TR Integrity Testing

Cammach provide a full service for all types of Integrity Testing, employing specialist equipment and experienced personnel to carry out the work.

This testing is carried out to the Performance Standard for the Temporary Refuge (TR) which assists in proving compliance with SI 1995 No.743, Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations 1995.

This is carried out in a similar way to Building Air Leakage Examinations which are carried out in the Building Industry.

The following section is an extract from HSE Offshore Information Sheet 1/2006.

It is common practice in the offshore industry to pressurise TR's to between 50 and 75 Pa. to measure pressure decay against time. From this an air leakage rate is calculated and used as a performance measure of the structure's integrity.

It is usually taken as 0.35 air changes per hour (ac/hr.) New build TRs are constructed to a leakage standard of 0.25 ac/hr. The actual numerical value is not critical and should not be considered in isolation.

More technical advice on this issue can be found in ISO 151382 and Operations Notice 274. The critical factor is the rate of depressurisation or pressure loss through the TR fabric.

This gives a measure of the TR's integrity necessary to prevent smoke or gas ingress by diffusion to maintain a breathable atmosphere within the TR as long as there are people present. The pressure decay is measured and plotted graphically as a natural exponential 'decay' curve. The shape of this curve is a visual indicator of the TR structural integrity.

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During the pressure decay test the main leakage paths should be investigated with detailed reports of the conditions of the fire dampers, door seal, door closure mechanisms, and other leak paths being recorded.

Other less obvious leak paths should also be investigated such as the grey water drain pipes in redundant or unused rooms where the 'U' bend water seals have dried up. Many older installations have significant corrosion at the edges of the external cladding, and or window frames, which may adversely affect the structure's integrity. All signs of external corrosion should be recorded for use in assessing the leakage rates and general structural integrity degradation.

It is recommended that TR pressurisation tests are carried out at a frequency of no less than three years and, preferably, every two years. A full TR pressure test and integrity inspection could be undertaken in conjunction with a major muster exercise/boat drill when disruption of normal operations would be minimised.

In calculating the leakage rate of an offshore module, corrections are made for air temperature and barometric pressure. Local wind speed should preferably be below 3 m/s.

To carry out the test all mechanical ventilation systems should be switched off, along with any in adjacent modules which could affect the pressurisation of the module under test. All boundary fire dampers must be closed, boundary doors shut, internal doors wedged open, void spaces such as; ceiling voids or floor voids opened. Access in and out of the TR would not be possible (unless there is an emergency). The test will take approximately 1 hour, there are no health risks to people who remain inside the TR for the duration of the Integrity test, but they may be some discomfort owing to noise and draughts from the fan.

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