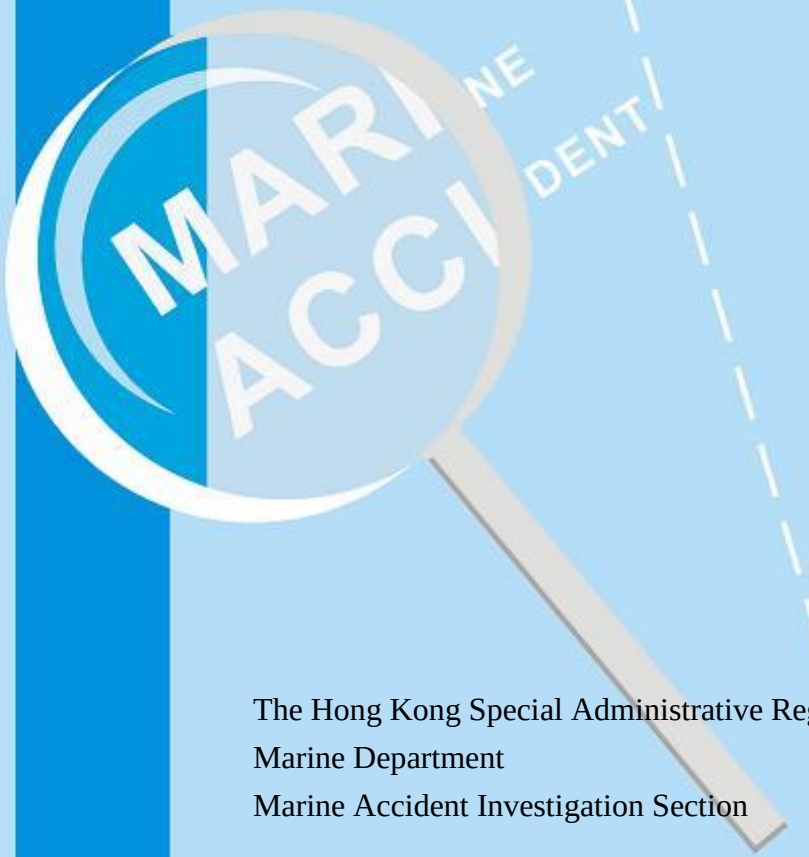
Report of investigation into a fatal accident on board the Hong Kong registered bulk carrier "DATO LUCKY" in the waters off the west of Japan, located at position 43º24'.2N, 137º51'.1E on 7 September 2023



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

29 October 2024

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

On 6 September 2023, the Hong Kong registered bulk carrier "DATO LUCKY" (*the vessel*) completed loading of coal and set sail from the port of Nevelsk, Russia towards her discharging port - Panjin, China. Due to a significant amount of cargo residues accumulated on the open deck areas, it was planned to wash the areas in the following morning.

At 0658 hours on 7 September 2023, the bosun of *the vessel* (*the bosun*) discussed with the chief officer (*the C/O*) on the bridge about the day's work plans, which included washing the open deck areas on the main deck and outside the accommodation as well as repairing the freshwater pipes on the deck. During the toolbox meeting, the crew members were divided into four teams, except *the bosun* was assigned the task of washing the aft upper deck of *the vessel* alone.

At 0800 hours, the crew members commenced the deck washing at the designated areas. A team comprising an able-bodied seaman of *the vessel* (*the A/B*), a deck cadet (*the D/C*) and *the C/O* was responsible for washing the main deck starboard side. At 0945 hours, *the A/B* heard someone calling loudly from forward of the ship and turned around to see *the bosun* standing between No.2 and No.3 cargo holds on the main deck starboard side using his right hand to support his bleeding left arm. *The A/B* immediately informed his teammates including *the C/O* for help. They ran over to check the condition of *the bosun* and noticed that his left arm was bleeding seriously. *The bosun* told them that his arm was broken. They then applied first aid to him to minimize the bleeding and then carried him to *the vessel*'s hospital for treatment. Meanwhile, other crew members found a portable angle electric grinder (*the grinder*) and a pool of blood on the deck of the port side forecastle store. At 0954 hours, *the C/O* informed the master of *the vessel* (*the master*) about the accident. *The master* rushed to the hospital and found that *the bosun* had suffered a severe cut on his left arm near the elbow joint. Severe bleeding was observed from *the bosun*'s arm after cutting off his clothes. *The master* immediately organized crew members to continue applying first aid to *the bosun* and contacted the management company of *the vessel* (*the company*) for emergency medical assistance. *The master* altered the ship's course towards Hokkaido, Japan. At 1740 hours, *the bosun* was airlifted and then transferred to a shore hospital in Hokkaido.

