



SAFETY INVESTIGATION REPORT

201903/015

REPORT NO.: 04/2020

March 2020

The Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011 prescribe that the sole objective of marine safety investigations carried out in accordance with the regulations, including analysis, conclusions, and recommendations, which either result from them or are part of the process thereof, shall be the prevention of future marine accidents and incidents through the ascertainment of causes, contributing factors and circumstances.

Moreover, it is not the purpose of marine safety investigations carried out in accordance with these regulations to apportion blame or determine civil and criminal liabilities.

NOTE

This report is not written with litigation in mind and pursuant to Regulation 13(7) of the Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011, shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame, unless, under prescribed conditions, a Court determines otherwise.

The report may therefore be misleading if used for purposes other than the promulgation of safety lessons.

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MV BOSTON TRADER **Serious injury while lashing containers on deck, in the port of Oran, Algeria** **14 March 2019**

SUMMARY

MV Boston Trader was moored at Dar Es Salem Terminal, in the port of Oran, Algeria.

During the morning of 14 March 2019, the third officer received a call over the portable radio that one able seafarer had an accident while securing containers on the cross deck between Bay 06 and Bay 12. On reaching the location, the third officer found the able seafarer standing with the sock and safety shoe of his right foot taken off and bleeding from the toe.

He immediately informed the master and the chief officer, and helped the injured seafarer down

to the deck.

A few minutes later, a medical team arrived on board and took the injured seafarer to a hospital.

The lower end of a long lashing bar had fallen onto the seafarer's right foot, cutting through his safety footwear. One toe on the seafarer's right foot was severely injured and had to be amputated.

Considering the safety issues taken by the Company, the MSIU has issued no recommendations to the Company.



FACTUAL INFORMATION

Vessel

MV *Boston Trader* was a 9,528 gt multipurpose dry cargo vessel, built in Ukraine in 2004. She was owned by Boston Trader Shipping Ltd., and managed by Uniteam Marine Shipping GmbH, Germany.

The vessel had a length overall of 146.47 m, a moulded breadth of 22.7 m, a moulded depth of 11.2 m, and a summer draft of 8.31 m. The container carrying capacity of the vessel was 1,083 TEUs¹.

Propulsive power was provided by a 7-cylinder, four-stroke, single-acting, direct drive MAN-B&W marine diesel engine, producing 9,730 kW of power, at 428 rpm, which enabled *Boston Trader* to reach an estimated speed of 20 knots.

Crew

The Minimum Safe Manning Certificate of

the vessel stipulated a crew of 13.

At the time of the accident, the complement of the vessel was in excess of these requirements. The crew members were nationals of Ukraine, Russia and Myanmar.

The injured able seafarer (AB) was a national of Myanmar; he had 19 years of seagoing experience, 14 years of which served in the rank of an able seafarer. He was qualified with STCW II/5 qualifications as an able seafarer deck, and had joined *Boston Trader* on 15 December 2018, from the port of Barcelona, Spain.

Lashing of containers on deck

The containers loaded on deck were secured in accordance with the Cargo Securing Manual, which required the containers stowed on Bay 06, in the vicinity of where the accident occurred, to be secured as shown in Figure 1.

