

### CREW FATIGUE CAUSED GROUNDING OF SHIP ON THE BULGARIAN COAST

ON 20 SEPTEMBER 2021, A GENERAL CARGO SHIP RAN AGROUND ON THE ROCKY COAST OF THE YAILATA PROTECTED AREA IN BULGARIA. THE INCIDENT OCCURRED WHEN THE SHIP, TRAVELING FROM YUZHNIY, UKRAINE, TO VARNA, BULGARIA, DEVIATED FROM ITS PLANNED COURSE BECAUSE THE SECOND OFFICER (2/O) ON WATCH FELL ASLEEP. THE BRIDGE NAVIGATIONAL WATCH ALARM SYSTEM (BNWAS) WAS FOUND DEACTIVATED, REMOVING A CRITICAL SAFETY NET. THE INVESTIGATION BY THE BULGARIAN NATIONAL AIR, MARITIME, AND RAIL ACCIDENT INVESTIGATION BOARD (NAMRAIB) CONCLUDED THAT FATIGUE, INSUFFICIENT LOOKOUT ARRANGEMENTS, AND LAPSES IN THE SHIPS SAFETY MANAGEMENT SYSTEM (SMS) CONTRIBUTED SIGNIFICANTLY TO THE INCIDENT. THIS CASE STUDY EXAMINES THE EVENT, THE DAMAGE INCURRED, AND THE LESSONS LEARNED TO IMPROVE SAFETY PROTOCOLS AND PREVENT SIMILAR ACCIDENTS IN THE FUTURE.



**FIGURE 1** GROUNDED SHIP  
**SOURCE** REPUBLIC OF BULGARIA NAMRAIB

### INCIDENT OVERVIEW

#### BACKGROUND OF SHIP AND VOYAGE DETAILS

The 1,984 gt ship, built in 1989, is registered under the Panamanian flag and has an overall length of 89.21m. The ship departed from Yuzhniy, Ukraine, on 18 September 2021, carrying a cargo of 2,837 metric tons of urea fertiliser. As the ship proceeded towards its destination in Varna, Bulgaria, it was expected to follow a Traffic Separation Scheme (TSS) in Bulgarian waters, designed to enhance navigational safety in congested areas near the shore.

### SUMMARY OF THE INCIDENT

At midnight on 20 September 2021, the 2/O relieved the master to take over the 0000 to 0400 navigational watch. However, contrary to the SMS and international regulations, no additional lookout was assigned for the night watch. The BNWAS, designed to alert the crew if the officer on watch becomes incapacitated, was turned off.

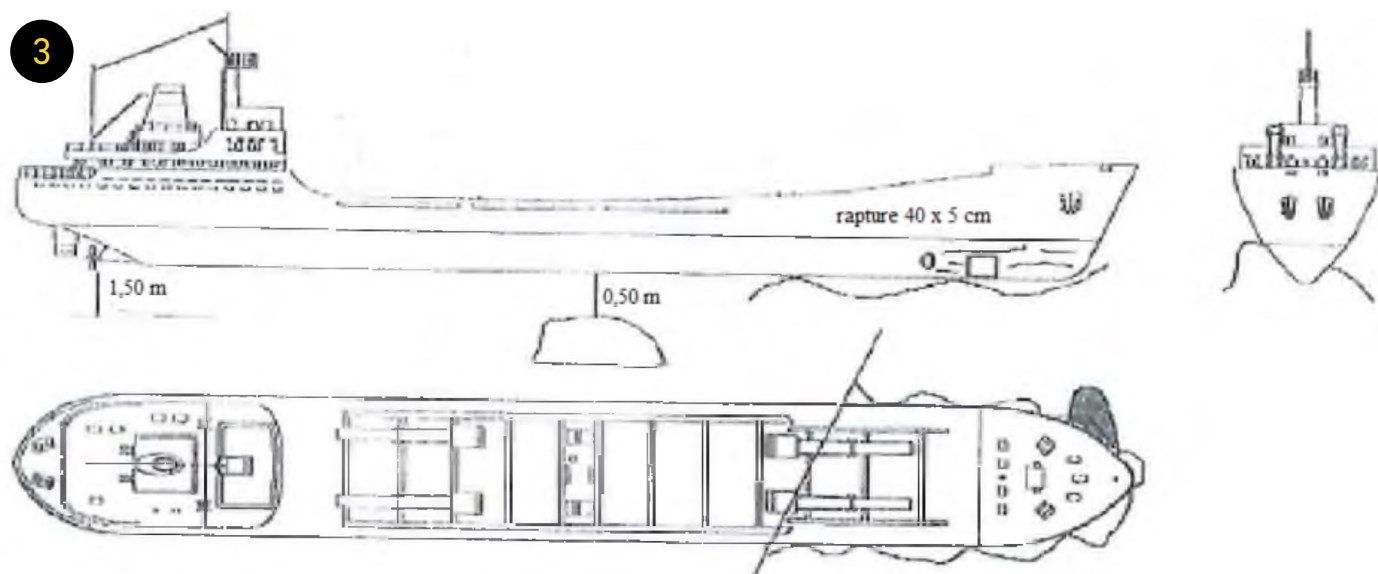
During the night, the ship proceeded on autopilot. The 2/O conducted his watch normally. However, between 0345 and 0355, he briefly sat on the bridge's couch and fell asleep. This lapse proved critical. At 0353, the ship failed to execute a planned turn to join the TSS and continued a straight course towards the shoreline. Coastal authorities monitoring the ship attempted to call on Very High Frequency (VHF) radio when it did not alter course, but the 2/O failed to respond.



