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Ballistic Missile Defence

The USA is developing a nationwide missile defence system to counter a perceived threat posed by the proliferation of ballistic missiles among so-called rogue states. It began testing system components in October 1999 and withdrew in June 2002 from the Anti-Ballistic Missile Treaty, which restricted the development of nationwide ballistic missile defences. The Bush administration plans to deploy the first phase of the system by 2004-05. The British Government has agreed to a US request to upgrade the early warning radar facility at RAF Fylingdales, which will form an important part of the proposed system.

This paper provides a history of US efforts to develop a missile defence system, an overview of the international debate over ballistic missile defence, and an assessment of the emerging ballistic missile threat to the USA and the UK. It examines the US decision to withdraw from the ABM Treaty, and considers the costs and potential consequences of the US decision to proceed with deployment. It also examines the position of the British Government on this issue.

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Summary of main points

For many years the USA has shown interest in some form of defensive shield against missile attacks and various proposals have been considered.

Since July 1999 it has been the policy of the US Government to pursue development of a national missile defence system capable of defending the USA against limited ballistic missile attacks from so-called rogue states. Such attacks might involve up to a few tens of ballistic missiles armed with conventional, nuclear, biological or chemical warheads.

Development of a nationwide ballistic missile defence (BMD) system was restricted under the Anti-Ballistic Missile (ABM) Treaty, signed in 1972 by the United States and the Soviet Union. The Clinton administration therefore embarked on a twin track approach of conducting tests within the established treaty parameters, while simultaneously seeking agreement with Russia on revising or abandoning the Treaty.¹

Negotiations between Moscow and the new Bush administration during 2001 failed to make progress and, as a result, Washington announced on 13 December 2001 that it had given Russia formal notice of its intention to withdraw from the treaty in six months.

Since the US withdrawal came into effect in mid-June 2002, Washington has embarked on an intensified programme of testing, and construction work has begun on the first interceptor site in Alaska.

There has been considerable debate in recent years about the potential impact the proposed US system would have on the international security situation and multilateral arms control architecture. Those in favour of missile defence argue that the USA needs to counter a growing ballistic missile threat posed by states such as Iraq, Iran, Libya and North Korea, and that this need has been underlined by the proliferation of weapons of mass destruction. Opponents believe that missile defence is too expensive, that both the threat and the technology are unproven, and that it will do little to enhance US security. They also argue that deployment of such a system will damage relations with Russia and China, undermine the existing framework of international arms control, and provoke a renewed arms race, primarily in southeast Asia.

¹ Russia accepted the continuing obligations of the Soviet Union following the latter's demise in 1991. See page 5 for more information on this subject.

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I Background

Missiles are categorised as ‘ballistic’ if, once their fuel is expended on launch, they then travel under the influence of gravity and air resistance. Modern missiles are launched on a precise trajectory intended to curve up into space, or the outer reaches of the atmosphere, and then descend under gravity to the target. With modern ballistic missiles, the payload, which may comprise one or more warheads, separates from the rest of the missile in space, before it re-enters the earth’s atmosphere and continues to the target.

The threat posed by ballistic missiles first came to prominence with the development of the German V-2 rocket during the latter part of the Second World War. During the Cold War period that followed, ballistic missile technology advanced at a rapid pace, leading to enhanced capabilities in payload, range and, with the deployment of nuclear warheads, a vast increase in destructive power. By the early 1960s ballistic missiles had emerged as a key element in the Cold War balance of power, with the two superpowers deploying thousands of inter-continental ballistic missiles and possessing the capability to inflict massive destruction on each other.

During the 1960s both the Soviet Union and the USA began to give serious thought to the development of ballistic missile defence (BMD) systems. It was hoped that such systems would break the dominance of offensive weaponry and provide at least some defence against a devastating nuclear strike.

Missile defence systems can be divided into three main categories depending on what part of the trajectory of the incoming missile the interceptor is designed to target:

- **Boost-phase** – where the defence system is designed to intercept during the boost phase of the attacking missile, in the first few minutes after it is launched and before the missile has released its warheads.
- **Terminal Phase** – where the missile warhead is intercepted in the final stage of its trajectory, as it re-enters the atmosphere shortly before reaching its target.
- **Mid-course** – where the defence system covers the area in between the two phases outlined above. Here the warhead is intercepted after it has been released by the missile, but before it re-enters the atmosphere (exo-atmospheric).

A missile in boost phase is the easiest target, because the rocket motor provides a highly visible heat signature and the missile and warhead are still together. On the other hand, the boost phase is short, and to target a missile effectively at this time requires (relative) proximity to the launch site. The mid-course phase is the longest, but there is no rocket motor heat signature and the missile is at its most distant from the earth, making interception more difficult. The re-entry phase provides heat signatures from the payload

components, but they are small and are moving at speeds that make them difficult to target.

In order to intercept incoming missiles successfully and reliably, a flawless performance by a whole range of advanced technical equipment is required. The various components required include: radar tracking devices, interceptor guidance and propulsion systems, on-board sensors and communication links. All of these individual components of the missile defence 'architecture' need to be integrated seamlessly to ensure a successful intercept.

Various attempts during the 1960s to develop reliable and comprehensive missile defences soon encountered significant technical challenges, primarily due to the small size of the target, the large numbers of missiles to be defended against, and the ease with which simple countermeasures could render any defensive system ineffective.

By the early 1970s an easing of superpower tension during the period of *détente* focused attention on arms control treaties as a means of scaling back the arms race and preserving the basis of nuclear deterrence. In 1972, following over two years of Strategic Arms Limitation Talks (known as the SALT process), Washington and Moscow concluded two arms control treaties.² The first established a limit on strategic offensive weapons, such as intercontinental ballistic missiles. The second, the Anti-Ballistic Missile (ABM) Treaty, imposed restrictions on the development of ballistic missile defence systems. More detail on the ABM Treaty is provided in Section II below.

Superpower relations deteriorated as the decade drew to a close, and attention again turned to the strategic balance of power. In 1983 President Reagan announced an ambitious project to develop a comprehensive defensive missile shield, with the declared aim of rendering nuclear weapons 'impotent and obsolete'. The proposed Strategic Defense Initiative (SDI, popularly known as 'star wars') was to comprise a variety of new and emerging technologies, including the deployment of space-based laser weapons.

There were fears in Moscow that SDI would destroy the Cold War balance of power and breach the ABM Treaty, giving the USA an overwhelming strategic advantage. In the event, the project ran into a series of technical and funding difficulties and its scope was gradually reduced.³ The need for such a system was also called into question by the rapidly changing security environment, as Cold War tensions decreased and bilateral arms control treaties again became the focus of US-Soviet relations.

In 1991 President George Bush redefined SDI's objectives, renaming it GPALS (Global Protection against Limited Strikes). Instead of offering a comprehensive defence against

² For more information on the Strategic Arms Limitation Talks (SALT), see Library Standard Note SN/IA/1404, *Arms Control and Weapons of Mass Destruction*.

³ Research on SDI between 1985 and 1990 is estimated to have cost around US\$17 billion.

a large-scale Soviet nuclear strike, the new proposal sought to provide strictly limited protection against an attack involving up to 200 warheads. The scale of the system was reduced even further during the 1990s, as US attention switched from the diminishing Russian threat to the growing proliferation of ballistic missile technology among potentially unstable states in the Middle East and beyond.

II ABM Treaty

The Anti-Ballistic Missile or ABM Treaty⁴ was signed on 26 May 1972 and entered into force in October of that year.⁵ The treaty represented an attempt to maintain what SIPRI termed “the stabilizing logic of mutual assured destruction” by preventing either side from gaining a significant advantage through the development of a missile shield.⁶

As its full title suggests, the treaty did not prohibit ballistic missile defence systems, but sought to limit their development and deployment. Neither side was allowed to develop a nationwide system of missile defence, although under the original terms of the treaty they were permitted to develop two anti-ballistic missile deployment areas: one around the capital city, and a second around an inter-continental ballistic missile (ICBM) launch site. A protocol was signed in July 1974, reducing the number of permitted deployment areas to one, with an upper ceiling of 100 ABM launchers and 100 ABM missiles.⁷ The Soviet deployment area was placed around Moscow, while the US site was located around the Grand Forks ICBM complex. The defences around Moscow were upgraded during the early 1990s,⁸ whereas the US site was dismantled in 1976 due to high costs and technical difficulties. Nonetheless, the facilities at Grand Forks continued to count as the designated US site under the ABM Treaty.

a. Memorandum of Understanding (1997)

As a result of the dissolution of the USSR in December 1991, some of the early-warning stations linked to the Soviet ABM defence system were located on the territory of the newly-independent states of Belarus, Ukraine and Kazakhstan. Clarification was therefore required as to the rights and obligations of these states under the ABM Treaty. A Memorandum of Understanding on Succession (MOUS), signed in September 1997, established that the United States, Russia, Belarus, Kazakhstan and Ukraine were all parties, with the four former-Soviet states agreeing to assume collectively the obligations of the treaty. As a consequence, only one ABM defence site was permitted among all four successor states, while Russia was permitted to continue operating any of the existing early warning stations and test ranges, provided the host governments agreed.⁹

⁴ The full title of the treaty was: ‘Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems’

⁵ The full text of the Treaty can be found in Appendix 1.

⁶ *SIPRI Yearbook 1998*, Stockholm International Peace Research Institute, p.20

⁷ The text of the 1974 protocol can be found on the Federation of American Scientists web site at: <http://www.fas.org/nuke/control/abmt/text/abmprot1.htm>

⁸ Although experts contend they are of questionable operational effectiveness.

⁹ The text of the MOUS can be found on the Federation of American Scientists web site at <http://www.fas.org/nuke/control/abmt/text/ad-mou.htm>

b. *Agreed Statements (1997)*

The experience of the 1991 Gulf War when US Patriot surface-to-air missiles were deployed against Iraqi Scud-derived ballistic missiles raised questions over the demarcation between strategic ABM systems and non-strategic theatre missile defences (TMDs), like Patriot. In order to clarify the demarcation line, Russia and the United States negotiated two Agreed Statements, which were finalised in September 1997.¹⁰ The statements allowed the USA to proceed with the development and deployment of the Patriot Advanced Capability-3 (PAC-3), Theater High Altitude Area Defense (THAAD) and Area Defense systems without violating the treaty.

