The Strategic Deterrent: Past, Present and Future

The United Kingdom and its Strategic Nuclear Weapons

The UK was the first state to work on a nuclear weapons programme, initially autonomous and later together with the United States. In the early years this nuclear cooperation with the US was rather difficult, but a stable and far-reaching cooperation arose during the 1980s. Nowadays, it still is an important part of the special relationship between the two countries. The current British Vanguard class nuclear-powered submarines with ballistic nuclear weapons will reach their end-of-lifetime in approximately 15 years and the replacement process is already underway. However, given the geopolitical and financial situation, it can be questioned whether the continuation of the most expensive replacement project ever in the history of the British armed forces is the most favourable option.

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On 18 July 2016 a parliamentary decision about the United Kingdom's Successor programme of the submarine-based nuclear deterrent was made.[1] The vote to continue the development of new ballistic missile submarines (SSBN) was the last in a series and it is expected that the production of the new submarines will start soon after this decision of the House of Commons. Modernizing and maintaining Britain's strategic deterrent might cost up to 167 billion pounds (approximately 197 billion euros)[2] on life cycle costs and will plausibly mean that the UK remains a nuclear weapons state until the 2060s.[3] Considering the far-reaching implications of this decision, it is very topical and relevant to take a closer look at the UK as a nuclear power, addressing history, present and future plans.

This article will first address the history of British strategic nuclear weapons, delivery systems and doctrines. After this historic overview the current system and policies are discussed. The Successor programme to replace the current submarines will be reviewed with a focus on the recent debate in British society and politics. Finally, in the conclusion, a stance is taken regarding the Successor programme and the UK's nuclear future.

The history of British nuclear weapons

The UK was the first power to start a nuclear weapons programme, the code-named Tube

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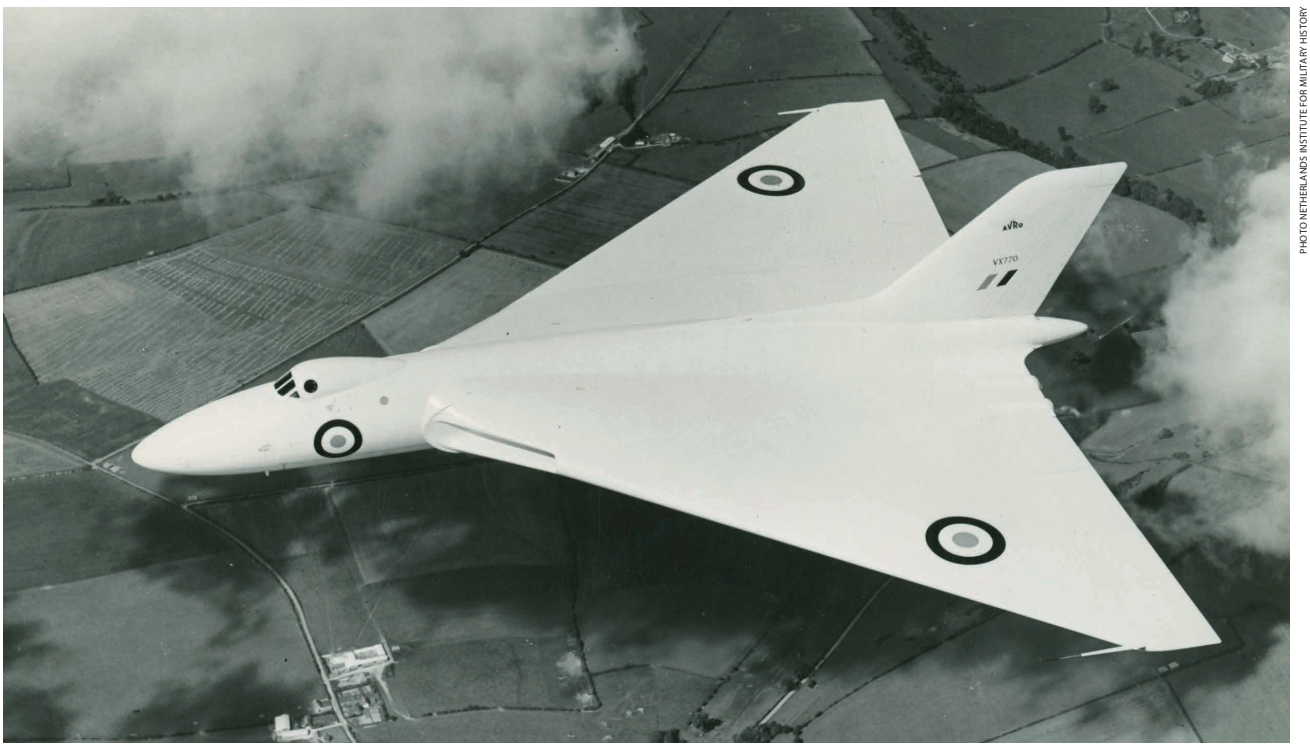
1 http://www.parliament.uk/business/news/2016/july/mps-debate-the-uks-nuclear-deterrent-18-july-2016/.

