



**REPUBLIC OF BULGARIA**  
**NATIONAL BOARD FOR AIRCRAFT, MARITIME AND RAILWAY ACCIDENT**  
**INVESTIGATION**  
**Marine Safety Investigation Unit**

**FINAL REPORT**  
**from the safety investigation**  
**of a very serious marine casualty -**  
**falling overboard of two crew members of m/v "MARE"**  
**and the death of one of them**  
**on 14.12.2020**



**2021**

**FOREWORD****Excerpt from the Merchant Shipping Code:**

**Art. 79.** (Amended, SG No. 41/2001, amended, SG No. 113/2002, amended, SG No. 87/2005, effective 01.01.2006). , amended, SG No. 92/2011, amended, SG No. 93/2017)

(1) (Amended, SG No. 62/2019, effective 06.08.2019) The investigation of marine casualties and incidents shall be carried out by investigative inspectors - employees of the National Board for Aircraft, Maritime and Railway Accident Investigation.

(2) The investigation under para. 1 aims to assist in improving the safety of maritime transport and to prevent marine accidents by establishing the causes and circumstances of a specific accident, without drawing conclusions about the presence of fault or the distribution of liability. The investigation under para. 1 shall be carried out separately and independently of the criminal, administrative-penal or civil proceedings conducted on the occasion of the same maritime accident and may not be obstructed, suspended or delayed by such proceedings.

(10) (Amended, SG No. 62/2019, effective 06.08.2019) Each safety investigation shall end with a report prepared in the form and with the content specified in the Ordinance under para. 13. Within 12 months from the date of the marine casualty or incident, the managing authority of the National Board for Aircraft, Maritime and Railway Accident Investigation shall publish the report, including its conclusions and recommendations, on the website of the Ministry of Transport, Information technology and Communications. The conclusions and recommendations contained in the report may not be used in civil, administrative, disciplinary or criminal proceedings.

**Note:** Investigative materials should not be used in litigation or commercial disputes, and the National Board cannot be a party to or involved in such litigation and disputes.

The report is published on the Internet, for public domain, on the official website of the Ministry of Transport, Information Technology and Communications: <https://www.mtitc.government.bg/>.

Times used are in local time (UTC + 2).



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**TERMS AND ABBREVIATIONS USED**

**BP** - Border Police

**CEMC** - Center for emergency medical care

**DG "ER"** - Directorate-General for Emergency and Rescue

**D "MA"** - Maritime Administration Directorate

**GDPBZN** - Directorate-General for Fire Safety and Population Protection

**m/c** - motor cutter

**m/v** – motor vessel

**MOI** - Ministry of Interior

**MRCC** - Marine Rescue and Coordination Center

**RPD** - Regional Police Department

**SMS** – Safety Management System

**TPP** – Thermal Power Plants

**UTC** –Universal Time Coordinated

**VTS** - Vessel Traffic Control

**SUMMARY**

At 22:08 on 14.12.2020 , the chief engineer of the m/v *Mare* fell overboard from the stern of the ship, while trying to retrieve his mobile phone, which turned out to be on the deck behind the railings.

The ship left the Port of TPP Varna with the help of a pilot and came out of Varna Lake, making the transition to the Port of Bourgas. The fall of the chief engineer was noticed by the ship's cook, who immediately informed the master,

who was on the bridge, and the two ran to the stern. As the master threw a lifebuoy into the water and tried to locate the chief engineer, the cook suddenly jumped over the railing into the water.

A search and rescue operation was carried out, during which the chief engineer was found and rescued. The search for the cook continued, including divers and patrols along the coast, but without a result. The cook's body was found ashore about a month later, and the established cause of death was drowning.

The safety investigation of the accident was carried out by a Commission of the National Board for Aircraft, Maritime and Railway Accident Investigation, after reaching an agreement with the investigating authorities of the Flag State of the ship - Republic of Vanuatu.

The Commission considers that the main cause of the very serious accident was a human error in the actions of both the chief engineer and the cook.

The Commission has issued one recommendation to the Company designed to improve crew awareness and readiness for actions in emergency situations and following the rules of health and safety.

