

DESIDER

AN INSIDE LOOK AT DEFENCE EQUIPMENT & SUPPORT



**PROTECTING OUR NATION, OUR TERRITORIES AND OUR ALLIES
TODAY, TOMORROW, TOGETHER**

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At the end of February, we marked two years since Russia began its brutal full-scale invasion of Ukraine. From those early dark days, when Kyiv's fall seemed inevitable, to today, when over half of their occupied territory has been liberated, Ukraine's success has been remarkable. Far from defeating Ukraine, these two years have been formative for their country, which is stronger and more unified than ever.

I feel immense pride when I look at the steadfast support the UK has shown over that time. The wide-ranging military assistance that the UK and our allies have provided has made a massive difference to Ukraine's capacity to fight back and protect its people.

We sent our first orders to Ukraine within 48 hours of being asked. Since then, the UK has provided almost £1.2 billion worth of military, humanitarian and economic support to Ukraine. This includes Challenger 2 tanks, Storm Shadow cruise missiles, 300,000 artillery rounds and millions of rounds of small arms ammunition. DE&S has supported the UK Field Army in training and kitting-out over 34,000 Ukrainian personnel.

In January this year, Prime Minister Rishi Sunak signed a historic UK-Ukraine Agreement on Security Cooperation with President Zelenskyy. This agreement formalises the UK's support on everything from intelligence sharing and cyber security to medical and military training, and lays the foundations for a century-long partnership.

I will let Major General Anna-Lee Reilly tell you more about the work of the DE&S Operations Directorate, which was stood up in late-2022 to focus our support to Ukraine, later in this edition. Suffice to say, their tireless commitment, and that of many of our staff, to procuring and delivering capabilities for our Ukrainian allies has been an inspiration to behold.

In this world of growing threats, our partnerships and alliances, stretching from the Defence Suppliers Forum here in the UK to NATO and the Ukraine Defence Contact Group, are essential to securing our long-term safety and prosperity. Together, we must now think, plan and build for the future.

As the UK's National Armaments Director, I've focused my efforts on strengthening our defence industrial base and

replenishing our stockpiles. This is essential, if our support for Ukraine and our allies is to continue unabated, without impacting on our national security or deterrent capacity.

Our work domestically on defence procurement reform is a crucial to these efforts. The MOD's new Integrated Procurement Model sets out a vision for a truly integrated One Defence system that delivers more effective outcomes at greater speed. DE&S will play a central role in driving this increased pace, delivering spiral development and helping to build a revitalised relationship with defence industry partners based on communication, transparency and targeted incentives that drive development.

I sit on NATO's Conference of National Armaments Directors (CNAD), which has taken a leading role in the international response to supporting Ukraine, and in preparing the alliance for the many other challenges we jointly face. The CNAD is driving forward efforts to improve long-term cooperation and alignment in acquisition processes, platforms and systems. Our shared ambition is to develop a robust NATO-wide enterprise that ensures a significantly strengthened collective defence.

This must be built on a resilient defence-industrial base. It's essential that we bring industry into our long-term discussions and develop industrial strategies collaboratively. The NATO Industrial Advisory Group and the NATO Industry Forum will be important spaces for this, and the UK is committed to supporting both, but they are only the start.

This thinking is at the heart of Taskforce Hirst, a new initiative helping Ukraine to become a defence industrial powerhouse through sustained, long-term partnerships with UK industry and government. As the Ukraine conflict enters its third year, this is now a war of industrial production. And our goal is clear: Ukraine and its allies must out-develop and out-produce Russia if it is to triumph and if our security is to be guaranteed.

I'd like to end by thanking one particular colleague, Major General Darren Crook, who left DE&S in early March after four years as Director Land Equipment. In his time with DE&S, Darren has led the Land Equipment portfolio through some of its toughest and most complex programmes with patience, poise and determination. I'd encourage you all to read Darren's piece in this edition, where he shares some of the important lessons he's learned in his time with us.



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SENIOR LEADER COMMENT

The future of DE&S support to Ukraine

Major General Anna-Lee Reilly, Director Strategic Capability, Engagement, Operations, and Director Taskforce Hirst, reflects on two years of DE&S support and how this will evolve in the future.



It has been two years since Russia launched its full-scale invasion of Ukraine. Like many in Defence, I understood that the world had changed and that the next few years would be both challenging and unpredictable.

In December 2022, I was honoured to be asked to lead the new Operations Directorate. This brings together a team from across DE&S to maximise our ability to procure and support vast amounts of lethal and non-lethal equipment for the Armed Forces of Ukraine as rapidly and efficiently as possible.

The last two years have been extremely challenging, but I am proud to say that DE&S has delivered and continues to deliver. Together with our partners in the defence industry and across the Armed Forces, we have worked tirelessly to deliver the crucial battle-winning equipment needed to support Ukraine. I know from speaking to colleagues in Ukraine that our efforts continue to make a real difference.

Today, Ukraine is still battling for its survival and our work is certainly not over. The UK will remain at the forefront of the international response and has recently reaffirmed its unwavering commitment by promising a further £2.5 billion in military aid over the next financial year. This support will be essential to the Ukrainian people and DE&S will be at the heart of its delivery.