2 All exchange rates in this article were retrieved 7 August 2016.

3 http://www.reuters.com/article/2015/10/25/us-britain-defence-trident-exclusive-idUSKCN0SJ0EP20151025#uYcSjGwFtgR16Ljp.97 and Claire Mills and Louisa Brooke-Holland, 'The Trident Successor Programme: An Update', *House of Commons*, March 10 (2015) 17.



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In the early years of the British nuclear weapons programme, the strategic nuclear strike role fell to bombers like the Avro Vulcan

Alloys, in 1941. Initially the UK had a technological lead over the United States' Manhattan Project, with whom information was shared. But the Americans were able to allocate vastly more resources to their project than Great Britain, and the Manhattan Project quickly outpaced Tube Alloys. However, in August 1943 the Quebec Agreement was signed between the two nations. The result was that the scientists involved in Tube Alloys would move to the US to join the Manhattan Project and that the British government would receive information about the progress of the project.[4]

The Manhattan Project culminated in the first nuclear test and ultimately in the bombing of Hiroshima and Nagasaki with nuclear weapons in August 1945. After the end of the Second World War, there was broad consensus in the UK that they also needed to possess nuclear weapons. Therefore, the passing of the McMahon Act in the US in 1946 was felt as betrayal in Britain.[5] The McMahon Act restricted the sharing of American nuclear information with other countries, including allies like the UK.[6] But the British government was determined to obtain nuclear weapons and restarted its own independent nuclear weapons programme. This resulted in the first autonomous British nuclear test in 1952, making the UK the third nuclear weapons state after the US and the Soviet Union (1949). Because of the McMahon Act, the costs for the UK had been significantly higher and it had taken more time than anticipated, but the desired outcome was achieved.[7]

After the nuclear weapons were acquired, the next step was to select delivery systems and to develop a nuclear doctrine. Because the first nuclear bombs were heavy and strategic

4 John Baylis & Kristan Stoddart, 'The British Nuclear Experience: The Role of Ideas and Beliefs (Part One)', in: *Diplomacy & Statecraft* 23 (2012) (2) 333.
5 Ibid., 334.
6 Emily S. Merritt, *Britain's Nuclear Deterrent Force and the US-U.K. Special Relationship* (Monterey CA, Naval Postgraduate School, 2014) 18.
7 Ibid., 22.

missiles were still in an early stage of development, airplanes were the only possible delivery system at that time. This first strategic nuclear strike role was carried out by the so-called V-bombers. These comprised three types of strategic bombers whose names all started with the letter V: the Vickers Valiant, the Avro Vulcan and the Handley Page Victor. These bombers were the delivery system for the strategic deterrent in the 1950s and 1960s.[8] Given their initial scarcity, the first nuclear weapons would be targeted at population centres. But this policy changed when more weapons became available. For a short period, until the end of the 1950s, the targeting policy was directed at reducing the enemy's capability to strike the UK by attacking atomic plants and bases.[9]