The first Agreed Statement provided an exemption from ABM Treaty limits for lower-velocity theatre missile defence systems with interceptor speeds of up to 3 km/second. Such systems could be tested against target missiles with a speed at or below 5 km/second and a range of less than 3,500 km.

The second Agreed Statement covered higher-velocity systems with interceptor speeds above 3 km/second. Similarly, such systems could not be tested against target missiles with a velocity greater than 5 km/second and a range greater than 3,500 km. In addition, the agreement banned TMD systems with space-based interceptors. However, the second agreement did not specify whether such higher-velocity systems would be subject to the limits of the ABM Treaty, leaving it to each nation to decide whether its systems had been “tested in ABM mode”.¹¹

c. *Obstacles to Ratification*

The Clinton administration declared its intention to submit the demarcation and succession agreements to the US Senate for approval, once the Russian parliament had ratified the Strategic Arms Reduction Treaty (START) II nuclear arms reduction agreement, although administration officials held that they were under no obligation to gain Senate approval for ratification.¹²

It soon became apparent that there was a growing body of opposition to both the treaty and the related agreements among Senate Republicans. Some argued that the treaty had lapsed following the dissolution of the USSR and would be of ‘no force and effect’ unless the Senate approved the succession agreement.¹³ This view was disputed by the Clinton administration, which argued that, although the Senate’s failure to approve the MOUS left

¹⁰ The texts of the Agreed Statements and other documents relating to the ABM Treaty can be found on the Federation of American Scientists web site at <http://www.fas.org/nuke/control/abmt/text/index.html>

¹¹ See pp.9-10 of Amy F Woolf, ‘Nuclear Arms Control: the U.S.-Russian Agenda’, *CRS Issue Brief for Congress*, 13 December 2001

¹² For more information on the two START treaties, see Library Standard Note SN/IA/1404, *Arms Control and Weapons of Mass Destruction*.

¹³ *SIPRI Yearbook 2000*, p.453

the issue of succession unresolved, the treaty still remained in force.¹⁴ With the demise of the USSR, the international community accepted the Russian Federation's claim to be the successor to the USSR and to be bound, therefore, by the latter's rights and obligations.

With regard to the demarcation agreements, some Duma members argued that the provisions undermined the ABM Treaty and failed to impose sufficient restraints on US systems. Opponents in the Senate claimed the agreements would hinder the development of effective theatre and strategic missile defences. As a consequence, neither side ratified the Agreed Statements or the MOUS.

¹⁴ *SIPRI Yearbook 2000*, p.544

III Developments during the Clinton Presidency

During the latter part of the 1990s support grew in Congress for some form of ballistic missile defence to counter the growing proliferation of missile technology to states such as Iran, Iraq, Libya and the Democratic People's Republic of Korea (North Korea), which were regarded as less stable or predictable threats than was the Soviet Union. Support for such a view came from a 1998 report on the ballistic missile threat to the USA, produced by a commission headed by Donald Rumsfeld.¹⁵ The commission concluded that ballistic missiles – armed potentially with weapons of mass destruction – posed a growing threat to the United States. It gave warning that the intelligence community's ability to monitor the development of such weapons had been eroded, and that the USA might have little or no indication that potential aggressor states were about to gain an operational capability.¹⁶

A. Assessments of the Ballistic Missile Threat

The US National Intelligence Council (NIC¹⁷) stated in its September 1999 report on the ballistic missile threat to the USA that:

We project that during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq. The Russian threat, although significantly reduced, will continue to be the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that potentially posed by other nations, whose missiles are likely to be fewer in number— probably a few to tens, constrained to smaller payloads, and less reliable and accurate than their Russian and Chinese counterparts.¹⁸

The missile threats cited to justify the development and deployment of a ballistic missile defence system can be summarised as follows:

The accidental or unauthorised launch of a small number of Russian missiles

Since the end of the Cold War Russia has reduced the size of its nuclear force significantly, partly as a consequence of arms control treaties with the USA and partly out

¹⁵ Mr Rumsfeld served as Secretary of Defense under President Gerald Ford between 1975 and 1977 and returned to the post in President George W. Bush's administration in January 2001.

¹⁶ *Report of the Commission to assess the Ballistic Missile Threat to the United States*, 15 July 1998, available online at the Federation of American Scientists web site at <http://www.fas.org/irp/threat/bm-threat.htm>

¹⁷ The National Intelligence Council is comprised of senior experts drawn from all elements of the intelligence community and from outside government.

¹⁸ National Intelligence Council, "National Intelligence Estimate (NIE): Foreign Missile Development and the Ballistic Threat to the United States Through 2015", September 1999, CIA web site at <http://www.cia.gov/cia/publications/nie>

of economic necessity. Nonetheless, it still retains a sizeable arsenal of around 5,000 strategic warheads, operating at a high state of readiness.¹⁹

By the late 1990s a deliberate missile attack by Russia was no longer regarded as likely by the Department of Defense (DOD) and was considered in any event to be too difficult to defend against. However, there have been concerns over the danger of an accidental or unauthorised launch, given the deteriorating state of Russia's economy and infrastructure and the possible impact this may be having on nuclear security and command and control.

The US Ballistic Missile Defense Organisation (BMDO) warned in 1995 that an unauthorised Russian attack could range from between 60 to 200 warheads:

The 60 RV (reentry vehicle) threat represents an attack by a commander in a country like Russia with larger nuclear forces; the resources are those of a land-based squadron or submarine. The 200 RV attack is the largest that a single Russian commander could control; it matches what is said to be aboard a Typhoon submarine.²⁰

An attack as a result of erroneous information from a malfunctioning early warning system could be much greater. A retaliatory attack against what was mistakenly perceived to be a major nuclear offensive by the USA would involve many thousands of warheads. Initially, the proposed US missile defence system would be rapidly overwhelmed by such medium to large-scale attacks.

An attack (deliberate, accidental or unauthorised) from China

China is believed to deploy upwards of 20 single-warhead ICBMs with a range of 13,000 km, capable of reaching the USA.²¹ However, the probability at present that China could be the source of an accidental or unauthorised attack against the USA appears low because all Chinese ICBMs capable of reaching the USA reportedly have their warheads and fuel stored separately from the missiles.²² Nevertheless, the NIC assessed in 1999 that:

By 2015, China is likely to have tens of missiles capable of targeting the United States, including a few tens of more survivable, land- and sea-based mobile

¹⁹ Figures from 'Russian Nuclear Forces, 2002', NRDC Nuclear Notebook, *Bulletin of the Atomic Scientists*, July/August 2002, from <http://www.thebulletin.org/issues/nukenotes/ja02nukenote.pdf>

²⁰ BMDO, "National Missile Defense Options," 13 July 1995

²¹ Figures from 'Chinese Nuclear Forces, 2001', NRDC Nuclear Notebook, *Bulletin of the Atomic Scientists*, September/October 2001, from <http://www.thebulletin.org/issues/nukenotes/so01nukenote.html>

²² *Washington Post*, 16 June 1998

missiles with smaller nuclear warheads—in part influenced by US technology gained through espionage. China tested its first mobile ICBM in August 1999.²³

Attacks from ‘rogue states’ such as North Korea, Iraq, Iran, Syria and Libya that possess a growing ballistic missile capability

The question of the imminence of the ballistic missile threat posed by so-called ‘rogue states’ has been debated within the US intelligence community. The CIA assessed in 1999 that the USA was unlikely to be threatened by missiles from rogue states before 2015. By contrast, the Rumsfeld Commission reported the year before that the threat to the USA was “broader, more mature, and evolving more rapidly” than US intelligence reports had indicated.²⁴ The Commission also stated that the USA could suffer a ballistic missile attack with “little or no warning” by 2003. The US Joint Chiefs of Staff contested some of the Commission’s findings, saying it was possible but unlikely that a rogue nation could develop a long-range ballistic missile undetected by US intelligence.²⁵

On 25 April 2000 John Holum, a senior advisor to President Clinton on arms control and international security, told reporters that US defence officials had North Korea in mind when planning a national missile defence system. Mr Holum said the administration’s plans were prompted in large part by North Korea’s 1998 launch of a three-stage Taepo Dong missile capable of reaching Alaska, and potentially other targets on the US west coast.

The NIC provided the following assessment of the threat posed by rogue states in its September 1999 report:

We judge that North Korea, Iran, and Iraq would view their ICBMs more as strategic weapons of deterrence and coercive diplomacy than as weapons of war. We assess that:

- North Korea *could convert* its Taepo Dong-1 space launch vehicle (SLV) into an ICBM that could deliver a light payload (sufficient for a biological or chemical weapon) to the United States, albeit with inaccuracies that would make hitting large urban targets improbable. North Korea is *more likely to weaponize* the larger Taepo Dong-2 as an ICBM that could deliver a several-hundred kilogram payload (sufficient for early generation nuclear weapons) to the United States. Most analysts believe it could be tested at any time, probably initially as an SLV, unless it is delayed for political reasons.

²³ National Intelligence Council, “National Intelligence Estimate (NIE): Foreign Missile Development and the Ballistic Threat to the United States Through 2015”, September 1999, CIA web site at <http://www.cia.gov/cia/publications/nie>

²⁴ *Report of the Commission to assess the Ballistic Missile Threat to the United States*, 15 July 1998

²⁵ Letter from Henry H Shelton, Chairman of the Joint Chiefs of Staff, to Senator James M Inhofe, 24 October 1998, from <http://www.nyu.edu/globalbeat/nuclear/shelton082498.html>

- Iran *could test* an ICBM that could deliver a several-hundred kilogram payload to many parts of the United States in the last half of the next decade using Russian technology and assistance. Most analysts believe it could test an ICBM capable of delivering a lighter payload to the United States in the next few years following the North Korean pattern.

Analysts differ on the likely timing of Iran's first test of an ICBM that could threaten the United States—assessments range from *likely before 2010 and very likely before 2015* (although an SLV with ICBM capability probably will be tested in the next few years) to *less than an even chance* of an ICBM test by 2015.

- Iraq *could test* a North Korean-type ICBM that could deliver a several-hundred kilogram payload to the United States in the last half of the next decade depending on the level of foreign assistance. Although less likely, most analysts believe it *could test* an ICBM that could deliver a lighter payload to the United States in a few years based on its failed SLV or the Taepo Dong-1, if it began development now.