**FIGURE 2** PART OF THE PASSAGE PLAN AROUND THE STRANDING DRAWN BY 2ND OFFICER ON A NAVIGATIONAL CHART AND AIS PLOTS SHOWING FINAL STAGES OF THE SHIP'S PASSAGE

**SOURCE** REPUBLIC OF BULGARIA NAMRAIB

At around 0413, the ship ran aground at a speed of 7.8 knots in the Yailata Protected Area, causing extensive hull damage. Water entered several ballast tanks through breaches in the hull, but there was no immediate fuel leakage. The impact rendered the ship immobile, and the rocky bottom complicated subsequent refloating efforts.



**FIGURE 3** PLACES OF CONTACT OF THE HULL WITH THE BOTTOM, AT THE TIME THE SHIP'S GROUNDING

**SOURCE** REPUBLIC OF BULGARIA NAMRAIB

### POST-INCIDENT ACTIONS

Following the grounding, the 2/O was awakened by the loud noise of the ship grounding. He stopped the engine and alerted the rest of the crew, including the master and chief officer (C/O). Upon arriving at the bridge, the master ordered the crew to refrain from responding to VHF calls and initially instructed the crew to turn off the Automatic Identification System (AIS). These decisions delayed emergency response efforts and raised questions about the master's judgment during the critical moments following the grounding.

The master attempted to use the main engine to reverse the ship off the rocks, despite objections from the C/O and other crew members, who feared that further damage to the hull might result. At 0512, the ship finally established radio contact with VTS-Varna and reported the grounding. Fortunately, no injuries were reported among the crew, and there was no immediate pollution. However, the delay in communication hampered early response efforts.



**FIGURE 4 CREW EVACUATION**  
SOURCE REPUBLIC OF BULGARIA NAMRAIB

Coastal authorities dispatched border patrol ships and a rescue boat to the scene, but the rocky terrain and shallow waters limited their access. Subsequent inspections found that the hull had suffered multiple breaches, resulting in water ingress that complicated efforts to refloat the ship.

### DAMAGE CAUSED

#### ENVIRONMENTAL IMPACT

The grounding of the ship posed a significant environmental risk due to the cargo of urea, a chemical fertiliser that, in large concentrations, can lead to eutrophication and ecological imbalances in marine environments. To address this, the Bulgarian Black Sea Basin Directorate and the Institute of Oceanology, monitored the site and worked to mitigate ecological damage. Efforts to discharge the cargo and refloat the vessel helped but did not fully eliminate the environmental impact.

