

Memorandum from Royal United Services Institute for Defence and Security Studies (RUSI)

This submission is a summary of a full assessment of the White Paper which RUSI currently is preparing, with publication planned for February 2007. This summary sets out issues which will be of direct relevance to the forthcoming public and Parliamentary debate. Other issues will endure beyond this point.

The Significance of the White Paper

- The White Paper is arguably the most comprehensive and open official review of Britain's nuclear deterrence policy, posture and capability.[\[1\]](#)

- The White Paper makes no significant changes to British policy, but clarifies some important aspects of the Government's position. The White Paper is a policy paper, and not a Green Paper setting out options: so, rightly, the White Paper recommends a policy to be debated by Parliament.

- The Cold War may be over, but the nuclear age is not. The debate is not about whether a nuclear-free world is desirable or not, but is about how Britain chooses to exist in a world in which nuclear weapons are an enduring factor.

- The critical questions in this debate arguably are not what retaining an independent strategic nuclear deterrent will cost or how long it will take to deliver: instead, they are why does Britain need such a deterrent and what value does it deliver to Britain.

- It remains difficult to have full public disclosure of all aspects of the Government's position and thinking on an issue as sensitive as strategic nuclear deterrence. However, there remain a number of crucial areas that have not been fully addressed in the White Paper, areas which need to be debated in advance of the Parliamentary vote. The Government should expect to be asked to clarify these issues prior to the vote.

Why Now?

- The timing of the Government's decision is informed by the lifespan of the existing VANGUARD-class ballistic missile submarines (SSBNs) and the timescale required to build a successor.

- The lifespan of the VANGUARD boats, limited largely by their nuclear steam raising plants (NSRP), is stated by the Government to be up to 30 years. Arguably, the 30 years consists of a standard 25-year service life, plus an option for a life extension of up to five years. What appears to be new in the White Paper is the inclusion of two years of sea trials in the life of the submarines, ie HMS VANGUARD's 25 years of service life start in 1992 when she was launched, not 1994 when she entered into service.^[2] This is understandable, as the life should indeed be measured from when the hull and the reactor first begin operating. Thus, VANGUARD will come out of service in 2017, or 2022 with a five-year life extension, rather than 2019/2024 as originally anticipated. The critical date, however, is 2023, when HMS VICTORIOUS, the second boat in the class launched in 1993, comes out of service after an extension to 30 years of operational life: at this point, with only two submarines still available, Britain would no longer be able to maintain the Continuous At Sea Deterrent (CASD) policy. Thus, without a decision to build a new generation of submarines and with no decision to extend the service life, the clock would stop on Britain's independent deterrent in 2018. Further clarification of the dates and timelines is required.

- Some independent analysts have, however, questioned whether the service life could not be much longer. While the VANGUARD submarines could be refitted for a much longer life, past experience has shown that defects and costs rise sharply following refit of older submarines. This could lead to the last years of the class being spent fighting unreliability and increasing costs, while struggling to maintain a credible deterrent.

- Ultimately, while the position of industry should only be a factor in *when* - and not *if* - Britain decides to retain a deterrent, indeed the determining factor may be the fragility of the submarine industry, which would struggle to survive a 20-year gap between design of the ASTUTE-class nuclear-powered attack submarines (SSN) and a future SSBN.

The Future Context: Threats, Theories and Influence

- The future strategic environment remains unknown and unknowable. History has proved that to be the case. Britain is an established nuclear power with global political, economic, defence and security profiles. Should Britain wish to retain such global prominence, maintaining a credible strategic nuclear deterrent in the face both of a broader range of nuclear and an uncertain future arguably remains fundamental to the support of British interests.

- Britain's strategic nuclear deterrent is a political tool of self-defence, designed to deter highest level threats to the survivability of the nation, and also to reduce the risk of nuclear blackmail.

- The rationale for maintaining the nuclear deterrent is based on the existence of nuclear arsenals in at least eight other states, the fact that nuclear technologies, know-how and desires are proliferating, the implicit assumption that more states are likely to acquire nuclear weapons in the future, the risks of rogue states and terrorist organizations acquiring nuclear and other weapon of mass destruction capabilities, and the calculation that nuclear aggression realistically can only be deterred by the possibility of nuclear retaliation.

- The political futures of at least three established nuclear powers - Russia, China and Pakistan - remain uncertain, particularly from the viewpoint of their potential impact on British security interests.