**1. FACTUAL INFORMATION****1.1. VESSEL, VOYAGE AND MARINE CASUALTY PARTICULARS**

<b>1.1.1 VESSEL DETAILS</b>	
Name	MARE
Flag / nationality	Vanuatu
IMO №	8411671
Call Sign	YJUA3
MMSI	577298000
Ship-owner	Efe Shipping & Trading Co. Ltd.
Port of registration	Port Vila
Ship operator	Efe Gemi Isletmeciligi Sanayi
Classification organization	Bulgarian Register of Shipping
Type	General Cargo Ship
Year of construction	1985
Shipbuilder	Ferus Smith Scheepswerf Hoogezand, Netherlands
Gross tonnage	998 t.
Length (maximum)	78.79 m.
Width (largest)	10 m.
Draught	3.2 m.
Deadweight (max)	1 494 t.
Main engine	Deutz SBA8M528

<b>1.1.2 VOYAGE INFORMATION</b>	
Last visited ports	Varna, Bulgaria - December 14, 2020 Chernomorsk, Ukraine - December 04, 2020 Chernomorsk, Ukraine - November 30, 2020
Port of departure	Varna, Bulgaria
Destination	Bourgas, Bulgaria
Type of voyage	International
Cargo information	Empty, under ballast
Crew	7 people, citizens of the Republic of Turkey, Azerbaijan and Georgia
Working language	Turkish

<b>1.1.3 MARINE CASUALTY INFORMATION</b>	
Date and time	14.12.2020, 22:08 LT
Type of accident	Very serious accident - falling overboard of 2 crew members and death of one of them.
Coordinates and location	43°12' 00" N; 027°51'50" E - Varna Lake, Black Sea
Hydro-meteorological conditions	Visibility: very good, dark part of the day, wind: W - 1, Sea: 0, Weather - clear
Place on board	Aft of the deck, behind the bridge, starboard side
Persons injured	Yes, deceased /drowned crew member
Consequences for the ship	No
Consequences for the cargo	No
Environmental effects	No

## 1.2. DESCRIPTION OF VESSEL

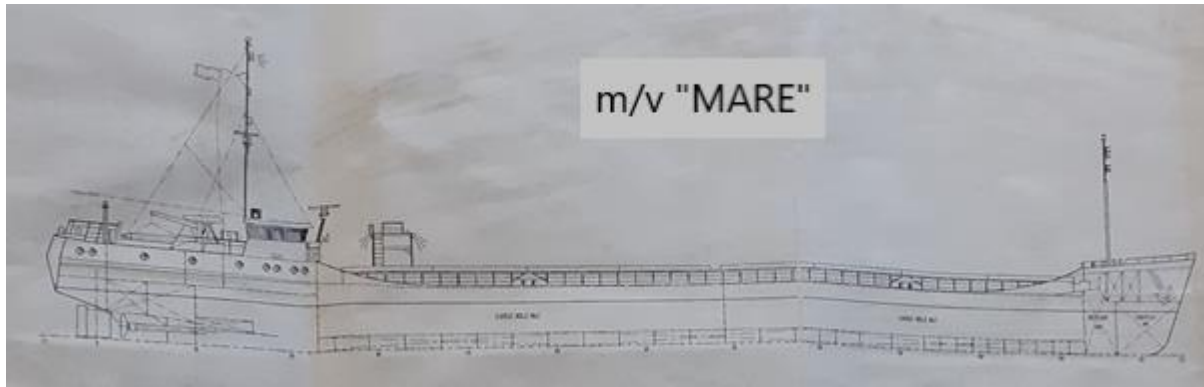


Fig. 1

Built in 1985, the *m/v Mare* is a single-deck ship with two cargo holds for bulk cargo and a superstructure in the stern. The bridge and the crew's living quarters are located in the superstructure. Below them is the engine room. The main engine, model Deutz SBA8M528, is capable of remote control from the bridge. Immediately behind the bridge is the stern part of the deck. Access to this deck is possible in two ways: from the bridge or from a separate exit from the corridor connecting the engine room with the living part of the ship (**Fig.2**).



