



SAFETY INVESTIGATION REPORT

201811/003

REPORT NO.: 20/2019

November 2019

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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This safety investigation has been conducted with the assistance and cooperation of the Transport Safety Investigation Centre of Turkey.

MV *Khosrov Bey* **Fatal fall down in the engine-room** **in position 41° 35.6' N 028° 44.0' E** **03 November 2018**

SUMMARY

At noon time on 03 November, the chief engineer, the third engineer, the electrical engineer, and one motorman were all in the engine control room.

The second engineer was making his way down to the engine-room to take over the watch from the third engineer. The electrical engineer, from the control room's window, saw the second engineer descend the first few steps of the stairway from the upper deck to the engine control room platform. After a short while, when he looked out again, he saw the second engineer lying on the deck

seemingly motionless and rushed to help him. First aid was administered, but the second engineer remained unresponsive.

The autopsy report revealed no narcotic or psychotropic drugs, but confirmed a presence of ethanol in blood (0.253 %) and in the eye fluid (0.267 %).

The MSIU has issued two recommendations to the Company aimed at reducing the risks associated with stairs and the consumption of alcohol.



FACTUAL INFORMATION

Vessel

Khosrov Bey (Figure 1), a 4,109 gt general cargo ship, was built in 2007 and was registered in Malta. She was owned by PAL Bulk 2 Shipping Co. Ltd., managed by Palmali Gemicilik ve Acentelik A.S. of Turkey and classed with BV. The vessel had a length overall of 99.89 m and a moulded depth of 8.40 m.

Propulsive power was provided by one internal combustion diesel engine, YANMAR 6N330-UN, producing 2,207 kW at 620 rpm. This drove a single fixed pitch propeller to reach a service speed of 13 knots.

Crew

Khosrov Bey's Minimum Safe Manning Certificate required a crew of 12. There were 14 crew members on board, from Azerbaijan and Ukraine.

The fatally injured Azerbaijani crew member was 49 years old, with 20 years of sea experience, and was signed on the vessel as a second engineer. This was his first contract with this Company. He had joined *Khosrov Bey* on the 22 April 2018, while the vessel was at Istanbul anchorage.

The second engineer held an STCW III/2 Certificate of Competence issued by Azerbaijan State Maritime Administration, and had worked as a second engineer with other companies for five years.

Environment

The sea condition was calm and a 1.0 m swell was running from a Northeasterly direction. The wind was from the Northeast, with a speed of 10 knots. The air temperature was 20 °C. No rolling and pitching were reported on that day.

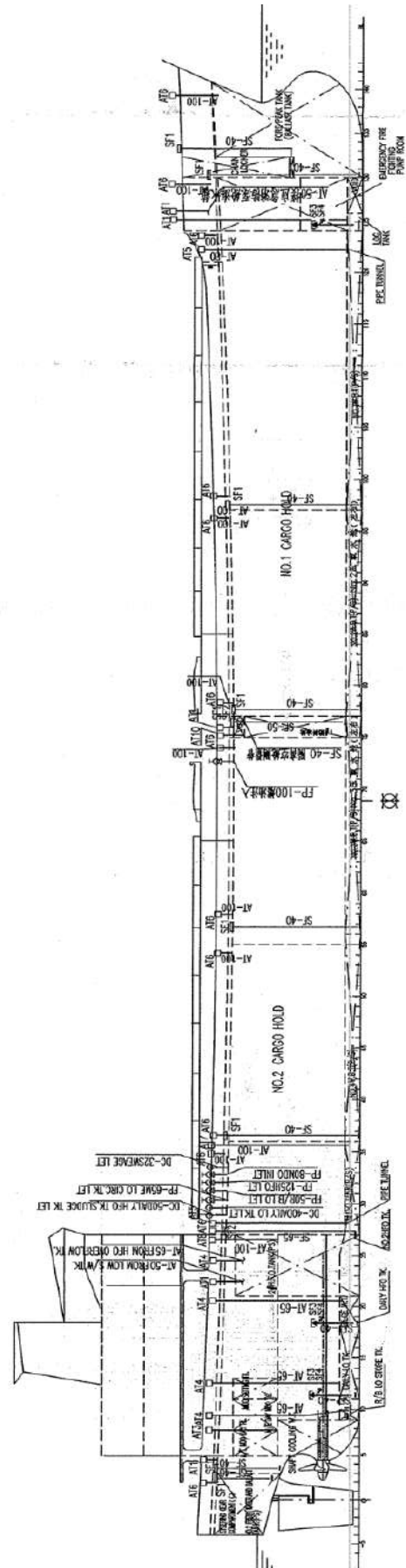


Figure 1: GA plan of MV *Khosrov Bey*

Narrative¹

Khosrov Bey left Bari, Italy, on 25 October 2018 for Reni, Ukraine. The vessel had no cargo onboard; instead she was carrying 2,000 metric tons of ballast water.

