



Ministry
of Defence

The United Kingdom's Future Nuclear Deterrent:

2022 Update to Parliament

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Introduction

The United Kingdom's (UK) independent nuclear deterrent protects against the most extreme threats to our national security and way of life, both now and in the future, providing the ultimate guarantee of our national security. It is relevant not only for today but will remain an important part of our national security strategy for as long as the global security situation makes it necessary. This approach forms the cornerstone of this and previous Governments' responsibility to maintain the safety and security of its citizens.

In 2007 the then Government, endorsed by a Parliamentary vote, started the programme to renew the UK's nuclear deterrent. That commitment to maintain and renew an independent, minimum credible deterrent was confirmed in the 2015 Strategic Defence and Security Review. This intent was endorsed in 2016 when Parliament voted overwhelmingly to renew our nuclear deterrent and maintain the Continuous At Sea Deterrence posture, to ensure the UK has a credible, independent, and capable nuclear deterrent. On 25 February 2020 the UK confirmed it was to replace the nuclear warhead, while also sustaining the current warhead until it is withdrawn from service.

The Government published its Integrated Review of Security, Defence, Development and Foreign Policy on 16 March 2021. The Review made clear that the nuclear deterrent would be maintained, and the UK's nuclear deterrence policy and posture would be continually reviewed to ensure it remains fully aligned to today's security environment and the UK's overall security strategy.

The Dreadnought Class submarines, and the Replacement Warheads are being designed and constructed in the UK with some of the most advanced systems ever built, employing world-leading and cutting-edge technology to deliver a formidable capability, directly supporting tens of thousands of jobs across the country, and investing billions of pounds into the UK economy.

This eleventh annual update sets out the progress over the last twelve months of the programme.

Progress on the Dreadnought Programme

The Dreadnought ballistic missile submarine programme remains within its overall budget and on track for the First of Class, HMS DREADNOUGHT, to enter service in the early 2030s.

In May 2022 the Department announced the next and most significant phase of the programme, known as Delivery Phase Three (DP3). Defence contracts worth over £2 billion were awarded to its Alliance Partners, BAE Systems and Rolls-Royce Submarines (RRS). This is the initial investment within a planned overall total of nearly £10 billion for the whole delivery phase. DP3 will see DREADNOUGHT exit the Barrow-in-Furness shipyard to begin sea trials and will lay the foundations for the delivery of the remaining three Dreadnought Class boats to time and cost.

As previously reported, all 12 missile tubes for DREADNOUGHT have been successfully delivered to the BAE Systems Barrow shipyard; these have now been integrated with the relevant parts of the pressure hull to form the missile compartment unit, a significant milestone in the delivery of the programme. We continue to work closely with our United States (US) colleagues to ensure missile tube deliveries for the remaining boats in a timely manner.

Progress continues across a wide range of Dreadnought programme activities. Most notable milestones over the past 12 months include: the maturation of the whole boat design, procurement of materials and equipment across the Class, outfitting of modules for DREADNOUGHT, fabrication of the steelwork for Boat 2, VALIANT, and the concluding investments in the shipyard infrastructure facilities at Barrow. RRS have progressed the Pressurised Water Reactor 3 project

that will provide the nuclear propulsion power plants for the four platforms. Work progresses with the procurement of materials and other activities to support cut steel for Boat 3, WARSPITE, and later, Boat 4, KING GEORGE VI.

Dreadnought costs

The 2015 Strategic Defence and Security Review estimated that the programme is likely to cost a total of £31 billion (including inflation, over the lifetime of the programme) and set a contingency of £10 billion. The programme remains within this overall budget and, as of 31 March 2022, £12.5 billion had been spent on the concept, assessment, and early delivery phases of the Dreadnought Programme, of which £2.2 billion was spent in financial year 2021-22.

Warhead and missile

The programme to replace the UK's sovereign nuclear warhead has now entered its concept phase. The programme is subject to Government scrutiny, oversight, and approvals processes. The requirements, design, and manufacture of the warhead are sovereign to the UK and meet our obligations under the Treaty on the Non-Proliferation of Nuclear Weapons. The transition of the current warhead from Mark 4 to Mark 4A continues, addressing obsolescence to ensure that the UK has a safe, secure, and available stockpile until the UK Replacement Warhead is available in the 2030s.

