



REPUBLIC OF BULGARIA
NATIONAL AIR, MARITIME AND RAILWAY ACCIDENT INVESTIGATION
BOARD

FINAL REPORT

THE INVESTIGATION OF A SERIOUS MARITIME ACCIDENT –

Grounding of the motor vessel „LOYGA“ on 17.02.2023



2023

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PREFACE:

The National Air, Maritime and Railway Accident Investigation Board (NAMRAIB) is an independent specialised governmental body within the Council of Ministers of the Republic of Bulgaria, which investigates maritime casualties and marine incidents occurring in the internal sea waters and in the territorial sea of the Republic of Bulgaria, which occurred on or with a ship flying the Bulgarian flag, regardless of the place of accident, which affected other important interests of the Republic of Bulgaria, which affected river ships navigating in the internal sea waters and in the territorial sea of the Republic of Bulgaria, or sea ships navigating in inland waterways.

The investigations carried out by the NAMRAIB aim to improve maritime transport safety and prevent marine casualties by establishing the causes and circumstances of a particular casualty, without seeking to apportion blame or determine liability.

The investigation shall be carried out in accordance with Article 79 of the Merchant Shipping Code and Ordinance No 23 of 24 October 2011 on the reporting and investigation of marine casualties and incidents in application of the International Maritime Organisation (IMO) Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty of Marine Incident (Casualty Investigation Code) as well as the EU secondary law.

The analyses and the safety recommendations made in this report do not give rise to any presumption of liability or guilt. In terms of content and style, the report has not been prepared for use in legal proceedings.

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

The events in this report are reflected in local time (UTC + 2).



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SUMMARY



On 17.2.2023 the motor vessel “LOYGA” made a passage/maneuver for berthing at the quay in the port of Varna-West. At 12:10 the vessel heaved up the anchor at anchorage No 1 for passage to berth No 13. At 12:40 a pilot boarded the ship. The vessel was heading towards the port of Canal No 1. At 12:57 she left the fairway, made a sharp turn to the starboard and grounded 50 meters NE of buoy No 117, near the base of the Asparukhov bridge. The vessel was pulled back and refloated at 13:46. A little

later she anchored at anchorage No 3 in Varna Lake. There were no damages to the ship, cargo or the environment.

The Investigating Commission considers that the main cause of the serious accident was human error, consisting of a misunderstood and executed by the ship’s helmsman of the pilot’s steering orders, which led to the wheel being diverted in the wrong direction (starboard rather than port side), resulting in the grounding of the ship.

Factors contributing to the accident are the lack of a deck officer in the bridge team and the poor knowledge of maritime English by the helmsman, in particular, and in general by deck crew members.

The Investigating Commission issued 5 safety recommendations to the ship’s operator.



Figure 1 – Motor vessel „LOYGA“ at the place of grounding (Photo courtesy Sky Pictures Bulgaria)

1. FACTUAL INFORMATION

1.1. INFORMATION ABOUT THE SHIP, THE VOYAGE AND THE MARITIME ACCIDENT

1.1.1 DATA ABOUT THE SHIP	
Vessel's name	LOYGA
Flag	Guinea-Bissau
IMO No	8004791
Call Sign	J5AA7
Official number	GBI-A008
MMSI	630001006
Shipowner	YAMAMA MARITIME SA
ISM company	G.M.Z. SHIPMANAGEMENT CO. S.A.
Ship operator	MINA GROUP SHIPPING LTD
Port of registration	Bissau
Classification society	International Naval Surveys Bureau
Type	General Cargo Ship
Year of build	1981
Gross tonnage	3 433 mt
Length overall	80.22 m
Beam	16.00 m
Draught	Forward – 6.3 m / Aft – 7.15 m
Deadweight (max.)	6 154 t
Main engine	Hanshin 6LUS40
Maximum speed	11 knots

1.1.2 VOYAGE PARTICULARS	
Last ports of calls	Dikili, Turkiye - 13.02.2023 Icdas, Turkiye - 2.02.2023
Port of departure	Dikili, Turkiye
Port of arrival	Port Varna - West, Bulgaria
Type of voyage	International
Cargo information	4000 mt granite in bulk
Manning	11 crew, citizens of the Syrian Arab Republic

1.1.3 MARINE CASUALTY INFORMATION	
Date and time	17.02.2023, 12:57:05 local time
Type of marine casualty or incident	Serious Marine Casualty — grounding
Location of incident	LAT 43°11'04" N; LONG 027°53'2" E – Canal No 1, Varna lake, 50 m NE of byou No 117
Hydro-meteorological conditions	Visibility: very good, daytime, wind: SW – 1, sea state: 0, weather – clear, sunny
Place on board	Grounding with the underwater part of the ship's bow – at the bulb
Injures/fatalities	No
Consequences for the vessel	No
Consequences for the cargo	No
Effects on the environment	No

1.2. GENERAL INFORMATION ABOUT THE VESSEL

The motor vessel „LOYGA“ (figure. 2) was built in 1981. She is mainly intended for the transportation of bulk and general cargo. She has a steel hull, a double bottom and vertical sides, with ballast tanks positioned on both sides. There are no bow or stern thrusters.