Analysts differ on the likely timing of Iraq's first test of an ICBM that could threaten the United States—assessments range from *likely before 2015, possibly before 2010* (foreign assistance would affect capability and timing) to *unlikely before 2015*.²⁶

The British Government assesses that there is “no immediate significant ballistic missile threat to the UK”,²⁷ but believes a number of states are seeking to acquire ballistic missile technology, which could be used to target UK territory or British forces deployed abroad. More detail on the Government's assessment can be found in Section X and Appendix 3.

B. National Missile Defence (NMD)

There have been a number of US proposals for ballistic missile defence systems since the 1960s. These have included Nike-X (1964), Sentinel (1967), Safeguard (1969), Strategic Defence Initiative (1983), Brilliant Pebbles (1989), Global Protection against Limited Strikes (1991), and arguably Patriot (1991). In the early 1960s the Soviet Union also developed a limited BMD capability around Moscow, which until 1998 comprised missiles armed with nuclear warheads to compensate for a lack of accuracy.

In January 1999 the Clinton administration responded to the various assessments of the growing BMD threat by announcing a significant increase in the budget allocation for missile defence. This was followed on 23 July 1999 by the signing into law by President

²⁶ National Intelligence Council, “National Intelligence Estimate (NIE): Foreign Missile Development and the Ballistic Threat to the United States Through 2015”, September 1999, CIA web site at <http://www.cia.gov/cia/publications/nie>

²⁷ *Missile Defence: A Public Discussion Paper*, 9 December 2002, p.10, available on the MoD web site at: http://www.mod.uk/issues/cooperation/missile_defence.htm

Clinton of the *National Missile Defense Act*. The Act, which had secured overwhelming backing from Congress, committed the United States:

to deploy as soon as is technologically possible an effective National Missile Defence [NMD] system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized, or deliberate).²⁸

Chapter six of the US *Annual Defense Report* of 2000 stated:

The Administration also believes it is necessary to protect the United States, its forces abroad, and its friends and allies from the effects of chemical and biological weapons and the missiles that can deliver them. The United States has a comprehensive strategy for countering such threats. The structure of the theater and National Missile Defense (NMD) programs meets present and projected future missile threats, provides the best technology to meet these threats, and is fiscally prudent.²⁹

The initial proposals of the Clinton administration for a National Missile Defence system envisaged the deployment of a ground-based mid-course system designed to intercept an incoming missile while still in space.³⁰

The system was to use a method known as ‘hit-to-kill’, using kinetic energy rather than an explosive warhead to destroy the incoming missile on impact. The limitation of this type of system is that an interceptor missile requires great precision in order to be successful.

In 1999 the BMDO described the ‘preliminary’ architecture of the missile defence system envisaged under the Clinton administration, as being deployed in three phases.

The first phase of a hit-to-kill system was to involve deployment of 20 interceptor missiles in Alaska. The system architecture was to incorporate upgrades to five existing ballistic missile early warning radars, including RAF Fylingdales, and an advanced X-Band Radar³¹ to be built at Shemya in Alaska. In January 1999 the administration acknowledged that the schedule was too ambitious, and pushed the deployment deadline back from 2003 to 2005. It subsequently increased the proposed size of the interceptor force to 100 missiles with the goal of this first phase system being to defend “all parts of

²⁸ *ISIS Briefing Note* on Ballistic Missile Defence, No.1, April 2000

²⁹ Department of Defense web site at <http://www.dtic.mil>

³⁰ More detail on the various components of the proposed National Missile Defence system can be found on page 25 (Chapter 3) of a report from 2000 by the Union of Concerned Scientists and Massachusetts Institute of Technology, ‘Countermeasures: A technical evaluation of the operational effectiveness of the planned U.S national missile defense system’, 11 April 2000, from <http://www.ucsusa.org/publication.cfm?publicationID=132>

³¹ X-band refers to the frequency of the radar waves produced. X-band radars have a better tracking capability than early warning radars, and are designed to distinguish warheads from debris and false targets. *Ibid.*

all 50 states against the launch of a few tens of North Korean warheads, accompanied by basic penetration aids” (decoys and countermeasures).³²

A more advanced second phase missile defence system was planned for deployment by around 2011. This second phase system was to remain geared to intercepting a ‘few tens’ of ICBM warheads but could also have been adapted to intercept missiles from the Middle East as well as North Korea. In order to meet the threat posed by missiles launched from the Middle East, which would approach the USA from the northeast, the USA would have had to build a second interceptor site, equipped with 100 interceptor missiles. More sophisticated ground-based radars and a new space-based missile-tracking system would also have been required to defeat more sophisticated countermeasures.

The third phase was planned for around 2015, involving up to 125 interceptors at the existing missile defence sites. A summary by the Union of Concerned Scientists and the Massachusetts Institute of Technology of the three stages of the missile defence programme envisaged under Mr Clinton is provided below, based on the assumption that the second interceptor site (possibly North Dakota) would be added in Phase III:

	Phase I	Phase II	Phase III
Number of Interceptors deployed in Alaska	100	100	125
Number of Interceptors deployed in North Dakota	0	0	125
Upgraded Early Warning Radars	Beale (Marysville, Calif.) Clear (Alaska) Cape Cod (Mass.) Fylingdales (UK) Thule (Greenland)	Beale Clear Cape Cod Fylingdales Thule	Beale Clear Cape Cod Fylingdales Thule South Korea
X-band Radars	Shemya (Alaska)	Beale (Marysville, Calif.) Clear (Alaska) Fylingdales (UK) Thule (Greenland)	Shemya Clear Fylingdales Thule Beale Cape Cod Grand Forks (N. Dakota) Hawaii South Korea
In-Flight Interceptor Communication Systems	Central Alaska Caribou (Maine) Shemya (Alaska)	Central Alaska Caribou Shemya Munising (Mich)	Central Alaska Caribou Shemya Munising Hawaii ³³

³² Walter B. Slocombe, Remarks to the *Center for Strategic and International Studies Statesmen’s Forum*, 5 November 1999, CSIS web site at <http://www.csis.org>

A test programme was launched to assess the feasibility of the proposed NMD system. The initial US proposal for a limited system of one site of 20 missiles was expected to cost \$10.5 billion. A larger scale deployment of up to 100 missiles at several sites would, according to many analysts, have cost an additional \$2.2 billion and would not have been ready for deployment until 2007 at the earliest.³⁴

An initial test in October 1999 (a total of 19 were planned) resulted in a successful intercept, although officials later conceded that the test was “contrived” and that the kill-vehicle had nearly missed the target.³⁵ A second test on 18 January 2000 failed after the kill-vehicle malfunctioned six seconds before its intended impact with a Minuteman II ICBM. A third test took place in July 2000, but the missile missed its target as the kill-vehicle failed to separate from the booster rocket.³⁶

In light of the failed tests, President Clinton opted to postpone the decision on whether to proceed with the programme until after the November 2000 presidential election.

C. Negotiations on Amending the ABM Treaty

In addition to technical difficulties, the Clinton administration was faced with opposition to its plans from a number of countries. The deployment of an NMD system, as then envisaged, would have required significant amendments to, or US withdrawal from, the ABM Treaty.

Initial discussions on possible amendments to the treaty took place between Russian Foreign Minister Igor Ivanov and US Secretary of State Madeleine Albright on 10 September 1999. Prior to the meeting Mrs Albright said the administration believed the threat posed by the activities of rogue nations was common to both the USA and Russia.

She went on to say:

As we have indicated in Washington, the President is committed to a limited development of national missile defense, but not a deployment. And we do think that this will require amendments to the ABM Treaty. We do believe that the ABM treaty has been the core of the arms control regimes and obviously consider its continued importance.³⁷

³³ Source: Union of Concerned Scientists and Massachusetts Institute of Technology, ‘Countermeasures: A technical evaluation of the operational effectiveness of the planned U.S national missile defense system’, 11 April 2000, p.21, from <http://www.ucsusa.org/publication.cfm?publicationID=132>

³⁴ ‘NMD timescale is too tight for comfort’, *Jane’s Defence Weekly*, 26 January 2000, p.5

³⁵ *Ibid.*

³⁶ For more detail on the test programme, see Section VII below.

³⁷ Remarks by Secretary of State Albright and Russian Foreign Minister Ivanov, Auckland, New Zealand, 10 September 1999 from http://www.state.gov/www/global/arms/speeches/albright/albright_990910.html

Mr Ivanov concurred that the ABM was “a core of the strategic stability”, but warned that:

Should this core be disrupted, then the strategic stability could also be disrupted. That is why we attach such great importance to this issue.³⁸

Russia warned that unilateral US withdrawal from the ABM Treaty would lead it to declare all existing arms-control measures null and void. Russian officials also threatened to reinstall multiple nuclear warheads (MIRVs³⁹) on certain ballistic missiles, a practice that both sides had agreed to abandon under the 1993 START II Treaty.

China declared its strong opposition to NMD, calling on all countries to “abandon anti-missile plans”.⁴⁰ Several European countries, including France and Germany, also expressed concern over the possible implications of NMD deployment, arguing it would damage Washington’s relations with Russia, yet add little to Western security.⁴¹

³⁸ Remarks by Secretary of State Albright and Russian Foreign Minister Ivanov, Auckland, New Zealand, 10 September 1999

³⁹ Multiple Independently-targeted Re-entry Vehicles

⁴⁰ *Financial Times*, 21 January 2000

⁴¹ *Guardian*, 3 February 2000

IV Missile Defence and the Bush Administration

The incoming Bush administration indicated its intention to push forward the missile defence programme, as had been pledged by Mr Bush during the election campaign in 2000. In a speech on 1 May 2001 the President declared that it was time to move beyond the old paradigm of ‘mutually assured destruction’ that had dominated superpower relations during the Cold War, to tackle new threats that were emerging and to stem the proliferation of weapons of mass destruction (WMD). In order to achieve this, he said it was necessary to “move beyond the constraints” of the ABM Treaty:

We need a new framework that allows us to build missile defenses to counter the different threats of today’s world. To do so, we must move beyond the constraints of the 30-year-old ABM Treaty. This treaty does not recognize the present, or point us to the future. It enshrines the past. No treaty that prevents us from addressing today’s threats, that prohibits us from pursuing promising technology to defend ourselves, our friends and our allies is in our interests or in the interests of world peace. This new framework must encourage still further cuts in nuclear weapons. Nuclear weapons still have a vital role to play in our security and that of our allies. We can, and will, change the size, the composition, the character of our nuclear forces in a way that reflects the reality that the Cold War is over.⁴²

President Bush also pledged to consult with the international community on the best way to proceed:

I’ve made it clear from the very beginning that I would consult closely on the important subject with our friends and allies who are also threatened by missiles and weapons of mass destruction. [...]

