



## **Defence guidance and improvement**

Services and solutions

## Independent expertise, innovative thinking

**BMT is a leading engineering and management consultancy, employing approximately 1,600 professionals in 60 offices across Europe, Asia, the Americas and Australia.**

We have a strong defence heritage that stretches from WWII with the water tanks where the 'bouncing bomb' was developed and the design for the floating Mulberry Harbours – used during the Normandy landings – through to the present day, where our innovative twin island platform design is a key feature of the

world's most advanced aircraft carrier. Over the years our portfolio of expertise has expanded and we are trusted by governments to deliver pragmatic guidance and sustained improvement to the armed forces.

Because many of our experts come from a defence background, we understand the challenges that the armed forces face. And, as we are not directly engaged in manufacturing or construction, we can provide an impartial view, supported by our status as an Employee Benefit Trust (EBT),

free from the influence of external stakeholders.

This independence allows us to be uninhibited in the scale and direction of our thinking, which is why BMT is a highly valued partner of defence organisations around the world. Our customers are confident that we will provide a wide range of solutions to complex defence projects, from expert policy guidance to improving the procurement and operability of defence assets.

“ Independence allows us to be uninhibited in the scale and direction of our thinking. ”

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## Guidance

BMT is at the forefront of developing innovative practices to help governments draw up policies for the acquisition, design, support, training and safe operation of defence assets.

### Concept and assessment

Our in-depth knowledge of the defence environment enables us to apply cutting-edge thinking and technology solutions to complex defence projects. By not being directly involved in manufacturing or construction, BMT can provide an independent view across all activities. Our services range from supporting improvements at policy level through to assisting governments and their suppliers to respond effectively to safety and environmental issues associated with specific projects.

We were the chosen partner of the United Kingdom Ministry of Defence (UK MOD) and industry for the Sustaining Surface Combatant Capability (S2C2) Pathfinder project. As well as breaking new ground in UK defence procurement for joint working, the project demonstrated the breadth and depth of BMT's defence capabilities and thought leadership.

#### Ships Naval Design Partnership

Following the success of S2C2, where we assessed 'new-versus-legacy' options for Royal Navy frigates, the Ships

Naval Design Partnership was formed. Once again BMT led the way with innovative practices and joint working. By establishing a 'rainbow construct' of industry members that can better plan and invest in skills, we provided the MOD with greater certainty that its naval design needs can be met. This model has subsequently been applied to submarines.

### Linking Ship Compartment Space and Cost Models

BMT is developing a method of combining the modelling techniques, used to determine the configuration and size of compartments on ships, with lifecycle cost models within a Multi-Criteria Decision Analysis (MCDA) framework. It will rapidly generate concept designs, taking into account both operational and cost effectiveness.



### Submarine Design Training

BMT run five-day training courses in submarine design for staff at the Australian Defence Materiel Organisation and other navies including the Canadian Department of National Defence's Fleet Maintenance Facility. We are also regular contributors to the postgraduate submarine design course at University College London.



## Joint Service Publications (JSPs)

We are trusted to draw upon our extensive expertise in the defence arena to update the UK MOD's Joint Service Publications and Defence Standards, translating often complex requirements and regulatory documents into simple guidelines.

## Naval Nuclear Propulsion Programme

Through JSP 518 the Defence Nuclear Safety Regulator (DNSR) has issued 40 authorising conditions for the safe operation of naval nuclear reactor plants.

BMT is supporting In-Service Submarines, the design authority responsible for nuclear safety, by preparing and advising on the management of documentation for complying with the safety requirements.

## Defence Standards

BMT staff have been instrumental in the development of Defence related standards and related guidance documents. We were a key partner, with the MOD, in the development of Defence Standard (DEF STAN) 00-60. More recently through our position on a number

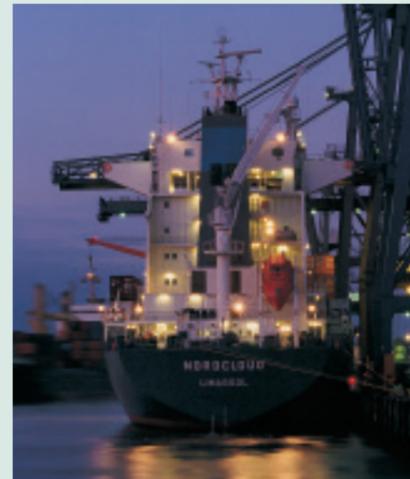
of UKCeB working groups we have supported the refresh of the standard and the release of DEF STAN 00-600.