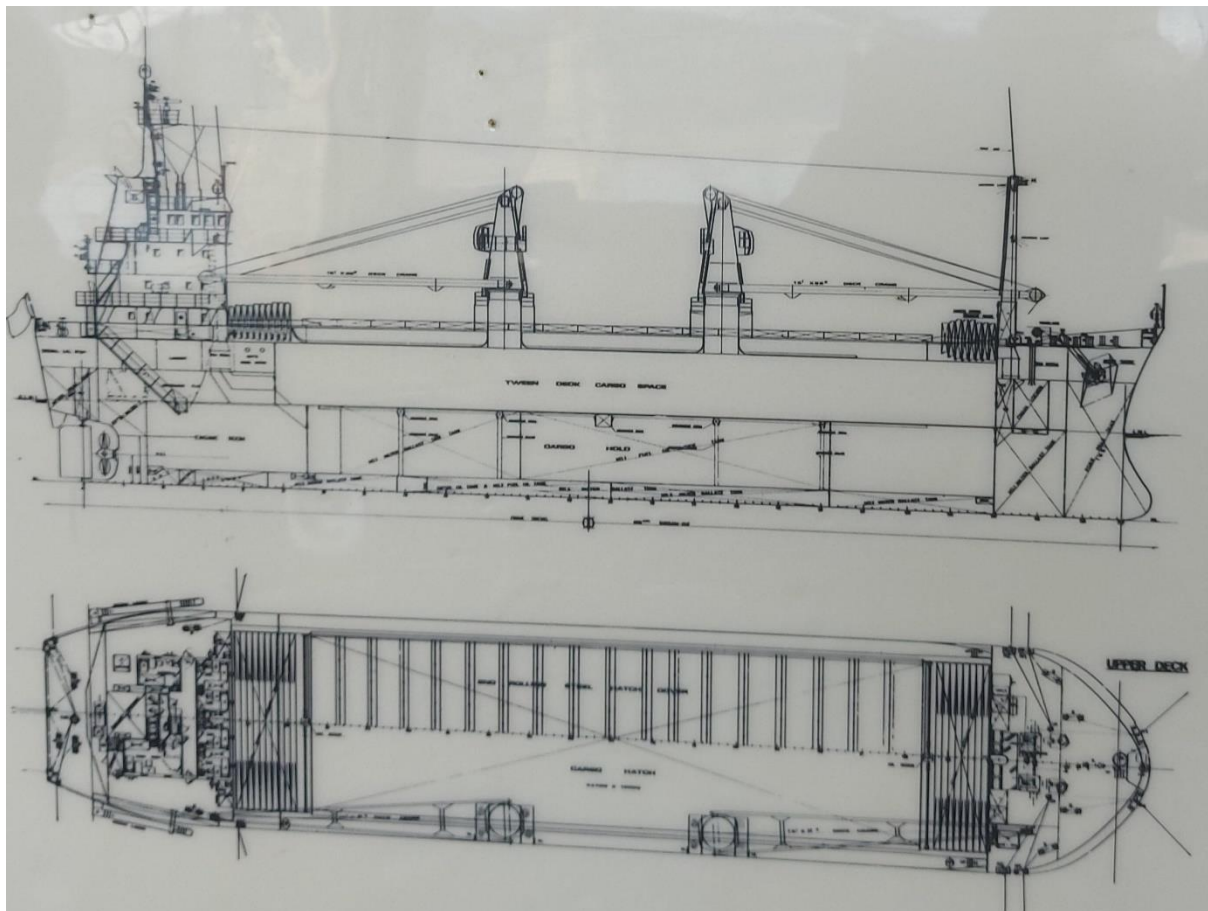


Figure 2 – General arrangements of motor vessel „LOYGA“

The ship has only 1 cargo hold with vertical sides. On the deck there are two cranes for carrying out cargo operations in ports that do not have adequate facilities.

The ship is under the supervision of the International Naval Surveys Bureau — Romania. A certificate No VG20/3277 of 4.10.2021 has been issued with a period of validity until 21.5.2026.

The ship's navigational equipment is in compliance with Regulation 19, Chapter V of the International Convention for the Safety of Life at Sea (SOLAS), as amended and supplemented, with respect to the requirements for the type of ship concerned, gross tonnage and year of built.

The Investigative commission found that the required periodic tests of equipment, including the so-called critical equipment, are carried out in accordance with the international regulations and the Company's Safety Management System.

1.3. INFORMATION ABOUT THE CREW AND THE PILOT.

1.3.1 The master, age 33, a citizen of the Syrian Arab Republic. He holds a valid certificate of competency issued by the Ministry of Transport of the Kingdom of Jordan with a period of validity until 18.5.2024. He is qualified for a master, without restriction, in accordance

with Regulation II/2 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (STCW Convention), as amended and supplemented. The functions “Navigation”, “Cargo handling and storage” and “Controlling the operation of the ship and care for persons on board” are covered at management level. He also holds a valid certificate for a Ship’s GMDSS – GOC radio operator and valid certificates of proficiency for special and additional training under the STCW Convention. Holds a valid endorsement issued in accordance with Regulation I/10 of the Annex to the STCW Convention issued by the ship’s flag administration.