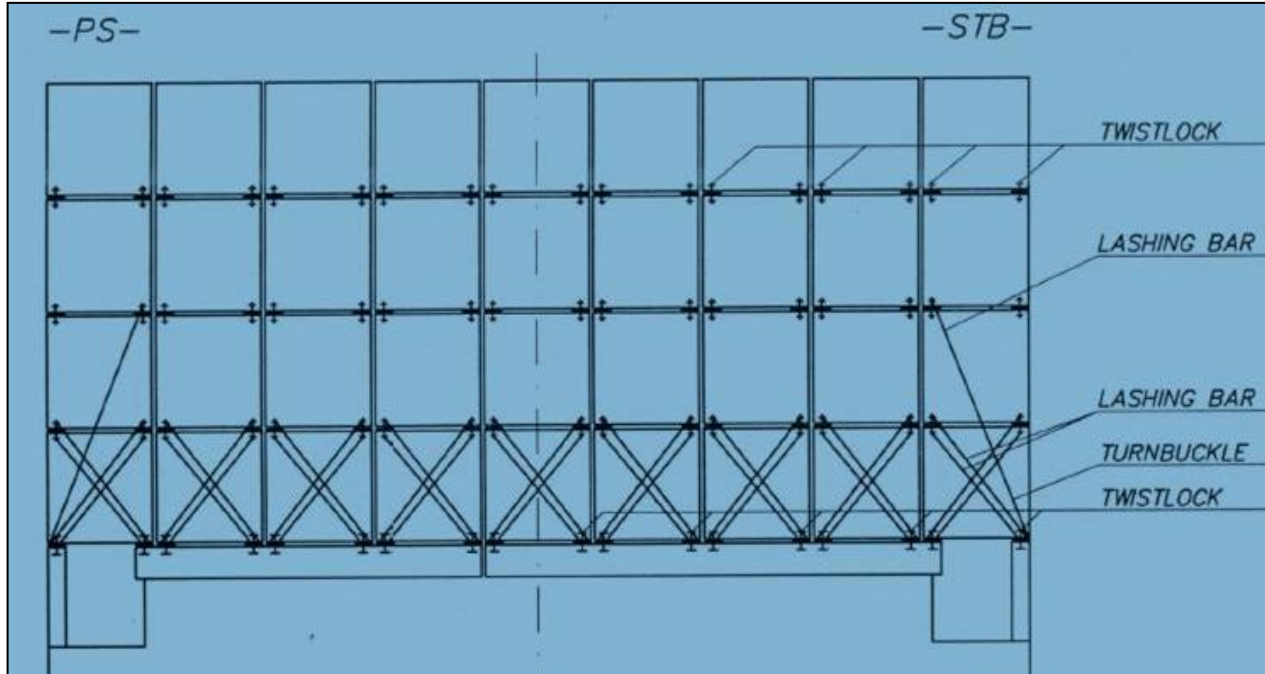


Figure 1: Container stowage and lashing plan – Bay 06

¹ Twenty-foot Equivalent Units – a standard unit used to describe a container vessel's or a shipping terminal's cargo carrying capacity.

The containers loaded on the third tier of the outboard ends had to be secured using a long lashing bar (Figure 2), and tightened with a turnbuckle connected to it.



Figure 2: Long lashing bar used for securing

The height of the long lashing bar was 5.07 m and it was said to weigh more than 20 kg.

The person securing the container would usually have to step onto the hatch cover, using it as a pedestal, to hook the lashing bar into the corner fitting² of a container (Figure 4).

Once hooked, the lashing bar would have to be brought diagonally across to be connected to the turnbuckle, which would then be screwed down to tighten the securing arrangement (Figures 5 and 6).



Figure 3: Hooking a lashing bar into a corner fitting

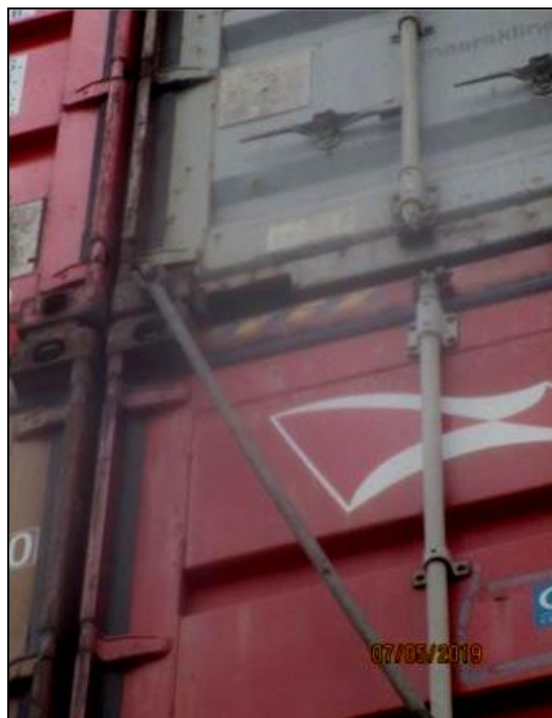


Figure 4: A lashing bar hooked into a corner fitting

² The International Convention for Safe Containers, 1972 (as amended) defines corner fittings of a container as an arrangement of apertures and faces at the top and/or bottom of a container for the purposes of handling, stacking and/or securing.