- In the Cold War, British deterrence policy was based on the certainty of response, that in certain circumstances Britain *would* respond with nuclear weapons. Today, with more numerous and more diverse potential threats, this uncertainty in threat is offset instead by strategic ambiguity and uncertainty in Britain's response: no potential adversary could be absolutely certain that Britain *would not* respond, an uncertainty which increases significantly the complexity of an adversary's decision-making.

- Ambiguity arguably is a useful and calculated deterrent stance, but the Government has yet to convince some that the White Paper demonstrates a robust policy and doctrine for strategic nuclear deterrence, and its declared sub-strategic component. The White Paper did not clarify the distinction between the strategic and sub-strategic concepts. Indeed, it did not mention sub-strategic at all. It also has been argued by some analysts that Britain has a deterrent capability at present, but no firm deterrent policy as yet - perhaps, not least, because the future context and future threats are so hard to define.

- While deterrence strategy needs to be grounded in reality and clearly related to national policy, deterrence theory and practice is based on conceptual arguments that are open to discussion and differences in interpretation. It is perhaps for this reason that the White Paper does not delve into discussions of the theoretical and practical application of deterrence: so doing might indicate to a potential adversary how Britain thinks deterrence might work, but might also leave the Government open to intellectual criticism of its thinking.

- The debates around the White Paper would benefit from an assessment of what deterrence is, how it is achieved, what are the implications of deterrence theory and practice of the changed strategic environment, and what are the circumstances in which nuclear deterrence might be relevant.

- The concept of nuclear deterrence remains powerful in the MoD and in the wider British politico-military establishment. The White Paper argues explicitly that Britain does not possess a nuclear deterrent for reasons of status. There remains a strong argument, however, that nuclear weapons today hold as much significance in creating international status and influence as they do in deterring nuclear war.

Options

- Britain's strategic nuclear deterrent is a political weapon of last resort, designed to deter high-end, nuclear threats to the survivability of the nation. The White Paper reinforces this posture, with a credible, minimum, independent strategic nuclear deterrent deployed on invulnerable submarines operating in a CASD patrol cycle giving Britain the ability to effect deterrence where and when required. For the foreseeable future, Britain will continue to retain one submarine continuously on deterrent patrol.[\[3\]](#) The fundamental principle for an effective deterrent is a survivable platform and weapon system which can deliver the desired effect and the place and time of choice, holding at risk anything which a potential adversary may value. Only a submarine-based system deployed in a CASD cycle can deliver this guarantee.

- None of the other options addressed in the White Paper would provide the requisite strategic capability, nor would they be more affordable.

- The critical question to address is if and why Britain should look to reduce the deterrent flotilla to three boats. It should be borne in mind that the Polaris programme originally called for five submarines, although this number was reduced to four, and that four boats provide sufficient redundancy in the system for something as critical as the national nuclear deterrent, should something unforeseen occur to one of the submarines.[\[4\]](#) Improvements in submarine technologies, build and maintenance may help improve submarine availability, but a reduction to three submarines may not deliver proportionate cost savings while increasing the level of risk. It should be noted, too, that a reduction in the number of SSBNs would impact upon the taskings for SSNs required to protect the deterrent, and thus may increase arguments to reduce the number of SSNs further still if affordability challenges for the Armed Forces and for the

Submarine Service continue.

- A particular issue should be noted with regard to options for using cruise missiles. Cruise missiles travel at slow speeds, and have been shot down in combat. Deploying the national strategic deterrent on such missiles would risk nuclear warheads falling in to the wrong hands.

Cost

- The final cost of the submarine is also subject to several key decisions, such as the number of missile tubes, the choice of new or existing nuclear propulsion plant, and the level of advanced technology introduced.

- Britain's nuclear submarine-building industry compares favourably with those of France and the US in terms of production time, cost and technology and capability. Relative unit procurement costs for SSNs and SSBNs are compared below:

- The White Paper refers to the future running costs of the nuclear deterrent as 'between 5 and 6% of the defence budget'.[\[5\]](#) This is in contrast to previous statements, which have detailed a running cost of between 2 and 4% since 1997. Moreover, the White Paper states that the commitment to investing in the Trident D5 (Life Extension) programme will cost Britain in the region of £250 million in total.[\[6\]](#) However, the costs of buying original D5 missiles were £1.17 billion. Does this mean that £250m is the buy-in price for the LE programme, with more due in due course for the missiles themselves? Thus, the Government will need to inform the debate with a focus on through-life costs, and clarify the expected demand on the defence budget for the future of the deterrent, as well as where the funding will be sourced.

- The critical issue with cost, however, is not necessarily the raw amount that renewing the deterrent will cost, but how much value an independent strategic deterrent delivers to Britain and what the taxpayer is prepared to pay for the benefits offered by the deterrent.