## SHIP DAMAGE

The ship sustained substantial structural damage, primarily to the hull, due to its impact with the rocky seabed. Initial inspections revealed breaches in several ballast tanks, resulting in water ingress, which further complicated refloating efforts. Over time, as the ship remained grounded, the pressure on the hull increased, exacerbating the structural damage. Subsequent refloating attempts required specialised equipment, including a floating crane and tugs, as well as partial cargo unloading to lighten the ship. The ship was eventually refloated and towed to Varna, where a detailed inspection revealed the full extent of damage to the hull, cargo hold and other mechanical systems.



**FIGURE 5** DAMAGES OF THE SHIP IN THE BOW (PORT AND STARBOARD)  
**SOURCE** REPUBLIC OF BULGARIA NAMRAIB



**FIGURE 6** SIGNIFICANT DAMAGE AROUND THE MIDSHIP STARBOARD SIDE  
**SOURCE** REPUBLIC OF BULGARIA NAMRAIB

## INVESTIGATION FINDINGS

The investigation identified several procedural lapses that contributed to the grounding. The most significant failure was the deactivation of the BNWAS system, which would have alerted the crew when the 2/O became incapacitated. The SMS procedures required the BNWAS to always remain active, but the system was manually turned off, and no record of its deactivation was made in the ship's logbook.

Another critical error was the absence of a lookout during the watch. The SMS required an additional lookout to be present during the hours of darkness, but the master released the lookouts from their duties, assigning them to general deck work during the day instead. This decision left the 2/O alone on the bridge during a critical phase of navigation, increasing the risk of human error.

The master's oversight of the voyage was also called into question. The passage plan prepared by the 2/O was neither reviewed nor approved by the master or C/O. Furthermore, the master altered the ship's course to sail closer to the coast but this deviation from the original route was not documented or properly communicated.

The 2/O's fatigue was also identified as a key contributing factor to the incident. He was repeatedly summoned by the master for various tasks, including administrative duties and translations. The investigation revealed that the officer had not been able to sleep adequately since the ship's departure from Ukraine, undermining his ability to remain alert during his watch.

Fatigue remains a critical issue in the maritime industry, and this case underscores the need for effective fatigue management.

## CONTACT

For more information on this incident email [lossprevention@tindallriley.com](mailto:lossprevention@tindallriley.com)

THIS CASE STUDY IS DRAWN FROM THE FINAL REPORT PUBLISHED BY THE NATIONAL AIR, MARITIME AND RAIL ACCIDENT INVESTIGATION BOARD.  
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THE PURPOSE OF THIS CASE STUDY IS TO SUPPORT AND ENCOURAGE REFLECTIVE LEARNING. THE DETAILS OF THE CASE STUDY MAY BE BASED ON, BUT NOT NECESSARILY IDENTICAL TO, FACTS RELATING TO AN ACTUAL INCIDENT. ANY LESSONS LEARNED OR COMMENTS ARE NOT INTENDED TO APPORTION BLAME ON THE INDIVIDUALS OR COMPANY INVOLVED. ANY SUGGESTED PRACTICES MAY NOT NECESSARILY BE THE ONLY WAY OF ADDRESSING THE LESSONS LEARNED, AND SHOULD ALWAYS BE SUBJECT TO THE REQUIREMENTS OF ANY APPLICABLE INTERNATIONAL OR NATIONAL REGULATIONS, AS WELL AS A COMPANY'S OWN PROCEDURES AND POLICIES.

## BRITANNIA COMMENTARY ON INCIDENT ON NEXT PAGE

## BRITANNIA COMMENTARY ON INCIDENT

THIS INCIDENT HIGHLIGHTS SEVERAL CRITICAL LESSONS FOR IMPROVING MARITIME SAFETY.

### IMPROVED FATIGUE MANAGEMENT AND WATCHKEEPING

The incident emphasises the need for strict fatigue management policies to ensure that all officers and crew members are sufficiently rested before taking on critical watchkeeping duties. Companies must implement adequate rest periods and avoid assigning excessive administrative or non-navigational duties to watchkeeping officers. A dedicated lookout during all watches, particularly in high-risk areas like the TSS, is essential to maintaining navigational vigilance and minimising human error risks.

