Dredger Chau Hsen No.2 Major Marine Occurrence

Executive Summary

On 15 September 2020, the Taiwan-registered self-propelled dredger Chau Hsen No.2, with a gross tonnage of 565 and Official No. 009818, equipped with two diesel engines for propulsion, was engaged in transporting rock loaded at Port of Taipei for offshore rock dumping operations off Taoyuan. At approximately 0910, while navigating about 1.5 nautical miles off the North Breakwater of the Port of Taipei, a fire broke out in the port-side engine located on the aft deck. As a result, both engines at the stern were damaged by fire. No injuries or environmental pollution were reported.

In accordance with the Transportation Occurrence Investigation Act, Taiwan, and the definition of major transportation occurrences specified therein, the Taiwan Transportation Safety Board was the independent agency in charge of investigating the marine accident. The organizations and agencies invited to participate in the investigation included the Maritime and Port Bureau of the Ministry of Transportation and Communications, Coast Guard Administration, Ocean Affairs Council, National Fire Agency, Ministry of the Interior, Taiwan International Ports Corporation, Ltd. and Chau Hsen Enterprise Co., Ltd.

After comprehensive investigation and analysis of the factual data, a total of 10 findings and 8 safety recommendations were obtained.

The findings related to probable causes are as follows:

1. The fuel piping system of Chau Hsen No.2 port-side engine was not adequately secured with fixed supports. Engine vibration during operation caused the insufficiently supported fuel pipe to fracture,

allowing fuel to spray onto the high-temperature exhaust pipe and ignite, resulting in an engine fire.

2. After the port-side engine caught fire, gas cylinders stored adjacent to the engine intensified the fire. The fire subsequently spread to the fuel tank located behind the wheelhouse, where leaking fuel ignited and expanded the extent of the fire on the aft deck, ultimately destroying both engines.

The findings related to risk are as follows:

1. Although Chau Hsen Enterprise Co., Ltd. understood the manning level and qualification requirements specified in the Minimum Safe Manning Certificate, only three crew members were assigned to operate Chau Hsen No.2, increasing operational risk.

2. Prior to the occurrence, shore-based repair workers from the company had worked onboard Chau Hsen No.2 and left gas cylinders onboard.

3. The crew of Chau Hsen No.2 were unfamiliar with the use of onboard firefighting equipment, resulting in the loss of the opportunity to extinguish the fire at an early stage.

4. The crew lacked the capability to properly respond to abnormal machinery conditions, increasing the damage caused after the fire broke out.

5. Chau Hsen Enterprise Co., Ltd. modified vessel equipment without complying with the Ship Inspection Regulations, including changes to the engines, fuel tanks, and fuel supply and return pipelines, thereby affecting operational safety.

6. Maintenance personnel arranged by the company lacked professional skills related to marine equipment.

7. Chau Hsen No.2 did not have a periodic maintenance and servicing program for machinery and equipment.

8. The management and inspection mechanism of the Maritime and Port Bureau, Ministry of Transportation and Communications for verifying compliance with minimum safe manning requirements for work vessels was inadequate.

Safety Recommendations

To Chau Hsen Enterprise Co., Ltd.

1. Comply with the requirements of the Minimum Safe Manning Certificate by assigning a sufficient number of qualified crew members and providing necessary familiarization training.

2. Strengthen in-service crew training to ensure familiarity with firefighting equipment and safety systems.

3. When considering modifications to major vessel equipment, comply with applicable regulations and prudently assess associated risks.

4. Review operational risks associated with work vessels and consider establishing an onboard safety management mechanism.

To Maritime and Port Bureau, Ministry of Transportation and Communications

1. Implement effective management and control mechanisms to ensure compliance with minimum safe manning standards for operating vessels.

2. Continue promoting vessel safety operation and pollution prevention management systems, and assess the feasibility of including work vessels in safety evaluation programs.

3. Establish a flag State safety inspection mechanism for Taiwan-flagged

work vessels operating in ports or coastal waters.

4. With reference to relevant international conventions and applicable standards of the China Corporation Register of Shipping, review the completeness of Taiwan's ship inspection regulations and develop related requirements (such as documentary review procedures, on-site test acceptance criteria, or inspection checklists) to serve as guidance for vessel owners and ship inspectors in implementation and compliance.

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.