



House of Commons  
Defence Committee

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# The Future of the UK's Strategic Nuclear Deterrent: the Strategic Context

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**Eighth Report of Session 2005–06**

*Report, together with formal minutes, oral and  
written evidence*

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## The Defence Committee

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## Summary

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Decisions on the future of the UK's strategic nuclear deterrent are likely to be required during the course of the current Parliament. The Government has promised a free and open debate on the issue before any decisions are taken. To date, it has offered no explanation of the nature of the decisions that are required. Nor has it sought to clarify the timetable within which those decisions would need to be taken and implemented. This report seeks to encourage and inform the public debate by examining the strategic context and timetable for decision-making.

Decisions on the future of the nuclear deterrent will be taken, for the first time, outside the international political and military context of the Cold War. The ending of that conflict transformed our security environment and changed our security needs.

The UK will need to examine whether nuclear deterrence remains relevant in the current strategic environment. We must take into account the nature of the threats currently facing our country and examine how those threats could evolve over the lifetime of any potential Trident successor. And we must consider whether, and in what ways, retention of a strategic nuclear deterrent capability might assist the UK in addressing those threats.

Before any decisions on the future of that deterrent are made, it will be important to address the extent to which the possession of nuclear weapons enhances the UK's international influence and status and whether such a reason adds significantly to the justification for retention of a strategic nuclear capability.

It will also be essential to decide what level of dependence upon the United States the UK is willing to accept in any possible Trident successor. We must consider the potential policy implications of any technical dependencies upon the US and the differing concepts of independence adopted by the UK and France.

We welcome the Government's promise of a full and open debate in Parliament, and in the country at large, on the future of the UK's strategic nuclear deterrent. But the Ministry of Defence has refused to participate in our inquiry. We are surprised and disappointed by this refusal.

A genuine and meaningful debate is only possible with the active participation of the Ministry of Defence (MoD). The public should know what decisions will be required, when they must be taken and implemented, and what factors are driving consideration of the issue now. We call upon the MoD to engage fully in our forthcoming inquiries into the future of the UK's strategic nuclear deterrent. We hope the MoD will make a substantive response to this report and that it will address openly the issues we have raised.



# 1 Introduction

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## Our inquiry

1. The United Kingdom's strategic nuclear deterrent is based on the Trident weapons system. Trident was introduced into service in the UK over a six year period beginning in December 1994 and has a projected life span of up to 30 years. Given the lengthy procurement process for large-scale defence equipment projects, the Government has stated that decisions on the future of the UK's strategic nuclear deterrent are likely to be required at some stage during the current Parliament, that is by May 2010 at the latest.<sup>1</sup>

2. After the Committee's first meeting, on 21 July 2005, we announced that we had noted the extensive public interest in the future of the UK's strategic nuclear deterrent and that we would consider how best to respond to this interest. On 20 January 2006, we announced that we would conduct a series of inquiries into the future of the UK's strategic nuclear deterrent over the course of this Parliament. Our intention is to encourage and inform the public debate on the future of the deterrent and to highlight the key issues and questions to be addressed in that debate. Through our series of inquiries, we do not seek to offer prescriptive policy recommendations. Instead, we hope to foster constructive public engagement with an issue of profound national and international significance.

3. Our first inquiry has focused on the strategic context and timetable for decision-making. We have considered the nature of the UK's current strategic nuclear deterrent and how it compares with those of the other established nuclear powers. We have looked at the threats which the UK's strategic nuclear deterrent is currently intended to combat and how this context might change over the next two decades. We have examined what other states and organisations could develop nuclear weapons capabilities in the 2025 to 2050 timeframe, and how this might affect the strategic context in which decisions on the UK deterrent will be made. And we have sought to clarify the timetable within which these decisions will have to be taken and implemented.

4. We took oral evidence at Westminster from representatives of defence think tanks, universities, campaign and lobbying groups, technical experts and representatives of the defence industry. We received a very large body of written submissions from a wide range of interested parties and experts, including universities, Non-Governmental Organisations (NGOs), defence contractors, trade unions, and religious groups, as well as from individual members of the public.<sup>2</sup> We had informal discussions on the future of the strategic nuclear deterrent with members of the US Administration and US Congress during a visit to Washington DC in May 2006. We are grateful to all those who provided oral and written evidence to our inquiry. We also appreciate the assistance provided by our specialist advisers: Mr Paul Beaver, Professor Michael Clarke, Rear Admiral Richard Cobbold, Professor David Kirkpatrick, Air Vice Marshal Professor Tony Mason and Brigadier Austin Thorp.

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1 Ministry of Defence, *Delivering Security in a Changing World: Defence White Paper*, December 2003, Cm 6041-I, p 9

2 A list of those who provided oral and written evidence is on pp 42–45

## The engagement of the Ministry of Defence

5. The Prime Minister and the Secretary of State for Defence have both stated that no decisions on the future of the UK's strategic nuclear deterrent have yet been taken and have each promised an open debate in Parliament, and in the country, on any potential Trident successor. In June 2005, the Prime Minister told the House of Commons that the Government "will listen to Honourable Members before making any decisions on replacing Trident".<sup>3</sup> In September 2005, the then Secretary of State for Defence, Rt Hon Dr John Reid MP, stated that "it is not only a good thing that there will be such a discussion, it is...inevitable" and pledged, "we are not going to have a secret Chevaline-like decision taken by some of the cabinet which then proceeds without any public discussion or debate".<sup>4</sup>

6. In evidence to us on 1 November 2005, Dr Reid said that:

It is not absolutely essential that you have a cross party consensus but in my view that would be desirable. It is also be desirable with any such important issues that there is the maximum information and consensus across the public as well as across Parliament.<sup>5</sup>

7. In evidence to the Liaison Committee on 7 February 2006, the Prime Minister stated that "there will be the fullest possible Parliamentary debate". He stated that the decision on the future of the UK's strategic nuclear deterrent "is a huge decision for the country and it will probably be done in a far more open way than decisions have been taken before".<sup>6</sup>

8. In July 2005, we asked the Ministry of Defence (MoD) to give us by the end of September a memorandum explaining what work it and other government departments were doing to inform the decision on the future of the UK's strategic nuclear deterrent; when more precisely the decision was expected to be made; what constraints the UK was under in making this decision; what options for replacement were under consideration and what estimates had been made of their costs; and which specific elements of the nuclear deterrent would require replacing and upgrading and by what dates.<sup>7</sup>

9. In September 2005, the MoD responded to this request, stating that:

No decisions on any replacement for the Trident system have been taken, either in principle or detail. Whilst some decisions are likely to be necessary in the current Parliament, they are still some way off. Indeed Ministers have not yet begun to consider the range of options that might be available. Whilst work has started in Government to begin the process of preparing for future Ministerial decisions, this work by officials is still at a very early stage and no advice has been presented to Ministers. It will take a considerable time before this work generates a detailed

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3 HC Deb, 29 June 2005, col 1292

4 *The Guardian*, 13 September 2005

5 Defence Committee, Minutes of Evidence, *Introductory Evidence Session with the Secretary of State for Defence*, HC 556-i, 1 November 2005, Q 5

6 Liaison Committee, *The Prime Minister: Oral and Written Evidence*, Tuesday 7 February 2006, HC 709-ii, March 2006, Ev 47