It is essential that Ukraine has the military and economic foundations to ensure a safe and prosperous future. For this reason, DE&S CEO Andy Start was tasked with increasing defence-industrial cooperation with Ukraine and, in December 2023, asked me to lead a new taskforce, Taskforce Hirst.

Through Taskforce Hirst, we are building a sustained defence-industrial partnership with Ukraine to help it develop a credible, long-term future force and a sovereign defence-industrial capacity.

In December, I joined Andy Start, colleagues from the MOD and the Department of Business and Trade, and representatives from various UK industry partners to deliver the first trade mission to Kyiv. As well as beginning a constructive dialogue, we explored opportunities for long-term industrial cooperation, reached agreements and discussed future contracts.

Heading into the third year of the war, Ukraine will need support from its allies more than ever. The UK is committed to playing a key role in supporting Ukraine and DE&S is at the centre of that commitment. Thank you to all of those across the defence enterprise who are helping us deliver for this vital cause.

Our response in numbers

- 3 Sea King helicopters
- 6 Stormer armoured vehicles
- 14 Challenger 2 tanks
- 32 AS90 155mm guns
- 5,000 Vallon metal detectors
- 5,000+ NLAW anti-tank weapons
- 300,000 Artillery rounds
- Millions of rounds of small arms ammunition
- 34,000 Ukrainian personnel trained and kitted out

FEATURE

Innovation lessons from Ukraine

James Gavin, Head of the DE&S Future Capability Innovation team explores Ukraine's innovation successes and what the UK can learn from them.

The success that the Armed Forces of Ukraine have had in repelling the Russian military is nothing short of inspirational. It also contains some important lessons for UK Defence.

Ukraine is innovating at high speed: tactically, strategically and technologically. In the two years since Russia's full-scale invasion began, it has shown an admirable capacity to develop and procure new technology at pace in response to changing environments, and to decisively focus investment into new and emerging areas.

Ukraine has set up systems that allow it to adapt its tactics and adopt agile processes at a local level which accelerate feedback loops and innovation. Ukrainian companies are rapidly evolving their technology based on user experience, allowing them to keep pace with a fast-changing context. Along with bridging the gap between the user and supplier, Ukraine is working hard to establish a sovereign supply chain, enabling it to rapidly respond and adapt to user requirements.

Emulating this – expediting innovation and procurement, bringing the supplier closer to the end-user – will require the UK to shift from a slower, more risk adverse peacetime perspective on equipping and supporting our armed forces to a wartime one. This means focusing more on speed, and accepting more risk in both development and fielding. It means accepting 'good enough'; an 80 percent perfect capability that meets all minimum requirements, but isn't yet perfect.

It is possible to view the conflict in Ukraine as a battle-lab for accelerating capability, where spiral development is turning minimum viable products into minimum viable capabilities even faster. As UK capabilities have been gifted to

Ukraine, this includes equipment that both the Royal Navy and the British Army are considering for use themselves.

One area where we are learning lessons from Ukraine's approach is with uncrewed systems, whether uncrewed air vehicles (UAVs) or uncrewed surface vessels (USVs). While still a technology in the early years of development, uncrewed systems represent a pivotal technological area of innovation in the conflict.

UAVs are delivering significant operational effect in Ukraine, from guiding artillery fire and resupply to command-and-control, reconnaissance and one-way attack. Inexpensive USVs deployed on mass and laden with explosives are also proving effective, as seen in the successful assaults on Russia's Black Sea fleet.

The MOD recently published its Uncrewed System Strategy, which will bring a more unified approach across the UK Front-line Commands, in collaboration with industry partners, and will enable rapid identification, testing and delivery of new uncrewed platforms.

The strategy is built on a pledge to focus MOD spending more effectively and nurture stronger uncrewed systems manufacturing in the UK, as part of our long-term commitment to Ukraine. The strategy signals our intention to better enable growth in UK domestic capacity. It emphasises the importance of safeguarding our sovereign capabilities and strengthening security in our supply chains.

The strategy will ensure systems can be upgraded via spiral development so they remain relevant within a fast-evolving battlespace. The new approach will see uncrewed systems delivered at a greater pace, leaving behind long development cycles and requirement discussions. Once operational, systems will be further developed and upgraded, in response to front-line user and environmental needs, and new lessons learned.



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FEATURE

How to deliver a battle-winning rifle in under two years



The DE&S Project Hunter team, their partners in industry and the Army's SoldierWorks team explain how they delivered a "game-changing" rifle at speed.

Colonel Paul Cummings (Portfolio Leader, Dismounted Close Combat Portfolio)

Thanks to a successful collaboration between DE&S, the Army SoldierWorks team, the Army Special Operations Brigade (ASOB) and our industry partners, Project Hunter has delivered a game-changing rifle at great pace. Through clear, concise engagement, the Project Hunter team, which sits in the DE&S Dismounted Close Combat (DCC) Portfolio, were able to set a demanding but achievable timeline for industry to respond to.

By engaging with the ASOB from the start, we were able to tailor the testing and acceptance process to exactly what was needed, saving considerable time. At all stages, the team drove concurrent, rather than sequential, activity and were proactive in marshalling the project through the approvals process to promptly move it to contract award.