He has a total seagoing service of 15 years. His experience as master is 7 years. He was on board of the ship for 12 months before the accident.

1.3.2. The ship’s helmsman, age 24, a citizen of the Syrian Arab Republic. He holds a valid STCW certificate, including special and additional training, issued by the Syrian Ministry of Transport. He also holds a valid certificate for passing a course “Bridge Resource Management” issued on 22.9.2021, valid until 21.9.2026.

He has total seagoing service of 9 years and has been in the position of “Rating forming part of a navigational watch” for 9 years. He was on board of the ship for 12 months before the accident.

1.3.3. The pilot, engaged with the piloting of the ship, age 54, a citizen of the Republic of Bulgaria. He has a total seagoing service of 32 years, qualified as “Master mariner”, without restrictions. He has been a master on ships for 19 years. He holds a valid “Pilot” certificate for the piloting area of Varna, and his total seagoing service as a pilot is 12 years.

1.3.4. Minimum safe manning of the ship.

The ship is in possession of a valid Permanent Minimum Safe Manning Certificate issued by the Guinea-Bissau International Ships Registry on 28.12.2022, valid until 27.12.2027. The document indicates the minimum number of crew of 10 persons (master, chief mate, chief engineer, engineer officer, 3 watch deck ratings, 2 watch engine ratings, 1 cook). It is expressly indicated that the Master and the Chief Mate are to hold a GMDSS — GOC radio operator’s certificate or to have a qualified radio officer on board the ship.

In the present case, the first condition is met.

According to the Crew List, the motor vessel “LOYGA” is completed in accordance with to the above document, with additional helmsman provided, but there is no provision for a deck officer in addition to the watch of the bridge.

The navigating watch of the bridge at sea shall be shared by the master and the chief mate in 6 hours on duty and 6 hours of rest (6 ON-6 OFF). Similar is the time schedule for cargo watches in ports.



PERMANENT MINIMUM SAFE MANNING CERTIFICATE

Certificate Number
0004/GB/MF

Name of Vessel LOYGA		Port of Registry BISSAU			
IMO Number 8004791	Official Number GBI-A008	Call Sign J5AA7	MMSI Number 630-001-006		
Type of vessel GENERAL CARGO		Gross Tonnage 3433	Total Engine Output (kW) 2200 KW		
Periodically Unattended Machinery Space NO		GMDSS Area A1+A2			
Type of Voyages RESTRICTED	Trading Area RED, MED & BLACK SEAS, INCLUDING AZOV AND ADRIATIC SEAS.				
Operating Company Name G.M.Z. SHIP MANAGEMENT CO. S.A.		Operating Company Address ZALKA MAIN ROAD, WHITE BLDG, 1ST FLOOR, BEIRUT, LEBANON			
The vessel specified in the present document shall be deemed to be adequately and safely manned, if whenever she proceeds to sea, carries not less than the number, grades and capacities of the personnel listed in the table below.					
ALLOCATION OF MINIMUM SAFE MANNING					
Deck Section			Engine Section		
GRADE/CAPACITY	Nr.	STCW	GRADE/CAPACITY	Nr.	STCW
Master	1 ✓	II/2	Chief Engineer	1 ✓	III/2
Chief Mate	1 ✓	II/2	Second Engineer	-	-
Deck Officer(s)	-	-	Engineer Officer(s)	1 ✓	III/1
Able Seafarer Deck	-	-	Electro-Technical Officer(s) (ETO)	-	-
Deck Rating(s) Watch	3 ✓	II/4	Engine Rating(s) Watch	2 ✓	III/4 OR III/5
Cook	1 ✓	VI/1	Able Seafarer Engine	-	-
-	-	-	Electro-Technical Rating	-	-
Special Requirements or Conditions: A minimum of two (2) watch keeping deck officers or one dedicated radio officer are required to have the appropriate GMDSS Radio Operator Certificate, general or restricted, depending upon the ship's intended area of operation					
Having the proper authority, the above referred vessel is hereby granted with a Permanent Minimum Safe Manning Certificate, issued under the provisions of Regulation V/14 of the International Convention of the Safety of Life at Sea, 1974, as amended.					
Issue Date 28TH OF DECEMBER 2022		Place of Issue PIRAEUS GREECE		Valid until 27TH OF DECEMBER 2027	

Figure 3 – Permanent Minimum Safe Manning Certificate of the ship

2. NARRATIVE

On 17.2.2023 in the morning, the ship was at anchor at anchorage No 1 in the Varna Bay pending a call for passage to the port of Varna — West for unloading.

The readiness of the ship and the port terminal shall be confirmed by the master, the shipping agent, the terminal operator of the port terminal and the tugs to assist. “LOYGA” was scheduled for berthing at berth No 13 port side alongside at of the port of Varna — West.

