

# Hyperbaric Trials Unit

The QinetiQ Hyperbaric Trials Unit (HTU) at Haslar in Gosport is a versatile, two compartment chamber used for the testing and evaluation of undersea and hyperbaric systems to 150 bar.

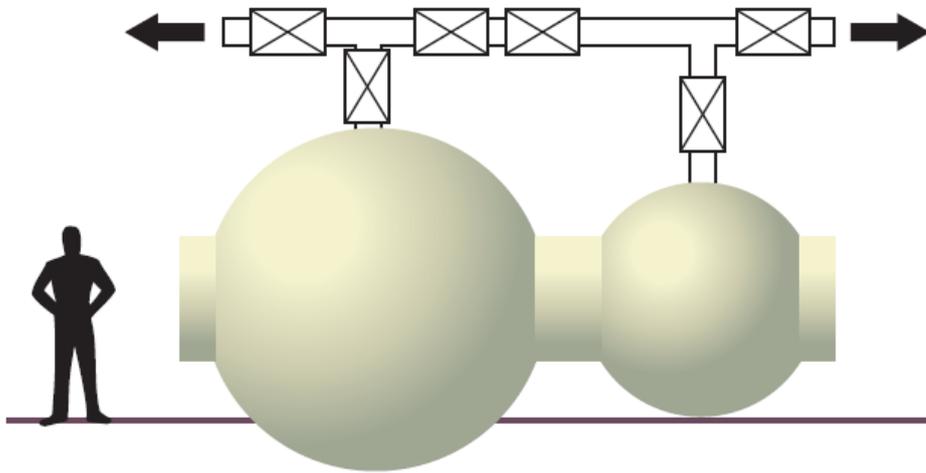
The HTU configuration specifically enables the assessment of submarine escape systems and components, but is also used to support the development of other equipment to meet the standards required in extreme underwater environments. The HTU has a unique capability to recreate the actual pressure conditions when escaping from a submerged submarine, completely independent of the performance of the components under test. This capability is essential for the evaluation of escape system components against any defined test standards. The HTU has also been used to test equipment, including pipeline pigs, for the oil and gas industry as well as conducting accurate pressure cycling trials of submersible components and significant testing of diving equipment.



- Testing system components against defined standards
- Independent Verification and Validation of system performance
- Unique Submarine Escape facility
- The foundation of UK MOD submarine Safe to Escape policy and guidance
- Support to Safety Case development
- Minimising through life costs and reducing risk
- Used to pressure and function test equipment to 1500 m

With over 50 years experience, QinetiQ has unrivalled knowledge in the field of Submarine Escape, Rescue Abandonment and Survival (SMERAS), Diving and Hyperbaric systems and provides independent Subject Matter Expertise (SME) to the UK MOD. Much of this knowledge was gained through

an extensive programme of trials in the HTU which was designed to support physiological and engineering studies by simulating escape from a distressed submarine (DISSUB). Trials included variable, controllable and repeatable pressure profiles conducted in controlled atmospheres.



## Hyperbaric Trials Unit

- Two compartment hyperbaric chamber
- 3 m diameter and 2 m diameter spherical compartments
- Rated pressure: 150 bar (1,500 m)
- Main access and interlock doors 0.76 m diameter

Using the HTU to test systems and components prior to conducting sea trials delivers substantial cost savings to platform operators and equipment suppliers. Expensive sea trials can be substantially de-risked by exercising equipment and procedures in the HTU.

Any reduction in time on sea trials will also lead to increased platform availability for operational tasking. The HTU is part of the Diving and Hyperbaric Test Centre (DHTC) at QinetiQ Haslar in Gosport, UK, and complements the capabilities of the QinetiQ Hyperbaric Medicine Unit (HMU) at St Richards Hospital, in Chichester.



Equipment under test in the HTU

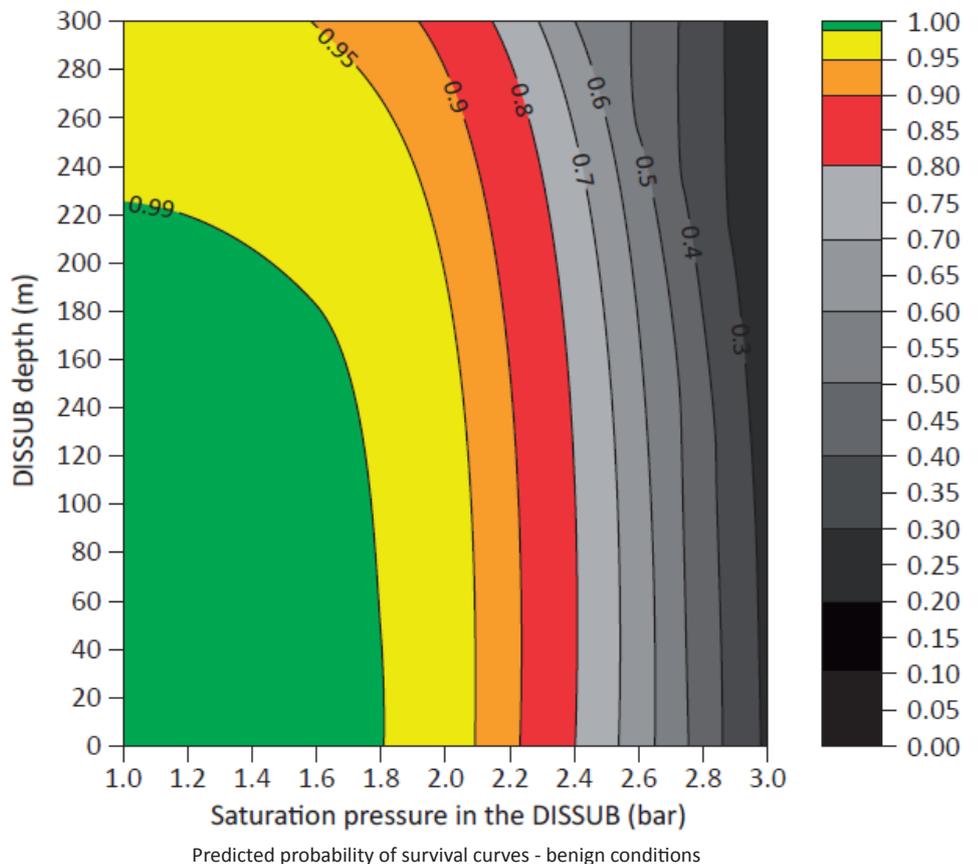
The HTU is a unique facility capable of simulating escape from a DISSUB. Extensive trials conducted in the HTU culminated in the world's first manned simulated submarine escapes from raised pressure in 1999.

This provided essential confidence in the advice contained in the submarine escape "Guardbook". Further trials have enabled "Safe to Escape" and "Probability of Survival" curves to be modelled and calibrated with appropriate data.

The advice generated allows medical teams on the surface and the crew of the DISSUB to assess the risks and consequences of attempting an escape.

*"During the programme to develop a tower escape system for the Italian Navy TODARO Class submarines Fincantieri made extensive use of the QinetiQ Hyperbaric Trials Unit (HTU) to test components using realistic escape pressure profiles. By using the HTU to support component selection and demonstrate component performance/calibration prior to installation we reduced the risks of the project and proceeded to sea trials with confidence in the final escape tower design. Using the HTU definitely saved us time during the on-board tests."*

Davide Mioni, Senior Project Engineer, Submarine Platform Subsystems, Fincantieri.



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