The project team built on a longstanding relationship with our chosen UK distributor, Edgar Brothers, and their US-based equipment manufacturer, Knights' Armaments Company. Together, we identified further opportunities to accelerate the process and bring forward the delivery of all 1,620 units into a single year. Overall, it has been a hugely successful project, delivering a new rifle to the ASOB in under two years and yielding nearly £500,000 in efficiencies.

Ramin Mosavi (Lethality Project Engineer, Soldier, Training & Special Programmes)

As part of the engineering team, I focused on the testing and evaluation stages, which involved countless wet and windy early mornings at the firing ranges. I worked alongside members of the ASOB, to capture lots of technical data to inform the contender selection process. I'm proud to have been part of the collaborative effort to deliver Hunter and ultimately provide the best equipment to our armed forces personnel.

Chanel Ebanja (Project Manager, Soldier, Training & Special Programmes)

I joined the project during the assessment phase, just before the project trials were due to take place. The thorough testing and evaluation, and the removal of contender systems at their point of failure, saved us both time and resources. Once the trials were finished and the winning system confirmed, there was a huge team effort and a push from all functions to complete the approvals process for the Full Business Case endorsement, allowing Army approval and contract award to be achieved two months ahead of schedule.

Brigadier Robert Hedderwick (Commander, Army Special Operations Brigade)

Project Hunter offers a marked increase in lethality and has delivered one of most capable day-sights currently available. Importantly, the weapon system will be further enhanced by our newest generation of night optics. The rifle will enable seamless integration and interoperability, which is essential given our specialist role, and the importance of working alongside many of the UK's allies.

Mike Newman (Director of Edgar Brothers)

As with every programme we undertake, Edgar Brothers' main goal is to enhance soldiers' capabilities to effectively perform their mission. We are privileged to supply what we believe to be the finest personal weapon system in the world, in conjunction with our partners in DE&S.

Jack Leuba (Director of Sales at Knight's Armament Company)

The KS-1 rifle system is the culmination of 40 years of ongoing refinement to the AR-15 rifle. Purpose-built with cutting-edge materials and manufacturing methods in conjunction with innovative design and engineering, the KS-1 was specifically designed to meet or exceed the demanding requirements of the specialised military units that employ these rifles.

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FEATURE

"We listen, we learn and we deliver together."

Major General Darren Crook retired as Director Land Equipment on Friday 8 March. Here, he shares some of the key lessons he learned in his time at DE&S.

I have now served for four years as Director Land Equipment at DE&S. It's been a remarkable and rewarding role. We have worked together to support operations, contribute to and deliver operational excellence, modernise capability and invest in collaboration.

The Land Equipment portfolio is incredibly broad. It ranges from body armour to operational infrastructure, general support vehicles to tanks, and small arms to artillery. We take the lead on high-profile programmes including Ajax, Boxer, Challenger 3 and support to the in-service fleet.

In my final piece for Desider, I want to reflect on some of the lessons I have learned and what we need to do to ensure future success.

Armoured capability sits at the heart of the Army's ambitious modernisation programme. Combined Arms warfare is crucial to our security, and delivering land equipment at pace is more important than ever. A combination of lethality, mobility and survivability are required, and must be underpinned by credible industrial capacity.

One of the key lessons we have learned in Land Equipment is the critical importance of trust, transparency and working together as a One Defence team. It takes a collaborative effort and needs continual investment. We listen, we learn and we deliver together.

To effectively equip and support the Army, we must work more closely with industry. Collaboration can be a powerful tool to improve our readiness and enhance operational effectiveness. Industry expertise in product and system development can lead to faster adaptation

and integration of new and innovative capability-based technology to ensure we maintain the operational advantage on the battlefield.

This collaboration, with companies of all sizes, alongside the soldier, the engineer and the scientist, is something we are working hard to foster in DE&S and throughout the UK. It is absolutely pivotal to how we deliver for our Armed Forces today and tomorrow. Developing multidisciplinary, pan-defence teams that work to a common purpose has taken effort, but I do not doubt it has been worth it. It is the systems we develop together, the behaviours and ways of working, that give us the edge.

Have we faced challenges? Of course, we have. Ajax, Boxer and Challenger 3 are major projects with complex systems being delivered against a backdrop of pandemic aftershocks, the war in Ukraine and worldwide supply chain disruption. Despite this, we have found ways to keep moving forward together, working hard to make complex problems tangible, penetrable and simple. Part of our delivery art is in taking these things and breaking them down to simple steps: we turn milestones into inch-pebbles, then check our trajectory.

Pace is also key, across Planning, Approvals, Contracting and Execution. We must mobilise fast to meet the immediate threats, even as we modernise to prepare for future challenges. This demands greater system integration with industry and our allies around the world, and novel digital engineering techniques, such as digital twinning. Our work on Jackal 3 with Supacat and Babcock is evidence of what we can do.



So how are we delivering the UK's armoured forces? Through greater collaboration with the Army and industry partners; by driving supply chain resilience; through system integration, providing the opportunity for spiral development; and through a focus on operational advantage, pace of delivery and interoperability with our allies. We must start small, fail fast and learn together.

FEATURE

The Defence Suppliers Forum invites businesses to get involved

Emily Wood, Programme Manager for the Defence Suppliers Forum (DSF), shares more information on plans to refresh the DSF, with the establishment of the DSF Communications Forum as an early step to harness industry expertise.