In 1958, at the instigation of US President Eisenhower, Congress amended the McMahon Act, opening new opportunities for nuclear cooperation between the UK and the US.[10] This renewed collaboration lasts until today. The allied powers decided to coordinate their targeting policies, which lead to a mix of military (counter force) and population centre (counter value) targets. Great Britain nevertheless chose to retain an independent target list aimed at Russia's main metropolitan areas and cities.[11]

The Anglo-American cooperation was not limited to targeting; the most important features included the sharing of delivery systems and joint nuclear testing.[12] By the end of the 1950s, the British were becoming increasingly worried about the effectiveness of their V-bomber fleet. The cause of these concerns was improved Soviet anti-aircraft capabilities, reducing the credibility of the bombers' strategic deterrent. The proposed new delivery system was the Blue Streak medium-range ballistic missile. This British designed missile project was cancelled in 1960 because of cost overruns and doubts about its effectiveness. It had already become obsolete before entering the production phase. From this point in time, the UK turned to the US for delivery systems. The foreseen new delivery system was the Skybolt air-launched ballistic missile. But the stakes for the Skybolt project were not even. The UK was putting all its eggs in one basket, while for the US the Skybolt project was just one of their strategic delivery systems. And when President John F. Kennedy in 1962 determined to abandon the project, it led to a crisis in Anglo-American relations.[13]

Once again, the British government felt let down by the US. A new and up-to-date delivery system was regarded a prerequisite for an independent strategic deterrent. The Nassau Agreement of December 1962 eventually ended the crisis. The agreement confirmed the purchase of Polaris submarine-launched ballistic missiles by the UK. The submarine fleet would be placed under NATO command, but when 'supreme national interests are at stake,' the British government could withdraw them from the NATO structure.[14] The Royal Navy was to operate four British-built Resolution class submarines, fitted each with 16 Polaris A3 missiles. The first operational patrol started in 1968 and since 1969 the Continuous At-Sea Deterrence (CASD) policy has been in effect. The CASD policy stipulates that there always is at least one British ballistic missile submarine on patrol.

The Polaris system had took over the strategic role of the V-bombers in 1969. Although the number of strategic warheads carried by the Polaris force was much lower than the V-bombers, the invulnerability of the submarines boosted the credibility of Britain's deterrent.[15] As a result of this decreasing number of

8 Matthew Godwin & Maurice Kirby, 'V is for Vulnerable: Operational Research and the V-Bombers', in: *Defence Studies* 9 (2009) (1) 149-150.

9 John Baylis, 'British Nuclear Doctrine: The 'Moscow Criterion' and the Polaris Improvement Programme', in: *Contemporary British History* 19 (2005) (1) 55.

10 John Baylis & Kristan Stoddart, 'The British Nuclear Experience: The Role of Ideas and Beliefs (Part One)', in: *Diplomacy & Statecraft* 23 (2012) (2) 341.

11 John Baylis, 'British Nuclear Doctrine: The 'Moscow Criterion' and the Polaris Improvement Programme', in: *Contemporary British History* 19 (2005) (1) 55.

12 John Baylis', 'Exchanging Nuclear Secrets', in: *Diplomatic History* 25 (2001) 45, 60.

13 John Baylis & Kristan Stoddart, 'The British Nuclear Experience: The Role of Ideas and Beliefs (Part One)', in: *Diplomacy & Statecraft* 23 (2012) (2) 342.

14 Ibid., 342.

15 Kevin Harrison, 'From Independence to Dependence: Blue Streak, Skybolt, Nassau, and Polaris', in: *RUSI Journal* 127 (1982) (4) 31.

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HMS Vengeance returns to Faslane from deployment: the Continuous At-Sea Deterrence policy requires the permanent patrol of at least one British ballistic missile submarine

strategic weapons, the targeting policy was adjusted. There had been comprehensive debates about what would be a sufficient deterrent towards the Soviet Union. With the commissioning of the Polaris system, it was agreed that the ability to destroy Moscow was the core of the strategic deterrent.[16] This Moscow Criterion was jeopardized when anti-ballistic missile capabilities were deployed around the Soviet capital. As a consequence, the UK developed an upgrade of the Polaris missile, the Chevaline project. This upgrade improved the survivability of the warheads by using penetration aids and decoys. The system was in service until 1996 when the current Trident system became operational.[17]