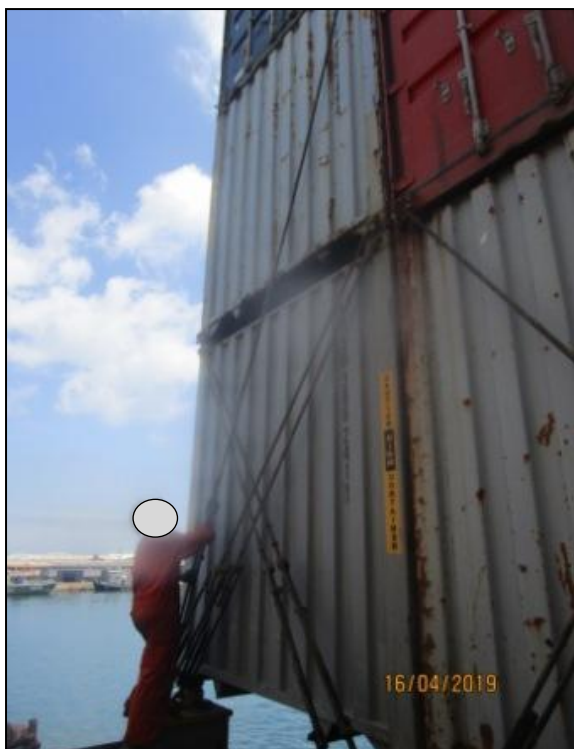


Figure 5: Connecting a lashing bar to a turnbuckle



Figure 6: A lashing bar connected to a turnbuckle

The vessel called at the port of Oran, Algeria, with a frequency of about one call per month.

In this port, the securing of the containers was always carried out by the vessel's crew. Information from the ship and the Company has indicates that one person was deemed sufficient to carry out this task. The familiarization records did not indicate that any crew member was familiarized with the container securing procedures and arrangements of the vessel.

Personal protective equipment

At the time of the accident, the injured AB was wearing the appropriate PPE required for the task *i.e.*, a hard hat, overalls, safety gloves and safety shoes. It was stated that all PPE worn by the injured AB were in good condition, and were of the correct size. His safety gloves appeared to be in a relatively new condition, and his safety shoes had only been worn for three months.

Risk assessment carried out for the task

A risk assessment for the securing of containers was carried out on 01 March 2019. The hazards associated with this task included injuries to personnel due to slips, trips and falls, and during the handling of equipment, (being hit by lashing material, and fall from a height).

The control measures required to be in place in order to minimize the risks associated with this task included, amongst others, wearing the correct PPE, training and briefing on correct handling techniques, and the assignment of sufficient personnel for each task.

All deck officers and ratings were involved in this risk assessment.

Environment

On the day of the accident, the weather was clear. The wind was blowing at a speed of about three knots, the air temperature was recorded to be 15 °C, and the sea was calm, with no swell being observed.

Narrative³

Boston Trader had been moored alongside the pier of Dar Es Salem Terminal, in the port of Oran, Algeria, since 11 March 2019; and cargo operations were in progress.

In the morning of 14 March 2019, the third officer, the bosun and two ABs were on watch since 0600. The bosun was keeping a watch on the vessel's gangway, one AB (AB 1) was securing the containers loaded on deck and another AB (AB 2) was on the pier checking and sealing containers about to be loaded.

While holding the hooked on lashing bar hooked with one hand, he stepped down from the hatch cover onto the cross deck in order to lift the turnbuckle with the other hand.

At this point, the lashing bar slipped out from the container socket and fell vertically down onto his right foot. The bottom end of the lashing bar (Figure 8) cut through the safety footwear (Figure 9) and injured his foot.