The operator of Varna Traffic informed the master of the ship to prepare the engine and to be underway at 10:00.

At 10:20, the vessel was still at anchor, without submitting any additional information, including the reasons for the delay. The duty operator of Varna Trafficy and the duty operator of “Pilot Station — Varna” sent a request to the master, to whom the latter responded that he was awaiting a confirmation from the shipowner.

The participants in the manoeuvre were informed of the refusal of the ship, raising doubts as to readiness of the vessel a whole to carry out a manoeuvre.

About two hours later, the ship confirmed readiness for manoeuvre.

The ship heaved up the anchor and got underway at 12:00 approaching the pilot's boarding position.

At 12:40, the pilot boarded the vessel. On the bridge (figure 4), the pilot and the master briefly discussed the characteristics of the upcoming manoeuvre (briefing pilot — captain). All instruments and devices, including steering gears, have been personally confirmed in order by the master. A pilot's card had been filled in.

Visibility was very good, the weather was sunny with a light southwestern wind. The speed of the ship was 7.5 knots.



Figure 4 – Ship's bridge with the steering gear console and handwheel and steering console

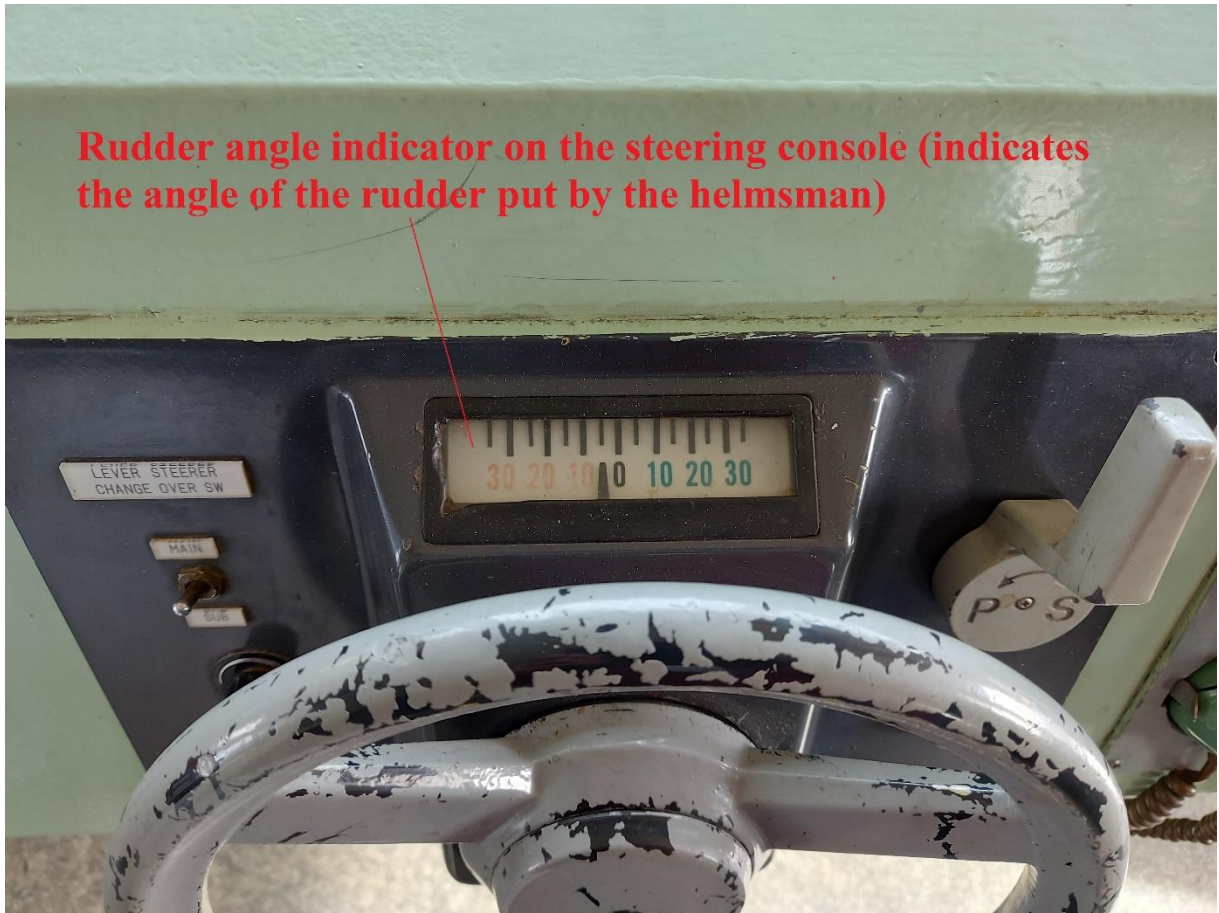
At 12:47:30, the ship was abeam of buoys No 107-108 and entered Channel 1 headed for Varna Lake. The wheel orders were given by the pilot and executed by the helmsman who repeated them also verbally.