These will be real consultations. We are not presenting our friends and allies with unilateral decisions already made. We look forward to hearing their views, the views of our friends, and to take them into account. We will seek their input on all the issues surrounding the new strategic environment. We’ll also need to reach out to other interested states, including China and Russia. Russia and the United States should work together to develop a new foundation for world peace and security in the 21st century.⁴³

This commitment to consult was welcomed by President Putin of Russia, who declared:

We have noticed in the [...] President’s statement that our US partners plan to consult with the international community on these crucial issues, including consultations with Russia. We are very much counting on this dialogue being constructive [...]. It is difficult not to agree with the President of the United

⁴² ‘Speech by President George W. Bush at the National Defense University, Washington’, 1 May 2001, from Acronym Institute web site at <http://www.acronym.org.uk/bush1.htm>

⁴³ *Ibid.*

States in this sense, that the world is changing rapidly and new threats are appearing [...]. I agree that we must think about this and resist these threats with sensible actions [...]. First, we should not destroy the established system of international security, and, second, we must act together to perfect it.⁴⁴

Further details of the US approach were given by Mr Bush during his first visit to Europe in June 2001. At a joint press conference with the Spanish Prime Minister, Jose Maria Aznar, Mr Bush said it was necessary to “lay aside” the ABM Treaty in order to address the new security threats of the 21st century:

Those new threats are terrorism, based upon the capacity of some countries to develop weapons of mass destruction, and therefore, hold the United States and our friends hostage. It is so important we think differently in order to address those threats. [...]

Part of the problem with the ABM Treaty is that it prevents a full exploration of possibility. We're bound by a treaty signed in 1972 that prohibits the United States from investigating all possibilities as to how to intercept missiles. For example, the technology of intercept on launch is a technology that we must more fully explore in order to make sure that we have the defensive capabilities necessary to prevent what I call blackmail. [...]

The ABM Treaty is a relic of the past. It prevents freedom-loving people from exploring the future. And that's why we've got to lay it aside. And that's why we've got to have the framework -- the discussions necessary to explain to our friends and allies, as well as Russia, that our intent is to make the world more peaceful, not more dangerous. Our intent is to bring stability into the world. And freedom-loving people must recognize the true threats that face democracies in the 21st century.

The days of the Cold War have ended, and so must the Cold War mentality, as far as I'm concerned. And I believe we're going to make great progress on this issue; I truly do. I realize it's going to require a lot of consultation, but I'm willing to listen.⁴⁵

Bush administration officials indicated their preference for a more ambitious system than the one envisaged by Mr Clinton, possibly involving ship-based ‘boost-phase’ interceptors that would destroy missiles shortly after launch, or space-based laser weapons that would destroy missiles mid-flight. The boost-phase system would have one advantage in that it could be used to defend the USA's allies, whereas the NMD system proposed by Mr Clinton was restricted, at least initially, to defending the continental USA.

⁴⁴ *Disarmament Diplomacy*, April 2001

⁴⁵ ‘Bush Press Conference with President Aznar in Madrid’, US Department of State, 12 June 2001, from <http://usinfo.state.gov/topical/pol/arms/stories/01061277.htm>

A. Debate in the United States

During May 2001 the broad bipartisan consensus in the USA on missile defence showed signs of fragmenting. Leading Democrats, emboldened by the loss of Republican control in the Senate, began to express concern about the administration's plan. The Democratic Leader in the House of Representatives, Richard Gephardt, declared in early May:

I am concerned that the President's approach to strategic nuclear and missile defense policy may have the effect of undermining our nation's security rather than enhancing it. By announcing his intent to move forward with as yet unproven, costly and expansive national missile defense systems, the President is jeopardizing an arms control framework that has served this nation and the world well for decades. Initial reactions from our allies and other nations suggest that this approach is likely to increase threats to the US and decrease global stability, as exhibited by the likely consequences: Russia's preservation and China's construction of large stocks of nuclear weapons to counter US missile defenses; an end to transparency and verification of other nations' nuclear arsenals, which has preserved strategic stability and advanced US interests; and the continued proliferation of weapons of mass destruction as other nations follow America's lead in taking unilateral steps that may serve their own immediate interests.⁴⁶

There were also concerns in the US military that conventional weapons programmes, such as the Joint Strike Fighter, would be cut back to ensure funds were available for ballistic missile defence. In July 2001 Democrats on the House Armed Services Committee failed narrowly in a bid to remove almost \$1 billion from the administration's request for missile defence funding, and to re-allocate the funds to other military requirements.

In August 2001 the Senate Democratic leader, Tom Daschle, criticised the administration's "single-minded approach" to missile defence, saying it "jeopardises larger US political, economic and security goals around the world." He went on to say that the funds would be better used to combat an array of threats that were far more likely than a missile attack, such as destroying nuclear material in Russia, increasing research into defence against cruise missile attacks, developing theatre missile defences and increasing computer security. He characterised the administration's missile defence plans as "the most expensive possible response to the least likely threat we face".⁴⁷

The terrorist attacks of 11 September 2001 had an impact on the debate and on public attitudes towards missile defence. Following the dramatic demonstration of US vulnerability to suicide terrorism, the Bush administration indicated its firm intention to proceed with missile defence to counter potential and emerging threats and to provide what it deemed to be a crucial layer in US defences. Mr Bush declared in late October

⁴⁶ Quoted on the Acronym Institute web site, 1 May 2001, at <http://www.acronym.org.uk/bush1.htm#us>

⁴⁷ *Financial Times*, 10 August 2001

2001 that: “The events of September 11th make it clearer than ever that a cold war ABM treaty that prevents us from defending our people is outdated, and I believe dangerous.”⁴⁸ Critics argued that ballistic missile defence would not have prevented the attacks. Supporters suggested they demonstrated a will to destruction of greater magnitude on the part of international terrorists, in the context of a world in which ballistic missiles were proliferating among unreliable and hostile states.

B. Talks on the ABM Treaty

Periodic consultations between US and Russian officials continued throughout the summer of 2001 without signs of significant progress. Nonetheless, there did appear to be a subtle shift in the Russian position in mid-August, as noted by the *Financial Times*:

Analysts pointed to a small but significant change in Mr Ivanov’s language on the ABM issue. “We still think that the ABM is one of the major elements of the complex treaties on which international stability is based,” Mr Ivanov was quoted as saying. Until yesterday the Kremlin had insisted that the treaty was the single inviolable basis of all arms accords, not merely one of them.

Dmitri Trenin, a military specialist at the Moscow Carnegie Centre, said: “I think the Russians have basically decided to do a deal and this is leading to incremental changes in their rhetoric, but only in return for concessions.”⁴⁹

In late August 2001 clearance work began on the planned missile defence site in Alaska,⁵⁰ as US officials stressed the need for progress in the talks prior to the November 2001 summit between Mr Putin and Mr Bush. They also indicated that the USA would withdraw from the treaty if agreement remained out of reach, claiming that any delay would hinder the planned test programme. In late October Defense Secretary Donald Rumsfeld said a series of planned tests had been cancelled to avoid a technical breach of the treaty. This line was disputed by some analysts, who argued that technical and budgetary restrictions would ensure that the USA remained within the bounds of what was permitted by the ABM Treaty for the foreseeable future.⁵¹ Russian officials indicated they would turn a blind eye to any technical breaches as long as Washington abided by the spirit of the treaty, but expressed frustration at what they perceived to be a lack of information from their US counterparts on planned unilateral cuts in the US nuclear arsenal.

⁴⁸ *Financial Times*, 22 October 2001

⁴⁹ *Financial Times*, 14 August 2001

⁵⁰ US officials said preparation of the site would not violate the ABM Treaty, but that work on the missile silos would constitute a violation. The one US ABM deployment site permitted under the treaty is Grand Forks, a stipulation that could have been changed under a new additional protocol with Russia.

⁵¹ See for example, Philip E. Coyle, ‘NMD Development is Not Hostage to the ABM Treaty’, *The Defense Monitor*, Vol. XXX, No.5, June 2001

Nonetheless, Moscow indicated that talks between Mr Putin and Mr Bush in Shanghai in late October 2001 had paved the way for working out “basic views on the framework of future strategic relations” between the two countries.⁵² Russian Foreign Minister Mr Ivanov also appeared to indicate a growing Russian acceptance of the US argument that the ABM Treaty was outdated, saying:

We have been often told in the past that the ABM treaty is a relic of the cold war. In part, and I repeat in part, I agree with this. But all Russian-US agreements are, to a certain extent, relics of the cold war.⁵³

The three-day presidential summit in Crawford, Texas, ended on 15 November 2001 without agreement on a new arrangement on the ABM Treaty, reportedly due to disagreements over the Russian requirement for extensive consultations prior to each US test.⁵⁴ Nonetheless, the summit was widely deemed a success, with both Presidents stressing the new strength of the relationship between the two countries. At a joint news conference Mr Putin declared that

given the nature of the relationship between the United States and Russia, one can rest assured that whatever final solution is found [on missile defence], it will not threaten . . . the interests of both our countries and the world.⁵⁵

Both sides also pledged to implement deep unilateral cuts in their strategic nuclear arsenals: Mr Bush said he would cut the US stockpile from around 6,000 warheads to between 1,700 and 2,200. Mr Putin said Russia would make cuts of a similar magnitude, involving a two-thirds reduction in the number of warheads.

Some Russian officials had called for more sweeping cuts, perhaps to around 1,000 warheads, due to the pressing need on the part of the Russian government to reduce military expenditure and phase out obsolete weapons systems. According to the Stockholm International Peace Research Institute (SIPRI), chronic investment shortfalls meant that, by 2010, Russian nuclear force levels were set to decline well below the limits set by the START II treaty.⁵⁶

⁵² *Financial Times*, 6 November 2001

⁵³ *Financial Times*, 6 November 2001

⁵⁴ *The Economist*, 17 November 2001, and *Financial Times*, 13 December 2001

⁵⁵ *The Washington Times*, 26 November 2001

⁵⁶ *SIPRI Yearbook 2000*, p.457

V US withdrawal from the ABM Treaty

On 13 December 2001 Mr Bush announced that his Government had given Russia formal notice of its intention to withdraw from the ABM Treaty in six months, as required under Article XV (2) of the Treaty, which stated that:

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

In a statement, Mr Bush said: “I have concluded the ABM Treaty hinders our government’s ability to develop ways to protect our people from future terrorist or rogue-state missile attacks.” He went on to say that the decision to withdraw from the treaty would not undermine Russian security or damage the new relationship with Russia.⁵⁷ Analysts noted that withdrawal would allow the USA to begin construction at the Alaska site during the short northern summer in 2002.

