

By Jonathan Wilson

Preparing for the unthinkable to happen means that for the foreseeable future the UK is going to require some form of a nuclear deterrence to protect its national security interests. It would be unwise to assume that the current status quo of security threats emerging from non-state actors will remain throughout the 21st century. A political decision regarding the future of our nuclear deterrence will be required over the next five years should we wish to maintain a nuclear capability. During the election campaign the Conservatives and Liberal Democrats had opposing views concerning the future of Britain's nuclear deterrence. The Conservatives backed Labours plans for a 'like-for-like' replacement and the Liberal Democrats opposed such replacement but acknowledged that Britain required some form of nuclear deterrence. Some estimates claim the renewal will cost £100Billion over a fifty year period and it has been argued that cheaper alternatives could provide a nuclear deterrence, such as the development of nuclear equipped Typhoon fighters at 1/10th of the cost. In the aftermath of the election the agreement made between the Liberal Democrats and the Conservatives placed the future of Trident in jeopardy, promising to include in the Strategic Defence and Security Review (SDSR) to 'ensure value for money.' Departmental infighting over who pays for the project between the MoD and Treasury has made it more likely that the project will be postponed or scrapped altogether. If the United Kingdom is to maintain its nuclear deterrence during the 'Age of Austerity' then it is essential that it should provide the British taxpayer with real value for money while delivering a guaranteed, affordable and most of all relevant nuclear deterrence.

Despite the change in threats to national security, nuclear deterrence has changed little since the Cold War. In order for deterrence to be successfully achieved it is essential to ensure that the state has a guaranteed nuclear capability that is protected from an aggressor's pre-emptive strike. The UK has since the 1960s maintained a so called second strike capability through four ballistic missile submarines which are deployed under the Continuous At-Sea Deterrence (CASD) policy. Under this policy at any one time at least one nuclear armed submarine is on patrol at any time, ensuring that a nuclear response is constantly available. Due to commitments under various international treaties and the Nuclear Non-Proliferation Treaty (NPT) all of the Nuclear Weapons States (NWS) - as defined by the NPT - have reduced the number of nuclear weapons since the end of the Cold War. The UK significantly reduced its own nuclear stockpile after the 1998 Strategic Defence Review, with the dismantling of the air-launched free-fall warheads and through a reduction of warheads carried on the Vanguard-class submarines to around 160. Despite the reductions made by the NWS, the number of states developing or possessing nuclear weapons has increased. In the twenty-first century there are fewer nuclear weapons with more fingers on the button. Working towards a nuclear-free world and reducing the numbers of nuclear weapons deployed should be at the heart of Britain's future deterrence, but not at the cost of national security.

The UK's four Vanguard-class submarines each carry 16 Trident missiles with each missile having the capability to delivering a maximum of 8 nuclear warheads. Each submarine therefore

has the ability to carry a maximum of 128 nuclear warheads. The number carried is actually around 60 which gives the government with a wide range of options for a wide range of situations. The yield of each warhead varies with some being as small as 10-15 kilotons for sub-strategic use and others being as large as 80-100 kilotons. The larger yields allow the UK to maintain the 'Moscow Criterion', which refers to the ability of the UK to strike at the heart of a highly centralised Soviet style decision making apparatus. It is the policy of maintaining the 'Moscow Criterion' and the continuation of the CASD that has attracted criticism for Trident being a Cold War weapons system. In reality Trident provides the UK with a constant and assured nuclear deterrence against a range of modern threats.

There are few alternatives to Trident and many lack the ability to provide the UK with an assured and credible deterrence. There is a suggestion that using existing aircraft to deliver nuclear weapons could cost only a tenth of the current proposals. Aircraft are however at risk of being destroyed before they reach their intended target and have a more limited range compared to the Trident missiles. The development of ground based alternatives such as Inter-Continental Ballistic Missiles suffer the risk of being destroyed in a first strike and would be opposed by the majority of the British public due to the proximity that such a system would be to a population centre. A submarine based deterrent gives Britain the ability to effectively hide its weapons from a potential adversary, making a first strike designed to knockout a nuclear deterrence almost impossible, ensuring its second strike capability. A submarine based deterrence suffers from the astronomical cost of developing advanced sonar and underwater stealth capabilities that are required to protect the vessels from attack.

