# QinetiQ Canada

## Testing & Evaluation (T&E) and Training and Mission Readiness (TMR) Solutions for Canada and Beyond

**BY JOETEY ATTARIWALA**

QinetiQ was formed in 2001 when the United Kingdom's (UK) Ministry of Defence (MoD) split its Defence Evaluation and Research Agency (DERA) in two. The smaller portion of DERA was rebranded as the Defence Science & Technology Laboratory (Dstl) and remains part of the MoD. The larger part, including most of the non-nuclear testing and evaluation establishments, was renamed QinetiQ.

Today, QinetiQ has over 6,000 employees from diverse and specialized backgrounds, and is a world leader in providing advisory services, training, engineering solutions, research and products for the aerospace, defence, civil, and security markets. As a function of one of their core capabilities, QinetiQ manages and operates extensive Test and Evaluation (T&E) facilities for air, land, sea and threat representative target systems around the world.

QinetiQ was established in Canada in 2014 when the QinetiQ Group in the UK made a strategic decision to invest in developing a new Canadian subsidiary. QinetiQ Canada Inc. (QCI) is headquartered in Ottawa and is the overarching entity in Canada, with QinetiQ Target Systems (QTS) managed from Medicine Hat, Alberta and Ashford, in the UK; and Canadian Programs, operating in Ottawa and Halifax, Nova Scotia. These operating units collaborate with the greater QinetiQ Group, through knowledge transfer, a formalized T&E skills development program, and bringing mission-critical capabilities to Canada to create value for customers.

Conversely, the Canadian units feed into the larger QinetiQ Group, which means Canadian developed products and expertise are exported to customers around the globe.

QinetiQ is growing globally in such places as Australia and the United States which results in new opportunities to introduce solutions like robotics from the US. Recently, QTS in Medicine Hat signed a contract to provide aerial targets for Japan, which is a new customer for the company.


**Photo:** HMCS WINNIPEG provided USS ESSEX with QinetiQ Canada's Hammerhead Uncrewed Surface Vehicle for target practice during RIMPAC

**Credit:** Leading Seaman Valerie LeClair , Canadian Forces

## MODERNIZING RCAF AIR RANGES

QinetiQ is recognized as a global leader in T&E and Training and Mission Readiness (TMR). This expertise was developed in the UK, where QinetiQ is the government's strategic defence T&E provider. It is from here that QinetiQ draws on an impressive pedigree of more than 40 years of delivering technology-agnostic integration of commercial, government, and proprietary elements to deliver cost-effective T&E and training solutions.

QinetiQ believes that T&E is a broad enabler of capability generation and assurance which enables complex military capability to be delivered earlier and more cost effectively. Critically, QinetiQ's T&E and TMR expertise provides customers with an evidence base that allows them to make well informed, objective decisions in relation to a defence capability.

Based on that expertise, QinetiQ Canada was awarded a contract to deliver a Range Modernization Study for the revitalization of the Department of National Defence (DND) / Royal Canadian Air Force's (RCAF) Air Weapons Ranges. The QinetiQ team included experts from the UK and Canada and the outcome benefited immensely from the close RCAF-QinetiQ collaboration, enabling highly-informed and widely-shaped recommendations.

The intent of the Range Modernization Study was to provide recommendations for suitable Operational Training Infrastructure (OTI) to facilitate Force Development and Force Generation activities in the RCAF. These activities are part of the RCAF's mandate to deliver relevant advanced combat capabilities for training 4+ and 5th generation platforms, such as the F-35, which will operate in the North American Aerospace Defense Command (NORAD) mission, and in joint and combined operations around the world.

"We listen to and work closely with our customers who trust us to be a through-life T&E partner to help them across the span of the military capability lifecycle," said Joanna Davies, Vice President of Business Development at Canadian Programs. "Through our understanding of technology and in response to the modern threat environment, our scientists and engineers combine with our test and evaluation capabilities, to provide mission assurance from fundamental research through multinational exercises, ensuring data is captured once and exploited by our customers throughout the lifecycle."