7 Ev 146

understanding of the relative costs and capabilities of different options. We shall let you have this information in due course, and will seek to be as open as possible.<sup>8</sup>

10. On 24 November 2005, we received a memorandum outlining some of the broad issues relating to the UK's current strategic nuclear deterrent: an assessment of the international legal constraints relating to a replacement of Trident; the expected life of the Trident system; and the investment at the Atomic Weapons Establishment.<sup>9</sup> The MoD told us that it was not in a position to provide information on future deterrent systems: "Ministers have yet to begin to consider future deterrent options and it is likely to be some time before we can provide advice on the range of options that might be involved, including their costs".<sup>10</sup> The MoD also declined to participate in an informal seminar we held on 13 December 2006 on the grounds that:

there is nothing further we could usefully say at this stage beyond the information that the Secretary of State gave to the Committee in evidence on 1 November and that which was contained in the memorandum sent to the Committee on 24 November.<sup>11</sup>

11. When announcing this inquiry in January 2006, we published the MoD's memorandum on the internet in order to inform the public debate. We invited the MoD to give evidence to the inquiry, but it declined.<sup>12</sup> We later provided the MoD with the transcripts of the evidence received and invited it to make any comments on the evidence, or any corrections of fact. It thanked us, but said it had no comments to make.<sup>13</sup>

**12. We welcome the Government's promise of a full and open debate in Parliament, and in the country at large, on the future of the UK's strategic nuclear deterrent. We are surprised and disappointed that the Ministry of Defence has refused to participate in our inquiry. We believe that a genuine and meaningful debate is only possible with the active participation of the MoD. We call upon the MoD to engage fully in our forthcoming inquiries into the future of the UK's strategic nuclear deterrent. We hope the MoD will make a substantive response to this report and that it will address openly the issues we have raised.**

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8 Ev 147

9 Defence Committee, Memorandum submitted by the Ministry of Defence, *The Future of the UK's Strategic Nuclear Deterrent*, Session 2005–06, HC 835

10 Ev 147

11 *Ibid.*

12 By email of 8 February 2006

13 By email of 10 May 2006

## 2 The UK's Strategic Nuclear Deterrent

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### Components of the UK's Strategic Nuclear Deterrent

13. The Trident weapons system is the UK's third generation strategic nuclear deterrent and was developed during the final decade of the Cold War. It was introduced into service over a six year period beginning in December 1994 and is currently the UK's sole nuclear weapons system.

14. The UK's Trident system has three key technical components: the platform; the missile; and the warhead.

#### *The platform*

15. The platform for the UK's current strategic nuclear deterrent is the Vanguard-class nuclear-powered submarine (SSBN). The UK has four of these submarines—HMS VANGUARD, HMS VICTORIOUS, HMS VIGILANT, HMS VENGEANCE. These entered service in December 1994, December 1995, June 1998 and February 2001 respectively.<sup>14</sup>

16. All four submarines were designed and built in the UK by Vickers Shipbuilding and Engineering Ltd. (VSEL), now BAE Systems, in Barrow-in-Furness, Cumbria.<sup>15</sup>

17. Each submarine weighs approximately 16,000 tonnes, is 150 metres in length, is powered by a Rolls Royce PWR2 nuclear reactor, and has 16 independently-controlled missile tubes which house the Trident II D5 missiles.<sup>16</sup>

18. Each of the Vanguard-class submarines has a projected service life of up to 30 years.<sup>17</sup>

#### *The missile*

19. The Trident II D5 submarine-launched ballistic missile (SLBM) carried on the UK's Vanguard-class submarines is a three-stage solid-fuel inertially guided rocket. Each missile is approximately 13 metres in length, nearly 2 metres in diameter, and weighs 60 tonnes. It has a range of between 6,500 kilometres and 12,000 kilometres, dependent on payload, and is accurate to within a few metres.<sup>18</sup>

20. Each missile is capable of carrying 12 warheads, which means that each Vanguard-class submarine is capable of carrying up to 192 warheads. Following the 1998 Strategic Defence Review, the number of warheads per Trident II D5 missile was limited to 3 warheads (and 48 warheads in total per submarine). Each missile has a MIRV (multiple independently-

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14 Stockholm International Peace Research Institute, *SIPRI Yearbook 2000*, (Oxford 2000), p 486

15 Michael Clarke, "Does my Bomb look big in this?", *International Affairs*, vol 80, no 1, (2004), p 50

16 *Ibid.*

17 Ministry of Defence, *The Strategic Defence Review*, Cm 3999, July 1998, p 17

18 Stockholm International Peace Research Institute, *SIPRI Yearbook 2005*, (Oxford 2005) p 589

targetable re-entry vehicle) capability which enables each Trident missile to engage multiple targets simultaneously.<sup>19</sup>

21. The Trident II D5 missile was designed and manufactured in the United States by Lockheed Martin. Under the Polaris Sales Agreement (modified for Trident), the UK has title to 58 missiles. Aside from those currently deployed, the missiles are held in a communal pool at the US Strategic Weapons facility at King's Bay, Georgia, USA. Maintenance and in-service support of the missiles is undertaken at periodic intervals at King's Bay, normally after a submarine has been through refit.<sup>20</sup>

### **The warhead**

22. The nuclear warhead fitted to the tip of the Trident II D5 missile was designed and manufactured in the UK at the Atomic Weapons Establishment at Aldermaston, Berkshire. Although public information is limited, the nuclear warhead on UK's Trident II D5 missile is reported to be closely related to the American W76 warhead, a thermonuclear warhead with a yield of around 100 kilotons.<sup>21</sup>

23. During our visit to the United States in May 2006, we heard that the US and UK collaborated closely on nuclear weapons and that there was a rich flow of nuclear ideas between the US and the UK. We were also told that the fiftieth anniversary of the 1958 Mutual Defence Agreement, which formalised this cooperation, would be a cause for both pride and celebration.

### **Onshore infrastructure and skills base**

24. The UK's Trident system is underpinned by a range of supporting industrial and manufacturing infrastructure.

25. **The submarine basing infrastructure:** The Naval Base at Faslane, Strathclyde, is home to the UK's Trident submarine force. It has a staff of over 7,000 and is also home to conventionally-armed submarines. The nuclear warheads carried onboard the Vanguard-class SSBN submarines are stored and fitted to the UK's Trident II D5 missiles at the Royal Naval Armaments Depot at Coulport, near Faslane.

