

Our National Endeavour - Dreadnought Boat 1 Keel Laying



BAE SYSTEMS

Welcome to Dreadnought Boat 1 Keel Laying

Our nuclear deterrent has been the bedrock of our national security for over 60 years, and remains as important as ever. Since 1994, Vanguard class submarines operated by highly skilled Royal Navy submariners have successfully delivered Continuous At Sea Deterrence (CASD) patrols, protecting the UK and our NATO allies from the most extreme threats we face.

Today's Keel Laying for HMS Dreadnought represents the next generation of this extraordinary capability, and our unwavering commitment to this most critical and enduring mission.

As Chief of Defence Nuclear, I am delighted to mark this significant milestone as HMS Dreadnought progresses from planning, through design, to construction. This is a truly National Endeavour of an unprecedented scale, requiring a collective effort from tens of thousands of dedicated individuals right across the country - from engineers and technicians to project managers and support staff; from government, industry, and academia - working together to achieve our shared mission.

Delivery of our Dreadnought class submarines involves some of the most complex and technologically advanced programmes Government has ever undertaken. It will result in an intensely formidable capability. In ensuring its success, our extraordinary Defence Nuclear Enterprise is working to secure the safety of this country for generations to come.



Since April 1969, Royal Navy Submariners have been proud to deliver the Continuous at Sea Deterrent, maintaining at least one nuclear-armed ballistic missile submarine on patrol, ready to respond to the most extreme threats to the UK.

Whilst the Vanguard Class of submarines continues to deliver CASD today, the Royal Navy is greatly looking forward to operating highly sophisticated and advanced Dreadnought Class Submarines. This keel laying ceremony is considered the 'birth' of a vessel and I congratulate all those involved across the Alliance for reaching this important milestone in the life of HMS Dreadnought, and look forward to bringing this exciting and highly capable submarine into service.



Madelaine McTernan CB
Chief of Defence Nuclear
at the Ministry of Defence

Admiral Sir Ben Key KCB CBE ADC

First Sea Lord and Chief
of Naval Staff



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A unique Transatlantic partnership – supporting the UK's strategic nuclear deterrent for more than 60 years



Signed on 6 April 1963 under the US and UK governments of President John F Kennedy and Prime Minister Harold Macmillan, the Polaris Sales Agreement (PSA) allowed the US to provide the UK with Polaris missiles, equipment and supporting services. The agreement was updated in 1982 to include the sale of Trident II missiles to the UK.

The PSA became a pillar of the nuclear strategic partnership between the UK and US and formalised the cooperation agreed in the 1962 Nassau Agreement. The PSA remains one of the most important intergovernmental agreements in the history of the US and UK. The first of its kind, the PSA provided both nations with unparalleled opportunities to collaborate and deliver its respective nuclear deterrents.

In 2006 the UK and US agreed to a common effort to design, develop, and produce a common missile

compartment. Both nations continue to work closely on major defence projects. This includes sustaining the current Life Extended Trident D5 Strategic Weapon System (D5LE) on the UK Vanguard class and US Ohio class, as well as jointly designing a common missile compartment for the next generation of ballistic submarines, the UK Dreadnought class and US Columbia class.

Speaking at the time of the PSA 60 anniversary in April 2023, Vice Admiral Johnny Wolfe, US Project Officer for the PSA and Director of Strategic Systems Programs, said: "There are few things that last two working generations. Even fewer last three. The PSA is the bedrock of the US-UK strategic deterrence relationship, and crucial to the collective security of our NATO allies. The legacy of the PSA is indebted to the dedicated people who directly support UK and US strategic deterrent programmes."

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Vice Admiral Johnny Wolfe
US Project Officer for the PSA and Director of Strategic Systems Programs

Delivering the capability to safeguard our nation



March 2007: Parliament votes to explore renewing the UK's nuclear deterrent

July 2016: The House of Commons formally approves the decision to maintain the UK's nuclear deterrent beyond the early 2030s

September 2016: Cut Steel on Boat 1 - Her Majesty Queen Elizabeth II approves name for First of Class - HMS Dreadnought



September 2019: Cut steel on Boat 2, Valiant, commences in the New Assembly Shop (NAS)



September 2022: Cut steel on Boat 3, Warspite, in the NAS

December 2022: First Dreadnought pressure hull unit delivered to the Devonshire Dock Hall (DDH)

March 2025: Boat 1, Dreadnought, Keel Laying ceremony

Guaranteeing our nation's security – the Continuous At Sea Deterrent

Today's Keel Laying ceremony for the first-of-class HMS Dreadnought is a critical step on the path to delivering the next generation of capability.