A. Reaction to the US decision to withdraw

The Russian reaction to the announcement was muted. Prime Minister Mikhail Kasyanov said the decision was regrettable since it undermined global strategic balances. Other officials told the press that they had been informed of the US decision in advance. The head of the Duma foreign affairs committee and a member of the pro-Kremlin Unity party, Dmitri Rogozin, said the US action was no “tragedy or drama”, claiming that it freed Russia from the restrictions imposed under the START II arms reduction agreement.⁵⁸

The reaction from China was also restrained. The Bush administration sent Assistant Secretary of State Avis Bohlen to Beijing on 17 December 2001 to consult with the Chinese Government on the US decision. According to a Chinese Foreign Ministry spokesperson:

the Chinese side reiterated its principled stand on the anti-ballistic missile issue, stressing the importance of preserving the international arms control and disarmament system and global strategic stability, hoping that the US side will seriously consider the opinions of most countries in the world. Both sides agreed to continue their dialogue on strategic stability.⁵⁹

⁵⁷ ‘Bush announces U.S. withdrawal from ABM Treaty’, US Department of State web site, 13 December 2001, from <http://usinfo.state.gov/topical/pol/arms/stories/01121302.htm>

⁵⁸ *Financial Times*, 13 December 2001

⁵⁹ Ministry of Foreign Affairs web site, Beijing, 18 December 2001, from *BBC Monitoring*

Russian and Chinese officials met shortly after the US announcement to discuss their response. Both sides reportedly agreed that, without the ABM Treaty, “the plans of the American administration would not have anything to restrain them and could lead to an arms race in the outer space”. Nonetheless, both sides concluded that further contact with the United States was vital and that “It would not be thoughtful ‘to slam the door’ and close the dialogue.”⁶⁰

The British Government reiterated its position that the future of the ABM Treaty was first and foremost a matter for the USA and Russia as parties, adding that:

We share United States concerns about the threats stemming from missiles and weapons of mass destruction. We agree there is now a need for a comprehensive strategy, including defensive systems, to counter such threats.⁶¹

More detail on the position of the British Government can be found in Section X below.

Other European governments expressed caution, saying they welcomed the Bush administration’s commitment to sharp cuts in its nuclear stockpile, but stressing the need for continued strategic stability in the future.

B. Moscow Treaty on Strategic Offensive Reductions

On 24 May 2002 Mr Bush and Mr Putin signed the Moscow Treaty on Strategic Offensive Reductions (SORT) at a ceremony in the Kremlin.⁶² The treaty codifies the reductions announced by the two Presidents in late 2001. It stipulates that by 2012 the number of strategic nuclear warheads deployed by the two sides will not exceed 1,700-2,200 each. This represents a reduction from the levels set by the START II Treaty of 3,000-3,500.

It should be noted that these figures relate solely to deployed strategic nuclear warheads and do not provide an indication of the total inventories of the two sides. For instance, they do not include the warheads held in reserve or the several thousand tactical (theatre) nuclear warheads believed to be held by the two sides. The *Bulletin of the Atomic Scientists* estimated in May 2002 that the United States had a total of 7,600 active nuclear warheads, with a further 382 held as spares and an additional 2,700 retained in an ‘inactive’ stockpile. The figure of 7,600 included around 1,160 tactical nuclear warheads.⁶³ The *Bulletin* estimated in May 2001 that the Russian stockpile stood at 5,000

⁶⁰ RIA news agency, 18 December 2001, from *BBC Monitoring*

⁶¹ Prime Minister’s spokesperson, quoted in *The Guardian*, 14 December 2001

⁶² The full text of the treaty can be found in Appendix 2.

⁶³ Figures from ‘U.S. Nuclear Forces, 2002’, NRDC Nuclear Notebook, *Bulletin of the Atomic Scientists*, May/June 2002, from <http://www.thebulletin.org/issues/nukenotes/mj02nukenote.pdf>

deployed strategic nuclear warheads and 3,400 tactical and air defence nuclear warheads, with around a further 10,000 warheads held in storage.⁶⁴

Under the terms of the treaty, surplus warheads withdrawn from deployment may be placed in storage and do not have to be destroyed. Moscow had sought to ensure that surplus warheads would be dismantled, but Washington refused, insisting it needed to retain some of the withdrawn warheads to counter future eventualities. US officials indicated that some warheads would be dismantled, with others placed in storage or used as spares.

The Bush administration had been anxious to avoid prolonged and tortuous negotiations with Moscow over a new treaty. Administration officials had argued that the new relationship with Russia rendered such an approach redundant and called for a looser framework that reflected the new spirit of partnership. However, Moscow insisted that the reductions agreed by the two sides be formalised in a legally binding treaty to ensure that they were irreversible. There was widespread speculation that Washington agreed to a treaty so as to mollify Russian objections to its plans for a BMD system and for withdrawal from the ABM Treaty.

Prior to ratification, the treaty will be submitted to the US Senate and the two chambers of the Russian parliament for approval. Once ratified, the treaty will remain in force until 2012, although either side can withdraw from it with 90 days' notice. A Bilateral Implementation Commission will meet at least twice a year to discuss issues related to the treaty. The related verification processes will draw on the procedures established under the START I Treaty.

⁶⁴ Figures from 'Russian Nuclear Forces, 2002', NRDC Nuclear Notebook, *Bulletin of the Atomic Scientists*, July/August 2002, from <http://www.thebulletin.org/issues/nukenotes/ja02nukenote.pdf>

VI Updated US Missile Defence Proposals

Plans to deploy an initial multi-layered land and sea-based missile defence capability from 2004 were announced by the Bush administration on 17 December 2002. The plans incorporated some elements from the NMD system and added some new components.

Initial capability will build upon the technologies developed and tested to date and serve as a starting point for fielding improved, multi-layered missile defence capabilities by the end of 2010. This evolutionary approach to the development and deployment of a missile defence capability, while undertaking parallel testing, means that there will be no final or fixed missile defence architecture. Rather, the composition of missile defences, including the number, type and location of systems deployed, will evolve over time to meet the changing threat and take advantage of technological developments.

Initial capabilities planned for deployment in 2004-05 include:

- Up to 20 ground-based interceptors (GBI) capable of intercepting and destroying intercontinental ballistic missiles during the mid-course phase of flight using hit-to-kill technology. The GBIs will be located at Ft. Greenly, Alaska (16 interceptors) and Vandenberg Air Force Base, California (4 interceptors).
- Up to 20 sea-based hit-to-kill interceptors employed on existing Aegis destroyers in the US fleet, to intercept ballistic missiles in the first few minutes after they are launched, during the boost and ascent phases of flight.
- Deployment of air-transportable Patriot Advanced Capability-3 (PAC-3) systems to intercept short and medium-range ballistic missiles.
- Land, sea and space-based sensors, including existing early warning satellites, an upgraded radar now located at Shemya, Alaska; a new sea-based X-band radar; upgraded existing early warning radars in the UK and Greenland and use of radars and other sensors now on Aegis cruisers and destroyers.⁶⁵

These capabilities may be improved over time through additional measures. These include:

- Deployment of additional ground and sea-based interceptors and PAC-3 units.
- Deployment of the Theater High Altitude Area Defense (THAAD)⁶⁶ system to intercept short and medium-range missiles at high altitude.
- Use of the developmental Airborne Laser aircraft that will use directed energy to destroy a ballistic missile in the boost phase.

⁶⁵ US Department of Defense Press Release, 17 December 2002. This is available online at: http://www.defenselink.mil/news/Dec2002/b12172002_bt642-02.html

⁶⁶ The Theater High Altitude Area Defense (THAAD) system is a ground-based missile defence system which represents the upper tier of a two-tiered missile defence system for protecting forces in theatre (Theatre Missile Defence). Systems such as Patriot form the lower tier of the overall system.

- Deployment of a common family of boost phase and midcourse interceptors for land and sea basing.
- Deployment of enhanced radars and other sensor capabilities.
- Development and testing of space-based defences, specifically space-based kinetic energy (hit-to-kill) interceptors and advanced target tracking satellites.⁶⁷

The US Department of Defense has also indicated its commitment to deploying a missile defence system capable of protecting allied countries:

Because the threats of the 21st century also endanger our friends and allies around the world, it is essential that we work together to meet these threats. The Department of Defense plans to develop and deploy missile defenses capable of protecting not only the United States and our deployed forces, but also friends and allies. The missile defence program will also be structured in a manner that encourages industrial co-operation by friends and allies, consistent with US national security. In conjunction with the Department of State, the Department of Defense will promote international missile defense co-operation, including within existing mutual defense structures like NATO, and negotiate appropriate arrangements for this purpose.⁶⁸

⁶⁷ US Department of Defense Press Release, 17 December 2002

⁶⁸ *Ibid.*

VII The Test Programme

Tests have been taking place since 1999 to assess the feasibility of US plans for a multi-layered missile defence system. Parallel testing of the first three initial capabilities envisaged in the new Bush administration proposals, a ground-based interceptor system, the Aegis based interceptor system and the PAC-3 system, have had mixed results to date.

A. Ground-Based Interceptor (GBI) System

Nineteen integrated flight tests of the GBI have been scheduled since 1999, although only eight had been completed by the end of December 2002. Five of those tests achieved a successful “hit-to-kill” intercept of a dummy warhead.

