

Republic of the Marshall Islands

MARITIME ADMINISTRATOR

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MARINE SAFETY ADVISORY No. 14-23

To: Owners/Operators, Masters, Nautical Inspectors, Recognized Organizations

Subject: FAILED BURSTING DISCS IN CARBON DIOXIDE FIRE-EXTINGUISHING SYSTEMS

Date: 18 September 2023

The Republic of the Marshall Islands (RMI) Maritime Administrator (the “Administrator”) recently received an operator’s report of failure of copper bursting discs in Carbon dioxide (CO₂) fire-extinguishing systems.

The report detailed failed cylinder valves that were manufactured by NK Co., LTD, Korea prior to 2016. There, a routine, two-year servicing and subsequent inspection found that the total number of empty or partially empty fixed CO₂ system cylinders represented a loss of more than 50% of the ship’s available supply. The operator’s root cause analysis determined that variable environmental conditions and fluctuating air cylinder pressures led to a material failure of the copper bursting discs in the cylinder valves.

In 2016, the cylinder valve’s manufacturer changed the material in the bursting discs from copper to nickel, as it is more resistant to changing environmental conditions. Though NK Co., LTD, Korea did **not** issue a service bulletin or similar notice recommending the replacement of copper bursting discs with nickel bursting discs in cylinder valves, they have since updated their [User Manual](#).

Owners and operators of RMI-flagged vessels are advised to review the following requirements and recommendations:

- For all fixed fire-extinguishing systems, owners or operators should verify with the manufacturer that it meets the recommended material component requirements and any changes. Where manufacturer’s maintenance manuals and inspection guidelines exist, they must be available onboard and followed, in accordance with RMI Marine Notice [2-011-14](#), *Maintenance and Inspection of Fire Protection Systems and Appliances*.
 - For systems with NK Co., LTD, Korea cylinder valves, the updated User Manual must be followed.
- It is strongly urged that owners or operators implement their periodic review process of manufacturer’s system manuals, service bulletins, and notices to ensure system changes can be identified, implemented, and rectified.

This MSA is evaluated annually by the Administrator and expires one year after its issuance or renewal unless otherwise noted, superseded, or revoked.