Since April 1969, there has always been a Royal Navy ballistic missile submarine on patrol, providing the nation's strategic nuclear deterrent. From the early 2030s, Dreadnought class submarines will begin to replace the Vanguard class.

Keel Laying is a centuries-old tradition within the Royal Navy, originally used to mark the formal start of construction of a new ship. It has, over time, been adapted and in the case of today's event, it will mark a significant milestone in the build programme, with the construction of HMS Dreadnought now at a mature stage and beginning to come together as a whole submarine in the Devonshire Dock Hall.

The importance of the Dreadnought class' role in providing the next generation of Continuous At Sea Deterrent cannot be overstated. It is critical to safeguarding our nation, supporting our allies and protecting our communities. Our Royal Navy is dependent on Dreadnought to continue this historic and vital operation.





Resolution class

The UK's Continuous At Sea Deterrent began with the Resolution-Class - four nuclear ballistic missile submarines.

The class comprised Resolution, Repulse, Renown and Revenge. The first two were built in Barrow and the second two at Cammell Laird in Birkenhead between 1964 and 1968. All four boats were based at HM Naval Base Clyde. In 1996, the Resolution class was replaced by the Vanguard-Class submarine carrying the Trident II missile system.



Vanguard class

The four Vanguard-Class submarines form the UK's strategic nuclear deterrent force operating today. All four boats - HMS Vanguard, HMS Victorious, HMS Vigilant and HMS Vengeance - were built in Barrow and each is armed with Trident II D-5 missiles. HMS Vanguard carried out the first Trident II missile test firing in May 1994 and the first of her operational deterrent patrols in 1995.



Dreadnought class

Construction of the first of four new Dreadnought class submarines started in October 2016 in the Barrow shipyard.

The new boats will measure 152.9m long, with a displacement of 17,200 tonnes - the biggest ever built for the Royal Navy. The first three boats are now in production: Dreadnought, Valiant and Warspite. The fourth will be named King George VI. HMS Dreadnought will enter service in the early 2030s and will play a pivotal role in the nation's defence and security well into the 2060s.

Fearless Dreadnought: a game-changing name for more than a century

History of the Dreadnought badge



- Ships' badges first appeared in the 1850s
- Ships' badges are reused along with the ship name
- When the monarch approves the name of a new ship, they will also approve the new ship's badge
- The Dreadnought crest is a pre-First World War design for the HMS Dreadnought battleship, based on the arms of Admiral of the Fleet John Fisher, who conceived the battleship. It shows a gauntlet gripping a key rising from the waves.
- The Admiral also bestowed the boat's motto: *Fear God and dread nought*
- The Dreadnought badge was revived in 1959 when the name was again given after nearly 40 years to the first nuclear submarine, and today's first-of-class Dreadnought Submersible Ship Ballistic Nuclear (SSBN) pays homage to this ground-breaking naval evolution

The original meaning of the word Dreadnought was a fearless person or thing, and in the 20th century the name was initially associated with battleships - the first being HMS Dreadnought in 1906, which represented an advance in naval technology.

It had an unprecedented number of big guns and was powered by steam turbines, making her faster than her adversaries.

Although designed to engage enemy battleships, HMS Dreadnought's only significant action in World War One was the ramming and sinking of a German submarine, thus she became the only battleship confirmed to have sunk a submarine.

Built in Portsmouth and with engines made by Barrow shipyard owners, Vickers Son and Maxim, Dreadnought had such an impact that subsequent similar battleships, such as the Spanish Espana class, were referred to simply as "dreadnoughts".