QinetiQ's remit was to deliver a report that provided a structured milestone-based series of priorities for the rejuvenation of Canada's military air ranges. The recommendations are aimed at delivering world-class Air Range Training, and a Test and Evaluation Enterprise centered on the Cold Lake Air Weapons Range. The recommendations were underpinned by comprehensive benchmarking against similar global ranges in the US, UK and Australia, as well as by QinetiQ's own expertise in the

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provision of OTI and range services to allied 5th generation fighter capabilities. Such rejuvenation will undoubtedly attract allies to Canada to resume multinational large force exercises like Exercise MAPLE FLAG which is hosted at CFB Cold Lake.

As part of the study, QinetiQ undertook an initial scoping phase from tactical-level operators to senior leadership. "This resulted in stakeholder needs and modernization priorities being combined into a comprehensive requirements set," said Davies. "In turn, the requirements were used to inform a Live Virtual Constructive Enterprise Design for a modernized range and fed the findings for an Enterprise Lifecycle Report."

The QinetiQ report presented an initial roadmap of investment that DND/RCAF could embrace to meet its requirements and strategic intent, together with an outline capability operation and sustainment plan for the future enterprise. The report also provided a roadmap for range modernization implementation which encompassed detailed suggestions for the evolution of RCAF's Live Synthetic Blend (LSB) capabilities, a set of recommendations regarding OTI security, an overall modernization timeline and refined lifecycle plans.

"The work conducted by QinetiQ ultimately led to two sets of recommendations. The first set provided recommendations for LSB capability evolution, and the second set provided recommendations for OTI modernization," explained Davies. "These recommendations support the future Options Analysis phase of the RCAF's plan to modernize the air weapons ranges at CFB Cold Lake, CFB Bagotville and other secondary ranges, and provides information for a business case and will ultimately support implementation with a set of traceable user requirements."

## PROVIDING T&E EXPERTISE ON CSC

QinetiQ's globally recognized expertise in T&E was instrumental in the company receiving a contract award from Irving Shipbuilding Inc. (ISI) for the Canadian Surface Combatant (CSC) Project. The contract provides expert T&E advice and support in the areas of Combat System integration and acceptance, and Land-Based Test Capability.

The contract was awarded to QinetiQ based on over 40 years' experience enabling the UK's MoD to achieve maximum value from its equipment and ensuring safe and effective mission systems for the Royal Navy's complex warships, with QinetiQ's UK facility at Portsdown Technology Park being at the center of this capability.

"Our T&E capability is at the leading edge of technology and innovation — we are designing, building, and operating integrated environments that allow for complex experimentation, test and evaluation, training and tactical development for customers. Specific to the CSC Project, we are leveraging our experience and long history of demonstrated success to support ISI and the Royal Canadian Navy (RCN) in delivering best-in-class, complex warship capability to Canada," said Davies.

CDR also spoke with Richard Ackerman, President of QinetiQ Canada. "The award of this contract marks a significant milestone in our mandate to deliver mission-led innovation around the world and is aligned with QinetiQ's vision to be the chosen partner globally for mission-critical solutions," he told CDR. "We are committed to leveraging the global footprint of the QinetiQ Group to add value to Canadian programs and as a foundation for a growing domestic capability built around test, evaluation and mission-led innovation."

Such is QinetiQ's emphasis on T&E that the company has created an international development program called the Test and Evaluation Sovereign Skills Program (TESSP) which seeks out Canadians from defence and adjacent industries to learn, develop and be at the forefront of creating and enhancing T&E capability in Canada. The program is a combination of online development and face-to-face mentoring and coaching from QinetiQ's T&E experts and includes a period of 6 weeks to 24 months training at QinetiQ's Air, Land and Maritime defence ranges and facilities in the UK. After training, graduates will have a role in Canada as they support customers with T&E projects; these graduates will receive continued mentoring from T&E experts in Canada.