The master was de facto in command of the vessel, the pilot being his adviser. The ship's chief mate was on the bow with two deck ratings in preparation for the upcoming mooring operations at the quay, which limited the bridge team only to the master, the pilot and the helmsman.

During the passage in the canal, the pilot noticed some uncertain actions of the helmsman when executing the wheel orders, as well as the slow, at his discretion, moving of the rudder.

The steering rudder angle indicator was located at the steering console in front of the helmsman (figure 5).

On the bridge ceiling there was a circular rudder angle indicator of the actual instantaneous position of the rudder (figure 6). The indicator was positioned in the way that allows observations to the left and right of the rudder. The pilot and the master were watching this indicator.



Rudder angle indicator on the steering console (indicates the angle of the rudder put by the helmsman)

Figure 5 – Rudder angle indicator on the steering console



Rudder angle indicator (displays the actual angle of the rudder)

Figure 6 – Rudder angle indicator on the bridge ceiling

At 12:55:05 the ship made a turn to starboard in order to take the straight line between buoys 115-116, 117-118 and subsequent passage under Asparukhov bridge (approximately on course 310° — 312°). At that time, the ship was abeam of buoys 115-116.

After passing buoy 115, the vessel changed course slowly to starboard from course 294° to course 313° leading between buoys 117-118.

When approaching buoys 117-118, the pilot noticed the ship was slightly drifting from the desired line to starboard (figure 7). At this point, the pilot was on the port side of the bridge, and the master on starboard side for better visual observation and assessment of the situation.



Figure 7 – Radar image showing the ship’s drift to starboard (points behind the ship are her past track)

In order to correct the drift to starboard, at approximately 12:56:03 (figure 8), the pilot ordered “Port 10”. Seeing that the bow of the ship was turning to the starboard instead of turning to port, the pilot ordered “Port 20” and looked at the rudder angle indicator on the ceiling of the bridge, indicating “starboard”. The ship continued to turn slowly to starboard.

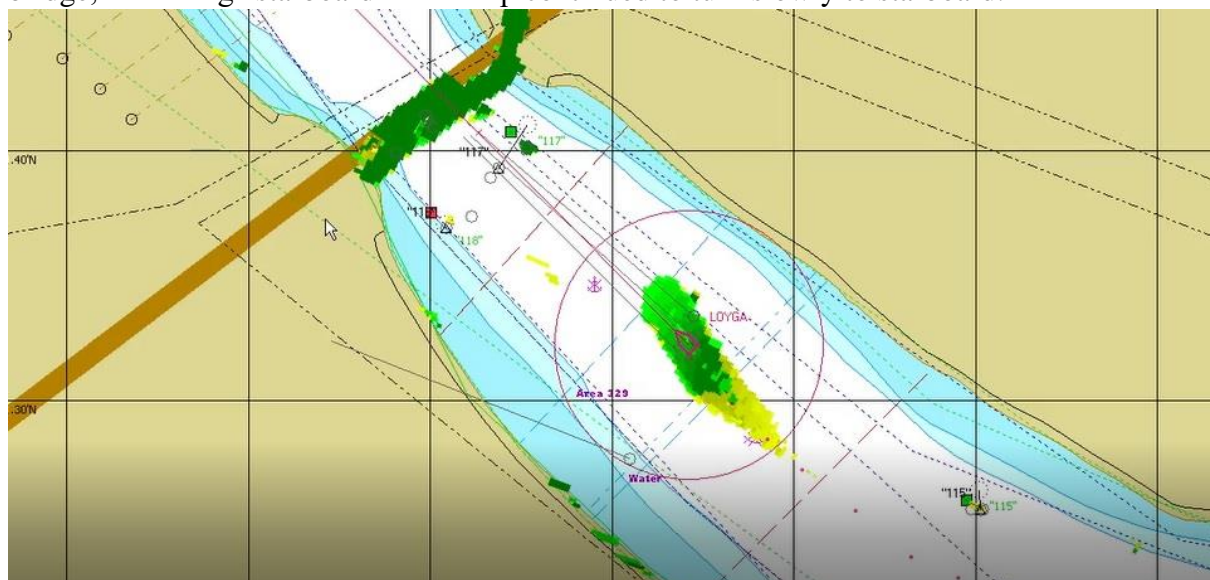


Figure 8 – Position of the vessel at the time of ime of the command "Left 10" given by the pilot

Realizing the criticality of the situation, the pilot shouted “Captain Emergency!”. The master and the pilot rushed to the helmsman, with the rudder adjusted to the full port side, but the ceiling rudder angle indicator still showed that the rudder was starboard. The ship was in loaded condition, which further slowed turning of the rudder. The master started switching buttons on the bridge (probably switches on the steering gear control console) to establish a possible failure of steering gear.

The master gave the engine full astern at the pilot's instructions and the speed began to slow down.

After passing the ship through the anchoring prohibited area, the pilot ordered the two anchors to be let go. The crew at the bow let go the starboard anchor. The anchor chain remained upright. 0,

Given the proximity of the coast, the error can no longer be corrected and in the area of buoy 117, the ship contacted the scarp of the canal. The soft ground took the punch. At the moment of grounding, the speed was 6.1 knots, the rudder angle indicator on the ceiling showed "Starboard", and the rudder angle indicator on the steering console "Port 20".