26. **The onshore submarine construction and maintenance infrastructure:** This comprises the building yard at Barrow-in-Furness, Cumbria, owned by BAE Systems, and the operational and refit and support site at Devonport, Plymouth, owed by DML (a consortium of which fifty-one per cent is owned by the US firm Halliburton). This part of the defence industrial base is characterised by its need for a highly specialised and skilled workforce and large-scale purpose-built physical infrastructure. Together, these requirements are present at all stages of the nuclear-powered submarine's life, from concept design through to operation, maintenance and disposal and carry significant levels

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19 Stockholm International Peace Research Institute, *SIPRI Yearbook 2005*, (Oxford 2005) p 589

20 *Ibid.*

21 Michael Clarke, "Does my Bomb look big in this?", *International Affairs*, vol 80, no. 1, (2004) p 37

of fixed cost that have to be incurred if key capabilities are to be retained. Once lost, these capabilities are likely to be very difficult and potentially expensive to recreate.<sup>22</sup>

**27. The warhead research and manufacturing infrastructure:** The UK's expertise in nuclear weapons design is concentrated at the Atomic Weapons Establishment at Aldermaston, Berkshire. AWE is a 'Government Owned Contractor Operated' (GOCO) facility. It is managed by a consortium, in which a third of the shares are held by the US firm Lockheed Martin. The role of AWE is to build, maintain and certify the existing weapons stockpile, as well as to ensure good stewardship of nuclear weapons knowledge. Prior to the MoD's current investment programme at Aldermaston (announced in July 2005), the AWE's workforce was around one-third of its peak Cold War levels. The MoD has stated that this funding is designed to ensure the UK skills base and manufacturing infrastructure in nuclear weapons is maintained until a decision on the future of the nuclear deterrent is taken.<sup>23</sup>

## The UK's nuclear posture

### *The UK's strategic nuclear arsenal 1952 to 1991*

28. The UK first tested a nuclear device in October 1952. It deployed an operational nuclear weapons capability the following year. Initially, the UK's nuclear deterrent rested on the 10 kiloton Blue Danube free-fall bomb, carried by the V bombers of the Royal Air Force's strategic bomber force. The UK tested a thermonuclear device in 1957, and an operational thermonuclear weapon entered service in 1961.<sup>24</sup>

29. In 1958 the UK and USA concluded the "Mutual Agreement for Co-operation on the Uses of Atomic Energy for Mutual Defence Purposes". The Agreement, which has long been regarded as the cornerstone of the UK's nuclear weapons programme, enables exchanges of technical information and allows the UK to draw on US warhead designs, although final responsibility for building and maintaining the warheads remains with the Atomic Weapons Establishment.

30. During the 1950s, the UK and USA were also involved in a joint project to develop the Skybolt air-launched nuclear missile, which the UK regarded as the central component of its future nuclear force. In 1962, the US Kennedy Administration cancelled the project. Later that year, the UK agreed to procure the Polaris submarine-launched missile system which entered service in the late 1960s.

31. The Polaris system comprised four Resolution-class SSBN submarines, each armed with 16 Polaris missiles. Like the current Vanguard-boats, the submarines were designed and built in the UK, albeit with initial assistance from the US in designing the nuclear propulsion system. The missiles themselves, like the current Trident II D5 missiles, were purchased from the United States. The warheads were designed and built in the UK with US collaboration. The UK subsequently developed a new version of Polaris, known as Polaris Chevaline, which could better penetrate Soviet defences.

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22 Ev 143

23 HC (2005–06) 835, Annex C

24 Library Standard Note, SN/1A/3706, House of Commons Library, April 2006, p 4

32. By the final decade of the Cold War, the UK's strategic nuclear deterrent had three main elements: strategic, sub-strategic and tactical. Polaris Chevaline served in the strategic role for use against multiple targets in the adversary's homeland. The sub-strategic role for a more limited strike against individual targets on enemy territory was fulfilled by the WE 177 free-fall bomb carried by the RAF's Vulcan and Tornado aircraft. Lower yield WE 177 devices served in the tactical role for use against enemy troops and equipment on the battlefield. American tactical nuclear warheads were deployed on heavy artillery and short-range Lance missiles under a US-UK dual-key arrangement.<sup>25</sup>

### **Reductions in the UK's strategic nuclear arsenal 1991 to 1998**

33. Following the end of the Cold War and the collapse of the Soviet Union in 1991, the UK Government withdrew from service a range of nuclear weapons, including the US tactical nuclear warheads mounted on heavy artillery and the Lance system and the Royal Air Force's sub-strategic air-launched nuclear weapons (the WE 177 free-fall nuclear bombs).

34. Completed in 1998, these reductions left Trident, which replaced Polaris Chevaline in 1994, as the UK's sole nuclear weapons system. The total warhead stockpile was reduced by 20 per cent and the number of operationally available warheads fell from around 400 during the 1980s to under 300 with the result that the explosive power of the UK's nuclear deterrent fell by an estimated 40 per cent of the megatonnage available during the 1970s.<sup>26</sup>

### **The 1998 Strategic Defence Review**

35. The 1998 Strategic Defence Review (SDR) promised "a rigorous re-examination of [the UK's] deterrence requirements". It sought to define a deterrence posture based upon:

the minimum necessary to deter any threat to our vital interests... we can safely make further significant reductions from Cold War levels, both in the number of weapons and in our day-to-day operating posture.<sup>27</sup>

36. As a result of the SDR, the number of operationally available warheads was reduced by one third, from around 300 to under 200, whilst the number of warheads carried on each Trident submarine was reduced by half, from 96 to 48. As a result of these reductions, the Government estimated that the explosive power of the UK's nuclear deterrent would be 70% less than that of the operationally available warheads held during the 1970s.<sup>28</sup>

37. The SDR also defined the 'operating posture' of the UK's strategic nuclear deterrent, clarifying both the technical specification and policy baseline for that deterrent.

38. **A Minimum Nuclear Deterrent Force:** The SDR prescribed further limitations on the maximum number of warheads to be deployed on each of the UK's Vanguard-class submarines. Although each Trident II D5 missile is capable of carrying up to 12 warheads,

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25 Library Standard Note, SN/1A/3706, House of Commons Library, April 2006, p 4

26 Ministry of Defence, *The Strategic Defence Review*, Cm 3999, July 1998, p 18

27 *Ibid.*

28 *Ibid.*

the SDR stipulated that no more than 3 warheads would be fitted to each missile.<sup>29</sup> Some missiles are believed to carry a single warhead and the warheads themselves are believed to be of variable yields. The precise number of warheads carried on patrol at any given time remains classified information.<sup>30</sup>

**39. The Continuous-at-Sea Deterrent Cycle (CASD):** The SDR stated that the UK would maintain continuous at-sea deterrent patrols. This meant that one of the four Vanguard-class Trident submarines would continue to be on patrol at any given time. The SDR stated that the purpose of CASD was “to avoid misunderstanding or escalation if a Trident submarine were to sail during a period of crisis”.<sup>31</sup> By keeping one submarine on patrol at all times, the UK avoids the risk of sending incorrect or misleading signals to a potential adversary at times of heightened alert.

**40. ‘De-targeting’ and ‘State of Readiness’:** The SDR stated that the Trident missiles aboard the Vanguard-class submarines would not be targeted and would normally be at several days ‘notice to fire’. However, the SDR also noted that “we will... ensure that we can restore a higher state of alert should this become necessary at any time”.<sup>32</sup> In the course of our inquiry, we were told that targeting the missiles does not take very long. Although some sub-systems aboard the submarines, such as the navigation sub-system, might take time to reach their accuracy levels, Commodore Tim Hare, a former Director of Nuclear Policy at the MoD, told us that “political rather than technical issues” explained the extended notice-to-fire of the UK’s Trident system.<sup>33</sup> Dr Rebecca Johnson, of the Acronym Institute for Disarmament Diplomacy, argued that both de-targeting and the reduced state of readiness were essentially meaningless since they could be easily overridden.<sup>34</sup>

**41. A sub-strategic role:** The SDR also defined a sub-strategic role for the Trident nuclear deterrent alongside its principal strategic function. It stated:

The credibility of deterrence also depends upon retaining an option for a limited strike that would not automatically lead to a full scale nuclear exchange. Unlike Polaris and Chevaline, Trident must also be capable of performing this ‘sub-strategic’ role.<sup>35</sup>

In comparison with a strategic strike, which would involve a full-scale attack against an adversary in which all or a significant part of the available Trident force would be launched, a sub-strategic strike would involve the launch of one or a limited number of missiles against an adversary as a means of conveying a political message, warning or demonstration of resolve. Commodore Hare told us that this sub-strategic role “offers the Government of the day an extra option in the escalatory process before it goes for an all-out strategic strike which would deliver unacceptable damage to a potential adversary”.<sup>36</sup>

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29 Ministry of Defence, *The Strategic Defence Review*, Cm 3999, July 1998, p 19

30 *Ibid.*

31 *Ibid.*

32 *Ibid.*

33 Q 148

34 Q 6

35 Cm 3999, July 1998, p 18

36 Q 149

Although the Government has revealed little information about the precise number and yield of UK warheads, it is widely believed that Trident missiles intended for this sub-strategic role carry only a single warhead, potentially with a significantly reduced yield.

