



# Delivering the UK's Continuous at Sea Deterrent

## Executive summary

In 2019, the Royal Navy marked a significant milestone in its long and illustrious history – fifty years of deploying ballistic missile submarines to deliver a continuous at sea deterrent, or CASD as it is often referred. In that time, QinetiQ and its predecessors have played a central role in supporting both the development and safe operation of the Royal Navy's submarine capability.

Delivered through the Long Term Partnering Agreement (LTPA) and Maritime Strategic Capability Agreement (MSCA) the provision of effective and responsive submarine solutions has evolved continuously to ensure operational advantage at all times and to capitalise on the latest material innovations and new technologies.

From hydrodynamics, propulsion and advanced stealth capabilities to critical communication systems, survivability systems and risk modelling, QinetiQ has provided the Royal Navy with a diverse and extensive range of services that lie at the very heart of this strategically significant deterrent programme.

## The Brief

The requirements for CASD cover both the design and development of new submarine platforms as well as maintaining mission critical 'at sea' capability and ensuring a rapid response to any operational challenges. The key outcomes for the Royal Navy throughout have been to maximise fleet availability, capability, safety, and survivability while also ensuring operational efficiencies and performance in all areas.

## Our solution

QinetiQ has used its experience and the specialist skills of more than 700 maritime personnel and scientists - from physics to physiology, acoustics to atmospheres and structures to survivability – to meet the challenges presented by CASD. Such capabilities have underpinned the long-term project support and provision of innovative system solutions while also ensuring a rapid 24/7 response to any critical operational challenge or issue.

Today, the services include in-service manoeuvrability and control, propulsor design, structural and stealth evaluation, resilience and shock testing, noise and vibration assessments and atmosphere modelling and control. In addition to evaluating and proving critical submarine systems, QinetiQ project teams also design and deliver demanding sea trials and provide detailed safety and survivability assessments for life support and escape systems as well as clinical and operational diving support services. Such work includes the provision of evidence for safety cases, detailed forensic investigations and more recently included the introduction of a technology demonstrator to support the deployment of female submariners for the first time in Royal Navy submarines.

As well as industry-leading hydrodynamics facilities at Haslar in Gosport, world-class workshops, advanced shock testing facilities at Rosyth and a dedicated facility for acoustic testing at Farnborough, QinetiQ uses the latest test and evaluation techniques and processes. These include high specification Non-Destructive Evaluation equipment as well as new generation laser measuring systems and highly advanced computational and experimental techniques to optimise capabilities and ensure cost-effectiveness at all times.

## Outcomes and Benefits

At the 50th anniversary service of recognition, The First Sea Lord, Admiral Sir Philip Jones, not only praised the dedication, professionalism and courage of submariners in delivering such a strategically important deterrent. He also drew attention to the “extraordinary feat of engineering and logistics that has underpinned our ability to keep inherently complex vessels and the myriad of on-board systems at the peak of operational readiness across the last 5 decades.”

QinetiQ's contribution to CASD has been as varied as it has been significant. The long-term nature of QinetiQ's partnership with MOD and the Royal Navy has enabled the company to deliver impartial and trusted advice to ensure informed decision-making from design concept to the development, operation and maintenance of the Royal Navy's submarine fleet.

In doing so, it has helped to minimise risks, improved cost-effectiveness, optimised capabilities and maintained an operational advantage for all vessels involved in Operation Relentless.

“QinetiQ is immensely proud to have been actively supporting the continuous at sea deterrent since the very first Resolution Class submarines. Our focus continues to be on delivering first class outcomes for the Royal Navy by demonstrating an ability to flex and adapt to meet new challenges and maintaining continuous service improvement to provide effective, relevant and responsive transformational services at all times.”

Steve Fitz-Gerald, Managing Director, QinetiQ Marine Land and Weapons.

“The Maritime Strategic Capability Agreement has demonstrated that it is a robust mechanism for the delivery of key capabilities to the Royal Navy and plays a critical role in the delivery of an effective submarine force – both now and into the future.”

Nick Overfield, Head of Naval Authority Group, Ministry of Defence

---

QinetiQ is always on your side, protecting, improving and advancing your vital interests

### For further information please contact:

Cody Technology Park  
Ively Road, Farnborough  
Hampshire, GU14 0LX  
United Kingdom

T3Eenquiries@QinetiQ.com  
www.T3E.uk  
www.QinetiQ.com