Fig. 2

On the stern deck is located the equipment necessary for the operation of the ship, as well as a wooden table used for rest and relaxation by the crew. The table is not fixed to the deck and can be moved freely. There are no restraints at the edges of the table top to prevent objects from falling due to the ship's tilting. The surface of the deck is covered with several coats of paint, with roughness and unevenness, as well as with peeled and rusty areas.

The railing of the ship is made in the form of a metal guardrail with a height of 1.0 m. The strip of the board beyond the railing is 0.29 m wide. The spare propeller of the ship is fixed on the inside part of the railing.



### 1.3. CREW MEMBERS

The ship was serviced by a 7-member crew of different nationalities. The captain and two seamen were Azerbaijani, the chief officer, the chief engineer and the cook were Turkish citizens, the motorman was a citizen of the Republic of Georgia. The working language was Turkish.

All crew members had regular documents - certificates of competency, certificates of additional training, medical certificates, etc.

The master was 55 years old Azerbaijani, and had 35 years of seagoing experience, ten years of which in the rank of a master.

The chief engineer was 40 years old, a Turkish citizen, with 20 years of seagoing experience, eighteen years of which in the rank of a chief engineer.

The perished cook was 42 years old and had joined the vessel on September 19, 2020 (3 months). Prior to his appointment on the ship, his last registered contract for an international voyage was in April 2016, terminated only after 9 days. The crew members described him as diligent and careful person. Fifteen days before the accident, he gave a notice to leave and, according to crew testimony, was looking forward to returning to Turkey to disembark.

Witnesses claimed that immediately before the accident, he behaved like a person under the influence of alcohol, showing unprovoked irritability and arguing loudly. Bottles of alcohol (beer) were seen in his cabin, probably bought during his stay ashore.

### 1.4. INFORMATION ABOUT THE CONDITIONS IN THE AREA OF THE ACCIDENT

At the time of the chief engineer's falling into the water, the ship was on the Eastern part of Varna Lake (**Fig. 3**), at the entrance of Channel 1, heading to the sea at 90° and a speed of 6.4 knots.

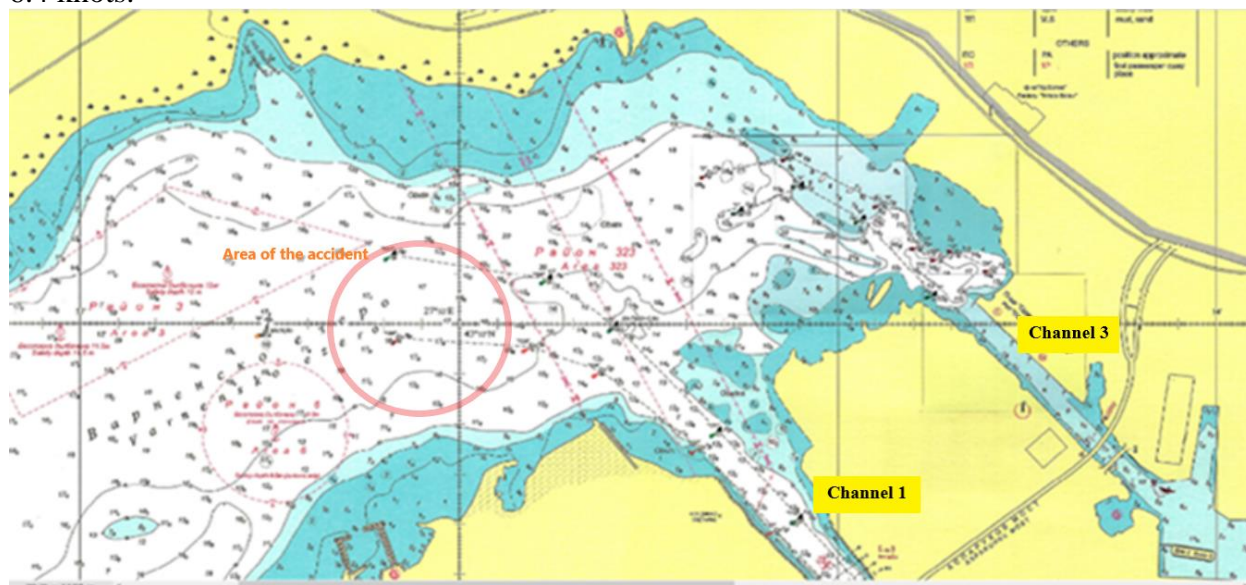


Fig. 3

The width of Varna Lake in this section is about 8 cb, with distances to the Northern and Southern coasts respectively 5 cb and 3 cb. The seawater was calm, there was no current. The wind was from the West, 5 m/s. The water temperature was 10°C, the air temperature was 6.5°C.

