

Bulletin

CCS Australian Office, No. 085, 2023 Issue 001

INSPECTION OF MAIN ISOLATION VALVE IN FIRE MAIN

BACKGROUND

The Main Isolation Valve in the fire main is a frequently inspected item during PSC inspections. The relevant requirements of SOLAS are as follows:

“Isolation valves to separate the section of the fire main within the machinery space containing the main fire pump or pumps from the rest of the fire main shall be fitted in an easily accessible and tenable position outside the machinery spaces.”

This valve’s primary use is segregating the fire main within the machinery space from the external fire line, in such a way that by closing the valve (normally located at a fire control station), the shipboard firefighting capabilities can be retained in case of damage to parts of the fire line. Normally, an AMSA PSC officer requires the valve be closed during an operation testing of emergency fire pump and then checks the water pressure at the outlet of fire hydrants, hence verifying the closing functionality of this valve. Recently, there was a detention case of a ship calling an Australian port due to the failure of the valve. To help ship operators well prepare for such an inspection of the valve, the safety instructions based on the detention case are given as follows:

INCIDENT

During an PSC inspection of said ship, the officer required the ship crew to perform operation testing of her emergency fire pump with the isolation valve in the fire main closed to the fire line from her machinery spaces. There was a pressure gauge fitted to the underside of the valve (i.e., machinery spaces side), as shown in Picture 1. After the pump was started, it was observed by the officer that there was still a pressure reading shown in the pressure gauge within the fire line from her engine room side, so the officer suspected that the valve was malfunctioning. To further confirm his assumption, he required the crew to switch the operation from the emergency fire pump to the main fire pump and audible flow sound was readily heard from the valve body upon the operation of the main pump. In the meantime, water leakage was seen at the outlet of the fire hydrant outside her deckhouse. Therefore, the officer judged that the valve was malfunctioning, and deficiency code 30 was given to the ship, requiring immediate rectification.

Your reliable safety prioritized Class mate



Picture 1

VERIFICATION METHODOLOGY

1. At present, some of the ships calling Australia have such pressure gauges installed at the main isolation valves at their fire control stations. The failure/malfunction of the valve can be readily identified by reading this gauge during the operation of main/emergency fire pumps. To be more specific, if the gauge is positioned to the bottom side of the valve (i.e., machinery spaces side) as shown in Picture 1, upon operation of the emergency pump, the gauge should indicate zero pressure with the valve in a closed position, which indicates there is no water pressure in the fire line from machinery spaces. Conversely, if it is position on top of the valve (the emergency fire pump side) as shown in Picture 2, upon operation of the main fire pump, the gauge should also indicate zero pressure with the valve in a closed position, which indicates there is no water pressure in the fire line from the emergency fire pump.



Picture 2

2. In addition, for other ships not having such pressure gauges fitted at their main isolation valves, a similar philosophy to the above is also adopted where the main fire pump is running with the valve in a closed position, fire-fighting water should only be supplied to machinery spaces and as a result, there should be no water coming out of the fire hydrants on the main deck. Conversely, when the emergency fire pump is running with the valve in a closed position, fire-fighting water should only be supplied to the main deck and adequate outlet water pressure should be ensured.

CONCLUSION

Through an investigation into the deficiency, it was argued that the root cause could be due to chronic corrosion of and physical fluid impact on the valve clack, which led to a reduction of its internal sealing. After the detention, the rectification was completed after the crew overhauled the valve to clean the inside of the valve body and polished/grinded the valve clack (Picture 3), which was followed by satisfactory operation testing.



Picture 3

SUGGESTION

During the operation of a shipboard emergency fire pump, the main isolation valve in fire main is a critical fluid gate, playing a vital role in avoiding a loss in fire-fighting water pressure within the fire main. However, the internal components of such a valve are prone to physical deformation and chemical deterioration when they are subject to years of fluid contact and repeating impact therein, which likely leads to failure of the valve's functionality and hence, a vessel detention within Australian waters.

To avoid the above, we suggest the followings to the ship operators:

1. operation testing of your emergency/main fire pumps and the main isolation valve at the fire control station is highly recommended before calling Australia, making sure they are all in good working order;
2. inspection and maintenance of the valve should be implemented on board on a regular basis, which includes but is not limited to manual turning actions/movement of the valve with bare hands (i.e., without aid of any tools).

CCS Australian Office
May 27, 2023

Announcement:

1. Intention to assist and ensure owners to understand and be well prepared, ensuring all updated requirements from AMSA can be met.
2. For more information, please visit AMSA website at www.amsa.gov.au and CCS website at www.ccs.org.cn.
3. The information contained does not and cannot supersede any AMSA or related governing parties requirement as well.