42. It is important not to confuse this sub-strategic role with a tactical role. Trident is not designed or intended to fulfil a tactical role on the battlefield.<sup>37</sup>

43. During our visit to the United States, we heard that the US was considering modifying its Trident system to allow its submarines to carry conventional weapons. In early 2006, the Pentagon proposed a \$503 million Conventional Trident Modernisation Programme in order to diversify its strategic options. This programme, currently under consideration in the Congress, has generated much controversy because of concern that the launch of a conventionally-armed Trident missile could be mistaken for a nuclear attack. We know of no plans for the UK to follow the US lead in developing a conventional role for its Trident force.

44. The UK's nuclear forces are formally committed to NATO's nuclear posture.<sup>38</sup> During the Cold War they were part of the United States's Single Integrated Operational Plan which included all NATO nuclear forces, other than those of France, and provided continuous, integrated targeting for all such forces. Since UK nuclear forces were formally de-targeted, this no longer applies in the same way, but the presumption remains that UK forces would cover NATO designated targets. The right and the capacity to fire the UK's missiles independently at targets designated by the UK Government is a derogation from the default setting that the UK's nuclear forces remain at the service of NATO.

### The UK's Strategic Nuclear Deterrent in a comparative international context

45. **The UK's strategic nuclear arsenal is small in comparison with the other established nuclear powers.** Its total stockpile of approximately 185 nuclear warheads represents 1.4% of the total number (13,470) in the world and only just 1.5% of the world total of strategic nuclear warheads (12,193). The United States, Russia, China, France and Israel each possess more warheads than the UK. Only India, Pakistan and North Korea have significantly fewer.<sup>39</sup>

46. The USA is believed to have approximately 4,216 strategic and 680 non-strategic nuclear warheads in its active inventory, with a further 5,454 additional warheads held in reserve or in inactive stockpiles, some of which will be dismantled in the coming years. By 2012, it is estimated that the total US stockpile will number approximately 5,945 warheads. Russia is estimated to have around 16,000 intact warheads, down from around 35,000 at the end of the Soviet era in 1991. Of these 16,000, 7,360 are operational, with 3,980 being strategic warheads and 3,380 non-strategic. The remainder of the stockpile may be officially retired and awaiting disassembly, or in short- or long-term storage. Dismantlement of Russian warheads is believed to be proceeding at the rate of 1,000 to

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37 *Ibid.*

38 Ev 133

39 International Institute of Strategic Studies, *The Military Balance 2003–2004* (Oxford 2003) p 228

2,000 a year. China is estimated to hold around 400 nuclear warheads, of which 282 are thought to be strategic warheads and 120 non-strategic. France is estimated to have 348 warheads, all of which are believed to be strategic warheads.<sup>40</sup>

47. The UK has abandoned the concept of the nuclear triad, where weapons are deployed by air, land and sea. In contrast, the United States, Russia and China all have powerful systems in all three areas. So too does Israel. India and Pakistan have two legs of a potential triad; air-based and land-based systems. India is expected to have a full triad by around 2007–08.<sup>41</sup>

## The purpose of the UK's Strategic Nuclear Deterrent

### *Original purpose*

48. The UK's current strategic nuclear deterrent was developed in the international political and strategic context of the Cold War. Its central purpose, at the time of its procurement in the early 1980s, was to discourage aggression against the UK, its allies and its interests from the Soviet Union and the Warsaw Pact which “had both the perceived capability and assumed intention to expand into Western Europe and elsewhere”.<sup>42</sup> To contemporary decision-makers in the UK, the Cold War offered a compelling justification for the possession of a strategic nuclear deterrent to counter both the actual and developing Soviet military and political threat.

49. To discourage Soviet aggression, the UK's strategic nuclear deterrent had to be able to fulfil what was known as the ‘Moscow criteria’—“the ability to threaten to inflict sufficient damage on Moscow and a number of other Soviet cities at any time of the day, 365 days of the year” and to be able to inflict such damage even after a surprise Soviet nuclear attack against the UK. It was assumed that the UK's nuclear deterrent could also help to compensate for the Warsaw Pact's large superiority in conventional forces.<sup>43</sup>

50. Commentators have also suggested an additional rationale for the UK's strategic nuclear deterrent during the Cold War; that it was a means of influencing the foreign policy and military decision-making of its principal ally, the United States. We were told that “though retaining the ability to act, in extremis, alone, Britain's policy was to influence the ultimate guarantor of the country's political independence and physical survival”.<sup>44</sup>

### *Current purpose*

51. The end of the Cold War and the collapse of the Soviet Union has radically altered the international political and strategic environment within which the UK's nuclear deterrent operates and has changed the nature of, and requirements for, strategic deterrence.

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40 Stockholm International Peace Research Institute, *SIPRI Yearbook 2005*, (Oxford 2005) p 579

41 Michael Clarke, “Does my Bomb look big in this?”, *International Affairs*, vol 80, no. 1, p 52

42 Ev 74

43 Ev 90

44 Ev 101

52. This raises the issue of what deterrence means, in practice, in the post-Cold War era. The Oxford English Dictionary defines the term deterrence as “discouragement by fear”. This is arguably what the UK’s strategic nuclear deterrent does: Trident is intended to discourage aggression by the fear of retaliation.

53. But Trident is not the UK’s only means of deterrence. Deterrence is “an extremely broad concept” and refers to “a whole range of instruments for the prevention of war, or the discouragement of aggression, some of which may not even be military”.<sup>45</sup> Deterrence can be exercised by a spectrum of options ranging from economic sanctions and robust diplomatic pressure to conventional military options and the threat of strategic nuclear retaliation.