The night of December 14-15 was moonless. The moon was in the "New Moon" phase (from 18:18 on 14.12.2020), with its dark side to the Earth and could not be seen - it was located between the Earth and the Sun. Despite the clear weather, the lack of light prevents the detection of targets in the water.

### 1.5. THE COMPANY DRUG AND ALCOHOL POLICY.

Efe Shipping & Trading Co Ltd maintains a strict policy to prevent the distribution and use of drugs and alcohol both on its ships and on the shore. This policy is set out in the SMS Handbook of EFE.02 C dated 12.10.2020, issued in accordance with the OCIMF "*Guidelines for the control of Drugs and Alcohol on board ships*".

It is not allowed to hire employees who use or who have recent registrations for drug use. It is explicitly emphasized that those under the influence of drugs or alcohol are incapable of work, disturb the other crew members, disobey the officers and act in violation of the Company's rules, which will lead to their immediate release.

Any crew member found in violation of this Company policy shall be released immediately and handed over to the appropriate authorities for further prosecution. Ship captains are strongly advised not to allow any alcohol on board.

### 2. DESCRIPTION

At 10:00 on 14.12.2020 the ship arrived at the Port of TPP Varna in Varna Lake from the port of Chernomorsk, Ukraine. During the ship's stay in the port, some of the crew members, not participating in the unloading operations, went ashore. With the permission of the chief officer, the cook also went ashore.

After the completion of the unloading operations, the ship was preparing to sail to the port of Bourgas.

At 21:10, the Bulgarian pilot boarded the ship. It was planned that the ship would pass through Varna Lake and Channel 1, after which it will drop the anchor at the Varna roads.

At 21:20 the ship left the port of TPP Varna, heading for Channel 1. The ship was empty, under ballast. On the bridge were the master, pilot and watchkeeper.

At around 22:00, the chief engineer left the engine room, with the intention to go to the stern deck to call his wife. On the way to the stern, he took his cigarettes from the cabin and entered the messroom to make a cup of tea. In the messroom he met the cook, who was behaving visibly inappropriately, irritated by the presence of the engineer. The cook complained loudly about the crew's excessive claims against him, and that the very presence of the chief engineer irritated him. The chief engineer tried to calm him down, but the cook's cries turn into screams that could be heard on the bridge. The master had to send the chief officer to the messroom to see what's going on. After the intervention of the chief officer, the cook calmed down and retired to his cabin. The



Fig.4

chief engineer followed the cook into the cabin and offered his help, but the cook preferred to be alone. The chief engineer went to the stern, where he left his mobile phone on the table and went down to the mess room to pour himself some tea. After returning to the stern, he found that his phone had fallen off the table and was located on the deck, outside of the railing (**Fig. 4, reconstruction**).

Initially, the chief engineer tried to reach out for the phone, without moving the table for easier access. For one reason or another, he failed and decided to climb over the railing.

After crossing the railing, the chief engineer picked up the phone and tried to get back on the deck. When he tried to cross the railing, he held one of the blades of the spare propeller with one hand. The shape of the blade made it difficult to have a



secure grip, and as the chief engineer moved, he lost his balance and dropped. Falling into the water, he cried loudly of surprise and fright.

The place where the events of picking up the phone and falling overboard took place was located above the porthole in the cabin of the cook (Fig. 5).