The first test in October 1999 was hailed a success, although later findings concluded that the missile intercept was coincidental after the missile drifted off course and targeted a decoy balloon, which was near the target warhead.⁶⁹

A second test on 18 January 2000 failed after the infrared detectors of the kill-vehicle malfunctioned six seconds before its intended impact with a Minuteman II intercontinental ballistic missile. A Department of Defense official commented at the time that “the technical challenges may prove difficult to surmount and could lead to slippage in the timetable to 2007 or 2008 at the earliest”.⁷⁰

Following the failure of the third flight test in July 2000, calls were made for the postponement of a decision on deployment until after the presidential elections later that year. Henry Kissinger, a former Secretary of State and supporter of missile defence, believed that the testing data, on the basis of the first three tests, was insufficient to allow a decision in favour of NMD to be made:

In the light of recent ambiguous test results and imminent electoral preoccupations, it would be desirable to delay a final technical judgement until the next administration takes office.⁷¹

The testing programme has been resumed by the Bush administration. The most recent successes were in March and October of 2002. The latest test on 11 December 2002 failed after the exo-atmospheric kill vehicle failed to separate from the booster. A similar fault occurred during flight testing in July 2000. An official from US Missile Defense Agency (MDA) commented that it was “frustrating and disappointing that the test had failed as a result of a glitch that had little to do with advanced missile technology”.⁷²

⁶⁹ ‘Six seconds that didn’t shake the world’, *Center for Defense Information*, 21 January 2000

⁷⁰ ‘NMD timescale is too tight for comfort’, *Jane’s Defence Weekly*, 26 January 2000, p.5

⁷¹ *Washington Post*, 9 February 2000

⁷² ‘US missile test fails’, *BBC News Online*, 11 December 2002

An article in *The Los Angeles Times* commented:

If there is one thing on which missile defense advocates and critics agree, it's that the technology isn't ready yet. Where they differ is on whether the technology will be "ready enough" three years from now to meet President Bush's accelerated deployment plan announced last week [...] Bush's order to field the missile defence system in the next three years forces what has been a developmental programme to suddenly – some say prematurely – become a deployment programme, skipping an entire phase of testing [...] Critics say it's not good enough to skip the operational phase and move directly to deployment [...] Even some missile defense proponents worry that speeding deployment of a flawed, rudimentary missile defence programme could delay development of a better, more reliable system.⁷³

An assessment by the International Institute for Strategic Studies in January 2003 stated:

The nature and extent of operational testing will determine the limitations of the system declared operational in late 2004. Given the limited time during which typical real-world engagements occur, missile defence systems must be highly pre-programmed to reflect the full range of threat possibilities (alternate trajectories, possible decoys, re-entry vehicle details and so forth). Existing intercept tests have not mirrored such realistic operational environments and the short time remaining before October 2004 greatly limits the system's probable initial military utility. Even assuming the availability of a production booster that has been tested to resolve system integration issues, the early deployment system would at best have limited capability to intercept North Korean missiles flying on pre-determined trajectories, displaying past flight conditions and carrying either no decoys or rudimentary ones similar to those used in the past, or in remaining flight tests before the October 2004 deployment date. Until much more robust discrimination capabilities become available – most notably with the addition of sea-based X-band radars and SBIRS [Space Based Infra Red System⁷⁴] satellites – the early system will have little, and more likely, no capability against ballistic missiles fired from the Middle East. Nor would it be able to intercept accidental or unauthorised launches from China or Russia...⁷⁵

On 19 March 2003 the Under Secretary of Defense for Acquisitions, Technology and Logistics, Pete Aldridge, is reported to have made the claim to the Senate Armed Services Committee that a missile defence system deployed in 2004 would be 90 per cent effective. An article in *The Los Angeles Times* reported:

⁷³ "Missile plan faces obstacles", *The Los Angeles Times*, 24 December 2002

⁷⁴ For more detail on SBIRS satellites, see page 25 (Chapter 3) of a report from 2000 by the Union of Concerned Scientists and Massachusetts Institute of Technology, 'Countermeasures: A technical evaluation of the operational effectiveness of the planned U.S national missile defense system', 11 April 2000, from <http://www.ucsusa.org/publication.cfm?publicationID=132>

⁷⁵ "Deploying US missile defences", *Strategic Comments*, Vol. 9, Issue 1, January 2003

A rudimentary missile defense system set to be installed in Alaska next year would be able to intercept and destroy North Korean nuclear warheads fired at American cities, a top Pentagon official testified Tuesday.

Undersecretary of Defense Edward “Pete” Aldridge said on Capitol Hill that the system, expected to be operational by the end of next year, would be 90% effective in intercepting missile fired from the Korean peninsula [...]

Aldridge’s claim about the system’s capability was greeted with disbelief from lawmakers and missile defense experts, who noted that the system has had meagre success in intercepting missile even in highly controlled tests.⁷⁶

In addition, the credibility of the whole testing programme has been called into question following allegations by an employee of the Massachusetts Institute of Technology (MIT) who claimed that the results of key tests had been falsified.

An article in *The Times* on 3 January 2003 commented:

The Massachusetts Institute of Technology (MIT) is considering an investigation into accusations that fundamental flaws in the proposed “son of star wars” system have been covered up.

The criticism is led by Theodore Postol, a physicist and missile defence critic at MIT, who has said that the institute is sitting on what is potentially “the most serious fraud that we’ve seen at a great American university” [...] Dr Postol and fellow critics say the ability of an interceptor missile to distinguish between an incoming warhead and the decoys likely to accompany it is deeply suspect. Any such doubts would cripple the credibility of the system. Such questions date back to mid-1997 when the military contractor TRW was accused by one of its employees of faking test results on a prototype anti-missile sensor meant to tell hostile warheads from decoys.

The company and its system was given the all-clear by the Lincoln Laboratory, a federally funded research centre at MIT. But subsequently the General Accounting Office, an investigative arm of Congress, accused TWR of exaggerating the sensors’ performance, saying that its conclusions had been “highly misleading”.⁷⁷

Seventeen more integrated flight tests of the GBI are scheduled to take place over the next few years.⁷⁸

⁷⁶ “US claims 90% hit rate in missile plan”, *The Los Angeles Times*, 19 March 2003

⁷⁷ ‘Physicist blows whistle on US missile defence’, *The Times*, 3 January 2003

⁷⁸ ‘Boeing-led missile defense team scores another hit’, *Boeing Co. Press Release*, 14 October 2002

However, there are reports that the Bush administration is proposing to exempt its missile defence system from the legal requirement to test every new weapons system before deployment. Some argue that this may have implications for the extent of the future test programme.

An article in *The Los Angeles Times* stated:

The Bush administration is proposing to exempt the Pentagon's controversial missile defense system from operational testing legally required of every new weapons system in order to deploy it by 2004.

Buried in President Bush's 2004 budget, in dry bureaucratic language, is a request to rewrite a law designed to prevent the production and fielding of weapons systems that don't work [...]

The proposal follows administration moves to bypass congressional reporting and oversight requirements in order to accelerate development of a national missile defense system [...]

Administration officials believe the unusual measures are necessary because of a growing missile threat from rogue countries such as North Korea, Iran and Iraq. But critics maintain the new independence and secrecy of what has become a vastly expanded missile defense program increases the chance that the Pentagon will spend tens of billions of dollars on an antimissile system that doesn't work.⁷⁹

B. Aegis-based Interceptor System

In parallel to the GBI testing-programme flight tests for the sea-based element of the system have also been underway. In comparison to the GBI testing programme the Aegis flight tests have been largely successful. The most recent test in November 2002, involving the launch of a developmental Standard Missile 3 (SM-3) from the Aegis ballistic missile defence cruiser USS *Lake Eerie* to engage a ballistic missile target, was the third successful flight test in a row. This test also marked the beginning of a more complex series of six flight tests following acceleration of the project due to earlier successes in the testing programme.

The next test of the Aegis system is scheduled for the spring of 2003. Five more tests are planned for 2003/2004.

C. PAC-3 System

Prior to operational testing the PAC-3 had missed only one ballistic missile target in six developmental flight tests. Planned operational testing of the PAC-3 programme

⁷⁹ "Missile defense waiver sought", *The Los Angeles Times*, 24 February 2003

concluded in June 2002 with partial successes in all four tests. Each test involved the firing of multiple PAC-3 missiles and after all four tests, three out of seven missiles failed to launch, two intercepted and destroyed mock theatre ballistic missiles (TBMs), one hit but did not destroy a Patriot acting as a missile target, while one PAC-3 missed completely because of an inaccurate cue from the ground.

An article in *Flight International* suggested:

The fact that two TBMs were destroyed by a single PAC-3 in what were planned as two-missile ripple firings – the standard tactical engagement – will probably be viewed as adequate demonstration of the weapon’s capability.⁸⁰

Some analysts believe that the deployment of PAC-3 during the current conflict with Iraq could have implications for public perceptions of ballistic missile defence. Steven Zaloga, a defence industry consultant from Teal Group Corp, has argued that, if the Patriots were successful in a conflict with Iraq, advocates of missile defence “will say ‘ah-ah, it works!’ And likewise, if PAC-3 screws up in a future combat operation, then activist types will scream, ‘The whole thing is fundamentally flawed.’”⁸¹

⁸⁰ “Patriot Games”, *Flight International*, 11 June 2002

⁸¹ ‘Raytheon’s Patriots face new test’, *Boston Globe*, 19 January 2003

VIII Estimated Costs

Estimates of the acquisition and whole-life costs of a missile defence system have varied considerably over the last few years. This has been due to the lack of consensus on the defined parameters for making a cost assessment, and the expansion in 2002 of the US missile defence proposals toward a “multi-layered” system.

An assessment of the costs of the Clinton administration’s proposals was provided by the Congressional Research Service in its report *National Missile Defence: Issues for Congress* in May 2001. The report stated:

There has never been a clear, consensus cost figure for deploying an NMD system. For several years, the Clinton Administration estimated that a limited NMD system would cost \$9 to \$11 billion to develop, test and deploy. In January 1999, the Administration estimated that an initial system of 20 interceptors would cost about \$10.6 billion. In February 2000, the Administration provided a life-cycle cost estimate of \$26.6 billion for an initial system of 100 ground-based interceptors, presumably in Alaska. A couple of months later, the Pentagon provided a life-cycle estimate of \$30.2 billion for the NMD system (FY1991). By May 2000, the General Accounting Office reported a cost figure of \$36.2 billion (GAO/NSIAD-00-131) a number which BMDO also apparently was using.