54. Strategic nuclear deterrence is not intended as a means of countering all threats to the security of the UK. Rather, it is “on the right hand of the deterrence equation to be used in extremis when the survival of the nation state is at stake”.<sup>46</sup>

**55. In considering the future of the strategic nuclear deterrent, the UK will need to examine whether the concept of nuclear deterrence remains useful in the current strategic environment and in the context of the existing and emerging threats to the security of the country. We will have to consider whether those states and non-state actors posing such threats can, in reality, be deterred from instigating acts of aggression by either existing or new approaches to nuclear deterrence. We will also have to consider how the UK’s nuclear capability should be adjusted to meet new strategic realities. Trident was developed during the final decade of the Cold War, and was designed to counter the threat posed by the size and technical capabilities of the Soviet strategic nuclear arsenal: we need to consider whether the form of the UK’s current nuclear deterrent is best suited to today’s and tomorrow’s strategic challenges.**

**56. We believe that it is essential that, before making any decisions on the future of the strategic nuclear deterrent, the MoD should explain its understanding of the purpose and continuing relevance of nuclear deterrence now and over the lifetime of any potential Trident successor system.**

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45 Q 13

46 Q 149

## 3 The Strategic Nuclear Deterrent and the UK's international influence

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57. **Before any decisions on the future of the deterrent are made, it will be important to consider whether the possession of nuclear weapons enhances the UK's international influence and status and whether this contributes to the justification for retention of a strategic nuclear capability.**

58. It has often been suggested that possession of a strategic nuclear deterrent is fundamental to the UK's international status, and that such a capability provides the UK with greater authority in international political organisations and structures, and enhanced status within Europe and in the world. It is said that it helped to maintain a political balance in Europe, that it acted as a safeguard against US disengagement from Europe, and that it provided a balance against global insecurity.<sup>47</sup>

59. Dr Lee Willett, of the Royal United Services Institute, argued that eliminating the strategic nuclear deterrent would leave France as the only nuclear power in Europe and that, consequently, the UK could lose world status and influence, especially with the United States. We were also told that abandonment of the strategic nuclear deterrent would indicate that the UK intended to take on a different role in international affairs and occupy a different place in the world order.<sup>48</sup>

60. In the course of our inquiry, several witnesses questioned the assumption that possession of a strategic nuclear deterrent enhances the UK's international influence. Sir Michael Quinlan, a former Permanent Under Secretary at the MoD, told us that he did not find the so-called 'seat at the top table' argument either persuasive or attractive. Although "our possession of nuclear weapons in a very general way gives us slightly greater confidence in the way we act around the world", he believed that the UK's permanent seat on the United Nations Security Council was not dependent upon, nor functionally linked to, the possession of a strategic nuclear deterrent capability. Sir Michael further suggested that:

it is rather a pity that we have the confluence between permanent membership of the Security Council and nuclear weapons status, because that does not seem to me logical, necessary or indeed politically desirable.<sup>49</sup>

61. Other witnesses agreed with this contention. Dr Dominick Jenkins of Greenpeace told us that the UK would not lose its seat on the UN Security Council if it chose to give up its strategic nuclear deterrent.<sup>50</sup> Similarly, Malcolm Savidge of the Oxford Research Group, testified that the UK's membership of the Security Council "is based on our position in World War II" and that it was entirely "coincidental" that the Permanent Five became the established nuclear powers. We heard that, in discussions on the reform of the UN, there

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47 Ev 67

48 Q 40 [Dr Willett], Ev 67

49 Q 40 [Sir Michael Quinlan]

50 Q 200

was no suggestion that India (a state which possesses nuclear weapons) would be favoured for permanent membership of the Security Council before Japan and Germany (neither of which possess nuclear weapons).<sup>51</sup> Malcolm Savidge also argued that the UK gained no additional status or influence within the G8 or the EU because of its possession of nuclear weapons.<sup>52</sup>

62. Others suggested that any attempt to link permanent membership of the UN Security Council to possession of nuclear weapons was potentially very dangerous. David Broucher, a former UK Permanent Representative at the UN Conference on Disarmament, told us that there was a widespread belief in the developing world that the UK possessed nuclear weapons in order to guarantee its seat on the Security Council. This erroneous perception, he said, risked fuelling further nuclear proliferation as developing nations sought to enhance their own international influence. For this reason, Mr Broucher claimed that the so-called 'seat at the top table' argument in favour of nuclear weapons was 'pernicious', reasoning that:

is it not better for us to establish that the reason we have a seat at the top table is because we are a powerful industrial nation with a great trading history and a great diplomatic history and we are a member of more international organisations than anyone else...I do not think you need to be waving the big stick in order to justify your seat at the top table.<sup>53</sup>

63. Professor Colin Gray, of the University of Reading, disagreed with this contention and suggested that "it is an historical fact that members of the Security Council have been nuclear armed". He argued that "the notion that we can change that unilaterally... flies in the face of historical experience", and "to try and rewrite that would be very difficult and not very persuasive". Ultimately, in his view:

the diplomatic cost to Britain of abandoning her nuclear weapons would be very considerable and the case for Britain maintaining her position [in the world] would become very much more difficult if she does abandon her nuclear weapons.<sup>54</sup>

64. Other witnesses took the opposing view, that far from enhancing its international influence, possession of nuclear weapons undermined the UK's prestige. Abandonment of the nuclear deterrent, they argued, would allow the UK to assume a leading role in international arms control agreements and thereby bolster the UK's long-term interests and status. Dan Plesch, of the School of Oriental and African Studies, argued that "this country would be looked on much more favourably if it did not have nuclear weapons" and "would be regarded as being much more modern".<sup>55</sup> Dr Kate Hudson, Director of the Campaign for Nuclear Disarmament, told us that:

there is an overwhelming demand from the vast majority of countries in the world for the nuclear weapons states to pursue their disarmament obligations, and the

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51 Q 202

52 *Ibid.*

53 Q 103

54 Q 104

55 Q 40 [Mr Plesch]

status and prestige which would associate with taking a step in that direction would be quite extraordinarily large.<sup>56</sup>

**65. It is clear that there is a difference of views and no clear consensus that international influence is, of itself, a reason to retain the strategic nuclear deterrent. We recommend that the MoD make clear whether the Government believes the possession of a nuclear deterrent is an important contributor to the UK's international influence.**

## 4 The independence of the UK's Strategic Nuclear Deterrent

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66. **The public debate over the future of the UK's strategic nuclear deterrent should address:**

- **the independence of the UK's current system; and**
- **the operational and diplomatic impact of any potential dependency on the United States of any future UK nuclear deterrent.**

67. We heard a range of conflicting opinions about the degree to which the UK's current strategic nuclear deterrent represented an independent system.

### Potential dependencies on the United States

68. Some witnesses to our inquiry questioned whether the UK's nuclear deterrent was genuinely independent. Witnesses pointed to a range of technical and operational dependencies of the UK's Trident system upon the United States and suggested that such dependencies fundamentally detracted from the UK's independence at a international political and diplomatic level.

69. **The warhead:** Greenpeace told us that the UK warhead fitted to the Trident II D5 missile is a direct copy of the US W76 warhead; that the arming, fusing and firing system used by the UK was designed by the US Sandia Laboratory and was "almost certainly procured from the USA"; that the neutron generator used on UK warheads was manufactured in the USA and was acquired "off the shelf"; and that the re-entry body shell, which contains the warhead, was purchased by the UK from the United States.<sup>57</sup>

70. **The missile:** Dan Plesch, of the School of Oriental and African Studies, told us that the Trident II D5 missile was designed and manufactured entirely in the United States; that the UK did not own its Trident missiles in any meaningful sense, that they were, in effect, leased from the United States and held in a communal pool at the US Strategic Weapons facility and were not identifiably British; that servicing of the missiles was conducted exclusively by the United States at King's Bay, Georgia; and that the Mark 6 guidance system used on the UK's Trident missiles was designed and made in the United States by Charles Stark Draper Laboratories.<sup>58</sup>