Unfortunately, *the bosun* was later pronounced dead at the shore hospital on the same day.

The investigation identified the following contributory factors leading to the accident:

(a) the safety precautions for using a portable grinder stated in the company's Shipboard Operation Manual were insufficient, as advised by paragraphs 18.2.3[1] and 18.3.2[2] of "Code of Safe Working Practices for Merchant Seafarers" (*the Code*[3]). For example, the precautions should include using suitable cutting tools for a task, holding *the grinder* with both hands and keeping both hands behind the cutting edge of *the grinder*, and ensuring hands are dry when operating *the grinder*;

(b) the communications between *the C/O* and *the bosun*, as well as *the C/O's* supervision to *the bosun* during work were ineffective; and

(c) the risks associated with the ad-hoc task of using *the grinder* by *the bosun* were not properly assessed prior to the work.

[1] 18.2.3 Personnel should ensure that they use the correct tools or equipment for a task. Tools should be used only for the purpose for which they were designed. Use of unsuitable tools or equipment may lead to accidents and incidents.

[2] 18.3.2 Wherever practicable, a tool in use should be directed away from the body, so that if it slips it does not cause injury. However, when using a spanner more control is gained by pulling towards the body. When using a tool with a cutting edge, both hands should be kept behind the blade.

[3] *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).

1. Description of *the vessel*

Ship name	:	DATO LUCKY (Figure 1)
Flag	:	Hong Kong, China
Port of registry	:	Hong Kong
IMO number	:	9596569
Type	:	Bulk Carrier
Year built, shipyard	:	2011, Taizhou Kouan Shipbuilding Co., Ltd.
Gross tonnage	:	32,929
Net tonnage	:	19,132
Length overall	:	185.64 meters
Breadth	:	32.26 meters
Depth	:	18.00 meters
Engine power, type	:	9,480 kW, MAN B&W 6S50MC-C
Classification society	:	Det Norske Veritas
Registered owner	:	Nanjing Transportation Group (HK) Shipping Limited
The company	:	Dato Marine Co. Ltd.



Figure 1: *the vessel*

2. Sources of evidence

2.1 Information provided by *the master*, the crew members and *the Company*.

3. Outline of events

(All times were local time UTC + 11 hours)

3.1 On 6 September 2023, *the vessel* completed loading of coal and set sail from the port of Nevelsk, Russia towards her discharging port - Panjin, China. As there was still a significant amount of cargo residue accumulated on the open deck areas, it was planned to wash the areas the next morning.

3.2 At about 0658 hours on 7 September 2023, *the bosun* went to the bridge to discuss the day's work plan with *the C/O*. The plan included washing the open deck areas on the main deck and outside the accommodation as well as repairing the freshwater pipes. During the toolbox meeting held by *the C/O*, the crew members were divided into four teams and *the bosun* was assigned to wash the aft upper deck alone.

3.3 At 0800 hours, the crew members commenced the deck washing at the designated areas. Team A was responsible for washing the main deck port side, whereas Team B was responsible for repairing the freshwater pipes on the deck near the No.1 cargo hold port side. Team C comprising *the A/B*, *the D/C* and *the C/O* was responsible for washing the main deck starboard side and Team D was responsible for washing the areas outside the accommodation. During cleaning and repairing operations, *the bosun* walked from the aft upper deck to the port side forecastle store via the walkway on the main deck port side. He met the crew members of Team A and Team B at the location shown in Figure 2 and had a conversation with them before entering the port side forecastle store.

3.4 At about 0945 hours, while Team C was working on the main deck starboard side between No. 2 and No. 3 cargo holds, shown in Figure 2, *the A/B* heard someone calling loudly from forward of the ship. He turned around to see *the bosun* standing nearby, using his right hand to support his bleeding left arm. *The A/B* immediately informed his teammates including *the C/O* for help. They ran over to check the condition of *the bosun* and noticed that his left arm was bleeding heavily. *The bosun* told them that his arm was broken. They then assisted *the bosun* to lie on the deck and applied first aid

to him to minimize the bleeding, and then carried him to *the vessel*'s hospital for treatment.

3.5 Meanwhile, the crew members of Team B went inside the port side forecastle store to get some materials. They found that a cut fire hose, *the grinder* connected to an electric power extension unit and a pool of blood on the deck. Both *the grinder* and the electric power extension unit were switched off.

3.6 At 0954 hours, *the C/O* informed *the master* about the accident. *The master* rushed to the hospital and found a serious cut with severe bleeding on *the bosun*'s left arm after cutting off his clothes. *The master* immediately organized the crew members to continue applying first aid to *the bosun*, hoping to stop the bleeding from his wound.