In addition to this we have supported the development of a range of related supporting standards covering Reliability, Reliability Centred Maintenance (RCM) and Safety. We are currently leading the development of a DEF STAN on Reliability Testing, which will form part of the 00-42 series, providing details of each reliability test type, its applicability within different phases of a programme and the ground rules which should normally be applied during their conduct.

## Ship Safety Management

BMT worked closely with the Defence Maritime Regulator (DMR) to provide updates to key Parts of JSP 430. This document provides the UK MOD Management of Ship Safety and Environmental Protection and contains the DMR regulations.

BMT was responsible for the development of the guidance which supports the regulations and a new part detailing specific Environmental Regulations. The aim of this task is to provide the maritime domain with the clear, concise and unambiguous guidance to the means of complying with the requirements of the DMR regulations. This work has also led to the generation of a separate maritime body of safety management knowledge."



## Land System Safety

BMT led a review of JSP 454 to produce a revised document that enhances the Land Systems Safety Regulator's (LSSR) ability to audit land safety and environmental systems. JSP 454 now reflects both LSSR's new regulatory roles and responsibilities and the requirements of the Defence Safety and Environmental Authority regulatory framework.



## Procurement improvement

The impartiality of our knowledge is valued by our clients who trust us to help them procure innovative and cost-effective defence assets that will operate safely throughout their working life.



BMT understands the particular pressures on defence budgets. We combine this knowledge with professional expertise and the sound procurement practices we apply to every area in which we operate.

As part of our commitment to promoting the highest procurement standards, we work closely with a number of professional bodies, including the UK's Association for Project Management and the Project Management Institute in the US.

Our experts, many of whom have been in the armed forces, offer impartial advice and provide robust risk assessments, cost systems and well-defined and measurable service level agreements.

The following examples demonstrate how BMT brings clarity to complex environments and provides defence agencies with the information and support that enables them to focus resources to achieve the right results.

## Case Studies

- 1: Submarine Dismantling
- 2: Future Submarine Project (FSM)
- 3: Land Equipment Operating Centre (LE OC) – improving skills and resource planning
- 4: UK Defence Logistics
- 5: Defence Medical Education LAN (DMEL)
- 6: Foxhound Light Protected Patrol Vehicle Risk and Schedule Support
- 7: Design, Engineering, Management and Logistics Support (ELMS/ DELMS)

### 1: Submarine Dismantling

BMT, in partnership with Nuvia, is providing 'customer friend' support to the UK MOD's Submarine Dismantling Project. This aims to develop a solution for disposing of 27 defueled nuclear submarines over 60 years. Our experts are helping to develop a project management plan, project controls, risk management and technical assurance.

### 2: Royal Navy Submarines

BMT supports the UK MOD's submarine enterprise providing expertise in programme management, systems engineering, cost estimating and

enterprise architecture. We have developed a complete cost strategy for projects and created a system linking the whole-life cost models to the financial management processes.

### 4: UK Defence Logistics

BMT helped the Logistic Network Enabled Capability (Log NEC) programme to achieve its objective of streamlining complex defence logistics processes and systems into an effective, end-to-end, logistics support chain.

Log NEC, which encompasses all the information capabilities that directly, or indirectly, influence the delivery of UK

defence logistics, includes the Future Logistic Information Services (FLIS) project. It aimed to appoint a single delivery partner to transform defence logistics while sustaining existing logistics information services.

Drawing on eight years' experience in logistics information systems, BMT helped the client through the tendering and supplier selection process and established a governance model for future operations. This model was used as the benchmark for assessing the bids, giving our client a clear understanding of the services they could expect from their selected supplier.

### 5: Defence Medical Education LAN (DMEL)

BMT provided project management, requirements development and management, and bidder evaluation assessment expertise to the Defence Medical Services Training Group. The group aims to make full use of technology on the way to becoming an internationally renowned medical training centre. Our experts devised and implemented a streamlined strategy to select the appropriate commercial route to market.