Industrial Issues

- Whilst the state of the industrial base must not be a rationale for retaining a nuclear deterrent, it is an important factor to consider once that decision has been taken in principle.

- A figure of 14 years is commonly cited for the design and production of the VANGUARD-class. While the decision to build the VANGUARD class was taken in 1980, work on the class had in fact

been under way for some considerable time before this. While Government statements from as early as 2004 declared that work was underway on a replacement deterrent system as early as 2002, the 17 year timescale may present some challenges.[\[7\]](#)

- The 17 year timescale for a replacement SSBN arguably may restrict some potential new developments. For example, it may not allow nuclear reactor shore testing to take place, effectively constraining the options for a significantly new nuclear power plant. Overall, the tight timescales may prescribe a design based around existing British designs, rather than a newer design which may be able to bring different approaches. Furthermore, major items of equipment may need to be ordered more than a decade in advance of the submarine's entry into service.

- The purported option of building another four copies of the VANGUARD-class submarine would be infeasible and counterproductive, as would delaying a decision to build the replacement class until 2010. The submarines would still be costly to build, and the use of the existing design - even with re-work resulting from obsolescence or supply problems - would result in the atrophy of submarine design skills.

- If the submarine industry was to decline, Britain could also lose the ability to build and operate SSNs. This would be detrimental to Britain's expeditionary policy and would lessen considerably Britain's ability to project conventional military forces.

Arms Control Issues and Unilateral Moves: Reductions in Each Component of the UK Deterrent Programme

- There is no evidence to suggest that other nuclear powers or potential nuclear powers would renounce their programmes and plans should Britain unilaterally abandon its deterrent, nor that nations such as Iran or North Korea were waiting on the outcome of the British debate before deciding whether or not to press on with their own programmes.

- A firmer resolution on international co-operation in nuclear weapons programmes will complicate the already ambiguous position of the US-UK relationship. For example, the 1958 Anglo-American Mutual Defence Agreement (MDA) (the agreement which defines Anglo-American nuclear co-operation) could be complicated by attempts to close a perceived loophole in the terms of the Non-Proliferation Treaty (NPT), one which allows states such as Pakistan and North Korea to trade in designs and parts of nuclear weapons without transferring actual devices. The result of this, for Britain, may be a gradual disengagement from the US on collaborative weapon design, with the possibility that a replacement for the existing British Trident warhead would be designed by the Atomic Weapons

Establishment (AWE), with minimal input from their US counterparts.

- The course of US and British arms control policy has important ramifications for the Anglo-American nuclear relationship. Clarification from the Government of the direction of British arms control policy would be useful in the current debate.

The Decision and Broader International Relations

Anglo-American Relations

- Anglo-American co-operation on military nuclear technology remains one of the most stable and significant facets of the 'special relationship'.

- The most significant decision is yet to be made. According to the White Paper, 'decisions on whether and how to replace [the existing] warhead are likely to be necessary in the next Parliament'.[\[8\]](#) In replacing or extending the current warhead, any move to qualitatively improve or modify its capability would be even more controversial than the present proposal to replace the submarines.

- There is potential for closer co-operation with the US on matters of submarine and nuclear reactor design and, perhaps, build. This would not automatically result in significant cost reductions, as US submarine programmes have generally been more costly than their British equivalents and work to different design priorities.

- Significant questions remain regarding the cost of the US components to be built into a new British-built submarine, principally the missile launch tubes which are no longer fabricated in the US.

- Discussion on technology transfer and potential International Traffic in Arms Regulations (ITAR) issues is required smartly if problems such as those which surrounded the Joint Strike Fighter (JSF) are to be avoided. Whilst the supply of US equipment and technology is likely to proceed, the cost may rise to unacceptable levels unless firm agreement is reached early in the programme.

- The MDA was renewed in 2004 and will need to be renewed again in 2014. It is not clear what, if anything, the US receives in return

for sharing its expertise, but some have argued that Britain will be required to support US foreign policy as a result of signing the agreement.

NATO

- Britain's nuclear deterrent remains an important part of the European contribution to NATO, with its sub-strategic policy a central element of NATO's deterrent strategy. However, NATO's doctrine of sub-strategic deterrence remains largely under-developed since the end of the Cold War. The Government will need to clarify the precise role of sub-strategic Trident in the NATO context.

- In the White Paper, the return of use of phrase 'independent centre of nuclear decision-making' raises the question of whether Britain is trying to pull its independent deterrent away from its NATO commitment.[\[9\]](#)

Anglo-French Relations

- While French domestic support for its deterrent is higher than British domestic support for Trident, France's nuclear forces - more extensive than Britain's and entirely French-produced - are very costly to maintain, drawing on around 8-10% of the defence budget. There is growing pressure for this figure to be reduced.