Fig. 5

While in his cabin, the cook heard the shouts of the chief engineer and saw him through the porthole, falling into the water. He immediately ran up the inner ladder of the bridge and notified the master. The master ordered the pilot to inform to the shore for "man overboard" and he and the cook ran to the stern. The Bulgarian pilot, having previously heard the screams, in Turkish, coming from the messroom, and subsequently the fuss on the bridge and not understanding the language, left with the impression that falling overboard was the result of an argument.

At 22:08 the pilot informed the officer on duty ashore, on VHF Channel 9, about a man overboard as a result of a fight.

From the stern the master threw a lifebuoy into the water and together with the cook they started calling the chief engineer by name, trying to locate his position. Unexpectedly, the cook, who was 3-4 meters away from the master, climbed over the railing and jumped into the water. The master threw a second lifebuoy and returned to the bridge.

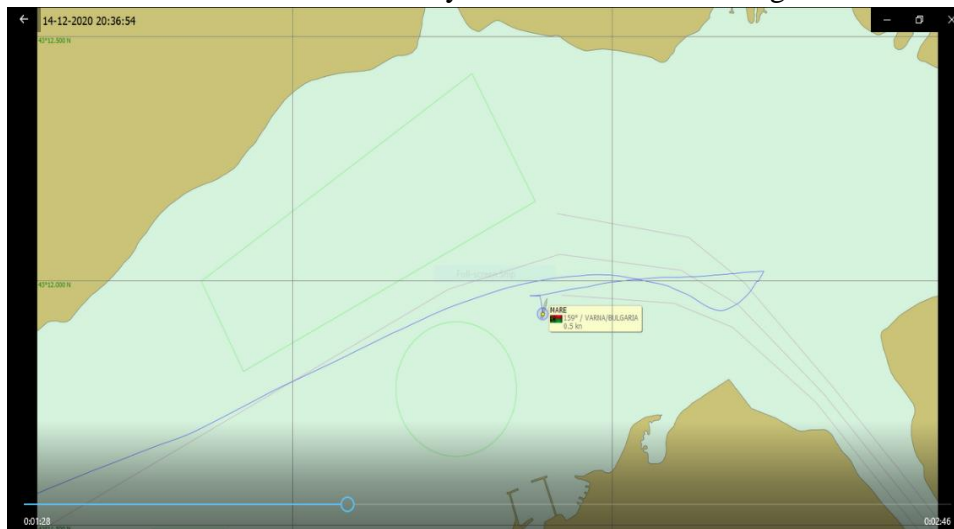


Fig.6

The shore authorities were informed of a second person overboard (again as a result of a fight). The ship undertook a maneuver to return to the scene of the accident (Fig. 6). Search and rescue operation began for the crew members who had fallen into the water.

Upon receipt of the "man overboard" signal, MRCC-Varna immediately launched a search and rescue operation (see section 2.2, "Actions of the Coastal Authorities").

At 22:25, the crew from the ship heard shouts in the water, with a searchlight they found a man about 20 meters on the bow and directed the arrived rescue boat.

At 22:30 the chief engineer was taken out of the water on board of the rescue boat. He was conscious, with a mild form of hypothermia. Subsequently, he was transferred to a pilot boat and transported to Varna Sea Station, where he was taken to a hospital with an ambulance team.

After the rescuing the chief engineer, the search for the cook continued.

Due to the restrictions on maneuvering in the area of Channel 1, the ship was ordered to stay at anchor in Varna Lake, in the area of buoy № 9. The search continued with the rescue boats of D"MA" and Border Police. The operation involved also divers, forces and funds of the MOI.

At around 22:50, an underwater inspection began, as well as a patrol on both shores of the lake around the scene of the accident.

The next day, 15.12.2020, the SAR-operation continued with the participation of *m/c Spasitel 1* of MRCC, *m/v Kaliakra* of BP, fishing boats and crews of 4 th Regional Police Department.

At 10:18, the unidentified body of a man was found in Channel 3. At 11:05, the SAR operation was terminated, and the case was taken over by the police. It later became clear that the body found was not the missing member of the crew. The cook who jumped overboard arbitrarily and disappeared had been declared wanted by the MOI.