71. **The platform:** Dominick Jenkins, of Greenpeace, told us that although the UK's Vanguard-class SSBN submarines were designed and built in the UK, many aspects of the design "are copied from US submarines and many components are bought from the USA"; that in order to assure the accuracy of the missiles, the exact position of the UK's submarines had to be precisely determined, that this was achieved by relying on two US-systems, GPS and ESGN, and that the US "has the ability to deny access to GPS at any time,

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57 Ev 88

58 Ev 51, 89

rendering that form of navigation and targeting useless if the UK were to launch without US approval”; that targeting software was based upon US designs, that weather and geodetic data, which help ensure the accuracy of the missile, was supplied by the US Navy, and that “all the hardware and software used by the [fire control] system is US-produced”, with the hardware manufactured by General Dynamics Defense Systems.<sup>59</sup>

**72. The onshore and warhead infrastructure:** Dan Plesch told us that Devonport dockyard, which serviced and repaired the UK's Vanguard-class submarines, was managed by DML, a consortium which was part owned by the US firm Halliburton, and that the Atomic Weapons Establishment at Aldermaston was managed by a consortium part owned by the US firm Lockheed Martin.<sup>60</sup> He also claimed that the A-90 plant used at the Atomic Weapons Establishment (AWE), Aldermaston, to manufacture warheads was a direct copy of the T-55 plutonium processing plant at Los Alamos and that the UK used the US nuclear testing site in the Nevada desert for sub-critical nuclear tests to ensure that the system continued to work effectively.<sup>61</sup>

73. Some of our witnesses felt that such technical dependencies upon the United States compromised the UK's independence of policy and diplomatic decision-making and that, as a consequence, several of the UK's continental allies regard the UK as “a vassal state”.<sup>62</sup>

74. Dan Plesch argued that the current US-sourced Trident system failed what might be termed “the 1940 requirement” (an ability to be used in situations of extreme national emergency when the UK was alone and isolated) and that the UK would, in practice, not be able to use its nuclear deterrent in circumstances in which the US was either neutral or actively opposed to UK policy, or where the US was an adversary. Mr Plesch asserted that although such circumstances are highly unlikely “this is precisely the test that an independent force must pass to be worth the expenditure of financial and political capital”. He also stated that “any US sourced successor to Trident will be subject to similar dependence”.<sup>63</sup>

75. Professor Colin Gray accepted the UK's dependence on the United States, but claimed that he was not concerned by it:

Britain's nuclear deterrent since the 1960s... has been thoroughly dependent upon the co-operation and indeed the willingness of the United States to sell us or loan us the most vital equipment... the independence of the deterrent is obviously highly questionable... I am not the least troubled by the American connection, but for anyone who wishes to question the true independence of the British nuclear deterrent I would concede that it is... a hostage to American goodwill... the dependency is critical and will continue.<sup>64</sup>

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59 Ev 88–89

60 Ev 89

61 Ev 51

62 Q 42

63 Ev 51

64 Q 106

## Operational independence

76. Other witnesses took the view that, in an operational sense, the UK's nuclear deterrent is independent.

77. **The warhead:** Commodore Tim Hare, a former Director of Nuclear Policy at the MoD, told us that although the US had long shared its warhead designs with the UK, and that the British warhead closely resembled the American W76 design, the UK retained the design authority on its Trident warhead. Commodore Hare also told us that whilst AWE Aldermaston was managed by a consortium which included Lockheed Martin, it was nevertheless owned by the MoD.<sup>65</sup>

78. **The missile:** Dr Lee Willett, of RUSI, stated that the Trident II D5 missile was “a totally self-contained package” which had “an inertial guidance system that takes it to a point in space, and then the ballistic trajectory then takes it to the latitudinal and longitudinal point on the target” and that “[i]t does not.... rely on external guidance systems such as American satellites”.<sup>66</sup>

79. **The platform:** We heard that the Vanguard-class submarines were designed and built entirely in the UK and that the UK retained design authority on the boats.

80. **It is important to distinguish between two different types of independence: independence of acquisition and independence of operation. We heard that independence of acquisition is what the French have opted for at a significantly higher cost to the defence budget. Independence of operation is an alternative concept of independence and it is this which the UK has opted for at a lower price.**

81. Sir Michael Quinlan told us that the UK's decision to choose independence of operation meant that “in the last resort, when the chips are down and we are scared, worried to the extreme, we can press the button and launch the missiles whether the Americans say so or not”.<sup>67</sup> He argued that the decision to fire is an independent, sovereign decision. The United States “can neither dictate that the [UK's] force be used if HMG does not so wish, nor [can it] apply any veto—legal or physical—if HMG were to decide upon [its] use”.<sup>68</sup>

82. Commodore Hare told us that “operationally the system is completely independent of the United States. Any decision to launch missiles is a sovereign decision taken by the UK and does not involve anybody else”. He told us that the United States does not have a “technical golden key” which can prevent the UK from using the system.<sup>69</sup>

83. The potential disadvantage of the UK decision to forego independence of acquisition is that “if, over a very long period, we became deeply estranged from the Americans and they decide to rat on their agreements, we would be in... great difficulty”.<sup>70</sup> Commodore Hare

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65 Q 185

66 Q 15

67 Q 49 [Sir Michael Quinlan]

68 Ev 65

69 Q 152

70 Q 49 [Sir Michael Quinlan]

told us that such a risk was, in reality, “very low” and that, ultimately, “one must balance that risk against the enormous cost benefits that we have in procuring an American system to house in our submarines. That should not be underestimated”.<sup>71</sup>

**84. We call upon the MoD to clarify the technical dependencies of the UK's Trident system upon the United States and to respond to the argument that the UK's nuclear deterrent is not truly independent. In weighing the importance of maintaining independence, attention needs to be paid to the differing concepts of independence adopted by the UK and France.**

## 5 Current and future threats

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85. **The public debate about the future of the UK's strategic nuclear deterrent must take into account:**

- **the nature of the threats facing the UK;**
- **how those threats could evolve over the lifetime of any potential Trident successor system; and**
- **in what ways retention of a strategic nuclear deterrent might assist the UK in addressing those threats.**

### The current threat

86. Dr Kate Hudson, of the Campaign for Nuclear Deterrent, told us that “we currently face no nuclear threat, and there is no imminent danger of such a threat emerging”.<sup>72</sup> Dr Jeremy Stocker, of the Centre for Disarmament and International Security Studies, told us that, with the removal of the Soviet threat, “Britain’s security is today assured to a degree probably unprecedented in its history, despite current concerns over terrorism”.<sup>73</sup> On that basis, Professor William Walker, of St. Andrew’s University, argued that:

it would be hard to justify the retention of a nuclear force on strategic military grounds alone. Among the eight or nine nuclear armed states, with the possible exception of France, the UK arguably has least cause for concern about future military attack from a well armed foe. This situation seems likely to continue, given the UK’s geographical position on the safe fringe of a relatively stable continent.<sup>74</sup>

87. This view, shared by several witnesses to our inquiry, echoes the conclusions of the Strategic Defence Review, which stated that “there is today no direct military threat to the United Kingdom or Western Europe. Nor do we foresee the re-emergence of such a threat”.<sup>75</sup>

88. **The most pressing threat currently facing the UK is that of international terrorism. Witnesses to our inquiry overwhelmingly argued that the strategic nuclear deterrent could serve no useful or practical purpose in countering this kind of threat.**

89. Dan Plesch argued that the notion of using nuclear weapons against terrorists was “entirely unrealistic”.<sup>76</sup> Sir Michael Quinlan, a former Permanent Under Secretary at the MoD, told us that “I myself do not believe that the terrorist case plays any large part in whatever case there is for staying in this business”.<sup>77</sup>