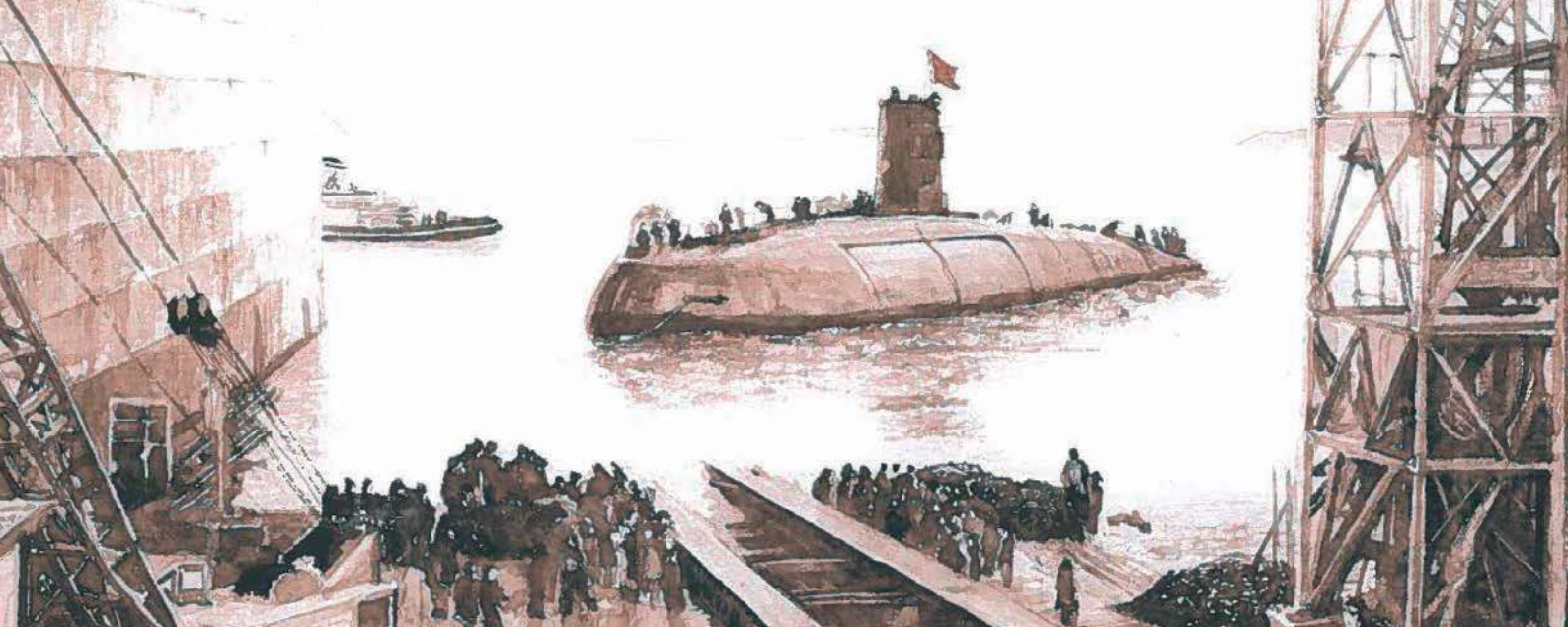
It was some years later that the Dreadnought name was first bestowed upon a submarine.

Barrow Shipyard heritage

In operation for more than 150 years, we're proud that the Barrow shipyard - which started life as the Iron Shipbuilding Company back in 1871 - has been a key player in the industry for such a long time. It has been its ability to remain at the forefront of technology and engineering expertise which has sustained its relationship with the Royal Navy, from its very first Admiralty contract - HMS Foxhound in the 1870s - up to its current role in designing and building some of the most complex products in the world.

Since launching the first Royal Navy submarine in 1901, more than 300 submarines have rolled off the production line in Barrow, representing the output of a unique and regionally dispersed industrial base committed to playing their part to protect the UK's interests for generations to come.





This striking image of the original HMS Dreadnought was painted by the late Kevin Cookmead, a former BAE Systems Submarines engineer. Following a cancer diagnosis, Kev combined his passion for art with his knowledge of our Shipyard heritage to produce a collection of submarine paintings which raised £10,000 for St Mary's Hospice. A fantastic legacy.

Following the Second World War the Admiralty realised the potential advantages of nuclear propulsion for submarines and across the Atlantic the US Navy commissioned the world's first nuclear submarine, USS Nautilus in 1954. Seeing the success of Nautilus, the UK Government tasked Vickers as the main contractor with Rolls-Royce and Foster Wheeler to jointly develop a prototype nuclear propulsion machinery for a submarine. This led to the pioneering HMS Dreadnought, the UK's first nuclear powered submarine (S101).

Work on Dreadnought started in 1959 and the keel was laid by the Duke of Edinburgh in June of that year. Her Majesty Queen Elizabeth II launched HMS Dreadnought on Trafalgar Day 1960 (21 October). She was commissioned into Royal Navy service in 17 April 1963.

Dreadnought was the largest submarine hull to be manufactured in the UK and was built of a new steel specification which would also enable her to dive deeper than any previous Royal Navy submarine.

