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Interesting observations

VIQ 5.23 Does the vessel have appropriate duplicate portable gas detection equipment suitable for the cargoes carried, are the officers' familiar with the operation, calibration and is the equipment being maintained in accordance with manufacturers and industry recommendations?

In order to address this question it is important to be aware of the terminology and the requirements to ensure that portable gas detection equipment is full functional at all times. Hence the below guidance should be considered when considering the appropriate tests of such equipment.



Portable Gas Detection Equipment (Direct Reading Portable Gas Monitor (DRPGM))

The main difference between a bump test and calibration is that a bump test determines whether a DRPGM can detect if a possibly hazardous gas is present, while calibration checks that equipment is accurate.

Bump Test

The International Safety Equipment Association (ISEA) defines a bump test as a *“qualitative function check where a challenge gas is passed over the sensor(s) at a concentration and exposure time sufficient to activate all alarm indicators to present at least their lower alarm setting. This is typically dependent on the response time of the sensor(s) or a minimum level of response achieved, such as 80% of gas concentration applied.”*

The bump test checks whether sensors and alarms are working as intended, and failure might indicate that a blockage is present. In sum, bump testing assesses function, not accuracy.

Calibration

A calibration check, is a *“quantitative test utilizing a known traceable concentration of test gas to demonstrate that the sensor(s) and alarms respond to the gas within manufacturer's acceptable limits.”*

Calibration Check

Calibration checks start by “zeroing” a DRPGM (resetting it to a reference point determined by the manufacturer) and testing that alarms go off after applying a high enough concentration of test gas. The resulting sensor reading should match the concentration listed on the test gas container. The ISEA says that a device is accurate within an acceptable range that's “typically $\pm 10\text{-}20\%$ of the test gas concentration applied unless otherwise specified by the manufacturer, internal company policy, or a regulatory agency.”

Full Calibration

The ISEA guideline describes full calibration as “the adjustment of the sensor(s) response to match the desired value compared to a known traceable concentration of test gas.”

This adjustment accounts for naturally occurring drifting and other environmental factors. **Specially trained, qualified personnel are the only people permitted to perform full calibrations.**

A bump test and calibration check should be performed every time a DRPGM is to be used and also in accordance with makers instructions. A full calibration should be performed if a bump test or calibration check fails and in accordance with makers instructions.

Override Devices

VIQ 5.1 Are officers' familiar with the process for conducting Risk Assessments for routine and nonroutine tasks, do operators provide adequate procedures for conducting RA and is there sufficient evidence of this process undertaken?

The risk assessment process identifies hazards present in a work undertaking, analyses the level of risk, considers those in danger and evaluates whether hazards are adequately controlled, taking into account any measures already in place.

Inspectors Observation: Several jet chisels and pneumatic powered portable grinding equipment located within the bosuns store amidships was noted fitted with cable ties permanently bypassing the spring loaded activation triggers for the equipment. The cable ties were removed when pointing out to the accompanying crew member.



Clearly any deadman switches on equipment should not be overridden under any circumstances.

VIQ 10.32 Are the following, where applicable, all in good order and do they appear to be well maintained? Boilers, including waste heat and domestic boilers

Notes: Where automated boilers are fitted, they should be being operated in automatic mode. Boiler controls should not be overridden or by-passed.

Inspectors Observation: One of the two auxiliary boiler safety valves were noted fitted with screw down gagging bolt. It was noted that the gagging bolt was not in the override position at the time, but the gag bolt remained in such position that it could be used inadvertently.



Gagging bolts are to be used for pressure testing purposes only under controlled conditions and should be removed from the pressure relief valves at all other times.

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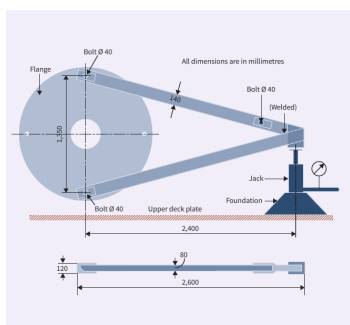
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Interesting observations

VIQ 9.7 Is there a policy in place for the testing of winch brakes and are the results recorded?

It is recommended that a complete set of test equipment is placed on board each ship properly stowed in an appropriate location. Alternatively, the owner may elect to procure one or two sets of testing equipment for each type and size of winch and retain this equipment in a convenient central location for shipment to repair facilities (MEG 6.4.6.3)

Inspectors Observation: The vessel was equipped with a complete set of winch brake test equipment, however the winch brake test kit pressure gauge was not provided with a certificate of calibration and there was no requirement within the planned maintenance system to periodically calibrate this pressure gauge either. Further, the pressure gauges for the hydraulic activated winch brakes also had no certificate of calibration and there was no requirement within the planned maintenance system to periodically calibrate the winch brake pressure gauges either.



Reference should be made to MEG 4 – Ch 4.4.6.5 Method of Testing point 2 *If the winches are set manually a torque wrench should be used. If they are set hydraulically the pressure gauge should first be calibrated.*

Further, due to criticality of winch brake test then calibration of the winch brake test kit pressure gauges should also be calibrated periodically.

VIQ 5.32 Are lifejackets in good order and correctly located?

Lifejacket lights and whistles shall be selected and secured to the lifejacket in such a way that their performance in combination is not degraded.

Inspectors Observation: The lights attached to the lifejackets were secured to the side of the lifejacket (rather than front) that would impact on the all-round visibility the light could be seen when a person was floating in the water.



VIQ 5.29 Are lifeboats, including their equipment and launching mechanisms, in good order and have they been launched and manoeuvred in the water in accordance with SOLAS requirements?

Inspector Observations: The oil filling cap / breather valve for the starboard lifeboat winch unit was painted over preventing its functionality.



Common observation found as many staff are unaware that the filler cap also serves as a relief breather valve and as such by being overpainted the breather function can be inhibited.

VIQ 6.7 Have bunker pipelines been satisfactorily tested on an annual basis and is there suitable evidence of this test?

Pressure testing should be a hydrostatic test, pressure testing using compressed air or inert gas is not acceptable.

Inspectors observation: The vessel conducted the pressure test of the bunker line by first filling the bunker line with fuel oil and then obtaining the higher pressure to test the line using compressed air.

There are several reasons why hydrostatic tests of bunker (and cargo) lines should be performed over a pneumatic test using air or inert gas.



- 1) Any failure of the system when air / inert gas is added as the compressing medium would lead to a more violent escape of liquid/gas mix due to the greater expansion ratio of the test medium under pressure.
- 2) Trapped air/inert gas in the pipeline can generate a pressure loss within a tight system that can misleadingly indicate a leak in the system.
- 3) Trapped air/inert gas can also mask undetected liquid leakage during testing.

4) Gas pockets (air/inert gas) can tend to reduce the actual rate of pressure drop during the test period that may give a false sense of pressure being maintained

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