A late April 2000 study by the Congressional Budget Office (CBO) estimated that it would cost about \$29.5 billion to develop, build and operate an initial NMD system (expanded Capability 1 system) through 2015. This total cost was comparable to the Administration’s estimate of \$30.2 billion (now apparently \$36.2 billion). CBO estimates it will cost another \$19 billion through 2015 to expand the initial system of 100 interceptors and build what is called a Capability 2 and Capability 3 system designed for greater numbers of more sophisticated potential missile threats. Additional space-based sensors would bring the total costs for NMD to around \$60 billion through 2015. NMD critics argue that the true costs will be even higher, perhaps as much as \$120 billion, to include other items some NMD supporters want: space-based and naval-based NMD interceptors.⁸²

A. The Bush Administration Proposals

In January 2003 the Congressional Budget Office (CBO) offered the following assessment of the costs of the Bush administration’s missile defence plans:

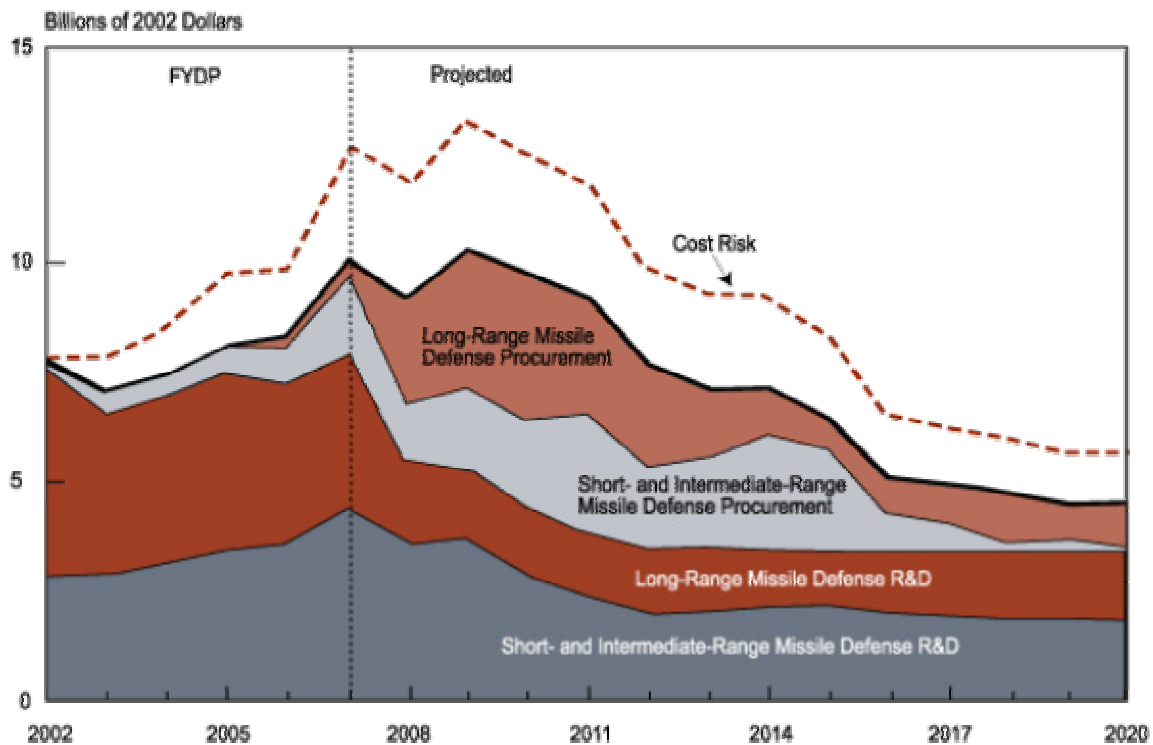
Long-Range, Land-Based System: DoD has begun building a missile defense test bed that will include placing a small number of interceptor missiles and building a radar in Alaska as well as making upgrades to existing facilities. CBO assumes that after 2007, DoD would expand that effort to include deployment of

⁸² Congressional Research Service, *National Missile Defense: Issues for Congress*, 2 May 2001

25 ground-based interceptor missiles at two sites: Fort Greely, Alaska and Grand Forks, North Dakota [...] Accounting for activities contained in the 2003 FYDP; CBO estimates that deployment of that system could be completed sometime in 2013 or 2014, at a total investment cost of about \$25 billion [...]

Shorter-Range, Ship-Based System: CBO's projection assumes deployment of an intermediate-range, sea-based missile defense system [...] CBO assumes that those new interceptors would be deployed after 2010 on the Navy's air-defense capable cruisers and destroyers, at a total investment cost of about \$17 billion.⁸³

The CBO's assessment of total project investment in a multi-layered missile defence system to 2020 is contained in the following table:



Source: Congressional Budget Office using data from the Department of Defense.

Notes: FYDP = Future Years Defense Program; R&D = research and development.⁸⁴

The CBO report concludes that:

Total investment in missile defense peaks in 2009 at about \$10 billion and then decreases as systems finish procurement and become operational. CBO assumes that all of the deployments in its projection would be complete by about 2016. After that, DoD would spend about \$5 billion a year for minor, evolutionary

⁸³ Congressional Budget Office, *The Long-term Implications of Current Defense Plans*, January 2003, p.91. This is available online at: <http://www.cbo.gov/showdoc.cfm?index=4010&sequence=0&from=1>

⁸⁴ *Ibid*, p.90

upgrades to operational systems, CBO projects, as well as for continued research on such concepts as space-based defenses.

If costs grow as they have historically, however, pursuing the programs in CBO's missile defense projection would cost an additional \$3 billion a year, on average, peaking at about \$13 billion in 2009.⁸⁵

A joint study in January 2003 by the Center for Arms Control and Non-Proliferation and the Economists Allied for Arms Reduction made an assessment of the full potential costs (both acquisition and whole-life) of a complex, multi-layered ballistic missile defence architecture through to 2015. The main conclusions of the study suggested:

1) Merely the acquisition costs plus operations costs just through 2015⁸⁶ (when applicable) of the postulated layered missile defense system would range, on the Low Estimate side, between \$509 and \$532 billion, and on the High Estimate side, between \$776 and \$807 billion.

2) Once longer term operations and support costs are added to acquisition costs to give a picture of the total life cycle costs for each missile defense system in the overall system, we find that the likely future cost of layered missile defense would be, on the Low estimate side, between \$785 billion and \$825 billion at least, and on the High Estimate side, between \$1.1 trillion and \$1.2 trillion.⁸⁷

A breakdown of the costs of each system within the multi-layered missile defence structure is also provided by the study. The executive summary stated:

Ground-based, midcourse NMD system: We project that the total likely acquisition costs for the two-site option, plus operations costs through 2015, would fall in a range between \$76 billion and \$110 billion. Acquisition costs of the three-site option, plus operations through 2015, could cost between \$90 billion and \$123 billion. Total life cycle costs for the two-site system would range from \$120 billion to \$161 billion, and for the three-site system, would range from \$142 billion to £181 billion.

Sea-based adjuncts to ground-based, midcourse NMD system: We estimate that acquisition (and operations through 2015)... would actually cost at least \$27

⁸⁵ Congressional Budget Office, *The Long-term Implications of Current Defense Plans*, January 2003, p.92

⁸⁶ The study considers acquisition costs to include research, development and testing, together with military site construction and production costs of the weapon system, sensors, other hardware and software. Operations and support costs are the costs to operate and maintain the systems after they are deployed, including operations and support of partial and phased deployments. Operating costs include the costs of personnel, site utilities, fuel, re-provisioning of ships and aircraft, equipment repair and replacement.

⁸⁷ Center for Arms Control and Non-Proliferation and Economists Allied for Arms Reduction, *The Full Costs of Ballistic Missile Defense*, January 2003. A full copy of the report is available online at: <http://www.armscontrolcenter.org/nmd/fullcost.pdf>

billion to \$31 billion and that this system would command a life cycle cost of \$52 billion to \$58 billion. Acquisition of a heavier “strategic defense” system through 2015, according to our estimates, would cost between \$37 billion and \$49 billion, while total life cycle costs for this system would rise from \$70 to \$95 billion.

Space-based laser (boost phase) missile defense system: We assume that a credible space-based laser missile defense system would require constellations of either 48 or 72 satellites, as the basis for its cost estimates. We estimate that the acquisition of the... satellite constellations respectively, would cost \$128 billion and \$195 billion. Total life cycle costs for these constellations would be \$310 billion and \$423 billion respectively.

Space-based kinetic boost phase: The life cycle costs of a space-based kinetic missile defense system similar to the “brilliant pebbles” system, would cost about \$69.9 billion.

Ground-based boost phase missile defense system: This conceptual missile defense layer would depend on foreign countries to host US deployment of land-based, boost phase interceptors... Development work on such a system has not yet been announced or conducted. We have developed an illustrative architecture, with four-site and eight-site configurations located in Russia and Central Asia, representing the low and high estimates as a range. Our estimates for acquisition costs (and operations through 2015) of the four-site and eight-site systems, respectively, are \$22.5 billion and \$30.1 billion. Total life cycle costs for these two configurations would probably run to about \$28 billion and \$41.8 billion. These figures do not include the likely cost to obtain, protect, or secure foreign bases overseas where land-based boost phase systems might be located.

Sea based boost-phase missile defense system: We find that the acquisition costs (plus operating costs through 2015) for such sea-based boost phase system would greatly exceed the costs of ground-based systems with the same objectives and would be on the order of \$61.4 billion and \$71 billion, for five and seven patrol area configurations respectively.

Airborne laser boost phase missile defense system: The Bush administration has given this programme new impetus, aiming to upgrade it from its original theatre missile defense objective to provide a strategic intercept capability as well as to expedite testing and initial deployment... the acquisition cost (plus operations through 2015) for this system will be about \$11.2 billion. The total life cycle costs of the seven aircraft laser fleet would easily reach \$19.3 billion.

Coastal terminal missile defence system: The Bush administration has emphasised terminal missile defense rhetorically but has not clarified whether it wishes to use this capability for national missile defense or only for theatre missile defense. We assume that the intent includes homeland defense and we construct an illustrative architecture covering the US coastlines... We believe the acquisition costs for the light and medium level capabilities for coastline terminal defense would cost, respectively, \$91.6 billion and \$148.1 billion. Our estimates of the total life cycle costs... are \$100.1 billion and \$167 billion respectively.

Overseas US terminal missile defence systems: We estimate that the acquisition costs of these overseas “terminal defense systems” in the numbers currently planned will be about \$80 billion. We expect the total life cycle costs of these TMD systems to be about \$108.2 billion.⁸⁸

In its submission to the Defence Committee report on *Missile Defence*, the British American Security Information Council (BASIC) commented:

The cost argument fits into a wider debate over the respective defence budgets of Europe and the United States. European governments are being placed under increased pressure to fulfil a larger number of capabilities with a fairly stagnant pool of resources. However, while missile defence figures on the list of priorities for some European NATO states, there are many other capabilities much higher on the list [...] Europe’s ability to commit to an expanded missile defence system will also be hampered by the inability – or unwillingness – of many European NATO states to increase their respective defence budgets [...]