The Defence Suppliers Forum (DSF) continues to offer a unique environment for the MOD and its suppliers to collaborate on matters of mutual strategic interest. We are grateful to the more than 400 defence enterprise colleagues who regularly contribute their time and expertise across the various DSF working groups, addressing issues ranging from recruitment to climate change.

Last year, the Defence Suppliers Forum launched a new set of Aims and Objectives in response to the Defence Command Paper Refresh. This set of joint targets helps us to collaborate more effectively and tackle shared problems, including supply chain bottlenecks and skills shortages, and will ensure we play our part in building the defence enterprise of the future.

With a renewed focus on collaboration, early engagement and the development of capability at pace, the agreement aligns all parts of the defence enterprise to the mission of protecting the nation and helping it prosper. To meet this ambition, a DSF refresh programme is underway, with a target date of April 2024 for the agreement of a new DSF operating model and structure.

How to get involved with the DSF

We want to make sure that opportunities to be involved in the DSF's work are open to even more of our industry partners, with companies of all sizes, to harness their expertise and capability.

As an early step in our refresh work, we are relaunching the DSF Communications Forum, which will now be open to representatives from any defence suppliers with a verified security clearance. The virtual forum is led by the Chairs of the DSF Executive Group, Andy Start and John Howie. It is a space for MOD and industry representatives to share updates on strategic defence priorities with the wider defence enterprise, cascade key news from across the DSF, and share opportunities to get involved in our collaborative work.

I would encourage any suppliers not currently attending our bi-monthly Communications Forum to register their interest by contacting the DSF Programme Management Office (defcomrclssm-dsf-team@mod.gov.uk).

What's next?

The DSF refresh programme reached a significant milestone in January when we hosted a workshop with the DSF Executive Group at Royal Horse Guards in London. In this historic Whitehall



venue, nearly 30 MOD and industry Executive Group members participated in a collaborative, hands-on workshop to create a new set of design principles for a future DSF operating model.

The DSF Programme Management team is busy analysing the outputs from the workshop and building a suite of design options for a new operating model and structure. One key design element being considered is a strengthened joint MOD and defence industry Programme Management Office to support delivery of the DSF programme of work. Another is refocusing core DSF activities around a clear set of strategic priorities, while also ensuring the DSF is more transparent and accessible.

We will continue to share information on how the DSF refresh is progressing through Desider and other communication channels.

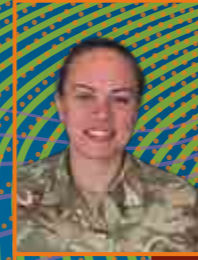


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NEWS

HMS Prince of Wales made ready to sail in just seven days



Thanks to a “Herculean” effort by DE&S, the Royal Navy and BAE Systems, the UK’s largest warship was made ready to set sail in a quarter of the time it would normally take.

HMS Queen Elizabeth was due to lead an international task group in one of the most important military exercises in a generation, NATO’s Exercise Steadfast Defender. However, when an issue with her propeller shaft coupling meant she had to go in for repairs, a joint DE&S, BAE Systems and Royal Navy team was mobilised.

Together, they masterminded a one-week plan that allowed HMS Prince of Wales to take her place in Norway and ensured the UK met its commitment to Steadfast Defender as planned. The Prince of Wales was about to enter a planned fleet time support period (FTSP) for maintenance, safety certification, repair work and capability checks. Yet, the team managed to ready her for sail in seven days, rather than the 30 it normally takes for this work to be completed.

Captain Duncan Humphery, DE&S Capital Ships team leader, said: “The biggest challenge was that the Prince of Wales was due, during FTSP, to have work done to her flight deck. Over January, teams of scaffolders had erected large tents over much of the deck to ensure this could be carried out. This was a major threat to our seven-day target, so extra scaffolding was brought to ensure we could clear the flight deck quickly and safely.

“Across the week, ship staff, BAE Systems and their contractors worked together to ensure the seven-day work package was achieved and the flight deck was clear of all scaffolding. To turn her around to be available for the NATO exercises in seven days was a challenge Herculean in stature.”

According to Daniel Cooke, Queen Elizabeth-class Operations Management group leader at DE&S, “The role of the DE&S engineering team on the waterfront was to give technical guidance and expertise to both BAE and ship staff as we prepared the work package and prioritised what was and wasn’t going to be achieved.

“We kept up regular contact across the enterprise, facilitating swift decision-making and being the hub for communication across wider DE&S, Navy and MOD stakeholders, with daily updates of progress and monitoring of risk. Our waterfront role is often the conduit through which quick decisions can be made and approvals granted – never more so than in situations like this.”

Commodore James Blackmore, Commander UK Carrier Strike Group, said: “I cannot emphasise enough how much hard work has been required to put us in the position where we are able to sail HMS Prince of Wales as part of my Carrier Strike Group. That myself and my battle staff are afloat in an aircraft carrier, which was preparing for a substantial maintenance package just seven days before sailing, is a remarkable achievement and a tribute to the professionalism, commitment and good humour of all involved.”

Scott Jamieson, Managing Director of BAE Systems’ Maritime Services, added: “This was a fantastic collaborative effort from teams across the enterprise to ensure the carrier was prepared and ready to sail in such a short time frame. My congratulations to all involved.”