Besides strategic nuclear weapon systems, the British armed forces, especially during the Cold War, deployed many tactical nuclear weapons as well. The British WE.177 gravity bombs were deployed by the Royal Air Force and Royal Navy. Furthermore, many dual-key tactical weapons were deployed: depth charges, demolition charges, artillery and short range missiles like the Honest John and Lance.[18] Since 1998, when the WE.177 bombs were decommissioned, the Trident system is the only British nuclear weapon.[19]

16 John Baylis, 'British Nuclear Doctrine: The 'Moscow Criterion' and the Polaris Improvement Programme', in: *Contemporary British History* 19 (2005) (1) 58.

17 Kristan Stoddart & John Baylis, 'The British Nuclear Experience: The Role of Beliefs, Culture, and Status (Part Two)', in: *Diplomacy & Statecraft* 23 (2012) (3) 498.

18 Dual-key nuclear weapons are provided by the US to NATO allies. These weapons remain under control of US guards, until the decision is made to actually use them. Then the weapons are transferred to the host nation for delivery. This concept is known as nuclear sharing.

19 Operational Selection Policy OSP 11, 'Nuclear Weapons Policy 1967–1998', *The National Archives* (November 2005) 11.

The current system

Already in 1980 Prime Minister Margaret Thatcher and US President Jimmy Carter agreed that the UK would acquire the next generation of submarine-launched ballistic missiles, the Trident system. In the UK commonly known as Trident, the system actually consists of three core components: the Vanguard class nuclear-powered submarines, the Trident II D5 submarine-launched ballistic missile and the nuclear warheads carried by these missiles.[20] The Vanguard class submarines have been operational since 1994. This 14-year period between the decision to obtain the system and its first deployment illustrates the long lead time for this kind of complex weapon systems. The strategic security environment had significantly changed during these 14 years. However, by the end of the Cold War much of the costs had already been made and there was widespread consensus that the system should be deployed, despite the changed security environment.[21]

The four Vanguard class submarines are based in Faslane, Scotland. They are able to carry 16 Trident missiles each. Each missile can carry up to 12 multiple independently targetable re-entry vehicles (MIRVs) with warheads. The warheads are presumably variations of the American W76, with a variable yield ranging between 0.3 and 100 Kilotons.[22] The operational range of the Trident missile is assumed to be over 12,000 kilometres.[23] The current stockpile of 225 warheads, of which 120-160 are operationally available, is to be reduced to 180 in the mid-2020s. The submarines are still deployed according to the CASD policy, with always at least one on patrol. However, the number of missiles is by policy reduced to eight and the number of warheads to 40 per submarine on duty. The Vanguard class is to be replaced starting from the early 2030s.[24] The first steps in the process of obtaining new submarines were taken in 2007 by Prime Minister Tony Blair's administration.[25]

British nuclear reasoning

Historically the UK has had a strong desire to possess nuclear weapons. Most of the arguments supporting an independent nuclear deterrent date back to the Cold War era, but are still used nowadays. The first and most important reason is that the strategic deterrent is considered an 'ultimate insurance policy' as stated by former Prime Minister David Cameron.[26] After the Second World War, there was widespread consensus in British politics that acquiring nuclear weapons was of utmost importance. Not only as the ultimate weapon, but also as something that would give status associated with a superpower in world affairs.[27] Another important reason was and is independence from the US. During the Cold War, there was a latent fear that America would not risk its own destruction by using strategic nuclear weapons when actual fighting was limited to the European theatre. Experiences like the McMahon Act and the Skybolt crisis – after the unilateral American discontinuation of the Skybolt missile programme – contributed to this sentiment. Therefore, the British persisted in keeping their own strategic weapons. This so-called second centre of nuclear decision-making within NATO was also presented to complicate risk assessment by possible adversaries.[28]

Paradoxically, another main argument to retain nuclear weapons is about fostering the Special Relationship between the US and the UK. This relationship extends far beyond security issues. Great Britain is regarded as the closest ally of

20 Nick Ritchie, 'Replacing Trident: Britain, America and Nuclear Weapons', in: *Contemporary Security Policy* 28 (2007) (2) 385.