### 7: Design, Engineering, Management and Logistics Support (ELMS/ DELMS)

BMT is a long term partner to the Royal Canadian Navy's National Shipbuilding Procurement Strategy (NSPS) program providing tier 0 consulting, management, design and engineering support through a long term contract (ELMS, DELMS). The project management offices for the major ship procurements such as the Joint Support Ship (JSS), Arctic Offshore Patrol Ship and the Canadian Surface combatant (CSC) programs leverage BMT to provide

a wide variety of tasks that improve the success of the procurement and ultimate operational capabilities of these ships which are the foundation of the new fleet so critical to the renewal of Canada's navy.

### 3: Land Equipment Operating Centre (LE OC) – improving skills and resource planning

BMT ran training courses for planners at the UK MOD's LE OC to equip them with the skills needed to run an Enterprise Project Management solution and the Microsoft Project Enterprise toolkit that supports it. We also developed the land equipment 'Simple Guide to Resource Management' which features a step-by-step planning process to follow and a minimum planning standard for all land equipment schedules.

As a result the LE OC's planning, scheduling and resource management activities are more consistent and the resourced schedules can now be more effectively analysed.



### 6: Foxhound Light Protected Patrol Vehicle Risk and Schedule Support

Designed and built to protect troops in Afghanistan, Foxhound is at the cutting-edge of protected patrol vehicle technology. BMT provided an independent assessment of the project, together with a cost and risk assessment for each contractor's bid.



# Operations improvement

BMT has a thorough understanding of the requirements for keeping military assets operational at sea, on land and in the air. This is built on our expertise in this area, our commitment to research and innovation, and the fact that many of our key personnel have armed forces experience.

Our services range from the performance management of live firing ranges for the Swedish Armed Forces to evaluating welding technology to increase the affordability of US Navy ships.

By combining innovative thinking and technical know-how, we continue to develop new and novel ways of resolving operational issues faced by defence organisations around the world.

## Swedish Live Firing and Gallery Ranges

BMT provides an in-service monitoring and reporting service for all Swedish armed forces live firing and gallery ranges. The service quantifies range and asset utilisation and availability, as well as providing a Data Reporting and Corrective Action System (DRACAS). Our service is based on BMT's RAMtr@ck data and analysis tool which provides constant visibility of equipment performance and its upkeep.

## In-service Performance Monitoring and Management

BMT RAMtr@ck is the data collection and analysis tool of choice for training and simulation exercises run by the UK MOD's Maritime Training Systems (MTS) and Sweden's Combat Vehicle and Battalion training systems. It provides accurate, real-time, information on the training systems' performance, allowing any failures or deficiencies to be identified and repaired immediately.

## Defence Support Chain Operations and Movements (DSCOM)

When DSCOM, which manages the defence support chain and the UK MOD's transportation assets, relocated to Abbey Wood, Bristol, it asked BMT to carry out a process review to identify and reduce organisational inefficiencies. We made a number of recommendations and gave DSCOM a baseline to seek continuous improvement by reducing costs and waste and increasing efficiency.

## US Coast Guard Cutter Boat Maintenance

By changing the maintenance philosophy of the boats attached to US Coast Guard Cutters, BMT has increased their operational availability and reduced maintenance costs. Traditionally, the boats were assigned to specific cutters, which meant they were lost to the service while the cutter was in refit. Under BMT's management, boats are retrieved from cutters during maintenance and brought to a centralised pool. This means that reconditioned and fully-operational boats are available at 24 hours notice.

## Submarine In-Service Support

BMT's expert submarine team is providing management resources, leadership and engineering expertise to support the UK Royal Navy's submarine fleet and the Royal Canadian Navy's Victoria Class submarine. Working alongside Babcock, the in-service support contractor for both Navies, BMT supports the establishment of a sustainable capability to cost-effectively design, develop and execute engineering change and provide robust through life support for these submarine fleets.