On the early morning of the 03 November 2018, the vessel exited the Istanbul Strait and proceeded off Turkey's coast for bunkering. The vessel commenced drifting at 0630, and completed bunkering from a bunker barge at around 1100.

By around 1200, the chief engineer, the third engineer, the electrical engineer, and one motorman, were all in the engine control room (ECR). In the meantime, the second engineer, who was on duty from 1200 till 1600, was making his way towards the engine-room. The electrical engineer, from the ECR's window (Figure 2), saw the second engineer descend the first few steps of the stairs (Figure 3) that led to the engine-room.



Figure 2: Engine control room window

¹ Unless otherwise stated, all times in this safety investigation report are local times.

After a while, the electrical engineer looked out the window again, and saw the second engineer lying on the floor. The electrical engineer alerted all personnel in the ECR, who all rushed out to help him. The master was informed and he swiftly proceeded to the location. The second engineer was reportedly found unconscious and, on observation, neither a breath nor a pulse was detected. Cardio Pulmonary Resuscitation (CPR) was commenced by the crew.

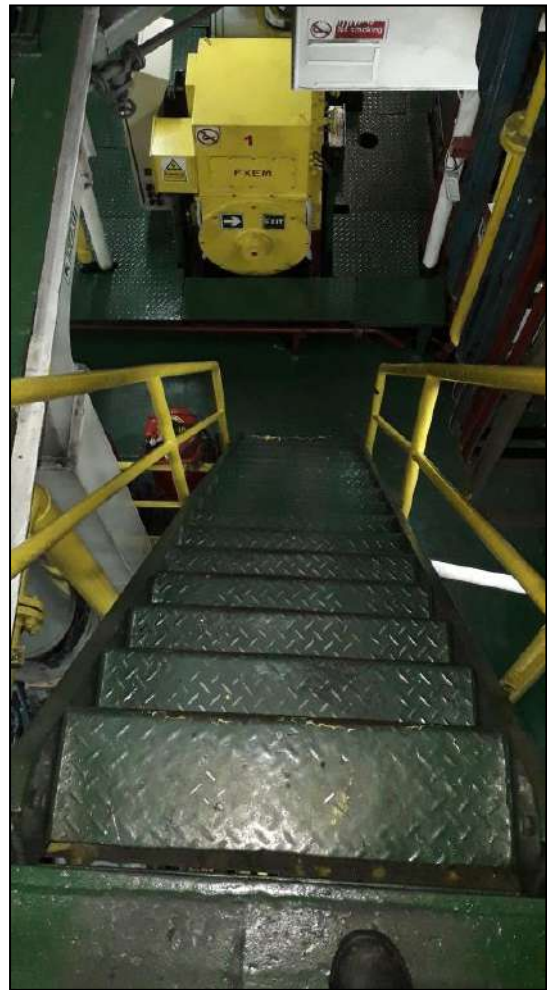


Figure 3: Stairs leading into the engine-room

The master ordered the crew to lift the second engineer and transfer him to his cabin, after which the relevant authorities were informed and the vessel diverted towards the Istanbul Strait, sector Turkeli, for medical assistance. Later on, a medical boat came alongside and the second engineer was eventually confirmed dead.

Personal protective equipment

At the time of the occurrence, the second engineer was reportedly wearing a boiler suit, safety boots, and a safety helmet.

Health of the second engineer

The second engineer's medical fitness certificate indicated that he was not suffering from any medical conditions and was neither taking any prescription nor non-prescription drugs. Furthermore, the master confirmed that the second engineer was not suffering from any sickness or diseases, known to him, at that time.

His record of work and rest hours, for the month of November, indicated that the second engineer had eight hours of rest, prior to the accident; however, the MSIU could not confirm the number of hours of quality sleep.