21 Ibid., 386.

22 Maria Rivas, 'UK Trident Replacement: The Facts', *British American Security Information Council* (BASIC) (2014).

23 http://missilethreat.com/missiles/ugm-133-trident-d-5/.

24 https://www.iiss.org/en/politics%20and%20strategy/blogsections/2015-932e/december-1bda/trident-replacement-goodbye-main-gate-4a9e.

25 Maria Rivas, 'UK Trident Replacement: The Facts', *British American Security Information Council* (BASIC) (2014).

26 http://www.independent.co.uk/news/uk/politics/david-cameron-says-that-he-would-use-nuclear-weapons-a6679256.html.

27 John Baylis and Kristan Stoddart, 'The British Nuclear Experience: The Role of Ideas and Beliefs (Part One)', *in: Diplomacy & Statecraft* 23 (2012) (2) 336.

28 Nick Ritchie, 'Replacing Trident: Britain, America and Nuclear Weapons', in: *Contemporary Security Policy* 28 (2007) (2) 386.

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Former Prime Minister David Cameron, talking to the US Joint Chiefs of Staff and their British counterparts, called the strategic deterrent an 'ultimate insurance policy'

America and the nations have frequently fought side by side since the First World War. Many perceive the nuclear weapons cooperation as the pinnacle of this alliance. Keeping nuclear weapons and using American technology is considered a sign of strengthening the Special Relationship for the future, providing the UK privileges it would not have otherwise.[29]

Since the end of the Cold War, the UK has also sought cooperation with France. In 1992 the Anglo-French Joint Commission on Nuclear Policy and Doctrine was constituted. The goal of this commission is to 'mutually strengthen deterrence, while retaining independence of our nuclear forces.'[30] In 2010 a Franco-British Defence and Security Cooperation Treaty and a separate Nuclear Treaty were signed by the nations. These treaties intensify military cooperation, especially regarding interoperability and shared use of aircraft carriers. The Nuclear Treaty focuses on collaboration on the technological management of nuclear stockpiles. For this purpose, two joint facilities have been established.[31] In the negotiations towards the 2010 Treaty, then French President Sarkozy proposed to create a joint nuclear deterrent by sharing continuous at-sea patrols. However, Prime Minister Gordon Brown rejected this pooling of sovereignty because he regarded it politically unacceptable.[32] Although the cooperation with France has increased over time, this collaboration is not as important for the UK as its nuclear relationship with the US.

The Successor programme

With the long lead times to develop the Vanguard class submarines in mind, plans for a successor of these vessels were developed as early as 2006. In 2007 the Parliament voted in favour of the programme by large majority. The project would be treated according to the normal defence acquisition procedure. Two main points of approval in this process are required: the initial gate decision at the end of the concept phase and the main gate decision following the assessment phase. The initial gate

29 Ibid., 394.

30 Martin Butcher et al., 'PENN Project on European Nuclear Non-proliferation Nuclear Weapons and the European Union', *PENN Research Note* (1997) (4).

31 Claire Taylor, 'Franco-British Defence Co-operation', Standard Note: SN/IA/5750 (2010) Library House of Commons, International Affairs and Defence Section, 13.

32 http://www.theguardian.com/world/2010/mar/19/france-britain-shared-nuclear-deterrent.

decision was taken in 2011 and from that moment on substantial costs have been made. The main gate was postponed several times and was ultimately set for 2016. The main gate was regarded a point of no return and the administration would seek parliamentary approval of the decision. However, in the 2015 Strategic Defence Review the regular defence acquisition procedure was abandoned; this means that terminology such as main gate decision was no longer used.[33] A parliamentary vote on the project was still scheduled for 2016.[34]
The Successor submarine design is based on the proven technology of the nuclear-powered attack submarines of the Astute class, which have been entering service since 2010. Four vessels will be built to ensure the Continuous At-Sea Deterrence and will be equipped with pressurized water reactors as propulsion system. Furthermore, they should be able to carry eight operational Trident missiles and 40 warheads. The Successor class is expected to remain in service until the 2060s. This implies that future adjustments to the submarines have to be possible in order to facilitate the replacement of the Trident D5 missiles (expected in the 2040s). The same applies to the warheads (2030s).[35]