3.7 At 1000 hours, *the master* contacted *the company* for emergency medical assistance. At 1002 hours, *the master* altered the ship's course towards Hokkaido, Japan where the closest coastal area was located.

3.8 At 1005 hours, *the master* contacted the Japan Coast Guard to request an emergency helicopter evacuation service to transfer *the bosun* to a shore hospital in Hokkaido for emergency medical treatment. However, the helicopter could not reach *the vessel* due to the ship's distance from the coast exceeding the helicopter's range. Therefore, *the vessel* sailed at full speed towards the helicopter meeting point as instructed by the Japan Coast Guard.

3.9 During the voyage, the crew members closely monitored *the bosun*'s condition and provided medical care to him based on guidance from the shore doctor. At 1525 hours, *the bosun* was found in an unconscious state with a weak pulse. The crew members immediately performed cardiopulmonary resuscitation (*CPR*) to *the bosun*. The *CPR* was continued even after the helicopter reached *the vessel* at 1740 hours.

3.10 At 1755 hours, *the bosun* was airlifted to the helicopter base and then transferred by ambulance to the shore hospital in Hokkaido. At 1936 hours, the ambulance arrived at the hospital. Unfortunately, at 2047 hours, *the bosun* was pronounced dead at the hospital.

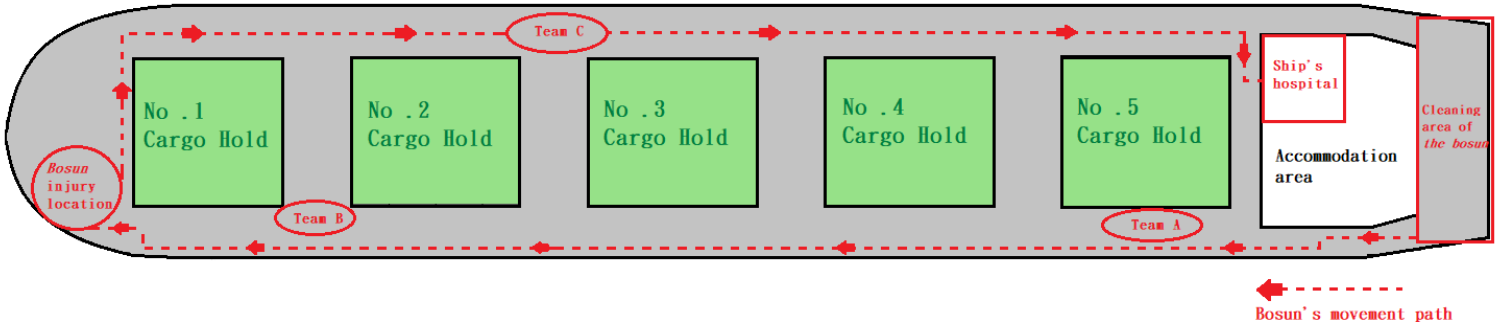


Figure 2: *The bosun*'s movement path on *the vessel*'s main deck areas

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 manned by 24 crew members 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 seven years of experience as a master. He possessed a Class 1 (Deck Officer) License issued by *HKMD*, valid until 5 August 2025.

4.3 *The C/O* had about half a month of experience as a chief officer. He possessed a Class 2 (Deck Officer) License issued by *HKMD*, valid until 27 July 2028.

4.4 The Second Officer had two years of experience as a second officer. He possessed a Class 3 (Deck Officer) License issued by *HKMD*, valid until 12 August 2027.

4.5 The Third Officer had about nine months of experience as a third officer. He possessed a Class 3 (Deck Officer) License issued by *HKMD*, valid until 15 November 2023.

4.6 The C/E had about five years of experience as a chief engineer. He possessed a Class 1 (Marine Engineer Officer) License issued by *HKMD*, valid until 16 January 2025.

4.7 The Second Engineer had about four years of experience as a second engineer. He possessed a Class 1 (Marine Engineer Officer) License issued by *HKMD*, valid until 10 January 2027.

4.8 The Third Engineer had about one year of experience as a third engineer. He possessed a Class 3 (Marine Engineer Officer) License issued by *HKMD*, valid until 1 July 2024.

4.9 The Fourth Engineer had about one year of experience as a fourth engineer. He possessed a Class 3 (Marine Engineer Officer) License issued by *HKMD*, valid until 5 February 2027.

4.10 *The bosun* had about 5 years of experience as a bosun. He possessed a Certificate of Proficiency issued by the People's Republic of China, valid until 25 April 2049.