### BNWAS AND SAFETY EQUIPMENT ADHERENCE

The incident highlights the importance of ensuring that all safety equipment, particularly the BNWAS, always remains operational. This system plays a crucial role in monitoring the alertness of watchkeepers and should never be disabled, especially during solo watches. Regular audits and system checks can prevent lapses in equipment usage and ensure that essential devices are always in working order to safeguard against accident.

### COMMUNICATION AND RESPONSE PROTOCOLS

The delay in responding to coastal authorities after the grounding impacted the immediate response efforts. This incident underscores the importance of swift communication between ships and local authorities to expedite emergency assistance. The SMS should include clear protocols for rapid reporting and cooperation with coastal authorities in case of emergencies to avoid delays and minimise potential risks to the crew, ship, and environment.

### BRIDGE TEAM MANAGEMENT AND COMMUNICATION

Proper bridge management requires not only monitoring equipment but also maintaining a vigilant lookout. The absence of a lookout on the bridge significantly increased the risk of human error.

### IMPORTANCE OF DOCUMENTATION AND OVERSIGHT

Finally, the ship grounding incident highlights the necessity for meticulous route documentation and strict adherence to SMS protocols. Any course deviations should be documented, approved by the master, and communicated to all relevant parties to ensure safety. These procedures are vital for maintaining accountability and providing a clear action plan during unexpected navigational challenges.

### CONCLUSION

The grounding of the ship on 20 September 2021 serves as a stark reminder of the importance of adhering to established safety protocols and maintaining effective communication and fatigue management on board ships. The incident resulted from a combination of human error, procedural failures, and system management lapses, all of which could have been prevented with stricter adherence to the ship's SMS.

This case demonstrates that maritime safety is not merely about having systems and procedures in place but also ensuring that these are followed diligently. The importance of adequate rest, proper supervision, and the continuous use of safety equipment cannot be overstated. Moving forward, shipping companies must prioritise safety culture and ensure that crew members understand and follow established procedures to prevent similar incidents.

## REFLECTIVE LEARNING MATERIAL ON NEXT PAGE

**REFLECTIVE LEARNING MATERIAL - CREW FATIGUE CAUSED GROUNDING OF SHIP ON THE BULGARIAN COAST**

THE QUESTIONS BELOW WILL HELP YOU TO REVIEW THE INCIDENT CASE STUDY EITHER INDIVIDUALLY OR IN SMALL GROUPS. IF POSSIBLE, DISCUSS YOUR CONCLUSIONS WITH OTHERS, AS THIS IS AN EFFECTIVE WAY OF THINKING ABOUT THE ISSUES IN MORE DEPTH.

PLEASE USE THE INFORMATION PROVIDED IN THE CASE STUDY TOGETHER WITH YOUR OWN EXPERIENCES AND THOUGHTS, TO REFLECT ON THE INCIDENT AND HOW THE ISSUES IDENTIFIED MIGHT RELATE TO YOUR OWN SITUATION.

**WHAT DO YOU BELIEVE WAS THE IMMEDIATE CAUSE OF THE INCIDENT?**

**WHAT OTHER FACTORS DO YOU THINK CONTRIBUTED TO THE INCIDENT?**

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**WHAT DO YOU BELIEVE WERE THE BARRIERS THAT SHOULD HAVE PREVENTED THIS INCIDENT FROM OCCURRING?**

**WHY DO YOU THINK THESE BARRIERS MIGHT NOT HAVE BEEN EFFECTIVE ON THIS OCCASION?**

**WHAT ACTIONS SHOULD THE MASTER HAVE TAKEN TO PREVENT THE INCIDENT FROM HAPPENING?**



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**WHAT WOULD BE THE APPROPRIATE WORK PROCESS THAT CAN PREVENT SUCH AN INCIDENT FROM HAPPENING?**

**WHAT WOULD HAVE BEEN A MORE APPROPRIATE MANPOWER ALLOCATION/ ARRANGEMENT TO IMPROVE THE WATCH KEEPING PROCESS?**

**WHAT POSSIBLE REASON(S) MIGHT HAVE LED THE SHIP OPERATIONS FROM NOT FOLLOWING THE PROCEDURES LISTED IN THE COMPANY'S SMS?**

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## NOTES