FEATURE

Learning lessons from urgent capacity support for Ukraine

William Freer, Research Fellow at the Council on Geostrategy, looks at the lessons that can be drawn from the UK's successful use of Urgent Capability Requirements.

Urgent Capability Requirements (UCRs), formally Urgent Operational Requirements, have long been a great tool for rapidly getting equipment to the UK Armed Forces in times of need.

Once more, geopolitics has thrown up a new and unforeseen set of circumstances with Russia's full-scale invasion of Ukraine in February 2022. This has seen the return of large-scale conventional warfare to Europe for the first time since 1945. Many European countries have struggled to adapt at pace to the pressing and ever-evolving requirements of supplying military aid to the Ukrainian defenders. DE&S should rightly be proud of its exemplary role in enabling the UK's support. Key to this success has been the ability to implement and manage rapid procurement activity.

There is now a perfect opportunity for a real review of what lessons can be learnt from these successes and applied to wider procurement projects.

There are essentially two avenues that could be explored. The first is looking to see where UCRs can be used more frequently. This is already happening, as can be seen, for example, in the use of UCR to procure 500 trucks from MAN for the British Army in an impressive seven months from conception to first delivery. A broadening of the circumstances under which UCR procedures can be used could prove very beneficial to capitalising on the speed



achieved in delivering aid to Ukraine. However, there are limits of course to how far reaching these changes can be. UCR cannot be used for everything. Turning all procurement into some form of UCR risks undermining the successful nature of UCRs themselves.

This brings us on to the second avenue which could be explored. There are elements of UCR methodology which might prove useful to extrapolate and transfer to standard procurement methodologies. For example, adapting the weightings for standard procurement so they are closer in line with those of UCRs, particularly in relation to the weighting given to time-related factors. Similarly, UK Defence could explore the impact of reducing the existing ceiling for approving accelerated procedures (or finding ways to expedite the approval process). This would increase the likelihood that projects will be made eligible for UCR-like processes, or UCR itself.

Further to this, another element that could be applied more widely is the ability of UCRs to pursue contracts through closed competition. Although UCRs do not do away with competition entirely, they do limit the number of suppliers involved to those which DE&S can readily identify as fitting the requirements. Certainly, competition should continue to be a fundamental part of procurement, but it could prove useful to implement a similar limited competition approach for wider procurement.

There are undoubtedly other elements, including perhaps less tangible ones such as the culture around UCRs, which have played a key role in recent successes and which following deeper analysis could be applied more broadly.

It has been promising to see the development of the new Integrated Procurement Model which, among other positive changes (such as more focus on exportability and spiral development), includes moving towards a more pace-driven approach.

What is clear is that DE&S can be incredibly proud of the work it has been doing on delivering equipment at speed to the Ukrainian Armed Forces. To capitalise on this, and to build on the work done in designing the Integrated Procurement Model, a detailed review of what has been working best and what can be applied more widely would be a sensible approach.

FEATURE

Jasso: Revolutionising the shock safety industry

Mike Fowles, maritime safety specialist in the DE&S Weapons Operating Centre, tells us about Jasso, a game-changing piece of kit in the field of weapons safety testing.

Ensuring the safety of naval personnel is key to our Armed Forces' success.

In December 2023, DE&S conducted a first of its kind non-contact underwater explosion test using the Jasso shock machine. These trials allowed them to create a blueprint for cost-effective, efficient future testing and could revolutionise the shock safety industry.

A non-contact underwater explosion, such as those caused by depth charges, can be very dangerous for both ships and submarines. It creates a powerful shockwave and a series of rapidly expanding and contracting bubbles that burst powerfully to the surface. These have the potential to seriously damage important equipment and severely harm a ship or submarine. They can cause dangerous munitions to dislodge or even detonate, weaken the hull and even cripple a vessel entirely.

It is important that Royal Navy vessels are rigorously tested to ensure their structures, equipment and munitions safety measures can withstand these underwater explosions.

The portable Jasso shock machine, aptly named after the Mexican God of Thunder, employs an innovative array of seismic airguns, which can accurately replicate the series of shockwaves created by an underwater explosion. Any equipment or structures placed on top of Jasso can be tested to see how they will perform or react.

It offers a realistic, adjustable, eco-friendly simulation of an underwater shock pulse, eliminating the need for traditional shock testing facilities that use live explosives and are based in remote areas. In stark contrast, it can be transported and used in any location. It is the first portable shockwave simulation machine of its kind anywhere in the world, and is a game-changer for underwater explosive testing.

Helen Peterson, from the Royal Navy Naval Authority and Technology Group (NATG), has spearheaded the development of this capability for over 14 years, having identified the need for a platform like Jasso that could impart representative underwater explosions in munitions safety testing.

I specialise in maritime safety in the Weapons Delivery team, part of DE&S' Weapons Operating Centre. I worked with the Lightweight Multi-role Missile (LMM) team to conduct with the Jasso shock test in December, with NATG guidance from Helen.

What followed was close collaboration between the DE&S LMM, Weapons Delivery and Design, Development & Prototyping teams, alongside the Submarine Delivery Agency, science and engineering consulting firm Thornton Tomasetti (who developed the Jasso technology), industry partner Thales, the DNV Spadeadam testing site and the Royal Navy disposal team.