On January 9, 2021, the body of the drowned cook was found surfaced in the area of Channel 3, Western Industrial Zone. After the body of the cook was found, an examination and autopsy were performed by the judicial authorities. The immediate cause of death was found to be mechanical asphyxia due to drowning. No traces of traumatic injuries were found. The chemical examination of the blood sample taken from the cook's body revealed the presence of ethanol and methanol in the blood with values corresponding to an average degree of alcohol intoxication. It is possible that these values are due to the use of alcohol before the accident, or to the post-mortem formation of ethanol and methanol as a result of the fermentation processes in carcass decay.

## 2.1. HYPOTHERMIA

One of the most important factors that limit the ability to survive a disaster at sea is the impact of the human body from the cold.

As the temperature of the water is usually lower than the body temperature (36-37°C), if a person is in the water for a certain time, his body overcools and his temperature drops - a state of hypothermia occurs. As soon as a person's temperature drops to 30°C, his heart begins to work arrhythmically, and when cooled to 28°C, the heart activity begins to break irreversibly until it stops completely. Studies show that there are two approximate limits of internal temperature: 34-35°C is the critical limit at which heart disorders can occur, and 24°C is the lethal limit at which processes inevitably lead to death.

At a water temperature of + 10°C, the time for a person to stay in it safely is about 40 minutes, after which a state of hypothermia occurs. The time for which the temperature of the human body in the water can fall to a dangerous level depends on many reasons - age, subcutaneous fat, hardening of the body, etc. To a large extent, this time depends on clothing and human behavior in the water. Even when wet, clothes slow down the body's release of heat into the environment, so the body temperature can be kept 4-5°C higher than the water temperature. On the other hand, if you do not have a life jacket, wet clothes and especially shoes, significantly reduce a person's ability to stay above water. Both crew members who found themselves in the water were wearing clothes and shoes and no life-saving equipment.

According to the chief engineer, after accidentally falling overboard, he succeeded to take off his jacket and shoes and stay afloat. Attempts to swim after the passing ship or to the shore were unsuccessful due to the extremely low water temperature.

The external examination of the body of the drowned cook showed that he was without a jacket, but with shoes and pants, that he tried but failed to take off.

## **2.2. ACTIONS OF THE COASTAL AUTHORITIES.**

After receiving the signal from the ship for "man overboard", MRCC-Varna began a search and rescue operation (SAR). According to the SAR plan, forces and resources from the D"MA", the BP and the MOI were included.

At 22:08 on 14.12.2020 the duty officer at MRCC received information by phone from the Vessel Traffic Control - Varna for a "man overboard" from *m/v Mare*, entering Channel 1, direction Lake-Sea. The duty officer of BP-Varna was notified and assistance with forces and means was requested. The movement of ships in the Channel 1 had been suspended.

At 22:12 the on-duty rescue boat (*m/c Spasitel-1*) was taken off from Varna Sea Station to make a transition to the scene of the accident (to the first red buoy-South, at the entrance of a Channel-1 in the lake).

At 22:20 the BP boat - GPK 535 was sent to the scene and provide assistance.

At 22:24, the rescue boat *m/c Spasitel - 1* arrived in the area of the accident and, guided by the crew of *m/v Mare*, found a man in the water.

At 22:30 one person was taken out alive of *m/c Spasitel-1*, at a point: 43°12',020 N; 027° 51',714 E.

At 22:40 the rescued man was transferred to the pilot boat *Nereida* for transportation to Varna Sea Station, where at 23:00 he was handed over to a team of CEMC and taken by ambulance to "St. Marina" hospital. The rescued person (the chief engineer) was examined, his condition was satisfactory and he did not need to be hospitalized.

At 22:50 two divers from the GDPBZN boarded the rescue boat and continued the search for the second person.

After coordination with the BP and the Police Department of the MOI, a search began by their patrols on both shores of the lake in the area of the accident, North and South.

*M/v Mare* was ordered, by the Varna harbormaster, to stay at anchor to buoy №9 in Varna lake.

On 15.12.2020 the SAR operation continued in the area of the entrance of Channel-1 in Varna Lake between buoy № 126 (First Southern Buoy) and buoy № 9. The identity of the missing seaman - the Turkish citizen, № 6 in the crew list (the cook) had been established. Search continued in the lake, as well as in both the area of the accident and along the two adjacent shores, by *m/c Spasitel-1*, *m/v Kaliakra* of BP and fishing boats, police teams on the shores.