The Department is investing in the personnel, infrastructure, and capabilities at the Atomic Weapons Establishment (AWE) that are required to deliver the UK Replacement Warhead programme and sustain the current in-service warhead until it is withdrawn from service.

Our in-service and Replacement Warheads are, and will remain, compatible with the Trident II D5 missile that is deployed on the Vanguard Class and will be deployed on the new Dreadnought Class submarines.

As previously reported, the UK is working with US partners on work to extend the life and replenish the Trident II D5 missiles to meet the future programme requirements of both Nations. These life extension programmes will address obsolescence and continue to provide sufficient missile packages, including spares, to support the UK's requirement.

Submarine dismantling and disposal

The Department is maintaining good progress dismantling our decommissioned submarines in Rosyth. The first stage of dismantling, including the removal of all Low-Level radioactive Waste (LLW) has now been completed on three platforms, Swiftsure, Resolution and Revenge, with work now taking place on a fourth boat, Repulse. Lessons learned from Swiftsure and Resolution enabled a significant milestone for Revenge, by removing steam generators and associated pressure systems. This is the first time these large components have been removed from any decommissioned submarine and is an international first for the UK.

We are now finalising the plans to fully dismantle Swiftsure, which covers the second stage in the process, the removal of Intermediate-Level radioactive Waste. In November 2022, an industry engagement day was hosted in Rosyth with companies from across the UK in attendance to explore recycling options and opportunities for the final full dismantling process.

At Devonport Royal Dockyard, commissioning of the Pressurised Water Reactor 1 (PWR1) defueling facility is also making good progress. In addition, dock and enabling facility surveys to scope the supporting works necessary to commence and sustain PWR1 defuel operations are nearing completion.

Skills

A Defence Nuclear Enterprise People and Skills Programme has been established to develop a sustainable and skilled workforce to support the defence nuclear programme. A range of activities are being undertaken to increase nuclear sector engagement with young people and to attract talent from a more diverse background. Additional apprenticeships and graduate bursary schemes have been implemented across the Enterprise and significant further increases are planned to build the capabilities required with the aim of creating around 6000 additional apprentices and 2000 new graduate opportunities by 2029-30. Measures are also being developed to ensure retention of existing staff through improved recognition of their skills and experience, and by providing increased opportunities for development and mobility across the nuclear sector. The Department is working collaboratively with the Department for Business, Energy and Industrial Strategy and the civil nuclear sector to identify and take opportunities to address common challenges and optimise use of resources and training infrastructure.

International collaboration

The UK enjoys a close and enduring relationship with the US under the terms of the 1958 Mutual Defense Agreement (MDA) and 1963 Polaris Sales Agreement. Both agreements underpin nuclear defence co-operation between the UK and the US. Nuclear cooperation remains an important element of the relationship between the US and the UK, enhancing transatlantic security. We will continue to work closely with the US on nuclear matters, including nuclear deterrence policy. We are committed to the renewal of the MDA in 2024.

As part of the Lancaster House Agreements, the TEUTATES Treaty between France and the UK was signed at Lancaster House, in London, on 2 November 2010, by the then President of France and UK Prime Minister. The TEUTATES programme covers the technology relating to weapons renewal programmes, with a view to maintaining the two countries' nuclear deterrent capabilities. This includes the joint construction, funding, and operation of a new hydrodynamics facility in France, at Epure, near Dijon, and a technology development centre and firing point in the UK at the AWE Aldermaston site. The success of the TEUTATES programme reflects the high levels of mutual commitment and trust that exist between the teams from the two nations. The UK and France are equipped to ensure the long-term sustainability and credibility of our nuclear deterrents, in strict compliance with our international commitments.