Thanks to collective hard work and partnership, we have produced a new facility that can test maritime shocks to the grade required by the Naval Authority Group. This means the DE&S Weapon Operating Centre can use Jasso to qualify ordnance, munitions and explosives to a high level of assurance for the Royal Navy.

Jasso won the Institute of Physics Business Innovation Award in 2020. It will continue to be tested and to operate for the MOD, in line with the NATG's high standards, paving the way for enhanced maritime safety.

By facilitating rigorous shock testing, JASSO ensures that potential dangers, such as munitions dislodgement or detonation, are effectively mitigated, thereby safeguarding both the vessel and its personnel against unforeseen risks at sea.



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- Major General Adrian Ciolponea**, Supreme Allied Command Transformation Representative Europe, NATO
- Group Captain Gary Darby**, Head UK Joint C-UAS Office, UK Ministry of Defence
- Colonel Alessio Gronchi**, Director, Italian Counter-Mini/Micro UAS Centre of Excellence, Italian Army
- Colonel Steven Gutierrez**, PM DE M-Shorad, Army Rapid Capabilities & Critical Technologies Office, U.S. Army
- Natalia Kushnerska**, Chief Operating Officer, Brave 1, Ukraine

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NEWS

DE&S delivers successful Ajax cold weather trials



The DE&S Ajax delivery team worked with the British Army Household Cavalry Regiment to put Ajax through its paces in sub-zero Swedish temperatures.

As temperatures plummeted as low as -36 Celsius, Ajax, the British Army's new generation of armoured fighting vehicle, successfully illustrated its capacity to operate in extreme cold weather and snow, and its ability to fire with accuracy while on the move.

Ajax was put through its paces by the Household Cavalry Regiment (HCR) at the Swedish military test site in Tåme, north-east Sweden. In doing so the HCR marked a significant milestone, becoming the first Field Army crew, at home or abroad, to fire the Ajax, which comes equipped with cutting-edge intelligence, surveillance, target acquisition and reconnaissance technology.

One of the key DE&S personnel at the cold weather trials was Warrant Officer Class Two (WO2) Paul Martin. Paul is the Range Conducting Officer. He ran the range and the firing tests in Tåme, as he does in the UK.

"It was great to work alongside our Army colleagues and industry who all have one common purpose and that's the end goal of delivering this exceptional platform to the Field Army," WO2 Martin said.

"It was an extremely challenging environment, but working as a group we were able to successfully deliver our objective of demonstrating that Ajax can travel long distances over snow-covered terrain and fire on the move with great accuracy.

"Ultimately, Ajax exceeded our expectations and the exceptional work across the group saw us gather more data than expected

which will inform the wider team and help them understand exactly what this exciting platform can do."

Also present in Tåme was Lieutenant Colonel James Glossop, the DE&S delivery team's Operation and Army HQ liaison.

"It was very impressive to see Ajax perform in Sweden," said Lieutenant Colonel Glossop. "I was lucky enough to see Ajax fire during a snowstorm and use its sighting systems to identify, engage and hit targets that simply could not be seen by the naked eye. It was incredibly impressive and a reminder of the competitive edge this armoured vehicle will bring to the British Army."

Ajax is an advanced fleet of armoured fighting vehicles that will provide deep reconnaissance and strike capability in contested battlespaces. It is an all-weather platform that can rapidly find and analyse an adversary at increased range using its advanced sensor suite.

Major Robert Gardner, Army Trials and Capability Development Lead, said: "Throughout the trial, Ajax demonstrated itself to be very effective in this environment. We've seen no drop in its effectiveness compared to the trials in the UK, which is really positive. Now we've proved the cold climate, the next step is to prove it in the hot weather this summer. After that, it is essentially proven and deployable in all situations."

The Ajax programme is centred around the delivery of a family of 589 tracked and fully digitised vehicles, comprising six variants, through a contract with General Dynamics Land Systems (UK).

FEATURE

The DE&S experts 'upcycling' defence assets

A specialist DESA team is pursuing new and innovative ways of recycling military equipment for the benefit of the MOD, the UK taxpayer and the environment.

Innovation in defence sustainability

The Defence Equipment Sales Authority (DESA) Innovation and Submarine Recycling team was established in 2023 to identify, evaluate and contractually action new methods of extracting the maximum value from the materials and equipment removed during the dismantling of decommissioned nuclear submarines.

Over the past nine months, the team, which works in partnership with the Submarine Delivery Agency and Strategic Command, has "grown arms and legs", according to Thomas Powell who leads the initiative. Their endeavours have now spread along numerous avenues of exploration and opportunity beyond submarines, with the team analysing everything from para-aramids (such as Kevlar®) to X-rays, carbon fibre and parachute textiles, to understand what pan-Defence materiel can be recycled and/or repurposed.

The team is also working with Additive Manufacturing Solutions Ltd. to investigate whether surplus defence equipment, such as maritime metals, can be 'upcycled' into new capabilities. By recycling it into feedstock for additive manufacturing printers, it could secure a UK supply for critical materiel, such as titanium and aluminium, needed to build new capabilities, and so increase operational availability and enhance platform sustainability.