At 02:00, due to the lack of probability of a living person in the water in the area of the disaster, the night search of the two boats ceased. Extended search continued on both shores in the area of the accident - North and South, by the police teams.

At 08:05, *m/c Spasitel-1* continued searching on both shores without result, the search continued in Channe3 and Channel-1.

At 10:18 a body of a man was found in Channel-3. The SAR operation had been terminated.

On December 16, 2020, information was received that the found body did not belong to the missing seaman. The search was resumed along the coast.

On 17.12.2020, information about the accident was exchanged with MRCC ANKARA. It was reported that the chief engineer was rescued, the search in the water area of the seaport was stopped, the missing cook was declared wanted by the MOI. The search continued along the coast by BP patrols.

### **2.3. COMMISSION FINDINGS ON THE VISIT TO THE SHIP.**

On December 18, 2020, the Commission visited the *m/v Mare* on the quay in the port of Bourgas. Together with the authorized representative of Vanuatu Maritime Services Ltd. for Bulgaria an inspection of the ship and the scene of the accident was performed, the crew members were interviewed, photos were collected, etc.

Given the nature of the accident, the commission tried to answer the following questions:

1. What were the operating conditions of the ship?
2. What was the relationship between the crew members?
3. Were intentional, malicious actions by the chief engineer or the cook possible?
4. What was the workload of the crew?
5. What was the health of the crew members?

Generally speaking, the answers to these questions were as follows:

1. In general, the crew had no claims, but there were some problems with food and pay for the crew. The Commission suggests that the food problems were more related to the way it was prepared and, given the different preferences of some of the crew members due to national differences.

2. The relationship between the crew members was good, regardless of the specifics and difficulty of working at sea. The relations were assessed as normal, with small, insignificant conflicts caused by the ship's conditions - restrictions related to the COVID 19 pandemic, problems with the supply of water and food, delayed remuneration, etc.

3. The possibility of malicious actions by the chief engineer or the cook was categorically rejected.

4. Judging by the table for work and rest the crew members were not overloaded.

5. Medical certificates were regularly issued and valid, people were physically and mentally fit to work at sea.

### **3. ANALYSIS.**

#### **3.1. PURPOSE.**

The purpose of the safety investigation was to establish the circumstances and factors that contributed to the accident, which will serve as a basis for the preparation of safety recommendations to prevent similar accidents in the future.

#### **3.2. ANALYSIS OF THE HUMAN FACTOR.**

In the course of the investigation, the Commission did not establish any preconditions for the maritime accident either in the ship's organization, or in the design of the ship, or in the internal or external conditions. Only the actions of the two participants in the accident (the chief engineer and the cook) contributed to the severe consequences (the human factor).

Initial information that the fall overboard of the two crew members was the result of a fight was refuted at the beginning of the investigation. This information was submitted to the coastal center by the Bulgarian pilot. The pilot, hearing the argument and the shouts in the superstructure (in Turkish) and seeing the fuss on the bridge, was left with the impression that there was a fight on the stern and a fall overboard, which he reported on the radio.

This version was categorically rejected after the interview of the crew members, the inspection of the ship and the victims. In the initial interview at the hospital, the first person to find himself in the water (chief engineer) stated that he had fallen overboard involuntarily and did not know that another crew member had jumped into the water after him.

The version of a fight between crew members was also rejected by the criminal investigation conducted by the Bulgarian prosecutor's office.

### **3.2.1. FALLING OVERBOARD OF THE CHIEF ENGINEER.**

The falling into the water of the chief engineer was preceded by a series of wrong actions.

Leaving unattended a mobile device, a relatively expensive personal item, on the unsecured table top, provided that it can easily fall at the slightest tilt of the ship, speaks either of low marine culture or of highly distracted attention, possible after dispute with the cook. Despite the calm waters of the lake, the ship may get a roll as a result of a turn, or from a wave caused by another ship in a passing.