Condition of stairs

The access to the first engine-room platform, (which is at level with the ECR), from the upper deck, is via a flight of stairs (Figure 4). These stairs are set at a 60° angle from the horizontal and comprise of sixteen steps, painted in green. Each step was reported to be uniformly placed, with a riser height of 22 cm and a depth tread of 20 cm.

At the time of occurrence, the crew reported that no defects in the structure or fittings were observed.

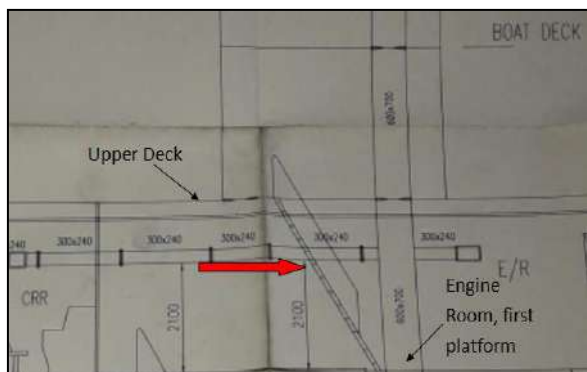


Figure 4: Plan showing the entry to the engine-room via stairs. The 'CRR' refers to the engine control room

The stairs included a fixed handrail and a midrail at either side of the stairway, both painted in yellow. At the time of the occurrence, the stairs were reported as being clear of any obstructions and not being slippery. The stairs were adequately lit by artificial lighting throughout its entire length (Figure 5).

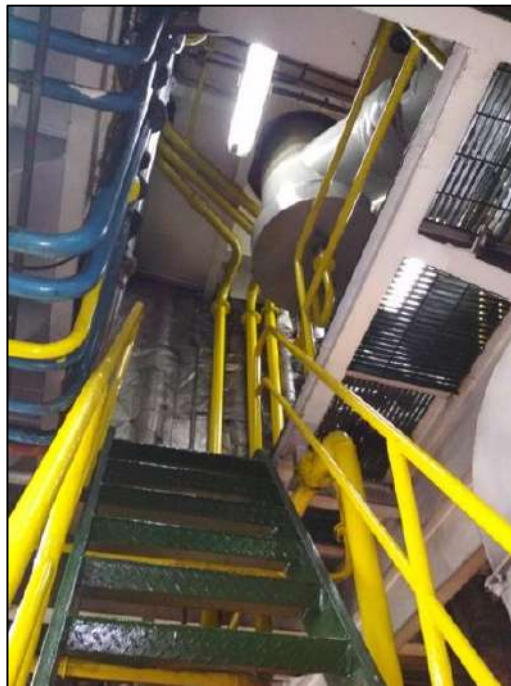


Figure 5: Lighting above the stairs

Company's drugs and alcohol policy

Section 24 of the HQSE Manual integrated the Company's drug and alcohol policy with the SMS section relating to the seafarers' use of drugs/alcohol while engaged with the Company.

The policy stated that:

“[A]ll distribution and consumption of alcohol onboard is prohibited. Any consumption of alcohol on the shore during granting leave of absence at port is prohibited.”

As a means of control, the SMS required the master to carry out random tests on 25% of the crew members per month.

Cause of death

The autopsy revealed that the cause of death was due to internal brain haemorrhage, brain tissue damage, together with skull fractures due to general body trauma. These injuries corroborate with the second engineer's fall down the stairs.

The toxicological tests revealed that 253 mgdl⁻¹ (0.253 %) of ethanol was present in the blood and 267 mgdl⁻¹ (0.267 %) of ethanol was present in the eye fluid of the deceased. Methanol was not present, and neither were any systemic drugs² nor stimulants present.

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.

Cooperation

During the course of this safety investigation, MSIU received all the necessary assistance and cooperation from the Transport Safety Investigation Centre of Turkey.

Effects of the weather conditions on the vessel

No rolling and/or pitching were experienced by the vessel in the prevailing weather conditions and, therefore, environmental conditions were not considered to be a contributing factor to this accident.

Fatigue, drugs, alcohol and other probable causes of the fall

The second engineer was bound to start his duty at 1200. Records of his work and rest hours, presented to the MSIU, indicated that his rest periods were in accordance with the STCW and MLC 2006 Conventions' requirements. Fatigue was, therefore, not considered to be a contributing factor to this accident.

As the toxicological analysis did not find any systemic drugs, stimulants or drug active substances in either blood, or urine, these were not considered to be a contributing factor to this accident.