Case study: Extracting precious materials with The Royal Mint

The DESA Innovation and Submarine Recycling team has secured a partnership with The Royal Mint to extract precious metals from electronic equipment no longer needed by the UK Armed Forces and other MOD departments.

Thomas, DESA's Innovation, Submarine Recycling, Circular Economy and Sustainability Lead, said: "The work we do is about creating a circular economy and maximising sustainability. It's

about looking at what assets Defence is currently paying to dispose of and turning that from a disposal task into a recycling opportunity wherever possible. It's about understanding whether there are new scientific and technological methods that might enable us to extract better value from our assets and retain this within Defence."

The Royal Mint is utilising patented technology, created by Canada-based company Excir, to recover the precious metals contained within circuit boards. Their pioneering processing plant in South Wales is due to be unveiled later this year. With shared commitments on sustainability and security, their partnership with DESA will see tonnes of equipment, which typically contains high levels of gold and other rare metals, completely destroyed and then securely recycled each year.

Richard Whalley, Head of DESA, said: "DESA is constantly searching for new ways to improve our recycling portfolio. It is DESA's pleasure to work with The Royal Mint to convert redundant non-saleable defence assets into valuable resources, while also reducing disposal costs, minimising environmental impacts and securing the UK's access to a new source of critical minerals."

The plant will use Excir's chemical process to safely recover gold and extract value from every element of the electronic asset – including silver, copper and palladium – using other processes developed by The Royal Mint. Once fully operational, the plant will be capable of processing up to 75 tonnes of electronic components per week – the equivalent of 75 small cars – and will produce hundreds of kilograms of gold each year.

Mark Loveridge, Business Unit Director for Precious Metals Recovery at The Royal Mint, said: "We are proud to be working with partners from across the UK, including DESA, allowing The Royal Mint to become a leader in sustainable precious metals."



FEATURE



The world-class training facility prepping the RAF's pilots

Fast jet pilots need to be able to manage the effects of G-force on their bodies – or risk losing consciousness. The High G Test and Training Facility accurately simulates this intense experience.

Tunnel vision, reduced blood supply to the head or even loss of consciousness; the impact of increased gravitational force (G-force) on the human body can be severe.

Before a fighter pilot steps inside a Prefect, Texan Hawk training aircraft, or flies a front-line Typhoon or F-35B Lightning jet, they must learn how to deal with G-force. When manoeuvring in air combat, pilots can experience up to 9G of pressure caused by rapid rates of turn.

Five years ago, DE&S delivered the cutting-edge High G Test and Training Facility (HGTTF) at RAF Cranwell. Built to a bespoke design, the facility is used to train pilots, provide experience for doctors and allied health professionals, and conduct aerospace medical research that supports next-generation aircraft, such as Tempest. The facility is the only one of its kind in the UK and one of the most advanced in the world.

At the HGTTF, pilots are taught the correct techniques to combat the effects of G-force on the body while manoeuvring a jet. It can accelerate to 9G in around one second, accurately recreating the intense onset rate of G-force that pilots experience in high-performance aircraft. The flight simulation includes a representative cockpit mock-up with stick and throttle, and an out-of-window display to create a more realistic environment. This mimics elements of aerial combat, forcing the pilot to turn rapidly and experience high G and high G-onset rates. Technological advances since the HGTTF was first installed include an upgraded visual system specially designed to work at high G-force.

Wing Commander Green, RAF consultant in aviation medicine, said: "The HGTTF enables us to deliver world-leading high G training to pilots, using flight simulation-based scenarios. Unlike conventional G training, this approach is unique and means that flying and combatting G force become linked and more instinctive for pilots."

The HGTTF is available for 200 training days a year. In addition to new pilots, all RAF fighter pilots return to the HGTTF every five years so doctors can monitor the impact of G-force and check they are still able to safely mitigate the potential ill-effects. Astronauts have also used the facility to mimic the impact of being inside a rocket.

According to F-35B Lightning pilot Lieutenant Alleyne: "Training in the HGTTF has been vital to learning to fly the Lightning. The facility helped me understand how to best manage the effects of G-force so I can use this knowledge to minimise the negative effects when flying the jet, and ultimately fight with aircraft effectively."

Cutting-edge aerospace medicine research is also conducted at the facility to understand better the effects of G-force on the human body, and to improve the protection methods that can be offered in the next generation of high-performance aircraft. This culminates in testing new and improved protective equipment to combat high G, enhancing flight safety and pilot performance.

DE&S' Flight Simulation and Synthetic Trainers team has successfully secured a contract amendment with contractor Thales to complete the technical upgrade during the HGTTF's planned maintenance period in September/October 2024. The upgrade will keep the HGTTF ready to train the pilots for the foreseeable future.

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DE&S activity highlights

A digest of some of DE&S' work from the past month that you might have missed.

DE&S and NHS mentoring programme flourishes

Twenty DE&S project delivery team members have been paired for six months with NHS counterparts as part of a mentoring programme to aid personal development, learning, organisation capability and performance. This is the third programme of its kind since the two organisations first worked together during the pandemic to build Bristol's NHS Nightingale hospital in less than four weeks.