The chief engineer's decision to move over the railings to retrieve his phone was a violation of safety measures, a consequence of a strong desire to get his valuable device back and, as a result, an incorrect risk assessment. The phone could also be reached by moving the wooden table without having to go through the railings. The ship was on the move, at night, no other eyewitnesses (the watchkeeper, the pilot and the master were watching the course). It was a coincidence that the fall overboard of the engineer took place in front of the porthole of the cabin where the cook was and that he noticed him. Otherwise, the absence of the chief engineer would be established only when the ship stopped at the Varna's roads and his finding and rescuing would be impossible.

### **3.2.2. JUMPING OVERBOARD OF THE COOK.**

Jumping overboard of the cook in order (according to the crew) to help the chief engineer had no logical explanation. Without a life jacket, with inappropriate clothing, at extremely low water temperatures, he could not help him in any way.

The Commission considers that in all likelihood his actions were more influenced by his particular mental state due to:

- alcohol use. Although it had not been conclusively proven, the inadequate behavior of the cook before the accident (the angry outburst in the messroom against the engineer), the observed bottles in his cabin, as well as the values of alcohol in the blood sample during the autopsy of the body gave reason to assume that before the accident the cook had consumed a significant amount of alcohol. In addition to leading to wrong decisions and reckless actions, the use of alcohol, significantly reduces the chances of survival in cold water.

- dissatisfaction with his job. The cook complained that some crewmembers were interfering with his work in the kitchen. The cook applied to leave and could not wait to get off the ship.

- personal problems for which the commission had no information.

### **3.3. ANALYSIS OF THE CREW'S ACTIONS.**

The reaction of the crew after the accident was adequate and fast. A signal was immediately given to the shore about the situation on the ship and assistance and help requested. Lifebuoys had been thrown into the water and surveillance was intensified. The maneuver to go back to the canal entrance could be considered risky, but it was the only way to quickly find the crew members who had fallen overboard. The ship changed her course many times in order to quickly find the people in the water. The ship's searchlight was included for better visibility in search. The chief engineer who fell into the water was found in time and the rescue boat was directed to him.



### **3.4. ANALYSIS OF THE ACTIONS OF THE COASTAL AUTHORITIES.**

On the fourth minute after receiving the signal "man overboard" and starting the search and rescue operation from MRCC-Varna (22:08), the rescue boat *m/c Spasitel-1* took off from the Sea Station and at maximum speed made a passage through Channel 1 to the scene of the accident (approximately 30 cb).

At 22:30, after about 22 minutes in the cold water, the chief engineer was put on board the boat. The quick reaction of the forces and means on duty helped to save him.

In cooperation of GD"ER" with the bodies of the MOI and the BP, the search for the second member of the crew, who turned out to be overboard, was organized. Despite efforts, the search was unsuccessful, probably due to the fact that the cook's body had sunk.

The Navy did not take part in the SAR operation due to the greater time needed to prepare their forces and means for action, especially in such extreme situations.

## **4. CONCLUSIONS.**

### **4.1. MAIN CAUSE OF THE ACCIDENT.**

The Commission considers that the main cause of the very serious accident was a human error in the actions of both the chief engineer and the cook.

### **4.2. FACTORS CONTRIBUTING TO THE ACCIDENT.**

The factors that contributed to the accident could be generally grouped as follows:

- Incorrect risk assessment. The Commission considers that in their actions the seamen who fell/jumped overboard did not assess the risks and their possible consequences, that is, they acted unreasonably, contrary to good maritime practice and in breach of safety measures.
- Consumption of alcohol by the cook.
- Working/Food conditions.
- Presence of loose table and chairs on the aft deck during the transition.
- Relationship between crew members. During the interviews, all crew members stated that the relationship between them was within normal limits. Notwithstanding their allegations, the Commission has reason to believe that there was some, albeit periodic, tension between them.

## **5. SAFETY RECOMMENDATIONS:**

### **5.1. To the Efe Shipping & Trading Co Ltd:**

To advise all Company's ships about causes and circumstances of the accident and to organize unscheduled audits of all ships to raise crew awareness and readiness for actions in emergency situations, make the crew strictly following the rules of health and safety.