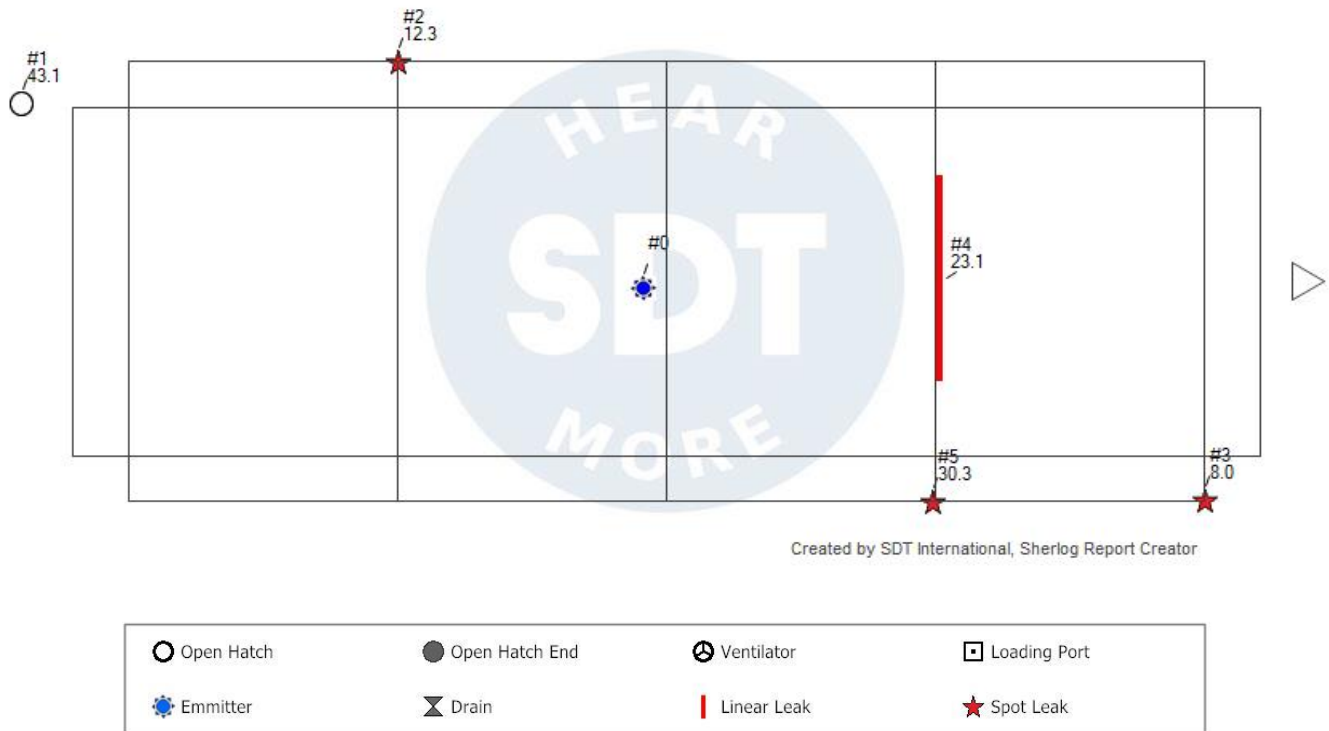


**ITEM:** ULTRASONIC TEST

**FINDING:** Spots and/or linear areas with lack of compression



### WHAT IS AN ULTRASONIC TEST?

Ultrasonic testing is a quick and easy way to locate areas with lack of compression on hatch cover sealing arrangements.

Within the scope of ultrasonic testing, the word “leakage” may not be completely correct. It would be more appropriate to use the words “lack of compression” as this is what is being detected in a spot or area where the packing rubber lacks sufficient compression force to provide a tight seal. Only when there is a transition from lack of compression to lack of contact, will water start to infiltrate and cause a real (water) leak.

This is why water hose tests and ultrasonic tests do not yield the same results: ultrasonic tests indicate lack of compression and hose tests show the areas with lack of contact.

If compression is good, then we know that the packing rubber has sufficient compression force, which means that the rubber packing will be able to compensate for relative movements and, as such, provide a tight seal. The fact that we can find out whether the rubber will perform well at sea whilst the ship is still in port provides extra safety.

## HOW TO READ THE RESULTS

In order to obtain an idea of the importance of a leak, a reference value is useful. This reference value is found in the form of an “open hatch value” (OHV), which is the ultrasound signal that is measured through an open hatch, i.e. a ‘big hole’. The value measured through the open hatch will be quite significant, and is, in fact, the highest value one can find for a particular hold.

The fail-pass criteria for an ultrasonic test has been set at **10% of the OHV** and not 0%, which provides an acceptable tolerance for a certain degree of wear on the sealing system.

Every measured value over 10% is written down. Logically, spot leaks have less risk of cargo damage than linear areas with lack of compression. Each ultrasonic test report is however assessed taking into account the hatch cover system and the limitations of testing. All ultrasonic operators have been trained to not only correctly measure, but to interpret the results in an accurate manner as well.



## ULTRASONIC TEST VERSUS VISUAL INSPECTION

Ultrasonic testing however does not tell the whole story. A hatch cover can only be considered as weathertight if the ultrasonic test AND the visual inspection do not reveal any issues.

Ultrasonic testing has its limitations. Tests can be influenced by additional sealings, silicones, Vaseline etc. Also, when rubbers are severely overcompressed, ultrasonic signals will no longer be able to pass through. These rubbers have however lost most or even all of their elasticity, and thus, at sea, leakages can occur.

This is why within the scope of the ArcelorMittal ship inspection programme ultrasonic tests will always be accompanied by a visual inspection.

This is also why providing a clean US test report will not clear out the remarks of the visual inspection. Both need to be addressed equally.

## WHAT KIND OF FEEDBACK IS REQUIRED?

### CORRECTIVE ACTIONS

- New ultrasonic test report showing no or only minor areas with lack of compression
- Ultrasonic test may be carried out on board by certified operator or by a third party

As stated above, a clean ultrasonic test report alone may not be sufficient to warrant a vessel upgrade. The visual remarks need to be addressed as well.