The UK is pioneering nuclear arms control verification research, and AWE's Arms Control and Verification Research programme continues to make progress in tackling technical and practical challenges. The UK also plays a leading role in international verification collaboration, through the Quad Nuclear Verification partnership between the UK, US, Norway and Sweden and via the International Partnership Nuclear Disarmament Verification and the United Nations Group of Government Experts.

Infrastructure

The Primary Build Facility at the BAE Systems Barrow shipyard comprises of two main facilities (buildings D58 and D59) connected to the Devonshire Dock Hall where the fabrication of the submarine reactor pipework and the final assembly of the reactor is carried out. As reported previously, Building D59 became operational in July 2021, while Building D58 has made good progress and remains on track for operational capability in 2023.

Project MENSA, the new-build warhead assembly/disassembly facility at the AWE Burghfield site is progressing. During 2022, work has progressed on the building works and systems integration, as well as material changes to a key part of the facility to achieve current and future safety standards. The facility is now connected to the power, gas and water networks and will soon be starting commissioning in earnest. 2023 will see the facility completing its fit out and

commissioning phase, including its end users verifying key processes associated with warhead assembly / disassembly.

The Core Production Capability delivers safe nuclear reactor cores to meet the Royal Navy's submarine programme, now and in the long term. The regeneration of the manufacturing facilities is being delivered in two phases: the first phase is now complete having delivered the key manufacturing facility for the new cores designed for the Dreadnought Class submarines. This year, the programme has demonstrated the capability to undertake the most complex set of operations involved in the manufacture of new reactor cores within this new manufacturing facility. This is an important milestone on the way to delivering the first production core and the complete demonstration of the core manufacturing capability for Dreadnought. Design work continues with the second phase which will enable the production of nuclear fuel and cores for subsequent submarine classes over the long term.

Management and governance changes

The Department is delivering on its commitment to strengthen the management of all nuclear programmes. In December 2022, Madelaine McTernan was appointed Director General Nuclear to lead the Defence Nuclear Organisation, succeeding Vanessa Nicholls, who departed after three and a half successful years leading the Organisation. The Director General Nuclear is responsible for the sponsorship of the Defence Nuclear Enterprise, which includes responsibility for the management of the defence nuclear portfolio, including the Submarine Delivery Agency (SDA), AWE, providing Senior Responsible Owners for the main nuclear equipment programmes, and for the delivery of the UK warhead.

During the period, Sir Chris Gardner KBE has been appointed as the new Chief Executive Officer (CEO) of the SDA and started in his role on 31 October 2022, succeeding Ian Booth whose five-year appointment came to an end on 3 September 2022. Sir Chris brings a wealth of experience at a pivotal time for the UK Submarine Programme having completed a 38-year career as a Royal Navy Officer including time in the Submarine Service. In his last role, Sir Chris was promoted to Vice Admiral in 2019 and appointed as Defence Equipment and Support's Royal Navy lead for the acquisition and in-service support of the surface fleet. He brings that background to this new role on transfer to the Senior Civil Service on a five-year Fixed Term Appointment.

Jonathan Simcock was appointed Chair of the SDA Board in June 2022, having held the post on an interim basis since 1 September 2021. Jonathan is an experienced member of the SDA Board, having served as a Non-Executive Director (NED) since 2018 when the Agency was established, and has a detailed knowledge and understanding of the SDA's work.

The CEO of SDA now reports directly to Director General Nuclear, as does a new position of Managing Director, Warhead, to which Dr Rebecca Weston has been appointed. She leads the Warhead Group that sets and drives the delivery of the warhead current and replacement programmes, including all of the required supporting capabilities, which includes the work of AWE and other government, academia and industry partners, nationally and internationally.

Since July 2021, following the company's transition back into public ownership, AWE plc has operated as a Non-Departmental Public Body wholly owned by the Ministry of Defence (MOD). Work to embed this model change, to leverage the benefits of the transition and ensure AWE's ongoing contribution to defence, progresses. Alison Atkinson and Sir John Manzoni remain as AWE CEO and AWE Board Chair respectively, with no changes in the period to the Board's six NEDs. MOD, as the company's sole shareholder, is also represented on the AWE plc Board.

Next report

The Department plans to next report progress to Parliament in late 2023.