

MARINE DEPARTMENT NOTICE NO. 206/2022

(Marine Industrial Safety Practices)

Sinking and Stranding of a Locally Licensed Floating Dock in the Waters off Tsing Yi

The Incident

A locally licensed floating dock anchored in the waters off Tsing Yi was performing docking and undocking operations on the day of the incident. During the ballasting sinking operation of the floating dock, its staff found that the water level of the water ballast tanks of two buoyant compartments was higher than that of the other water ballast tanks. In order to control the abnormal sinking of the floating dock, the staff closed all inlet valves and bypass valves of the water ballast tanks of the floating dock. At the same time, the staff opened the outlet valves and started the ballast pumps of both affected buoyant compartments to deballast the water inside, but the water level of the affected tanks showed no signs of dropping. After that, the staff opened the bypass valves and outlet valves connecting each ballast tank of the floating dock and switched on all ballast pumps in parallel to deballast the water, hoping to stop its sinking but in vain. Due to the water ingress in multiple compartments inside the floating dock wall, the electric power supply of the floating dock was interrupted and the ballast pumps stopped working, resulting in the continuous inflow of seawater into the water ballast tanks of the floating dock and the compartments inside the floating dock wall. The floating dock eventually sank and grounded.

2. The investigation revealed that the contributory factors leading to this sinking incident were the weakened structural strength of the floating dock, the significant corrosion of the deck plating of each independent buoyant compartment, and that the level of corrosion was close to the steel plate corrosion limit as a result of failure in carrying out effective maintenance in a timely manner. When the floating dock was sinking, the dockyard failed to provide relevant emergency operation instructions and contingency measures; during the deballasting operation, the staff lacked safety awareness and did not realise that

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the changes in deflection and stress of the floating dock might cause further deformation and damage of the deck of the significantly corroded buoyant compartments and weaken the buoyancy of the floating dock.

3. The investigation also revealed that the bypass valves and outlet valves of the water ballast tanks could not be closed manually when the electric power supply of the floating dock was lost. Seawater continued to pour into each water ballast tank along the deballasting water pipeline, causing the floating dock to lose its buoyancy further and sink eventually.

Lessons Learnt

4. To avoid the recurrence of similar accidents in the future, the dockyard should:

- (a) enhance the maintenance of floating docks;
- (b) raise the safety awareness of the effects of floating dock ballast operations on floating dock structures; and
- (c) provide relevant emergency operation instructions, contingency measures, and training of relevant personnel in case of damage and flooding of a floating dock.

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