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72 Ev 56

73 Ev 101

74 Ev 133

75 Ministry of Defence, *The Strategic Defence Review*, Cm 3999, July 1998, p 17

76 Q 32 [Mr Plesch]

77 Q 34

90. Michael Codner, of RUSI, argued that the only conceivable role for the UK's strategic nuclear deterrent in dealing with terrorism would be in deterring states from sponsoring and harbouring terrorists; "there is clearly an option...for nuclear deterrence against a state which is clearly giving [such] support".<sup>78</sup> Dr Lee Willett, of RUSI, agreed that "it would be very hard for a non-state actor to develop its own nuclear weapons capability. It would have to get it from somewhere, and that somewhere would have to be a state".<sup>79</sup> Professor Gray, of the University of Reading, too saw a role for the nuclear deterrent in this situation; "terrorists require support, and, to the degree that they require state support, the states that support them are capable of being deterred".<sup>80</sup>

91. Professor Gregory, of the University of Bradford, told us that he had "not seen any credible analysis where anyone in France or here or in the United States has come up with a way of using nuclear weapons to deter terrorists directly". Nuclear weapons, he argued, were essentially about states; "the analysis I have seen is about deterring state sponsors of terrorism—assuming you can make that jump".<sup>81</sup>

92. Professor Gray disagreed and suggested that, in addition to their utility as a deterrence against state sponsors of terrorism, nuclear weapons could be used against terrorists themselves. He argued:

I certainly would not want terrorists and those who support them to say they can use weapons of mass destruction against Britain and we will do our best with conventional weapons to bring the roof down on their heads. I would like them to know that they are messing with a nuclear power.<sup>82</sup>

In arguing this case, Professor Gray appeared to be a lone voice. Other witnesses to our inquiry did not share his analysis.

93. Dr Bruno Tertrais, of the Paris-based Foundation for Strategic Research, argued that the nuclear deterrent was only of "partial relevance" in dealing with terrorism:

Most of the defence and fight against international terrorism has nothing to do with Western nuclear deterrence, British, French, American or otherwise. This would be relevant only in the extreme scenario where a state deliberately sponsored a terrorist group and asked it to act on its behalf. If one of our Governments had incontrovertible evidence that a terrorist act was being sponsored by another state's Government and that it would be of such magnitude that it could enter the realm of our vital interests in such a case there would be a role for nuclear deterrence.<sup>83</sup>

94. Malcolm Savidge, of the Oxford Research Group, contested the notion that nuclear deterrence could be even partially relevant in dealing with terrorism, arguing that:

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78 Q 32 [Mr Codner]

79 Q 32 [Dr Willett]

80 Q 97

81 Q 96

82 Q 98

83 Q 194 [Dr Tertrais]

it would be the fanatical, absolutist organisations like Aum Shinrikyo or al-Qaeda which would have the objective of nuclear terrorism. It is, surely, very unlikely that they would be sufficiently closely identified with a particular state that it would be meaningful to try to use nuclear deterrence. Even with the identification that one had with, say, al-Qaeda and the state of Afghanistan, there was never a thought of nuking Kabul...I find that an improbable scenario.<sup>84</sup>

**95. Witnesses to our inquiry did not believe that the UK currently faced a direct or impending military threat from any of the established nuclear weapons states, including Russia, China, India, Pakistan, Israel, North Korea, or, of course, from France or the United States.**

### Future threats

**96. There are difficulties inherent in anticipating future threats to the security of the UK. It is not possible to predict accurately the nature of the future strategic international environment and to identify with any certainty the threats the UK is likely to face.**

97. In considering the future of the strategic nuclear deterrent, Michael Codner told us that “we have to look into the longer term and to a very cloudy future, and one in which things could change very substantially”.<sup>85</sup> “No prudent statesman,” we heard, “would assume the indefinite continuation of [the current relatively benevolent] condition”. Dr Lee Willett told us that recent history is “littered with strategic shocks, things that we had not expected”. The point about the nuclear deterrent, Dr Willett stressed, is that it “is there as a hedge, just-in-case capability, should threats that require such a response come to pass”.<sup>86</sup> Professor Colin Gray concurred with this analysis, emphasising that “the future is deeply uncertain.... There are no experts on the unknowable future. The first rule of statecraft is prudence, do not take avoidable risks”.<sup>87</sup> He continued, “in 2006, we can no more predict the strategic history of the 21st Century, than our predecessors in 1906 could predict what the 20th Century would bring”.<sup>88</sup>

98. Professor Gray argued that that although Russia did not, at present, pose a direct military threat to the security of the UK, its future political direction was deeply uncertain. Russia, he argued, accords top priority in its defence policy to modernising its nuclear weapons and has the lowest threshold for nuclear use of any country’s nuclear doctrine. He further argued that Russia was deeply dissatisfied with its current situation, that it has unsatisfactory relations on most of its borders, that it was not reconciled to the loss of the Baltics, to the loss of the Ukraine or to what had occurred in the Caucasus. NATO was also pushing against its boundaries, which Russian policymakers intently disliked. On this basis, Professor Gray argued that “the notion that Russia was.... yesterday’s problem is.... an

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84 Q 194 [Mr Savidge]

85 Q 9 [Mr Codner]

86 Q 18 [Dr Willett]

87 Ev 81

88 *Ibid.*

unjustifiably optimistic assumption”.<sup>89</sup> Other witnesses, however, believed that Professor Gray's view was unduly pessimistic.

99. Professor Simpson, of the University of Southampton, asserted that China did not, at present, represent a serious military threat to the security of the UK and was unlikely to do so in the future. Its main capability was short-range missiles which were aimed primarily at Taiwan. Simpson pointed out that China had never engaged in an arms race with any other nation and that it was not driven to acquire additional nuclear weapons because of specific concerns about other states; “they seem to want a capability but do not want to go beyond that”.<sup>90</sup>

100. We were told that, in future, there could be several additional nuclear powers, and that the nuclear Non-Proliferation Treaty was currently under enormous pressure. David Broucher, a former Head of the UK Delegation to the UN Disarmament Conference, told us that “confidence in [the] treaty is flagging”:

If the Non-Proliferation Treaty were to break down, and if Iran develops a nuclear weapon, I think it is difficult at this stage to be precise about which countries might follow suit but there is a danger that you would see several countries considering the nuclear option.... there are at least 15, perhaps more, countries in the world that could develop a nuclear weapon quite rapidly if they were to take the decision to do so.<sup>91</sup>

101. The future of the Non-Proliferation Treaty is likely to have a significant impact on the course of nuclear proliferation in the coming decades. If the authority of the Treaty does not recover, there is a danger that a number of states could develop a nuclear weapons capability in a relatively short timeframe. It could be argued that UK decisions on the future of its Trident deterrent could affect the authority of the Treaty. Witnesses to our inquiry have questioned the legality of replacing the Trident system under the terms of Article 6 of the Non-Proliferation Treaty. We have not sought to address these concerns in this first report, which focuses on the strategic context and timetable for decision-making.