One of the aspects which attracts extensive media coverage are the cost calculations of the Successor programme. In 2015 the Ministry of Defence presented an estimate of 31 billion pounds (37 billion euros) and a 10 billion pound (12 billion euro) contingency fund. These costs solely include manufacturing.[36] Total lifetime cost estimates range from 70-80 billion pounds (83-94 billion euros) (RUSI, 2013) and 100 billion pounds (118 billion euros) (BASIC, 2014) up to 167 billion pounds (197 billion euros) (Reuters, 2015).[37]

The political debate about the Successor programme

The political debate was characterized by different stances, but a vast majority of MPs have always been in favour of the Successor programme. The Conservative Party has been very clear and intended to replace the four current strategic submarines like-for-like with four new ones. Labour has supported the replacement and it was Tony Blair who initiated the programme. But things have changed with the arrival of their new leader Jeremy Corbyn in September 2015. The party has been divided between Corbyn, who is opposed to the programme, and the party establishment who remain in favour.[38] The Liberal Democrats as well were divided on the subject. They proposed an alternative which would retain submarine-launched ballistic missiles, but would end the CASD policy; this would imply less submarines and lower costs. The strategic deterrent would then only be sent on patrol during periods of heightened tensions.[39]

The only relevant party strongly opposed to the nuclear deterrent is the Scottish National Party (SNP). The SNP wants the nuclear weapons removed from Scottish soil. This scenario became realistic in the period leading up to the Scottish independence referendum in 2014, but the Scottish people chose to remain part of the UK.[40] However, this scenario could re-emerge with the current political uncertainty following the Brexit referendum.[41] Since the 2015 general election, the Conservative Party has an absolute majority in parliament. Add to this the division within Labour, by far the second largest party, and rejection of the Successor plan in Parliament was highly unlikely.[42] So it was no surprise when the House of Commons on 18 July 2016 backed the renewal of the UK's

33 https://www.iiss.org/en/politics%20and%20strategy/blogsections/2015-932e/december-1bda/trident-replacement-goodbye-main-gate-4a9e.
34 http://www.theguardian.com/uk-news/2016/jan/21/jeremy-corbyn-trident-compromise-michael-fallon-faslane.
35 Maria Rivas, 'UK Trident Replacement: The Facts', *British American Security Information Council* (BASIC) (2014).
36 HM Government, *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom* (London, Williams Lea Group, 2015) 36.
37 http://www.independent.co.uk/news/uk/politics/cost-of-replacing-trident-is-167bn-double-previous-estimates-calculations-suggest-a6708126.html.
38 http://www.newstatesman.com/politics/uk/2016/02/how-will-labour-handle-trident-vote
39 http://www.bbc.com/news/uk-politics-23155535.
40 http://www.bbc.com/news/uk-politics-34911204.
41 http://www.theguardian.com/politics/2016/jun/24/alex-salmond-second-scottish-independence-referendum-is-certain.
42 http://www.bbc.com/news/election/2015.

PHOTO PA/GUY BELL/REX/SHUTTERSTOCK

An anti-Trident protest in London on 27 February 2016, organised by the Campaign for Nuclear Disarmament, was joined by Members of Parliament and Scottish First Minister Nicola Sturgeon

nuclear weapons system by an overwhelming 472-117 vote.[43]

Opinion polls about whether or not Trident should be replaced show mixed results, often depending on how many answer options are given.[44] However, the subject does not appear to be a decisive voting issue for many people. Proponents of the strategic deterrent within the government stated in the National Security Strategy and Strategic Defence and Security Review 2015 that: 'The UK's independent nuclear deterrent will remain essential to our security today, and for as long as the global security situation demands.'[45] Furthermore, risks of further proliferation still exist and states might use nuclear weapons to threaten the UK. The recent changes in the international security environment stress the importance of a minimum credible deterrent.[46] Other arguments in favour of replacing the submarines are the important contribution to collective security through NATO and retaining the already mentioned special Anglo-American relationship, of which the UK supposedly reaps benefits. Other reasons include economic interests in the shipbuilding and defence industry and direct employment of the Royal Navy in Scotland.[47] Nowadays, arguments about the status nuclear weapons would provide in international relations are not stipulated anymore.