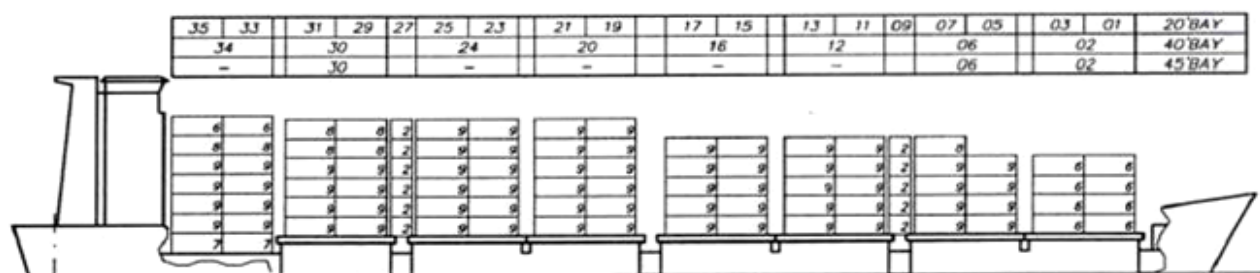


Figure 7: Location of the accident

Cross deck between Bay 06 and Bay 12

While containers were being loaded onto the hatch cover of no. 2 cargo hold (Bay 06), AB 1 was positioned in the cross-deck between Bay 06 and Bay 12 (Figure 7).

In order to secure a 40-foot container, which was loaded on the third tier, towards the outboard end of the starboard side of the vessel, AB 1 stepped onto the hatch cover of cargo hold no. 2, and hooked up a long lashing bar into the corner fitting of the container.



Figure 8: The bottom end of the lashing bar

³ Unless specified otherwise, all times mentioned in this report are in Local Time (UTC +1).



Figure 9: The safety shoe of the injured seafarer, after the accident

In the meantime, the bosun, who had heard AB 1 calling the third officer, called AB 2 to return on board and keep a watch on the gangway. At 0851, the chief officer, along with the bosun, arrived at the location and carried AB 1 into the accommodation.

The master informed the local agents of the accident and requested for emergency medical assistance, while the crew tried to arrest the bleeding.

At 0858, the agents, along with the local port authorities and a medical team, arrived on board. The medical team immediately transferred AB 1 to a hospital ashore and underwent surgical intervention and one toe was amputated. Two days after the surgery, the injured AB was discharged from the hospital and was repatriated.

ANALYSIS

Aim

The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, and to prevent further marine casualties or incidents from occurring in the future.

Fatigue or consumption of drugs and alcohol

The injured seafarer had a rest period of six hours, prior to resuming his duty at 0600 on the day of the accident. Although the quality of his rest hours could not be confirmed, it met the relevant requirements of STCW⁴ and MLC, 2006⁵. Fatigue was, therefore, not considered as a contributory factor to this accident.

An alcohol test was not carried out after the accident, however, information did not suggest that the injured seafarer might have been under the influence of drugs and/or alcohol. The hospital had no issues to provide the necessary medication. Based on this confirmation, the safety investigation did not consider drugs and alcohol to have contributed to this accident.

Familiarization with lashing arrangements and procedures

As mentioned earlier in this report, there were no records of any of the crew members being familiarized with the container securing procedures and arrangements of *Boston Trader*. However, taking into account that the injured seafarer had joined the vessel three months prior to this accident, and that the vessel regularly called at the port of Oran, where the

⁴ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, as amended.

⁵ Maritime Labour Convention, 2006, as amended.

securing of containers was always carried out by the crew members, the safety investigation did not deem the lack of (familiarization) records to mean actual lack of familiarization.

Risk assessment

The safety investigation is of the view that some of the control measures, which were required to be put in place to minimize the risks associated with the securing of containers, were not actually in place at the time of the accident.

The missing control measures included the following:

- correct PPE – although the injured seafarer was wearing the right PPE, it would appear that the injured seafarer might not have been wearing his shoes properly, at the time of the accident, thus indicating that the effectiveness of the safety shoes had been compromised⁶;
- sufficient personnel – the safety investigation is of the view that this measure was not in place at the time of the accident, and that the risk associated with designating only one crew member for the task was accepted by the crew.

Number of personnel required for the securing of containers

Although the crew members believed that securing of loaded containers could be carried out by only one person, taking into account the design of the lashing bar and the securing arrangements, the safety investigation believes that at least two persons were required to secure the containers – one to hold the hooked up lashing bar, and the other to connect it to the turnbuckle lying flat on the hatch cover.