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

Fatigue, alcohol and drug abuse

4.12 There was no evidence indicating that the crew on board suffered from either work-related fatigue or abuse of alcohol and drugs.

Weather and sea conditions

4.13 On the day of the accident, the sea condition was moderate, and the visibility was good. The weather was cloudy with northeasterly wind of Beaufort wind scale Force 5. The weather and the sea conditions were not considered to be the contributory factors to the accident.

Cause of the accident

4.14 Nobody witnessed the accident as the bosun was working alone in the port side forecastle store at the time of the accident. However, a cut fire hose (Figure 3), *the grinder* (Figure 4) connected to the electric power extension unit but powered off and a pool of blood were found on the deck of the port side forecastle store after the accident. The bosun may have been cutting the fire hose or repairing other ship equipment with *the grinder* in the port side forecastle store.

4.15 *The grinder* was a handheld power tool that was used for grinding, cutting or polishing metal or wood materials. Its power supply was 220 V (50 Hz). Its output power and speed were 850 W and 11,800 RPM respectively that was too powerful for cutting fire hoses. It was fitted with an abrasive wheel with a diameter of 125mm and a half-opened safety guard to protect the user.



Figure 3: A cut fire hose



Figure 4: *The grinder* (unplugged from the power source after the accident)

4.16 According to information provided by *the company*, *the bosun* had told other crew members after the accident that he had suffered an electric shock while using *the grinder*. From the photo taken after he was injured (Figure 5), *the bosun* was wearing wet cotton gloves at work. It could be deduced that *the bosun*'s gloves were wet after performing washing on the aft upper deck. *The bosun* might have been wearing wet gloves to cut the fire hose or repair other ship equipment with *the grinder* in the port side forecastle store. The wet gloves and wet skin could have increased electrical conductivity and reduced skin resistance, thus potentially led to an electric shock when *the bosun* contacted any live parts or damaged parts with low-insulation of *the grinder* during work. The electric shock was likely to be happened when *the bosun* put *the grinder's* plug to the live socket. After the shock, his muscles might have become uncontrollable, resulting in *the grinder* accidentally cutting his arm and causing a severe injury to his left arm. This could be one of the causes of the accident.



Figure 5: A photo of *the bosun* after he sustained the injury

4.17 There could be another possible cause, *the bosun* was using his left foot to step on one end of the fire hose on the deck. At the same time, he was using his left hand to pull another end of the hose to straighten it. This allowed *the bosun* to hold and operate *the*

grinder with his right hand to cut the hose. In doing so, the cutting edge of *the grinder*, which came close to his left hand after cutting the hose, could potentially cut his left arm due to the leftward force exerted on it by *the bosun*.

4.18 The investigation revealed that the appropriate cutting tools, such as a hacksaw or a pair of scissors, were not used to cut the fire hose, as advised by paragraph 18.2.3 of *the Code*. Moreover, *the bosun* used *the grinder*, which was unsafe for the job, as he kept the cutting edge of *the grinder* too close to his left arm and placed himself in a dangerous situation by not holding *the grinder* with both hands while cutting, as advised by paragraph 18.3.2 of *the Code*.

4.19 The investigation also revealed that the safety precautions for using a portable grinder stated in the company's Shipboard Operation Manual were insufficient, such as using suitable cutting tools for the job, holding *the grinder* with both hands and keeping both hands behind the cutting edge of *the grinder*, and ensuring hands are dry when operating *the grinder*.

Cause of the death

4.20 Based on the autopsy report provided by the shore hospital in Hokkaido, it is suspected that *the Bosun*'s cause of death was excessive bleeding resulting from a severe cut on his left arm.

Communication and supervision

4.21 *The bosun* was assigned to work alone to clean the aft upper deck and *the C/O* as a site supervisor did not properly supervise *the bosun*'s work and render necessary assistance. Similarly, *the bosun* did not inform *the C/O* or other crew members when he went to the port side forecastle store to carry out a new task (i.e. cutting the fire hose or repairing other ship equipment with *the grinder*) and did not seek necessary assistance. The investigation found that the communications between *the bosun* and *the C/O* as well as the supervision of *the C/O* to *the bosun* during work were ineffective.