"We are adding skilled members to the Canadian workforce through the TESSP, and we are also making investments to grow our footprint in Halifax, Medicine Hat and Cold Lake. In doing so we are contributing to local economies, developing supply chains, supporting community and stakeholder engagement, and creating partnerships to provide the best outcomes for all our customers in Canada," said Davies.

## UNCREWED TARGET SYSTEMS

QinetiQ Target Systems (QTS) is a world-leading provider of unmanned air, land, and sea targets for live-fire training and weapon system evaluation. QTS in Canada produces unmanned maritime and land target systems, and works hand-in-hand with its sister facility in Ashford, UK, which produces fixed-wing target systems.

"What we do within QinetiQ Target Systems is provide real threat representation," said Jules Werner, Business Development Director for QTS. "Militaries today are able to do a lot in the synthetic environment, but they also need to make sure that weapon and sensor systems work as they should. Our expertise is in providing threat representative targets and a realistic threat environment as well. For example, we provide aerial targets that look like a jet fighter and perform like a jet fighter, and that enables our customers to track it and destroy it out of the sky to validate all systems if they wish to do so."

QTS targets can replicate various threats with the aid of payload enhancers which provide additional threat representation for complex threat scenarios. "Customers around the world are demanding value for money, so we are answering that call by adding capability enhancements to our target systems," said Werner. "In the case of aerial targets, it's not just putting something up in the air to shoot down. We are increasingly asked to add sensors and payloads to broaden the capabilities of our targets."

QinetiQ's Hammerhead unmanned surface target was designed and developed in Canada to replicate Fast Inshore Attack Craft, and was first adopted by the RCN. The current version is the Hammerhead Mk II which incorporates hull and material design efficiencies.

"We can operate 4 Hammerheads with one control system, and we can have up to 10 operators, so that gives you a sense of the scalability we have to replicate a complex swarm attack," said Werner.


One of the newest targets designed and produced by QTS in Medicine Hat is the Rattler Ground Air-Launched Supersonic Target

QinetiQ's Banshee Jet 80+ aerial target offers customers the opportunity to reach endurances exceeding 45 minutes. The current version is fitted with twin 45kg thrust gas turbine engines which offers an increase in the maximum straight and level airspeed of up to 200 metres per second. When fitted with the patented Hot Nose the target provides a forward and side-looking infrared (IR) source while the engines provide a realistic rear aspect IR signature.

QinetiQ is currently in the final stages of testing their new Banshee NG (Next Generation) which will deliver a target with enhanced performance and altitude.

One of the newest targets designed and produced by QTS in Medicine Hat is the Rattler Ground Air-Launched Supersonic Target (GAL-ST) system which has been engineered to replicate air-launched Anti-Radiation Missiles (ARMs) and Supersonic High-Diver threats.

The Rattler can reach speeds of between Mach 1.8 to Mach 2.5, using a unique material composition that provides high-speed kinematic performance at an affordable cost compared to other maneuverable supersonic targets currently available on the market.

"The Rattler can be air-launched from the Banshee Jet 80+ aerial target, which has a range of more than 100 kilometres. The beauty of that capability is they are both unmanned — the Rattler simulates the release of a missile from a manned aircraft which yields a very complex and relevant training scenario," said Werner.

QTS sees future opportunities for all domains in Canada, with particular focus on providing threat representative targets for the RCAF and the RCN and enhanced ground based air defence training for the Army.

## LOOKING AHEAD

It is evident that QCI, QTS and Canadian Programs are focused on developing long-term relationships and understanding customers' needs to deliver trusted expertise and products to the Canadian Armed Forces and international customers. Areas of on-going and future investment include Live Synthetic Blend and Distributed Training. With the joint and collaborative effort of QTS and Canadian Programs and continued investment by QCI, QinetiQ in Canada is growing its business to further develop platforms and capabilities while leveraging the expertise of the entire QinetiQ Group, ultimately for the great benefit of current and future customers. ■

*Joetey Attariwala is CDR's Senior Staff Writer & Aviation Editor*