## Maritime Equipment Program Management (MEPM)

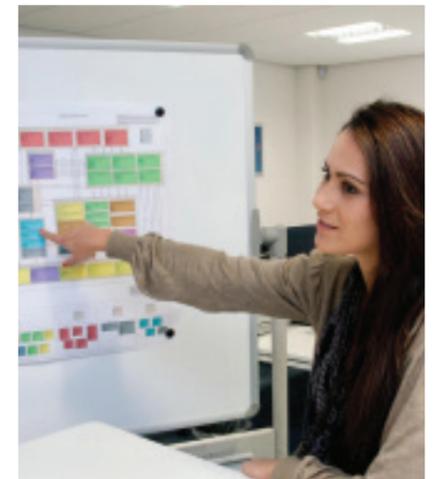
BMT developed an 'Integrated Program View' to support the Canadian Department of National Defense (DND) Maritime Strategic Initiative (MSI). This ongoing multi-year program allows MEPM to understand dynamically what is and what is not achievable for them to deliver both through the use of IPV and by inculcating a planning culture into MEPM such that objective quality evidence can be drawn to support decisions that will benefit the multiple stakeholders in MEPM and the wider DND. BMT is establishing a program team and providing leadership and expertise to re-establish the Naval Material Assurance (NMA) processes and support.

## ICE Welding Technology Evaluation

BMT evaluated the use of ICE welding technology to allow stronger, thinner and lighter steels to be used during construction of US Navy ships. The heat from conventional submerged arc welding can distort the thinner steels, adding an extra 30% to the fabrication costs. BMT showed that ICE welding can successfully be applied to thinner steels without distorting them.

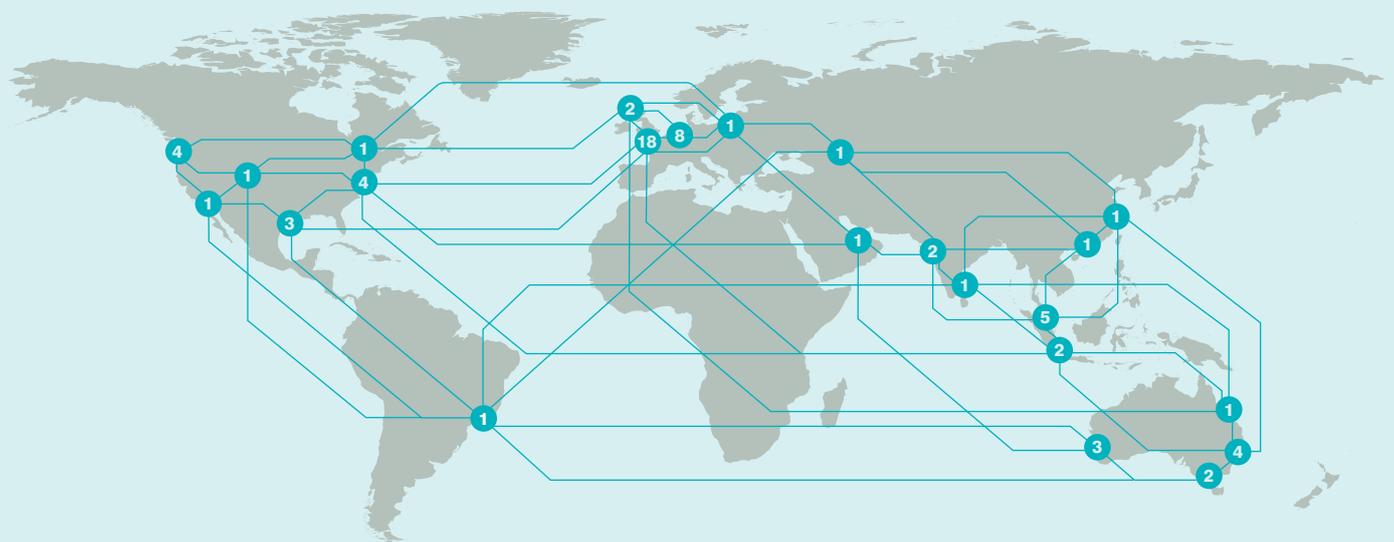


1. Working with the US Coast Guard to improve how Over the Horizon Cutter craft and maintained and so increase their operational availability.
2. Data collection and analysis tool BMT RAMtr@ck is used for training and simulation exercises as part of Sweden's Combat Vehicle and Battalion training system.
3. Brining know-how and innovative thinking to resolve the operational issues faced by defence organisations.



**BMT is an international design, engineering and risk management consultancy, working principally in the energy and environment, transport and defence sectors.**

**With locations in all of the major markets we serve, ours is an active network that sees us sharing skills and knowledge, combining disciplines and building international teams to create integrated answers to the questions of our customers.**



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