Opponents call the nuclear strategic deterrent a relic of the Cold War and say that no direct nuclear threat from the Soviet Union exists anymore. Furthermore, strategic nuclear weapons are deemed useless against 'new' asymmetrical adversaries or terrorists. In addition to that, the second pillar of the Treaty on the Non-Proliferation of Nuclear Weapons of 1970 (NPT) states that parties should pursue total nuclear disarmament. The UK has ratified this treaty and therefore has to fulfil its obligations. However, no time frame is mentioned in the treaty. And then there are financial matters: opponents of the Successor argue that in times of austerity it cannot be

43 http://www.bbc.com/news/uk-politics-36830923.
44 Maria Rivas, 'UK Trident Replacement: The Facts', *British American Security Information Council* (BASIC) (2014).
45 HM Government, *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom* (London, Williams Lea Group, 2015) 34.
46 Ibid., 34-36.
47 Maria Rivas, 'UK Trident Replacement: The Facts', *British American Security Information Council* (BASIC) (2014).

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HMS Vanguard fires a Trident missile during tests: the UK seems unwilling to take unilateral steps towards nuclear disarmament

justified to spend such a vast amount of money for such an intangible return.[48]

Conclusion and appraisal

Since the 1940s the UK has been involved in nuclear weapons technology. Its nuclear relationship with the US is a remarkable combination of independent decision-making and dependence on American technology. The initial disturbances in their nuclear cooperation are a thing of the past and the Special Relationship seems warmer than ever before. Even though the security situation has changed dramatically since the end of the Cold War, the British government is determined to prolong the Continuous At-Sea Deterrence policy in the foreseeable future. The decision to build new submarines for strategic ballistic missiles will most likely mean that the UK will remain a nuclear weapons state until at least the 2060s.

If there was a chance to break this ongoing cycle, the moment was the July 18 parliamentary vote. The vast majority of the billions of pounds have not yet been spent on the new system. Although pursuing a world free of nuclear weapons is something praiseworthy, it does not seem very realistic in the short to medium term. This has been stressed by American President Barack Obama on numerous occasions.[49] However, all nuclear weapons states, including the UK, seem unwilling to take unilateral steps towards nuclear disarmament.[50] This, together with stagnating multilateral initiatives, has resulted in a deadlock in nuclear disarmament.

But if there is one country which has the possibility to give up nuclear weapons unilaterally with very limited – if any – security implications, it would be the UK. There are currently no conventional or unconventional security threats against the UK that nuclear weapons would deter. Other nations of comparable size and power (e.g. Canada, Germany and Italy) can be secure without an independent deterrent. Furthermore, the Special Relationship with the US will not end without British nuclear weapons. On the contrary, this relationship could provide extended nuclear deterrence; the UK, like other (NATO) states, could come under the American nuclear umbrella, possibly resulting in renewed nuclear sharing of tactical weapons. The move to abandon an independent nuclear deterrent would also have a significant symbolic value, since the UK would be the first official nuclear weapons state (according to the NPT) to give up its arsenal. This would be an example for the world community and vastly increase credibility of the NPT.

And last but not least, the budget reserved for the Successor could be used for other scarce capacities in the armed forces. This could give a boost to modernization and thus contribute to overall security of the UK. Taking all these considerations into account, the retention of an independent nuclear deterrent appears to be a very costly redundancy for the UK. ■

48 http://www.bbc.com/news/uk-politics-13442735.

49 http://www.independent.co.uk/news/world/americas/barack-obama-calls-for-world-to-reduce-nuclear-weapons-stockpiles-during-historic-visit-to-hiroshima-a7051561.html.

50 HM Government, *National Security Strategy and Strategic Defence and Security Review 2015: A Secure and Prosperous United Kingdom* (London, Williams Lea Group, 2015) 36.