The delivery of HMS Dreadnought on time and to cost should not be underestimated as it had required significant changes and developments across the Admiralty and industry, as well as collaboration with their opposite numbers in the USA.

One of the key relationships in this was the co-operation between Vickers Shipbuilding and the Electric Boat Company.

By the end of March 1965, HMS Dreadnought had sailed the equivalent of nearly six times around the world and the reactor core had reached the end of its design life. As a result she was docked for the boat's first major refit, which was completed in 1970.

In March 1971, HMS Dreadnought became the first UK submarine to surface at the North Pole, breaking through approximately two feet of ice. The boat spent seven days under the ice and surfaced six times, while travelling 5,200 miles in 19 days.

A further major refit and refuelling of the reactor was undertaken between April 1974 and October 1976. However, in August 1980, a fault was discovered in a back-up cooling system during routine trials, which required the reactor to be shut down. Dreadnought was formally decommissioned in March 1983.

Dreadnought had been a truly game-changing submarine, so when the time came to name the successor class of SSBNs to replace Vanguard, the name was an obvious and popular choice.

Our partnerships

Delivery of the programme - the Dreadnought Alliance



Madelaine McTernan CB
Chief of Defence Nuclear at the Ministry of Defence



Vice Admiral Sir Martin Connell KCB CBE
Second Sea Lord



Sir Chris Gardner KBE
CEO of the Submarine Delivery Agency



Dr Charles Woodburn
CEO of BAE Systems



Chris Cholerton
Rolls-Royce Group President

The Dreadnought Alliance is a collaboration between the Ministry of Defence, BAE Systems and Rolls-Royce formed to jointly deliver the Dreadnought programme.

Dreadnought Alliance Leadership Board



Sir Peter Gershon
Dreadnought Alliance Independent Chairman



Alexander McMillan
Submarine Production Alliance Managing Director



Steve Timms
BAE Systems Submarines Managing Director



Steve Carlier
President Submarines, Rolls-Royce Defence



Rear Admiral Paul Carroll OBE
Director of Submarine Acquisition, Royal Navy



Matt Harrison
SRO for the Maritime Capability Replacement Programme

"As we mark the keel laying of the first of class HMS Dreadnought today, we are immensely proud of this programme and the team of people who are working to deliver it. This boat, and those that will follow, will be the ultimate guarantor of our national security for generations to come."



Partnership with the Royal Navy

We are proud of the role we play in enabling the Royal Navy to protect our country and play a key role in NATO.

The skills, experience, innovation and dedication of our people has played a critical role over many decades in providing core capability and support to the Royal Navy. We are committed to serving those who serve and protect us and our continuing role is a source of great pride to our business.

By working in partnership to deliver on our commitments, we help the Royal Navy to safeguard the men and women who serve on the submarines we design, build and support.

HMS Dreadnought and her sister submarines will continue to provide the UK's independent strategic nuclear deterrent deep into this century.

The Dreadnought programme is a truly national enterprise, and it is with great pride and pleasure that I can represent the first of those women and men of the Royal Navy that will form the crew of HMS Dreadnought.

Commander Edward Higgins
Royal Navy, Senior Naval Officer
- HMS Dreadnought



The Dreadnought programme supports tens of thousands of jobs across the UK

The UK Defence Nuclear Enterprise supports 42,000 jobs across the UK, almost 30,000 of them on the Dreadnought programme.

While nearly half of these jobs reside in the North West of England, the supply chain for Dreadnought extends to every region of the UK.

BAE Systems estimates it will spend in the region of £7.5 billion with supply chain companies over the life of the programme across England, Scotland, Wales and Northern Ireland.



Dreadnought Association

Barrow shipyard enjoys a close relationship with the Dreadnought Association - members of the former crew of Britain's first nuclear submarine SSN01.

Representatives visited Barrow two years ago to mark the 60th anniversary celebrations of the commissioning of HMS Dreadnought on 17 April 1963 by Her Majesty Queen Elizabeth II.

Retired Commander Robin Whiteside - who was HMS Dreadnought Executive Officer in 1971 when the submarine famously surfaced at the North Pole - addressed the Association at the dinner and thanked his hosts with a tot of rum.

In addition, a presentation of a Secondary Telegraph Repeater from SSN01 was made to former SSBN09 Senior Naval Officer, Commander 'Titch' Evans, inscribed with the words "May submarine ethos live on in Dreadnought."





DREADNOUGHT