

Container Vessel WAN HAI 312 Major Marine Occurrence

Executive Summary

On July 10th, 2023, a Singapore-registered container vessel Wan Hai 312, IMO number 9248693, gross tonnage 27800, and a container capacity of 2,646 TEU, departed from Berth No.64 of Kaohsiung Port heading towards the second entrance. At 1956 hours, the vessel made contact with revetment during the turn to starboard. No casualties or environmental pollution resulted from this occurrence.

In accordance with the Taiwan's Transportation Occurrence Investigation Act and the Casualty Investigation Code of the International Maritime Organization, the TTSB is an independent transportation occurrence investigation agency responsible for conducting this investigation. The investigation team also included members from the Maritime and Port Bureau of the Ministry of Transportation and Communications, the Taiwan International Ports Corporation, Ltd., the Kaohsiung Port Pilot Office, the WAN HAI LINES (ship management company), and the Transport Safety Investigation Bureau (TSIB), Singapore.

After comprehensive investigation and analysis of the factual data, a total of 11 findings and 4 safety recommendations were obtained.

The finding related to probable cause is as follows:

1. When the pilot was navigating the vessel Wan Hai 312 out of Kaohsiung Port towards the second entrance, at a distance of about 0.18 nautical miles from the turning basin, the vessel's speed remained at 8.1 knots. The initial speed during the turn was slightly high, and Wan Hai 312 commenced a starboard turn utilizing its rudder force. However, the rate of turn was insufficient,

resulting in the vessel deviating from the anticipated turning circle trajectory. Although the pilot increased the engine speed (from slow ahead to half ahead), the increased propeller speed was not enough to generate the necessary propeller wash to impact the rudder and enhance its effectiveness of turn. Consequently, the turning rate of the vessel did not significantly increase with the minor thrust acceleration. Finally, due to an excessively large turning radius, the vessel Wan Hai 312 made contact with the revetment of the second entrance of Kaohsiung Port.

The findings related to risk are as follows:

1. The pilot did not adequately develop a pilotage plan. The vessel's turning rate was insufficient during the turn, and the pilot did not take correct emergency actions. There was no evidence of emergency procedures being implemented by the pilot before the vessel made contact, indicating a safety hazard in the pilot's pilotage plan, and a resulting risk of accidents was not adequately addressed.
2. The pilot did not fully implement the requirements for master and pilot information exchange (MPX) which was prescribed in the bridge resource management for pilot (BRM-P). After boarding, neither effective information exchange was performed with the bridge team of Wan Hai 312, nor situational awareness was co-created. This prevented the captain and the bridge team from effectively playing their respective critical roles. Consequently, before the accident occurred, the bridge team of Wan Hai 312 did not proactively identify the impending accident risk factors.
3. The bridge team of Wan Hai 312 did not adhere to the requirements outlined in WAN HAI LINES' Safety Management Manual to establish effective communication with the pilot. The captain did not actively inquire about the pilotage plan when the pilot didn't explain the pilotage plan to the captain

after his boarding. The lack of effective communication resulted in the captain not questioning the pilot when he doubted the pilot's subsequent maneuvering intention. When the pilot did not proactively discuss the pilotage plan with the captain upon boarding, the captain should have taken the initiative to inquire about the pilot's pilotage plan, demonstrating a commitment to navigation safety and jointly ensuring the safe departure of the vessel, thereby reducing the risk of occurrences.

4. Kaohsiung Port currently lacks specific regulations or recommendations about the termination area and conditions for tugboats, since these are typically determined by the instructions of the pilot or the captain. In this occurrence, the pilot did not consider using a tugboat in the turning basin, and the tugboat task was discontinued immediately after the completion of Wan Hai 312 U-turning.
5. The Kaohsiung Port Vessel Traffic Service (VTS) monitoring system currently only monitors the speed of the inbound vessels after they pass the signal station. However, it does not provide monitoring and warning for the speed of the outbound vessels before passing through the turning basin of the second entrance.

The other findings are as follows:

1. At the time of the occurrence, Kaohsiung Port experienced a northwesterly wind at Beaufort scale level 2, with clear weather conditions.
2. At the time of the occurrence, the steering gear, main engine, and navigation equipment of Wan Hai 312 were all functioning normally.
3. The current 10-knot speed limit regulation between Berth 63 and the second entrance in Kaohsiung Port, along with the suggested reduced speed within the port, may have differences in understanding.

4. At the time of the occurrence, only one person was on duty at Kaohsiung Port Vessel Traffic Service (VTS) for the second entrance. The on-duty dispatcher did not adhere to the current regulations of Kaohsiung Port VTS, which require two people on duty. This non-compliance could potentially affect the operator's capacity to respond to emergencies adequately.
5. After the pilot shift changed due to personal desire, the pilot worked the night shift continuously for 8 days in the month before the occurrence. This re-schedule did not align with the original scheduling method set by the Kaohsiung Port Pilot Office. Furthermore, during the night shift from the second day and continuously for 7 days, the pilot experienced insufficient sleep hours and poor sleep quality.

Safety Recommendations

During the occurrence investigation process, the Taiwan International Ports Corporation (TIPC) Kaohsiung Branch has established procedures for the duty and rest scheduling of shift Vessel Traffic Service (VTS) personnel. WAN HAI LINES management company has taken countermeasures in response to this occurrence, including increased training on bridge resource management (BRM), verification of vessel operations through feedback from the fleet, issuance of recommended speed limits for arriving at and departing from Kaohsiung Port to their fleet, and the requirement for tugboat assistance for turning maneuvers when entering and leaving Kaohsiung Port. This case will no longer raise related safety recommendations.

To Maritime and Port Bureau of the Ministry of Transportation and Communications

1. Supervise the pilot offices at each port to ensure that pilots implement the vessel arrival and departure pilotage plans during navigation, conduct effective master pilot information exchange (MPX) with the bridge team, and maintain safe speeds during piloting to ensure the safety of the vessel and port, thereby reducing the risk of occurrences.

To Taiwan International Ports Corporation, Ltd.

1. Enhance maritime operations and navigation safety within Kaohsiung Port, propose procedures or recommendations regarding the conditions and areas for ending tugboat tasks, to reduce the risk of vessels experiencing sudden loss of propulsion or restricted maneuverability.
2. Set the safety of the port and ships as a higher priority, and adopt the principle of reduced speed of vessels in the port area to ensure the navigation safety in the port. Review the supporting measures for the speed limit in the Kaohsiung Port in conjunction with the pilotage plan.

To the Kaohsiung Port Pilot Office

1. Implement the vessel's arrival and departure pilotage plans during piloting. Perform an effective master pilot information exchange (MPX) with the bridge team, and maintain a safe speed to ensure the safety of both the vessel and the port, thereby reducing the risk of occurrences.

Note: The final report of this occurrence investigation is published in Chinese. To facilitate understanding for non-Chinese readers, the Executive Summary has been translated into English. While every effort has been made to ensure accuracy, discrepancies may occur. In the event of any inconsistency, the Chinese version shall prevail.