The ship grounded at 12:57:05 at about 50 meters NE of buoy No 117 (figure 9).

After the grounding, the pilot informed the operator of Varna Traffic about the situation and requested tug assistance.

The master ordered sounding of all bilges and ballast tanks in order to detect possible leaks and infiltration of water. It has been established that all tanks were empty and there was no inlet of water.

After sounding the bilges, ballast tanks, the ship's draught and inspecting it with the pilot boat with two other pilots for possible spillage and external damage to the hull, a considered decision was made that the ship could be refloated easily with the help of a tug.

The forward draught was 5.50 m, compared to 6.3 m before grounding.

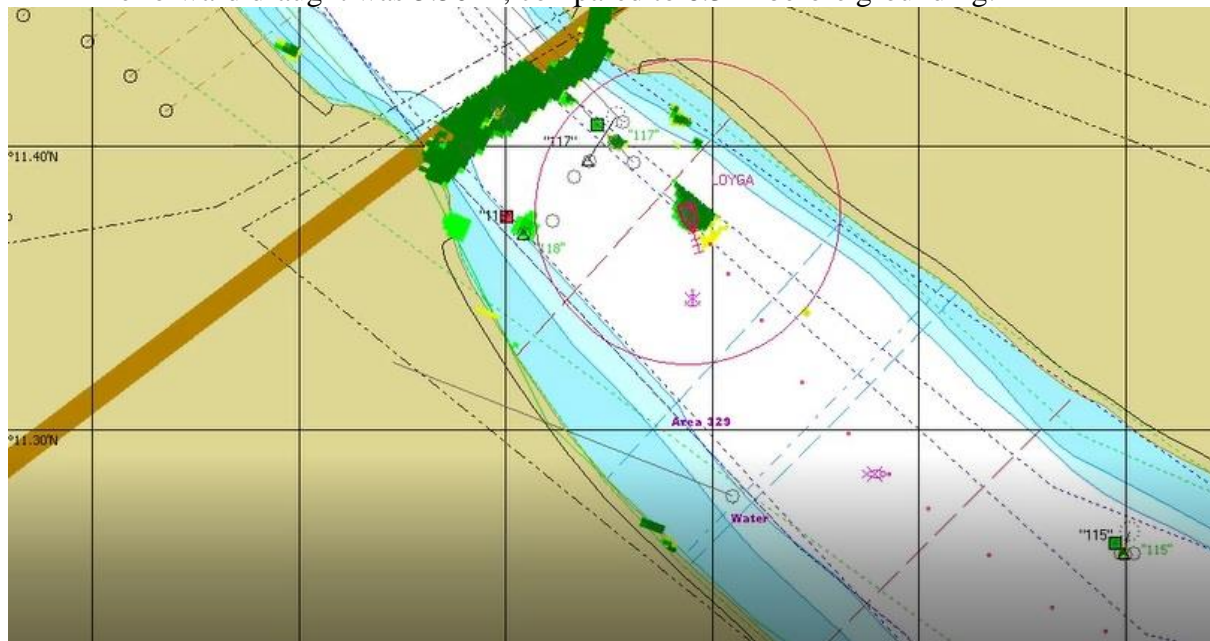


Figure 9 – Radar image of the motor vessel „LOYGA“at the place of grounding

At 13:30, the tug "PROCION" approached the vessel. A towing line was held on the stern of the motor vessel "LOYGA". After a few minutes of joint operation of the tug and the ship's engine put astern, it became clear that she would be easily pulled back from the shoal and the crew started heaving up the anchor.

The pilot and the master made a check of the operation of the steering gear and ascertain that the steering gear was in good condition.

At 13:46, the ship was refloated from the place of grounding and directed for anchoring at the anchorage located opposite the village of Zvezditsa in Varna Lake, where she anchored at 14:43.

The draught after anchoring was measured by the pilot after his transfer to the pilot boat. The draughts were the same as the draughts before grounding.

After anchoring, the ship was inspected by a representative of the classification society and a diving underwater inspection was also carried out. There were no damages to the ship's hull, devices and mechanisms.

On 18.2.2023 the ship berthed for unloading at the port of Varna — West and continued her operation.

3. ANALYSIS

The purpose of a safety investigation is to establish the circumstances and facts that contributed to the accident to serve as a basis for making safety recommendations to prevent similar accidents in the future.

An analysis of the accident was carried out on the basis of the collected evidence and witness statements of the direct participants in the marine accident by the crew and coastal authorities.

3.1. Analysis of the technical condition of the steering gear and the ship's steering, according to the international requirements

According to Regulation 29, para 3.2, Chapter II -1 of SOLAS the main steering gear and rudder stock shall be capable of putting the rudder over from 35 degrees on one side to 35 degrees on the other side with the ship at its deepest seagoing draught and running ahead at maximum ahead service speed and, under the same conditions, from 35 degrees on either side to 30 degrees on the other side in not more than 28 seconds.