Before the 2010 election Liberal Democrat MPs Menzies Campbell and Nick Harvey published a review of the Trident replacement and proposed alternatives to the plans. Including some of the alternatives mentioned above the review included: extending the life of the current Vanguard-class fleet to beyond the 30 years currently planned; reducing the number of submarines, ending the policy of CASD; and developing a modified Astute-class submarine to carry either a small number of Trident missiles or nuclear tipped cruise missiles. Under the current Trident proposals the Vanguard fleet is already due to have their operational life extended by an extra five years at the cost of £250million. It is possible that extending the life of the current force beyond this five year extension could place the ships and the crew in danger due to the age of the ships hulls and nuclear reactor onboard. American nuclear weapons policy specialist Richard Garwin and others claim that the MoD's arguments against life extension beyond five years are due to the wish to preserve the UK's defence-industrial base rather than fears over safety and cost, and that extending the life of the Vanguard-class to 45 years as the US government is planning with their similar Ohio-class submarines is a possibility.

The MoD's concern for safety and the defence-industrial base may however be justified as the UK and US have different safety standards regarding nuclear material and the added expense that would likely be incurred after a large gap between the last Astute being constructed and the Vanguard replacement being ordered. Ending CASD as proposed in the review paper would reduce the running costs of the program and reducing the nuclear weapons possessed by the

UK. This would be achieved by reducing the number of boats from four to two or even one. There would however be little reduction in the build cost of the project due to the costly research and development of the boats systems as well as the specialist equipment and parts that come at an excessive cost to the supplier. Building several boats decreases the individual build costs and provides redundancies against damage or losses.

Nuclear tipped cruise missiles bring the advantage of dramatically reducing the cost for the development and operation of the nuclear deterrence but their use undermines its credibility. Cruise missiles travel at relatively low speeds and have a much shorter range than their ballistic missile counterparts, making them susceptible to being shot down before they reach their intended target. Ballistic missiles on the other hand are notoriously difficult to intercept. More dangerously however, Britain's possession of nuclear tipped cruise missiles could escalate a potential conflict that Britain's forces are involved in. The flight path of cruise missiles is the same, nuclear tipped or not, meaning that an adversary would not be able to differentiate between the launch of a conventional warhead or an attempted nuclear first strike, potentially inviting an immediate nuclear response. Ballistic missiles - such as Trident - have a very different flight path to cruise missiles and they only carry nuclear weapons, meaning that if another state detects their launch they know what it contains. The development and use of nuclear-tipped cruise missiles should be avoided.

The current proposals for renewing Trident do provide the UK with one of the few methods of an assured and credible deterrent, but the cost of the project does raise questions concerning its value for money. In order to better justify the added expense of replacing Trident, the next generation of ballistic missile submarines should be able to carry out conventional tasks as well as providing a nuclear deterrence. In a recent RUSI paper Malcolm Chalmers suggests the use of such 'dual-use' boats. His suggestion calls for the design and construction for a new generation of submarines that will perform conventional roles similar to that of the current Astute-class but carry a smaller number of Trident missiles to maintain a nuclear deterrence. However a new generation of submarines is not necessarily required. During the last decade the US has successfully converted four of their Ohio-class ballistic missile submarines for conventional tasks by carrying cruise missiles and the ability to deploy Special Forces. It should be possible to add this capability to the current Vanguard-class boats once they start beginning refitted for the life extension program. Replacing all but four of the Trident missiles would allow for ten of the tubes to be used for cruise missiles and the remaining two to be converted into lock-out chambers for use by Special Forces.

In a conventional conflict the Vanguard-class would have a new capability they never had before with the ability to launch seventy cruise missiles during the conflict. Extending their life beyond the currently planned thirty years would mean that the building of seven Astute-class boats could be scaled back and allow both classes of boats to be replaced at the same time by a new class, designed around a multirole capability. The next generation of submarines could even keep the number of converted ballistic missile tubes, maintaining the potential for the submarines to be rearmed in the event that the international situation deteriorates. Having a larger fleet of around seven submarines that have the ability to carry nuclear weapons also allows for possibility that not all the submarines would carry nuclear missiles all the time. Potential adversaries would then find it difficult to decide which submarines carry the nuclear

weapons and add an aspect of deniability to whether nuclear weapons are deployed on a boat conducting conventional operations. Only having three of the seven boats armed with Trident missiles would allow CASD to continue.

In conclusion, during such tough government spending cuts and the apparent insistence of the Treasury for the MoD to pay for Tridents renewal it is necessary for the deterrence to provide real value for money. Other options such as nuclear tipped cruise missiles - that would be cheaper than the current proposals - lack the ability to provide the UK with a credible deterrence that may be needed should the current national security threats change. The best way to provide value for money would be to change the role that the Vanguard-class currently plays in the armed forces. Giving the submarines the conventional capability described would provide real benefits to defence planning and capabilities as well as allowing a capability to prepare for a potentially uncertain and unthinkable nuclear future.

#### About the author

Jonathan Wilson born in Manchester on 13th May 1988 studied his undergraduate degree Aberystwyth University where he is currently undertaking a Masters degree in Intelligence and Strategic Studies focusing on the future of the British Armed services. Interests include technology, defence matters and international relations.