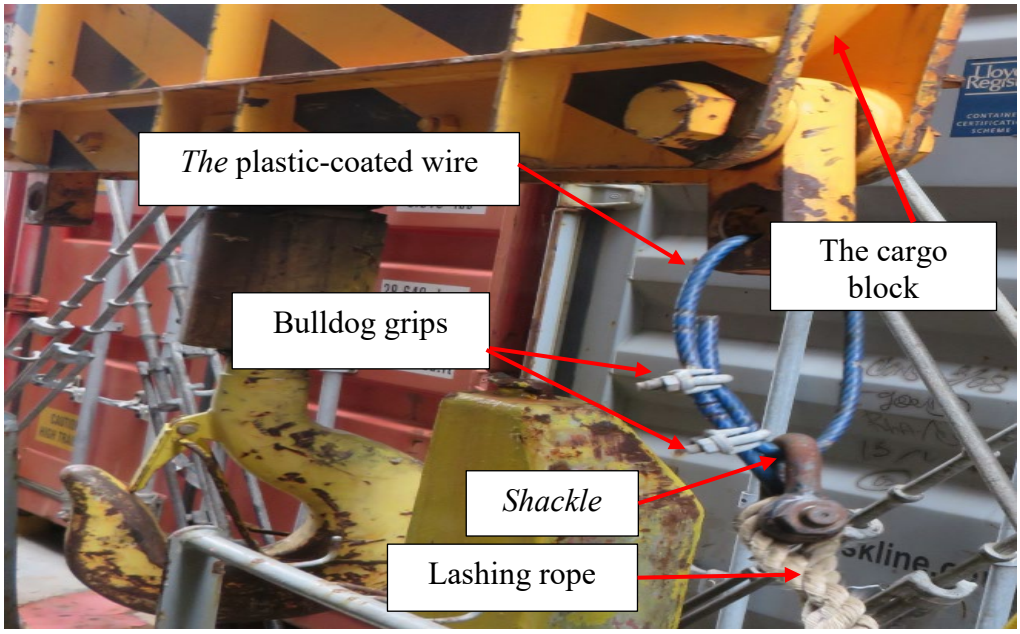

Figure 6 The lashing arrangement of the No.3 ship crane at the time of accident

Safety awareness and shipboard maintenance

4.13 The OS stood on the lashing bridge underneath the ship crane to check the tension of the lashing ropes after linking it to the cargo block. It was revealed that the OS was lack of safety awareness and underestimated the risk of the object falling from a height while securing the ship crane with lashing ropes.

4.14 According to the shipboard ship cranes inspection record, the ship cranes were inspected and maintained periodically. The inspection of the ship crane, including its control system, hydraulic system, brake system, safety limit, hydraulic oil, etc., was carried out periodically on board. However, the crew did not notice the lashing arrangement which did not follow the requirements specified *in the manufacturer's manual*, and the risk of using plastic-coated wire in accordance with the requirements of *the Code* after the inspection. It indicated that the crew did not familiar with the requirements of the ship crane's lashing arrangement and were lack of knowledge of using wire.

Probable causes of the accident

4.15 *The wire* was subjected to loading when *the cargo block* was lifted

to the securing position. Moreover, the crew exercised an improper arrangement of using a plastic-coated wire in the lifting process. Subsequently, *the wire* slid out of the bulldog grips when the loading exerted on it during the lifting of *the cargo block*. As a result, *the wire*, *shackle*, bulldog grips, and the lashing rope fell from a height of about 20 meters to the lashing bridge below.

4.16 At the accident scene, a *shackle* linked with lashing rope and one bulldog grip were found adjacent to the OS. The safety helmet of the OS was cracked on the left side (Figure 7). It was deduced that the OS was hit by a bulldog grip and *the shackle* connected to the lashing rope, which resulted in his serious head injury leading to his death afterwards.

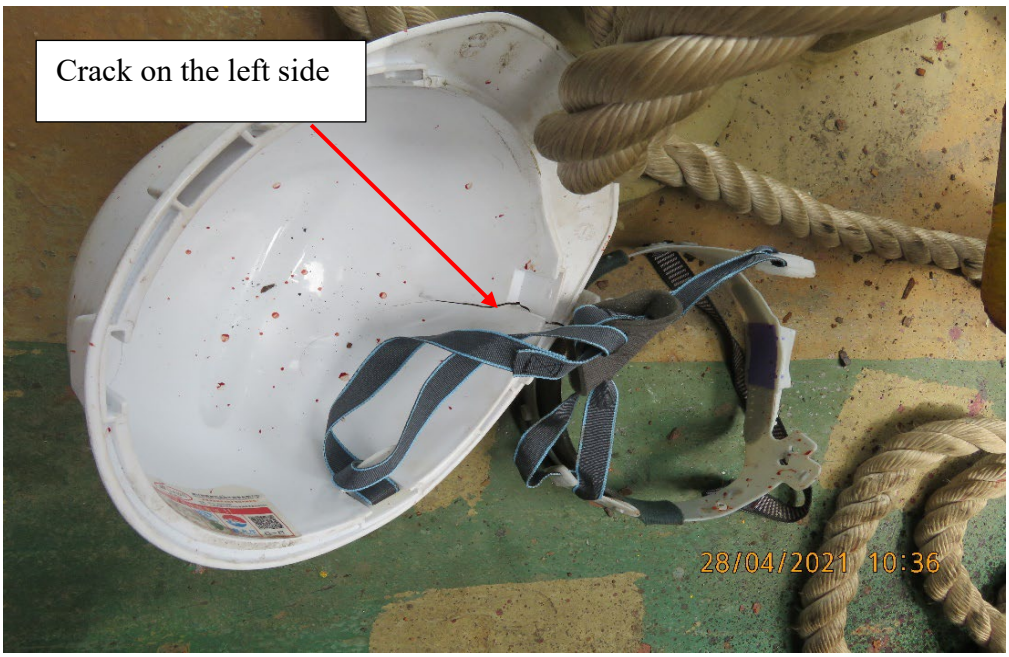

Figure 7 The safety helmet of the OS.

5. Conclusions

5.1 On 28 April 2021, *the vessel* was completed cargo operation and was being prepared for departure from the Kwai Tsing Container Terminal, Hong Kong. The OS was assigned to assist in securing the ship crane on the lashing bridge before sailing. *The wire,* including bulldog grips, and *a shackle* connected to the lashing rope, were suddenly falling from a height of about 20 metres. Unfortunately, *the shackle* connected to the lashing rope with the bulldog grip hit the OS who was working underneath the ship crane. The OS suffered a severe head injury and was evacuated to a local hospital for medical treatment, but he was declared dead on the same day.

5.2 The investigation identified the contributory factors leading to this accident were as follows:

(a) failure of following the requirements specified in *the manufacturer's manual* with respect to the lashing arrangement of the ship crane;

(b) lack of safety awareness and underestimating the risk of the object falling from a height while working underneath the ship crane on the lashing bridge; and

(c) lack of knowledge of using proper wire in accordance with the requirements of *the Code*.

6. Recommendations

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

(a) enhance the safety culture onboard, in particular when the ship crane is in operation; and

(b) enhance the training plan to ensure the crew are familiar with lifting gears and lifting operation, particularly the lashing arrangement of ship crane.

6.2 A copy of the investigation report should be provided to the Panama Flag Administration for information and attention on the findings of the report.

6.3 A Marine Department Notice 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 management company and the Master of *the vessel* for comments.

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