- Current Anglo-French co-operation on nuclear weapons and non-proliferation is focused on the Joint Commission on Nuclear Policy and Doctrine, established in 1992 and made permanent in 1993. The Commission has achieved a substantial measure of discussion and agreement.

- Deeper Anglo-French collaboration would be constrained by a range of factors, including cost, the French emphasis on self-reliance, and a range of international agreements including the NPT, the Missile Technology Control Regime and the Anglo-American MDA.

- The White Paper reiterated the concept of Britain acting as an 'independent centre of nuclear decision-making' in the context of the UK-US-France relations, which effectively discards the option of pursuing a co-ordinated Anglo-French deterrent force.

- Finally, both state's basic rationale for possessing a nuclear deterrent - to ensure the unimpeded exercise of sovereignty in times of crisis - makes closer co-operation in build or operation highly unlikely.

Wider European/Global Relations

- Some analysts have raised the questions of whether Britain's global reputation would have been enhanced had Britain abandoned its deterrent, and whether the decision to renew the deterrent has damaged Britain's image.

What Next

- Arguably, all the Government has done is maintain the status quo.

- The decisions taken in the White Paper - to remain a nuclear power, to build a new class of submarine and to invest in the LE programme - arguably are reversible, although at some cost.

- In the short term, while 2007 should see a commitment to the concept phase of the submarine programme and Britain signing up to the LE programme, the Summer's Comprehensive Spending Review (CSR) may have significant implications for the affordability of the deterrent renewal programme.

- The critical decision time actually comes in the middle of the next decade, when: the Government will need to re-negotiate the MDA; the decision will need to be taken on whether to build three or four submarines; the main investment in those submarines will be made; the Government will need to start considering whether to buy into any successor missile programme to the LE; the Government will need to make a decision on whether to refurbish or replace the current warhead.

- Until this time, there remains a window of opportunity to discuss Britain's role in the world, the need for strategic deterrence, and whether global multi-lateral disarmament can be more than an aspiration.

Michael Codner (*Director Military Sciences*)

Dr Lee Willett (*Head, Maritime Studies Programme, Military Sciences Department*)

Gavin Ireland (*Researcher, Military Sciences Department*)

22 January 2007

[1] Ministry of Defence (MoD) and Foreign & Commonwealth Office (FCO). *The Future of the United Kingdom's Nuclear Deterrent*. Presented to Parliament by The Secretary of State for Defence and The Secretary of State for Foreign and Commonwealth Affairs, by Command of Her Majesty. Command 6994, December 2006. Norwich: The Stationery Office (TSO).

Previously, the 1998 Strategic Defence Review (SDR) had revealed what was regarded then as an unprecedented level of discussion of Britain's nuclear posture. The current White Paper numbers over 50 pages: SDR's analysis numbered only several (see: MoD. *The Strategic Defence Review*. Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty. Command 3999. London: Her Majesty's Stationery Office, July 1998).

[2] See: MoD & FCO. *The Future of the United Kingdom's Nuclear Deterrent*. 'Fact Sheet 4: The Current System.'

[3] MoD & FCO. *The Future of the United Kingdom's Nuclear Deterrent*. p.26, para.5-8. For a detailed discussion in the White Paper of SSBN operations, see p.27, box 5-2.

[4] Under CASD, four submarines rotate through the patrol cycle to enable Britain to keep one boat permanently on patrol with sufficient redundancy should unexpected problems occur with one of the submarines. The White Paper argues that CASD could be maintained with only two submarines rotating through the patrol cycle (either with a third boat in re-fit, or with two more having retired from service), but that this posture could only be maintained for 'limited periods' (see: MoD & FCO. *The Future of the United Kingdom's Nuclear Deterrent*. p.26, para.5-7).

[5] MoD & FCO, *The Future of the United Kingdom's Nuclear Deterrent*. p.27 (para.5-14).

[6] MoD & FCO. *The Future of the United Kingdom's Nuclear Deterrent*. pp.7 & 26 (para.5-10).

[7] Hoon, G. (then Secretary of State for Defence). *Hansard*, 30 June 2004, column 356W.

[8] MoD & FCO, *The Future of the United Kingdom's Nuclear Deterrent*. p.30-31, para.7.4.

[9] MoD & FCO. *The Future of the United Kingdom's Nuclear Deterrent*. pp.18 (para.3-4) & 20 (box 3-1)