102. Sir Michael Quinlan told us that, ultimately, the strategic nuclear deterrent was an insurance policy against the unknowable future. In considering the value of any insurance policy, he argued, one had to undertake a cost-benefit analysis. It would be possible, he believed, to design and build a nuclear deterrent which was capable of countering most conceivable threats to the security of the UK, but it would come at a significant price. A lower level of insurance would protect against a narrower range of threats for a lower price. According to Sir Michael, when looking at future threats, policymakers would have to weigh the likely threats against the available resources:

Life does not come with 100 per cent certainties in either direction, but insurance policies are related to things that may or may not happen. The hard question is: how much is it worth? I am not an absolutist on this question at all. I would want to know how much it is going to cost.

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89 Q 73

90 Q 72

91 Q 75

103. We call upon the MoD to consider publicly the threats the UK faces today and how those threats may evolve in the future. Such a threat assessment will shape any decision on the future of the UK's strategic nuclear deterrent. We accept that future threats are unknowable, but, clearly, a world in which nuclear proliferation had taken hold would create deep uncertainties in international relations. For this reason, the UK may wish to retain a strategic nuclear capability as a guard against the unknown. If the MoD believes in the value of the nuclear deterrent as an insurance policy, rather than in response to any specific threat, we believe it is important to say clearly that is the reason for needing the deterrent.

## 6 The substance and timing of UK decisions

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### The nature of the decisions facing the UK

104. The Government has stated that decisions on the future of the UK's strategic nuclear deterrent will be required during the course of the current Parliament. To date, it has offered no explanation of the nature of those decisions. If there is to be a meaningful debate on the future of the UK's strategic nuclear deterrent, the public should know what decisions will be required, when they must be taken and implemented, and what factors are driving consideration of the issue now.

105. In the broadest terms, we heard that there are four key types of decisions facing the UK in considering the future of its strategic nuclear deterrent:

- Retention versus abolition;
- Service life extension;
- Future capability; and
- Further investment in current capability.<sup>92</sup>

#### *Retention versus abolition*

106. A fundamental political decision needs to be made on whether or not the UK should retain a strategic nuclear deterrent. There is no clear point at which this decision has to be made and there is a risk that – by taking a series of decisions to keep options open – we could find that we have in practice taken the decision to keep the deterrent. Conversely, if we do not keep those options open, we could find we are left without a deterrent. In our view, the UK should make a clear decision on whether to retain the strategic nuclear deterrent. It is important that a decision of this magnitude is not taken by default. It should be made only after a full public debate. It must not be made by the Government in secret.

107. A decision on the future of the strategic nuclear deterrent is not required imminently and there is an argument for leaving it as long as possible so that the latest strategic threat can be assessed. On the other hand, we should not embark on very substantial investment in a Trident replacement system without having come to a clear decision that we want to replace it. In practice, this means that the fundamental decision will need to be made at least before a Main Gate decision on procuring a replacement to the Trident submarine.<sup>93</sup>

#### *Service life extension*

108. A broad capability decision will be required on what form any successor nuclear deterrent system should take, if retention of a strategic nuclear deterrent capability is

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92 Ev 67

93 Main Gate is the approval point between the Assessment Phase and the Demonstration and Manufacture Phases

considered necessary for national security. One option for the UK is to embark on a programme of extending the service life of the current Vanguard class SSBN submarines. The United States is currently engaged in such a programme for its Ohio-class Trident submarines.

109. Commodore Hare told us that service life extension is only a short term solution for the UK's future capability. The hulls of the UK boats, he argued, could only be extended for approximately five years. After that, the safety of the boats would become an issue and the cost of addressing such safety concerns would likely be too high to warrant a more extensive programme of upgrades.<sup>94</sup>

**110. A service life extension programme would allow the UK to postpone decisions on whether to replace Trident until around 2010, on the basis that a service life extension programme would add an additional five years to the existing system and that procurement of a Trident replacement would take approximately 14 years. By this time, it is possible that the strategic environment might be clearer. But it is likely to be an expensive process. Such an expensive option should not be used only as a means of deferring a decision on the future of the UK's strategic nuclear deterrent.**

### ***Future capability***

111. In the longer-term, the UK will have to decide whether to continue with a submarine-based system, or opt for a ship-based system, an air-based system, or a land-based system as the foundation of its strategic nuclear deterrent capability or a combination of the three.

112. We heard that a final decision on future capability would be required only at the Main Gate stage of investment, though we also heard that many options would be dispensed with at the Initial Gate stage.

### ***Further investment in current capability***

113. A series of decisions are required on how best to preserve the submarine construction skills base, and the nuclear warhead skills base, until conclusive decisions on both future capability and retention versus abolition are required. Some of these decisions are already being taken. The MoD's new investment programme at Aldermaston, announced in July 2005, is expressly intended to maintain infrastructure and preserve the UK skills base.

114. In December 2005, the MoD published the Defence Industrial Strategy, which emphasised the importance of driving down and controlling costs of the nuclear submarine programme to keep open options prior to a decision being taken, but did not include further details.<sup>95</sup>

**115. It is important that the Government continue to invest in the UK infrastructure and skills base until a decision on whether to retain or abolish the nuclear deterrent is made. Unless this investment is forthcoming, the Government is likely to find that its**

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94 Q 170 [Commodore Hare]

95 Ministry of Defence, *The Defence Industrial Strategy*, December 2005, Cm 6697, p 76

**options will be constrained and that certain choices for the future of the UK's nuclear deterrent will no longer be available.**

### The timetable for decision-making

116. The timing of decisions on the future of the UK's strategic nuclear deterrent is dictated by the time involved in extending, upgrading or replacing the three distinct components of the current Trident system: the warhead, the missile and the platform.

117. The UK's strategic nuclear deterrent "is a system of systems", including the warhead, the missile, the submarine, and the supporting infrastructure. Extending, upgrading or replacing these components represent the timeline challenges which are driving the current debate on the future of the UK's nuclear deterrent.<sup>96</sup>

### The warhead

118. The UK's current nuclear warhead, based on the American W76 design, which is fitted to the Trident II D5 missile, was introduced into service with the Trident system in 1994. It is widely expected to remain in service until the mid-to-late 2020s. The MoD itself has stated that:

An extensive research programme to assure the safety and effectiveness of the warhead stockpile, coupled with the additional investment at AWE [Atomic Weapons Establishment] Aldermaston announced on 19 July 2005, gives a high level of confidence that the current warhead design can, if required, be maintained in service to at least into the 2020s, with some relatively minor upgrading and refurbishment required during the first half of the next decade.<sup>97</sup>

119. The MoD's new investment programme at the Atomic Weapons Establishment amounts to an additional £350 million per annum over the next three years. This programme indicates that the Government is already examining the research, capability and stockpile issues relating to the nuclear warhead. It does not necessarily mean that the MoD has already decided to continue with a strategic nuclear deterrent programme. The MoD itself has explained the purpose of the Aldermaston investment as necessary to keep its options open for the future:

This additional investment at AWE is required to sustain the existing warhead stockpile in-service irrespective of decisions on any successor warhead. The investment will sustain core skills and facilities that could also be used in future to develop a successor but no decisions have yet been made either in principle or practice on this issue.<sup>98</sup>

120. During our visit to the United States in May 2006, we heard that the US had embarked on a Reliable Replacement Warhead programme (RRW), aimed at modernising the US strategic nuclear arsenal and improving the reliability, performance, longevity and safety of

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96 Ev 69

97 HC (2005–06) 835, Annex B, para 2(a)

98 *Ibid.*, Annex C, para 13