On 19.02.2023 two investigators from the Investigating Commission visited the ship and conducted 5 (five) tests of the steering gear. The tests were carried out in the condition of the ship - unloaded at 50%, moored port side alongside to the quay, in the conditions of unloading operations, without taking of ballast or bunkering .

The average time of the tests carried out to putting the rudder from 35° on one side to 30° on the other was 31 seconds, which exceeds by 3 seconds the legally determined time of Regulation 29, para 3.2, Chapter II -1 of SOLAS. It should be taken into account that when conducting the tests, the ship was moored and partially unloaded, i.e. not all requirements of the above test condition rule were met. Analogous tests had been carried out after the ship refloated from grounding, during the stay of the ship at the anchorage in front of the village of Zvezditsa on 18.02.2023.

Despite the above, the Investigating Commission considers that the non-compliance with the requirements for the speed of movement of the rudder was not reflected in the critical situation that arose, i.e. this cannot be accepted as a contributing factor to the accident. The ship's steering was somewhat sluggish, but not fatal. Due to the proximity of the shore, delayed actions to correct the rudder from starboard to port could not have prevented the grounding, even if the steering gear had complied with SOLAS regulations.

The Investigating Commission considered the possibility that one of the possible causes of the marine accident was a technical failure of the steering gear, resulting in the rudder becoming "jammed" in the starboard position. The fact is that the time from the pilot's command to deviate the rudder to the port side until the moment of grounding (62 seconds) is long enough to compensate for any rudder error and to make the desired course correction. Against this hypothesis, however, is the absence of any visual and sound signaling for a possible failure of the steering gear and the subsequent successful tests of the same. In this regard, the Commission of Inquiry considers this hypothesis unlikely.

3.2. Human Factors Analysis

3.2.1. Analysis of the actions of the master and the pilot

The inspection carried out by the Investigating Commission showed that the master, according to the provided documentary information, had a normal distribution of the work-rest ratio, which corresponds to international norms. In the conducted interview, the master confirmed the same, noted that on the day of the accident he was rested, not under the influence of alcohol or medication.

The pilot, on the day of the accident, was on duty after rest period, i.e. he was not in a state of fatigue.

According to international rules and principles, except in the pilotage areas expressly designated for this purpose, when navigating with a pilot on board, the master retains his exclusive authority and responsibility for the command of the ship, provided that he is physically present on the bridge and has expressly indicated that he has taken the conn. The pilot is the master's advisor.

According to Art. 28, para. 2 of Ordinance No. 1 of 03.04.2019 on piloting activities in the Republic of Bulgaria, the pilot's orders given in the presence of the master of the piloted vessel or a person authorized by him are valid if they are repeated by the master or if not be immediately revoked by the master or authorized person present.

All orders given by the pilot were in English.

In the particular case, when approaching the buoys 117-118, the pilot was on the port side wing of the bridge and the master was on the starboard side. This is not unusual, but a normal practice in modern shipping, since when approaching a very narrow areas, such as the area near the Asparukhov bridge in Channel 1, Varna. The position from the wing of the bridge gives much better visibility and an opportunity to assess the situation, relative to the glazed cabin of the wheelhouse of the navigation bridge. It is normal practice for the master and pilot to pass from one wing of the bridge to the other when navigating in narrows, anchoring, mooring operations, etc.

Orders given by the pilot to deviate the rudder to the port to compensate for the ship drifting to the starboard, were not expressly canceled by the master, therefore they were in effect.

The subsequent actions of the pilot and master to prevent/minimize the consequences of the emergency situation were fundamentally correct.

The Investigating Commission attaches importance to the discretion shown by the pilot in not dropping the anchors immediately, but after passing the prohibited anchoring area, as this would have resulted in the disruption of important underwater communications and facilities.

The subsequently letting go the starboard anchor had a stabilizing effect on the ship at the grounding location.

3.2.2. Analysis of the helmsman 's actions

Clarification of the helmsman's actions before and at the time of occurrence of the emergency situation that led to the grounding is of utmost importance in order to determine the genesis of the accident.

The Investigating Commission established the relatively poor knowledge of the maritime English language by the helmsman. The masters's knowledge of the English language is.

The pilot giving the order "Port 10" to compensate the drifting of the ship to the starboard was logical and correct.

During the interview conducted by investigators from the Investigating Commission with the helmsman, the same, together with the master, claimed that the pilot initially gave the order "Starboard 5", and subsequently "Starboard 10", which did not correspond to the proximity of the coast on the starboard side relative to the distance of the port and approach to the narrowed section under the Asparukhov bridge. Even assuming that the pilot's initial order was "Starboard 5", due to confusion, the second order would not have been given in error, but rather would have been a correction to the first. An order to deviate to the starboard contradicts the logic of steering the ship in the specific situation under the specific conditions (navigational situation).

It is not clear why the helmsman did not ask for confirmation or clarification of the order from the pilot or mater, if it is assumed that it was given in error for a rudder deviation starboard instead of port side, given the proximity of the shore. It is also unclear whether the master heard the pilot's order, and if it was wrong, why he did not correct it immediately.

