

The missing question from the NTSB Report on MV Golden Ray:

Photo Credit: Petty Officer 3rd Class Ryan Dickinson | U.S. Coast Guard District 7 PADET Jacksonville | Date Taken: 09/09/2019 | <https://bit.ly/3qtn7a7>

WHY?



By *Salvatore R. Mercogliano, Ph.D.*



Two years after MV Golden Ray capsized while departing the port of Brunswick, Georgia early in the hours of September 8, 2019, the National Transportation Safety Board released their final report on the incident. The accident occurred as the ship, under the supervision of an embarked pilot, executed a 68-degree turn heading out to sea.

With the vessel increasing speed, and 20 degrees of rudder ordered, Golden Ray heeled past 8 degrees and never recovered. The ship maneuvered out of the main shipping channel, but with a list of 60 degrees to port, and an open hatch for the pilot, the vessel flooded and sank to the bottom of St. Simon's Sound. The Coast Guard and tugs responded and quickly removed the pilot and nineteen members of the crew. Rescue efforts cut out the remaining four crew trapped on board.

The 46-page report is filled with information and factual data about the event gathered from

eyewitnesses, testimony, and research from NTSB experts. After their review of the facts and their analysis, they determined that:

- The probable cause of the capsizing of the Golden Ray was the chief officer's error entering ballast quantities into the stability calculation program, which led to his incorrect determination of the vessel's stability and resulted in the Golden Ray having an insufficient righting arm to counteract the forces developed during a turn while transiting outbound.

The NTSB ruled out weather, the transfer of ballast or fuel during the transit, malfunction of the propulsion and steering systems, the shifting of cargo, obstructions in the channel, or a fire in the hold. With none of those present, the bureau focused on the actions – or more appropriately, inactions – of the First Mate, who also served as the cargo officer, in failing to properly input the readings from the ship's 21 ballast tanks into the shipboard stability computer (LOADCOM). This error resulted in the incorrect determination of the vessel's stability. With that error, and the ship lacking the adequate metacentric height (GM) to properly right the



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vessel in the final turn toward the open sea as the vessel sped up, it resulted in the centers of gravity and buoyancy rolling the vessel when she heeled past 8 degrees.

As in most NTSB reports, the who, what, where, and how are extensively investigated and detailed. What is glaringly missing, however, is WHY? Why did the Chief Mate, who had been serving on the ship for over six months, with six years in car carriers and ten years as First Officer, fail to input the correct data from the ballast tanks into the LOADCOM. Why, after he ordered the quartermaster to sound the tanks to ensure that the computer soundings matched the actual readings, did he input the incorrect data. Why did he fail to use the automated feature on the system that automatically linked this data directly to the LOADCOM computer? Finally, why did the NTSB not ask these questions?

In the end, the NTSB made two recommendations to the operating company, G-Marine Service Company, Limited. First, to revise their safety management system to establish procedures for verifying stability calculations and implement audit procedures. According to the investigation, the Chief Mate had only 3 to 4 hours training on the LOADCOM, even though he used it to determine the stability of the vessel before and after every loading operation. He was also the only person on board who accessed this information. G-Marine used a firm to develop their load plans, but final information after loading was not received until the vessel sailed; in this case, two hours after the ship capsized.

The second recommendation had to deal with several watertight doors that had remained open during the transit and when the

ship took its catastrophic list and led to the flooding of the vessel and the entrapment of the four engineers. Amazingly there were no recommendations or actions that would prevent this accident from happening again. There was no requirement that any car carrier leaving the port of Brunswick, or any US harbor for that matter, provide a statement or report on its stability. But perhaps the most glaring issue not addressed in the NTSB report is why was the data inputted incorrectly?

The Chief Mate gave a deposition following the accident, but he failed to appear or make himself available during the NTSB hearing. The fact that incorrect data was fed into the LOADCOM indicates the mate was grossly negligent in his duties, which is alleged by the fact that he was unfamiliar with the primary tool he would use to solely determine the

stability of the vessel he had served on for six months. Or he intentionally submitted false data and failed to use the automatic link from the ballast tanks to the LOADCOM for fear that it would show that instead of having 8.3 feet of GM, which was required, he was at 6 feet. We again come to the question, that is never asked in the NTSB report, why?

Not once discussed in report is the ship's ballast water treatment plant. It is represented in a graphic on page 46 that details the ship's water ballast system. When Golden Ray sailed into Jacksonville, Florida, the port before Brunswick, it had offloaded 1,500 MT of ballast to raise the vessel to make the required draft of 31 feet. After sailing, it did not take on any more ballast. When it arrived at Brunswick, it also failed to take on ballast as it navigated the 36-foot channel, with a maximum permissible draft of 33 feet. In Brunswick, the ship offloaded and loaded vehicles and increased its cargo weight by 373 MT, but failed to take on ballast; why?

The answer lies in the fact that when a ship loads ballast, the water runs through the ballast water treatment plant. It takes time to remove sediment, silt, and biological organisms from the water before it could be loaded in the tanks. There is less of this material in the open

blue water of the Atlantic compared to the brown water of St. Simon's. Additionally, the material gathered in the ballast water treatment plant cannot be discharged in US waters but pumped ashore for further treatment, according to the US Coast Guard.

So, why would an experienced Chief Mate input false reading into the LOADCOM when he knew that the computer soundings had been verified? As the LOADCOM data was destroyed in the accident, we cannot know for sure, but it appears that the Chief Mate intended for the ship to show an acceptable GM, not thinking that the ship would suffer a catastrophic heeling motion. He probably intended to load ballast water once clear of the coast and in blue water. We do not know if the Chief Mate intended to ballast once clear of Brunswick, or even wait until final cargo operations were completed in Baltimore.

The failure of the NTSB to address this issue means that car carriers entering and leaving Brunswick, Georgia currently, and for the past two years, and every other port in the United States, may have officers on board the ship inputting false data to avoid fouling their ballast water treatment plant. Failure to have the LOADCOM computer directly linked

to the ballast tank sensors, verified with soundings, and then uplinked to the company's engineering firm to determine the stability of the vessel, and waiting for the verification of the load and stability data were not addressed in this report. Yet, these factors contributed to the accident.

By focusing solely on the Chief Mate, and to a lesser extent on G-Marine Services failing to have an effective ship management system regarding ship's stability, the potential for another car carrier capsizing in US waters has not been eliminated or even substantially diminished.

The public docket for the investigation can be viewed at <https://bit.ly/2XLB1IB> and contains more than 1,700 pages of factual information, including interview transcripts, photographs and other investigative materials for your perusal.

The NTSB Marine Accident Report is available online at <https://bit.ly/3CosGcO>.

I cover this topic and more in my video, *What's Going On With Shipping? Why Did MV Golden Ray Capsize?*, over on my Youtube page at <https://www.youtube.com/watch?v=SwQSZa34V1E>.



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