⁶ Figure 9 indicated that the damage to the safety boot was in way of the metatarsals whereas he injured part was one of the proximal phalanges, which is normally well protected by the steel toecap.

Moreover, with just one person, securing containers on the third tier would have increased the risk of personnel injury when the lashing bar was being lifted.

Slipping of the lashing bar from the corner fitting

The sockets of corner fittings into which lashing bars are hooked, are oval in shape (Figure 4). A lashing bar, such as the one being used by the injured AB, was designed to slip in with ease into the socket of the container and to lock into the socket, once the bar is rotated diagonally across and connected to the turnbuckle. In view of this design, if the lashing bar is left suspended vertically, it may slip out from the socket of the corner fitting. The danger is higher if the lashing bar is not hooked correctly. The upper end of the lashing bar is shown in Figure 10.



Figure 10: Upper end (hook) of the lashing bar

Shoes of the injured seafarer

The safety investigation had been informed that the injured seafarer was wearing the correct size of safety shoes. However, as stated elsewhere in this safety investigation report, the part of the shoe which was

struck by the lashing bar (Figure 9) did not coincide with the position of the sustained injury.

Although the injury resulted in one of his toes being amputated, there were no signs of other injuries on the seafarer's foot. This suggested that the seafarer's foot might not have been inserted fully into his shoe when the lashing bar fell, either because the shoe was not properly worn or because his foot slipped out.

CONCLUSIONS

Taking into account the sequence of events, along with the facts and analysis of this accident, the MSIU drew up the following conclusions:

1. The injured seafarer was the only crew member tasked with the securing of containers;
2. Crew members believed that one person was sufficient for this task;
3. The long lashing bar slipped out of the socket after it was suspended vertically from the corner fitting;
4. The injured seafarer may have either worn his safety footwear improperly, or his foot slipped out at the time of the accident;
5. The risks associated with the task might not have been adequately assessed, as some of the control measures were not in place, at the time of the accident.

SAFETY ACTIONS TAKEN DURING THE COURSE OF THE SAFETY INVESTIGATION⁷

During the course of the safety investigation, the Company reviewed and revised the securing of containers' risk assessment form. Through this revision, the Company:

1. recommended that two persons are employed when handling long lashing bars;
2. reviewed and amended the SMS Manual to revise the guidance on safe lashing;
3. introduced a formal system of briefing and familiarization for safe lashing;
4. issued a 'Safe Lashing & Unlashing Checklist';
5. sent guidance to all managed vessels to remind masters of the importance of timely and accurate reporting in the case of crew injuries and in the approved company format to ensure that the required information is received by those that most need it;
6. reminded masters to preserve evidence and to get accurate and readable medical reports from shore medical providers and to check flag State requirements;
7. sent all lessons learnt and guidance to all managed vessels.

⁷ Safety actions shall not create a presumption of blame and/or liability.

SHIP PARTICULARS

Vessel Name:	<i>Boston Trader</i>
Flag:	Malta
Classification Society:	Det Norske Veritas – Germanischer Lloyd
IMO Number / Official Number:	9282168
Type:	Multipurpose Dry Cargo
Registered Owner:	Boston Trader Shipping Ltd.
Managers:	Uniteam Marine Shipping GmbH
Construction:	Steel
Length Overall:	146.47 m
Registered Length:	139.48 m
Gross Tonnage:	9,528
Minimum Safe Manning:	13
Authorised Cargo:	Dry cargo and Lo-lo

VOYAGE PARTICULARS

Port of Departure:	Valencia, Spain
Port of Arrival:	Oran, Algeria
Type of Voyage:	International
Cargo Information:	Containers
Manning:	19

MARINE OCCURRENCE INFORMATION

Date and Time:	14 March 2019 – 0848 LT
Classification of Occurrence:	Serious Marine Casualty
Location of Occurrence:	Dar Es Salem Terminal – Oran, Algeria
Place on Board	Freeboard deck
Injuries / Fatalities:	One serious injury
Damage / Environmental Impact:	None
Ship Operation:	Moored – Cargo loading/unloading
Voyage Segment:	Alongside/Moored
External & Internal Environment:	Weather: Clear. Visibility: 7 miles. Wind: Beaufort Force 1. Sea State: Calm. Swell: Nil.
Persons on board:	19