

Heavy load carrier YU ZHOU QI HANG Major Marine Occurrence

Executive Summary

On October 14th, 2024, at 1407 hours local time, while the ship was berthing at Berth West No.20 of Keelung Port, one of the quay gantry cranes on the wharf was struck and toppled by the gantry crane carried on the ship. Damage occurred to both the shore-based crane and the gantry crane on the ship. No injuries or oil 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 Keelung Port Pilot Office, Hainan Yu Zhou International Shipping Co., Ltd., Pacific Shipping Corporation, and Ji Sheng Shipping Agency Co., Ltd..

After comprehensive investigation and analysis of the factual data, a total of 16 findings and 9 safety recommendations were obtained.

The findings related to probable causes are as follows:

1. The pilot did not reduce speed or adjust the heading in the outer channel or turning basin before entering the fairway, proceeding directly into the berth approach. Relying solely on visual lookout was insufficient to determine the ship's position and lateral deviation. The pilot and the ship's bridge team did not use navigational instruments to monitor the ship's position and lateral

movement, which prevented timely correction of berthing speed and angle. Due to restricted maneuvering space, a gantry crane, carried as a cargo on the ship, made contact with a shore-based gantry crane, causing the latter to collapse and be declared a total loss.

2. Although the pilot was aware of the berth and fairway conditions prior to pilotage, he did not adequately assess the berthing risks or propose a plan modification or refusal. Insufficient situational awareness during pilotage led to an inadequate evaluation and management of the risks associated with berthing in a confined fairway.
3. The master of the ship did not fully comply with port entry and departure safety procedures or effectively apply Bridge Resource Management (BRM). The Master–Pilot Exchange (MPX) was inadequate, failing to address critical risk factors such as the ship’s oversized cargo, berth environment, and special handling requirements.

The findings related to risk are as follows:

1. The pilot executed the maneuver without a comprehensive berthing plan and failed to recognize that the actual maneuvering width of the fairway was limited to 81 meters, significantly increasing the risk during berthing.
2. The ship management company did not obtain specific berthing information for Keelung Port, resulting in a risk assessment that omitted port-area operations. Additionally, the Master failed to conduct the required company risk assessment before entering the port and did not consider the clearance distances between the shipborne crane and shore facilities.
3. Berth management controls at Keelung Port were ineffective. For ships carrying oversized cargo, no special application or review procedures were established. The failure to clear West No. 23 Berth as originally planned

further restricted maneuvering space and increased operational risks.

4. The Keelung Port Vessel Traffic Service (VTS) Guidelines apply only to “special ships” and lack an application and review mechanism for vessels carrying oversized cargo, missing the opportunity to prevent incidents.
5. The ship’s agents and China Container Terminal Corporation had completed the pre-arrival declaration and coordination for the ship’s port call; however, their discussions focused solely on cargo discharge arrangements and neglected the risk assessment related to the ship’s oversized load.

The other findings are as follows:

1. The ship held valid statutory certificates issued by the China Maritime Safety Administration and a valid Safety Management Certificate issued by the China Classification Society. All certificates and procedures were current, with no abnormal remarks.
2. The ship had no bow thruster; its drafts upon arrival were 4.8 m forward and 5.2 m aft. The ship’s main engine, auxiliary machinery, and steering gear functioned normally, ruling out equipment failure or structural damage as causal factors.
3. At the time of the occurrence, the weather was clear with a rising tide, east-southeast winds at Beaufort scale 4, and good visibility, ruling out environmental causes.
4. Both pilots held valid pilot licenses issued by the Ministry of Transportation and Communications of the Republic of China (R.O.C.).
5. The Master and 16 crew members held valid Certificates of Competency issued by the China Maritime Safety Administration.
6. The two pilots, two tug masters, and the ship’s crew maintained normal work

and rest hours during the 72 hours preceding the occurrence, thereby ruling out fatigue.

7. One of the pilots had previously, about 7 to 8 years earlier, handled the pilotage of a vessel carrying wind-turbine components and had served as a co-pilot assisting from ashore.
8. Keelung Port has experienced six recent incidents involving ships that made contact with wharves or gantry cranes, or ran aground.

Safety Recommendations

To the Keelung Port Pilot Office

1. Review and improve the risk assessment process for berthing operations involving special ships and vessels carrying oversized cargo to ensure pilots have sufficient time to develop berthing plans and contingency measures.
2. When large ships berth at West Wharves from no.20 to no.23, pilots should reduce speed and adjust their heading in the outer channel or turning basin before entering the fairway to ensure safe berthing and protect the wharf facilities.

To Hainan Yu Zhou International Shipping Co., Ltd.

1. Ensure that bridge teams implement Bridge Resource Management for Pilots (BRM-P), strengthen Master-Pilot Exchange (MPX) procedures, and fully comply with safety protocols for port entry and departure operations. If pilot maneuvers raise safety concerns, the Master must take appropriate action.
2. Instruct Masters within the fleet to complete voyage planning and risk assessments that consider berthing details, special cargo characteristics, and environmental conditions. Additionally, enhance crew competence in using navigational instruments to monitor the ship's position during berthing.

To Pacific Shipping Corporation

1. Effectively utilize the berth allocation coordination mechanism to ensure the safe berthing of vessels carrying or equipped with oversized cargo.

To China Container Transport Corporation

1. Improve risk management procedures for berth operations and utilize the berth allocation coordination mechanism to ensure the safety of vessels carrying oversized cargo.

To the Taiwan International Ports Corporation, Ltd.

1. Strengthen port safety management functions, improve coordination among berth allocation committees and relevant units, and optimize scheduling of operations at adjacent berths.
2. Establish special application and review procedures for the entry and departure of special ships (such as oversized ships or ships carrying oversized cargo) at ports, and conduct the necessary risk assessments.

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

1. Supervise the Keelung Port Pilot Office to ensure that pilots conduct thorough risk assessments and have adequate time to develop berthing plans and contingency measures.

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.