Section A-VIII/1.10 of the STCW Convention, as amended, has established measures to prevent drug and alcohol abuse on board. A mandatory requirement has established a maximum limit of either blood alcohol content (BAC) not greater than 0.05 % or 0.25 mg/l alcohol in the breath for masters, officers and other seafarers while performing designated safety, security and marine environmental duties.

The Company's policy was clear in that consumption of alcohol on board and ashore, while being employed with the Company, was prohibited. The responsibility to monitor and implement the drug and alcohol policy on board was imposed on the master.

The MSIU did not come across direct evidence, showing that the second engineer had consumed alcohol prior to his watch. However, the toxicological findings indicated that the BAC was at a level which would have likely affected his breathing, his ability to walk without assistance, his bladder control and, possibly, could have led to loss of consciousness.³

In addition to the above, the design of the staircase lacked contrasting step edges (nosings), which are highly effective against

² Medicines that affect the entire human body.

³ [SA Health - Government of South Australia.](#)

missing a step and slipping⁴. It did not transpire to the safety investigation that the fitting of step edges is a mandatory requirement.

As mentioned elsewhere in this report, the second engineer was, at the time, wearing appropriate PPE, including safety boots.

Close-up photos of the safety boots indicated that although evidently used, there was still adequate depth to the sole (Figure 7). The safety investigation could not attribute the fall to the condition of the safety boots.



Figure 7: Grooves in the sole of the second engineer's safety boots

Taking into consideration the above, the MSIU believes that in all probability, the fall was caused by any of the following:

- The high level of alcohol may have impaired the second engineer's cognition or caused poor coordination;
- Loss of consciousness due to the high level of alcohol present in the body of the second engineer;

- Lack of contrasting step edges might have caused him to miss a step and slip; and
- A combination of any of these factors.

CONCLUSIONS

1. The high level of alcohol may have impaired cognition or caused poor coordination of the fatally injured crew member; and
2. The fatally injured crew member may have lost consciousness due to the high level of alcohol present in his body;
3. The fatally injured crew member may have missed a step on his way down to the engine-room;
4. There were no contrasting nosings on the step edges;
5. The fatally injured crew member was not observed to be holding the handrail;
6. The fatally injured crew member was wearing PPE, which included; safety shoes, overall and safety helmet;
7. The fatally injured crew member was adequately rested as per ILO/IMO requirements;
8. The fatally injured crew member was not suffering from any illness or diseases, and was not taking prescription drugs;
9. The fatally injured crew member's hands were free from objects and the stairs were not obstructed;
10. The stairs were free from any defects or damages which might have contributed to the fall;
11. The stairs were adequately lit by artificial lighting at all stages of descent.

⁴ Step edges and handrails provide an effective visual trigger and can avoid overstepping and mis-stepping.

RECOMMENDATIONS⁵

Palmali Gemicilik ve Acentelik A.S. is recommended to:

20/2019_R1 Mark nosings of stairs with a contrasting colour.

20/2019_R2 Share this investigation report with the Company's fleet.

⁵ **Recommendations shall not create a presumption of blame and / or liability.**

SHIP PARTICULARS

Vessel Name:	<i>Khosrov Bey</i>
Flag:	Malta
Classification Society:	BV
IMO Number:	9437347
Type:	General Cargo
Registered Owner:	Pal Bulk 2 Shipping Co Ltd
Managers:	Palmali Gemicilik ve Acentelik A.S.
Construction:	Steel
Length Overall:	99.89 m
Registered Length:	94.72 m
Gross Tonnage:	4,109
Minimum Safe Manning:	12
Authorised Cargo:	Solid Bulk

VOYAGE PARTICULARS

Port of Departure:	Bari, Italy
Port of Arrival:	Reni, Ukraine
Type of Voyage:	International Voyage
Cargo Information:	In Ballast
Manning:	14

MARINE OCCURRENCE INFORMATION

Date and Time:	03 November 2018 at 12:00 (LT)
Classification of Occurrence:	Very Serious Marine Casualty
Location of Occurrence:	41° 35.6' N 028° 44.0' E
Place on Board	Engine-room
Injuries / Fatalities:	One
Damage / Environmental Impact:	None reported
Ship Operation:	Underway
Voyage Segment:	In transit
External & Internal Environment:	Northeast wind, Beaufort Scale Force 3, Swell's direction was from Northeast with a height of 1m. The air temperature was 20°C.
Persons on board:	14