£1.85 billion contract to enhance the Navy's "eyes and ears"

DE&S awarded a contract worth almost £2 billion to boost UK security and ensure the long-term availability and resilience of critical assets used by the Royal Navy over the next 15 years. The Marine Sensor Enhancement Team (MSET) contract with Thales UK aims to provide full availability of the equipment that acts as the Royal Navy's eyes and ears. It will utilise data technology, including AI and virtual reality, predictive maintenance systems and supporting sonar. Around 300 UK jobs from the previous Thales UK support contract will be sustained, along with a further 150 UK-wide STEM jobs, including highly skilled engineering roles and apprenticeships.

MROS team wins prestigious government award

The Multi Role Oceanic Surveillance (MROS) team fought off 119 submissions to be crowned winners of the Defence and Security Project of the Year Award at the 2024 Government Project Delivery Awards. The winning project saw the team secure, modify and deliver two former commercial ships to the Royal Fleet Auxiliary (RFA) – RFA Proteus and RFA Stirling Castle – in just 10 months.

DE&S awards MOD satellite software contracts

As part of Project Beroe, DE&S has placed contracts to develop innovative software that will provide a robust, secure, automated control system for future MOD satellites. Worth a total £4 million, the contracts, placed by the Space Delivery Team with Rhea in Bath and Lockheed Martin Space Systems UK in Oxfordshire, will further enhance the UK's multi-domain integration efforts.

DE&S pivotal to new Uncrewed System Strategy

DE&S will play a key role in delivering the outcomes from a new MOD Uncrewed System Strategy, aimed at accelerating delivery of innovative uncrewed systems to all UK Front-line Commands. Backed by a projected £4.5 billion investment across 10 years, colleagues from the Future Capabilities Innovation team and the Mine Counter Measures and the Remotely Piloted Air Systems delivery teams will be responsible for incentivising industry and equipping the front-line faster than ever.

Innovative smart logistics just got even smarter

Innovative AI-powered defence tool Motherlode, designed to boost the availability, reliability and safety of Merlin and Wildcat helicopters, has been upgraded so that it can provide even richer data. This includes additional functionality to support ad-hoc mission planning and scenario-modelling activity. The upgrades will enhance the user's ability to process aircraft data at an unprecedented speed and ensure engineering problems are detected at the earliest possible point. The software, produced by the DE&S Digital AI team, the 1710 Naval Air Squadron and the Royal Navy Engineers, represents a step-change in data-driven decision-making.



HMS Dauntless and a Wildcat from 815 Naval Air Squadron conduct a gunnery exercise while patrolling in the Caribbean.

PEOPLE

Helen Thomas

Job title

Chief of Staff, Operations Directorate

What does your role involve?

I work in the Operations Directorate, supporting the Director and their Deputy. My role is as wide as it is varied, from providing strategic advice and guidance to developing strong cross-organisational relationships that enable the strategic management of the Directorate.

What do you most enjoy about your job?

In the Operations Directorate, we manage things very differently to the rest of DE&S. Much of our work is in support of Operation Scorpius, which means working at pace and being agile to ever-changing events around the world. The most interesting and rewarding part of my role is seeing the quick turnaround of an urgent requirement from flash to bang. In all my years of working for DE&S, I've never seen equipment demand signals delivered in such a short space of time. It has been extremely rewarding to be a part of something which demonstrates the great things we can achieve when we think outside the box to support such an important Defence priority.

What is your greatest accomplishment to date?

My Bachelor's Degree. I was working full-time in the C17 project team, commuting 200 miles a day to MOD Abbey Wood and studying in my spare time. When I look back I really don't know how I did it, but to successfully complete my studies meant and still means so much to me.

What keeps you energised about working at DE&S?

My energy comes from, quite simply, what we in DE&S are doing. I've worked in Defence for over 30 years and can honestly say I've never wanted to leave the MOD. I feel privileged to be doing my bit for the UK's defence and security; watching how we have evolved and reinvented ourselves to keep up with technological, cyber and security advances. It's these changes that better position us to serve the Armed Forces and deliver for the front-line more effectively.

Who or what has shaped who you are?

My life experiences – good, bad and indifferent – have all had an impact on who I am today. For me, it's about using those experiences to grow, be a better version of myself and live my life to the full.

What do you enjoy doing in your spare time?

Anything outdoors! On weekends I can mostly be found out among the Welsh hills on my mountain bike, rain or shine, or paddle boarding and canoeing in the Lake District in the summer, and sometimes just pottering in my garden for some simple relaxation.

What might surprise people about you?

I'm a step-mum to 12-year-old quadruplets (all boys) who live with us and keep me very busy. They were born on 29 February, which makes them leap year babies, and have just celebrated their third birthday. They were even featured on BBC Newsround to celebrate this four-yearly event.

What's the best advice you've ever been given?

My dad always said to me: 'if you don't ask, you don't get!' That has led me to be a curious person, ask questions and not to be afraid of finding out more. In other words, be a little nosy!



The German British Pioneer Bridging Battalion, part of the NATO Very High Readiness Joint Task Force, on manoeuvres as part of Exercise Polish Dragon in March 2024.

Want to receive Desider direct to your inbox? Email: jonathan.mazliah100@mod.gov.uk

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A Royal Navy Merlin MK2 helicopter and the French submarine Amethyste participate in Exercise Steadfast Defender 24 off the coast of Norway.

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