4.22 Due to the lack of communication and supervision, nobody knew that *the bosun* was seriously injured with severe bleeding in the port side forecastle store during work, and no immediate first-aid could

be applied to minimize his bleeding. *The bosun* had to walk about 80 meters from the port side forecastle store to the main deck starboard side and seek medical assistance from Team C. Though the crew members applied first aid to *the bosun* to minimise the bleeding upon meeting him and immediately carried him to *the vessel*'s hospital for treatment by the Second Officer who was the designated seafarer on board for medical care, possessing the competence specified in section A-VI/4 of the STCW Code, the movement of *the bosun* after the accident would largely increase his blood loss from the wound. A substantial blood loss in the body would likely lead to his death. It could be one of the contributory factors to *the bosun*'s death.

Toolbox meeting and risk assessment

4.23 Section 1.2.5 of *the Code* states that *every task carried out on board the vessel should be subject to risk assessment. This does not mean that a risk assessment needs to be written every time a simple task is carried out, but the existing risk assessment must be referred to as part of a toolbox talk before the task can commence to ensure that the hazards and controls are fully understood, still relevant and appropriate*.

4.24 According to the information provided by *the company*, no risk assessment was carried out before the deck washing, as *the C/O* defined the task as routine. However, no existing risk assessment was referred to as part of toolbox meeting before commencing the task. *The bosun* underestimated the risks of using *the grinder*. He had neither notified *the C/O* of his ad-hoc task nor conducted a proper risk assessment.

4.25 The investigation revealed that the risks associated with the ad-hoc task of using *the grinder* by *the bosun* were not properly assessed prior to the work.

5. Conclusions

5.1 On 6 September 2023, *the vessel* completed loading of coal and set sail from port of Nevelsk, Russia, towards her discharging port - Panjin, China. Due to a significant amount of cargo residues accumulated on the open deck areas, it was planned to wash the areas in the following morning.

5.2 At 0658 hours on 7 September 2023, *the bosun* discussed with *the C/O* on the bridge about the day's work plans, which included washing the open deck areas on the main deck and outside the accommodation as well as repairing the freshwater pipes on the deck. During the toolbox meeting, the crew members were divided into four teams, except *the bosun* was assigned the task of washing the aft upper deck of *the vessel* alone.

5.3 At 0800 hours, the crew members commenced the deck washing at the designated areas. A team comprising *the A/B, the D/C* and *the C/O* was responsible to wash the main deck starboard side. At 0945 hours, *the A/B* heard someone calling loudly from forward of the ship and turned around to see *the bosun* standing between No.2 and No.3 cargo holds on the main deck starboard side, using his right hand to support his bleeding left arm. *The A/B* immediately informed his teammates including *the C/O* for help. They ran over to check the condition of *the bosun* and noticed that his left arm was bleeding seriously. *The bosun* told them that his arm was broken. They then applied first aid to him to minimize the bleeding and then carried him to *the vessel*'s hospital for treatment. Meanwhile, other crew members found *the grinder* and a pool of blood on the deck of the port side forecastle store. At 0954 hours, *the C/O* informed *the master* about the accident. *The master* rushed to the hospital and found that *the bosun* had suffered a severe cut on his left arm near the elbow joint. Severe bleeding was observed from *the bosun*'s left arm after cutting his clothes off. *The master* immediately organized crew members to continue applying first aid to *the bosun* and contacted *the company* for emergency medical assistance. *The master* altered the ship's course towards Hokkaido, Japan. At 1740 hours, *the bosun* was airlifted and then transferred to a shore hospital in Hokkaido. Unfortunately, *the*

bosun was later pronounced dead at the shore hospital on the same day.

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

(a) the safety precautions for using a portable grinder stated in the company's Shipboard Operation Manual were insufficient, as advised by paragraphs 18.2.3 and 18.3.2 of *the Code*. For example, the precautions should include using suitable cutting tools for a task, holding *the grinder* with both hands and keeping both hands behind the cutting edge of *the grinder*, and ensuring hands are dry when operating *the grinder* ;

(b) the communications between *the C/O* and *the bosun* as well as the supervision of *the C/O* to *the bosun* during work were ineffective; and

(c) the risks associated with the ad-hoc task of using *the grinder* by *the bosun* were not properly assessed prior to the work. .

6. Recommendations

6.1 *The 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) revise the company's Shipboard Operation Manual to include sufficient safety precautions for using portable grinders and other powered cutting tools;

(b) provide adequate training to ensure crew members use suitable cutting tools for a task and are familiar with the tools before use;

(c) enhance safety awareness of crew members when using electric cutting tools by instructing them to keep cutting tool away from their body, keep both hands behind the cutting edge of the tool, and keep their hands dry;

(d) promote effective communications and on-site supervision for crew members during work especially for those who are assigned to work alone; and

(e) conduct risk assessments for new tasks prior to work and implement appropriate control measures if hazards are identified during the assessment.

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* for comments.

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