Thus, the only opportunity to prevent the accident was missed.

All other actions, including correcting the rudder to port, putting the engine astern, dropping anchor were correct, but they did not prevent the ship from running aground and could not compensate for the error of the initial rudder deviation to starboard.

It should be noted that the master's initial accident report specifically stated that "the vessel lost control due to helmsman error", which he later denied in an interview.

The Investigating Commission considered that as the ship approached the buoys 117-118, the helmsman misunderstood and executed the pilot's order wrongly and moved the rudder to the starboard instead of the port side, resulting in the ship running aground. The Commission rejects the possibility of a wrong order by the pilot.

3.3. Bridge Teamwork Analysis.

A basic requirement for the safe operation of a ship, bringing the relevant income to the operator/shipowner, is the use of highly qualified crew and modern equipment.

Modern economic realities lead to a strong reduction of ship crews, which in many cases lead to critical situations, crew fatigue, tension, and sometimes accidents.

The determination of the minimum number of navigation officers and ratings forming part of a navigational watch is carried out according to specially defined methodologies for each administration, taking into account factors such as area and duration of voyage, type of ship, operations carried out, etc.

Navigation in confined waters, mooring operations, anchoring, etc. is related to a significant amount of work in a short period of time - plotting the ship's position on the navigational chart for the purpose of monitoring, visual or radar determination of the ship's position for the purpose of controlling other electronic devices, radio communication, manual control, visual observation, etc. All this requires the presence on the bridge of a certain number of qualified crew members, in order to effectively distribute the duties between them.

Navigating with a pilot on board requires additional organization of the bridge team, effective communication and integration of the pilot as part of that team.

It is not by chance that in modern shipping, the term "bridge resource management" (also known as bridge team management) was introduced, which increasingly, in terms of content, acquired the importance of a separate science or at least an independent branch of ship's navigation. The training of bridge teams requires the completion of a specific course. The competences of navigational officers at management and operational level include knowledge and skills in the given subject and are clearly indicated in the tables of the Seafarers' Training, Certification and Watchkeeping Code (STCW Code), as amended and supplemented.

After the analysis of the facts and circumstances of the case, the Investigating Commission considers that the composition of the bridge team lacks a key element – watchkeeping deck officer.

When the team consists only of the master and helmsman, provided that the latter is engaged only in the execution of rudder deviation orders, practically the master should be engaged in direct command, monitoring the movement of the ship, plotting the position of the ship on certain intervals, passing abeam of landmarks, turning waypoints, conducting radio communications, giving orders to the engine, giving orders for the steering and control for the correct deviation of the steering wheel, etc.

From all of the above, it is clear that in practice, when engaging in the direct command of the ship, the activities of monitoring the movement by plotting the position of the ship are neglected. And vice versa, if the master is busy with the activities of plotting the position of the ship, radio communications, control of the orders executed by the helmsman, etc., this leads to the reduction of the position of the master to a watchkeeping officer and interruption of the activity of actual command of the ship, requiring time for a clear and logical assessment of the situation.

The Investigating Commission believes that a major contributing factor to the grounding was the lack of an additional watchkeeping deck officer to take over essential duties, in order to relieve the master. A key activity with which the officer of the watch is charged, in the presence on bridge of a pilot and the master, is precisely control of the correct execution of the assigned orders to the helmsman and control of the position of the rudder, which would prevent grounding. This is a major missing safety barrier.

Nothing restricts the company - the operator of the ship from including an additional watchkeeping deck officer, given that the minimum safe manning certificate of the ship with a crew determines the minimum and not the maximum amount of crew.

4. CONCLUSIONS

4.1. ROOT CAUSE OF THE ACCIDENT

The Investigating Commission considered that the main cause of the serious accident was human error, consisting of a misunderstood and executed by the ship's helmsman of the pilot's steering orders, which led to the wheel being diverted in the wrong direction (starboard rather than port side), resulting in the grounding of the ship.

4.2. FACTORS CONTRIBUTING TO THE ACCIDENT

Contributing factors to ship's grounding are:

- the lack of an additional deck officer in the bridge team;
- the poor knowledge of maritime English by the helmsman, in particular, and in general by deck crew members.

5. SAFETY RECOMMENDATIONS

The Commission of Inquiry makes the following safety recommendations:

5.1. MINA GROUP SHIPPING LTD is recommended to

BG/2023_R8: To send a circular to all ships of the company with a description of the accident and its causes;

BG/2023_R9: To include in the crews of the operated ships an additional deck officer, where in the minimum safe manning certificate of the ship are only two navigational officers. In the Safety Management System the clear distribution of duties between them should be reflected;

BG/2023_R10: To include in the Safety Management System a detailed instruction for navigating with a pilot on board and the interaction with the bridge team;

BG/2023_R11: To ensure the passing of refresher courses on "Bridge Resource Management and teamwork" by the crew members who are part of the navigation watch;

BG/2023_R12: To ensure the passing of additional courses in specialized maritime English to the crew members who are part of the navigation watch.