The US is developing large, readily extendable missile defence using a range of technologies. If all programmes now under development become operational, the Congressional Budget office has estimated the cost of such a system at \$238 billion by the year 2025.⁸⁹

An examination of the costs to the UK of participating in a missile defence system is provided in Section X E.

⁸⁸ Center for Arms Control and Non-Proliferation and Economists Allied for Arms Reduction, *The Full Costs of Ballistic Missile Defense*, January 2003, p.xi-xiii

⁸⁹ Defence Committee, *Missile Defence: Minutes of Evidence*, HC 290-II, Session 2002-03, 29 January 2003, Ev 102

IX The Debate over Missile Defence

In recent decades US non-proliferation policy has comprised three main strands: support for the international structure of arms control treaties; efforts targeted against specific countries or regions to reduce the risk of proliferation; and defensive measures to ensure the USA could protect itself against any emerging threats.

Over time the relative balance between these three strands has fluctuated. The Clinton administration initially sought progress in developing the existing international arms control architecture, but met with increasing resistance from the Republican-dominated Congress, particularly over the Comprehensive Nuclear Test Ban Treaty (CTBT). The administration also pursued a number of initiatives as part of the second strand, most notably with the now stalled 1994 Agreed Framework with North Korea, which envisaged the dismantling of suspect North Korean nuclear reactors and their replacement with proliferation-resistant light-water reactors under international safeguards. Pressure from Congressional Republicans also helped stimulate some progress on the third strand, with the development of NMD, although administration officials appeared to view missile defence as a complement to the other strands, rather than a foundation stone of non-proliferation policy.

The policy being developed by the Bush administration appears to constitute a shift in emphasis in the relative importance of the three strands. The policy rests on the argument that the proliferation of WMD and ballistic missiles is inevitable and increasingly widespread, despite the existence of various treaties aimed at preventing the spread of such weapons. It is argued that these treaties can delay the inevitable only temporarily and are often counterproductive in that they foster a false sense of security. As a consequence, US security can be ensured only through the development of a nationwide ballistic missile defence shield. Without such a defensive system, supporters argue, hostile states in possession of WMD would be able to hold the USA hostage and limit its freedom of action internationally.

A vigorous international debate has developed over the merits of missile defence, with criticism of the proposed US system embracing a number of different issues.⁹⁰ First, some analysts have doubts about the threat posed by so-called 'states of concern' or 'rogue states', which US ballistic missile defence is supposed to counter. It is argued that the cost of developing missile technology may discourage potential aggressor states, particularly when other options, such as suitcase bombs or terrorist attacks, provide a cheaper and less technologically challenging alternative. Furthermore, some take the view that the threat of massive US nuclear and conventional retaliation would be

⁹⁰ A more detailed discussion of the pros and cons of missile defence is given in 'The US National Missile Defense Program: Vital Shield or Modern-Day Maginot Line?', *Australian Parliamentary Library Research Paper* 16 2000-2001, 5 December 2000, from <http://www.aph.gov.au/library/pubs/rp/2000-01/01RP16.htm>

sufficient to deter potential attackers. Advocates of missile defence counter that it would be better, morally speaking, to thwart attackers by destroying their missiles, than to rely on the threat of nuclear retaliation.

Secondly, question marks remain over the technical viability of any ballistic missile system based on current or projected technology. Even if a reliable system can be devised, critics believe it could be overwhelmed by basic countermeasures, such as decoys, and would struggle to cope with missiles armed with multiple warheads. Advocates of missile defence argue that it would be intended, at least initially, as a defence against states without such advanced technologies.

Thirdly, international attention has focused on the destabilising effect US plans could have on the international security environment. It is feared that, rather than increasing stability, missile defence could in fact encourage the proliferation of ballistic missile technology and weapons of mass destruction. Whereas Russia, at least for the foreseeable future, will have a sufficiently large arsenal capable of overwhelming any US defensive system, the effectiveness of the limited Chinese deterrent of around 20 ICBMs could be undermined. Some analysts believe China could respond with a significant expansion of its missile programme, which could, in turn, impact on Indian and Pakistani nuclear strategies.⁹¹ A US intelligence report released in December 2001 predicted China would expand its ICBM fleet to between 75 and 100 missiles by 2015.⁹²

President Chirac referred to this possibility in an interview with the *New York Times* in 1999:

If you look at world history, ever since men began waging war you will see that there's a permanent race between sword and shield. The sword always wins. The more improvements that are made to the shield, the more improvements are made to the sword. We think that with these systems we are just going to spur swordmakers to intensify their efforts.

China, which was already working harder than we realized on both nuclear weapons and delivery vehicles for them, would of course be encouraged to intensify those efforts, and it has the resources to do so. India would be encouraged to do the same thing, and it, too, has the resources. So all that is dangerous.⁹³

US officials argue that China will expand its nuclear arsenal regardless of US action on missile defence.⁹⁴ Other analysts disagree, claiming that the Chinese government believes

⁹¹ *Washington Post*, 10 January 2002

⁹² *Foreign Missile Developments and the Ballistic Missile Threat Through 2015*, Unclassified Summary of a National Intelligence Estimate, December 2001, from the CIA web site at: http://www.cia.gov/nic/pubs/other_products/Unclassifiedballisticmissilefinal.htm

⁹³ *International Herald Tribune*, 18 December 1999

⁹⁴ *Financial Times*, 13 December 2001

money on nuclear expansion would be better spent on economic development and reform. The Russian *Kommersant* newspaper wrote on 18 December 2001 that:

China is currently unwilling and unable to build up its nuclear missile potential since it needs the money for more peaceful objectives: the modernization and privatization of the ineffective, loss-making state sector of the economy requires billions in investment.⁹⁵

Some hold that the Bush administration sees missile defence as an alternative, rather than a complement, to traditional arms control diplomacy. Such fears have been reinforced by the refusal of the United States to ratify the Comprehensive Test Ban Treaty (CTBT) and its rejection of the proposed verification protocol to strengthen the Biological Weapons Convention (BWC).⁹⁶

Furthermore, some observers believe the more ambitious space-based BMD systems being proposed by the Bush administration could violate the Outer Space Treaty, 1967, which prohibits the deployment of weapons of mass destruction in space, and military activity on the moon and other celestial bodies. In evidence to the Foreign Affairs Committee, however, the Foreign and Commonwealth Office said it was

not aware of any proposal to amend the Treaty in order to accommodate missile defence, or for any other purpose. None of the proposals we have seen from the US for a missile defence system would violate the terms of the Outer Space Treaty. These proposals include the deployment of space-based sensors, and continued research into two space-based systems utilising a laser and a “hit-to-kill” interceptor. Neither system under research would fall into the category of a weapon of mass destruction nor would it be intended for deployment on celestial objects. It should be noted that the US has made no decisions on what missile defence system it will deploy.⁹⁷

Nonetheless, the Committee recommended that “the FCO continues to maintain close scrutiny of the arms control implications of the militarisation of outer space.”⁹⁸

⁹⁵ *Kommersant* newspaper, 18 December 2001, from *BBC Monitoring*

⁹⁶ For more information on the CTBT and BWC, see Library Standard Note SN/IA/1404, *Arms Control and Weapons of Mass Destruction*.

⁹⁷ Memorandum from the Foreign and Commonwealth Office to the Foreign Affairs Committee, para 19, from the Committee’s Second Report of Session 2001-02, *British-US Relations*, HC 237, 18 December 2001, evidence p.20

⁹⁸ Foreign Affairs Committee Second Report of Session 2001-02, *British-US Relations*, HC 237, 18 December 2001, para 107

X UK Involvement in Missile Defence

A. Previous Government Policy

In the *Strategic Defence Review* White Paper of July 1998 the British Government declared that, in its assessment, the threat to the UK from ballistic missile proliferation was “many years off”. This assessment was underlined in November 1998 by the then Secretary of State for Defence, George Robertson:

Britain’s approach to Ballistic Missile Defence was considered as part of the Strategic Defence Review. Supporting Essay 5, published as part of our report on the Strategic Defence Review, set out our conclusion that the risk to Britain from the ballistic missiles of nations of concern was many years off. This conclusion was based on a careful review and assessment of the intelligence information available to the Ministry of Defence from a variety of sources. As indicated in the Essay, we are continuing to monitor the position, and remain in close touch with our Allies.⁹⁹

A reiteration of this assessment was provided by the current Secretary of State for Defence, Geoff Hoon, in February 2001:

We assess that there is currently no significant ballistic missile threat, nor any other significant threat of attack, on the United Kingdom at present. We do, however, continue to monitor developments closely. It is not for the UK to make such assessments in respect of other countries.¹⁰⁰

Despite this, the Government had expressed qualified support for the US position on missile defence. In a Written Answer on 13 April 2000, Mr Hoon provided details on the level of UK cooperation with the USA on BMD:

The US has not asked for UK assistance in the deployment of the proposed National Missile Defence system, nor would we expect them to do so until after a US decision on whether or not to proceed with its deployment. In my discussions with the US Administration on the subject, I have made it clear that the UK would consider any such request carefully. I have also welcomed the fact that the US will make their deployment decision on the basis of a number of important factors, which will include taking account of the views of Allies and the status of the Anti Ballistic Missile Treaty.¹⁰¹

⁹⁹ HC Deb 12 November 1998, c291w

¹⁰⁰ HC Deb 12 February 2001, c49w

¹⁰¹ HC Deb 13 April 2000, c261-2w

B. Current Involvement in Missile Defence

On 17 October 2002 the Government announced its intention to publish a public discussion paper on the issue of missile defence. That consultation was launched on 9 December 2002.¹⁰² In a statement to the House Mr Hoon declared:

As I promised the House on 17 October, I have today placed further analytical and discussion material in the Library of the House which I hope will contribute to the debate on the role that active missile defence might play within a comprehensive strategy for tackling the potential threat from ballistic missiles... if there is a United States request for the use for missile defence purposes of Fylingdales or any other United Kingdom facility, we will consider it seriously. The Government would agree to such a request only if the security of the United Kingdom and the alliance would ultimately be enhanced.¹⁰³

In addition to considering the merits of missile defence, the public discussion paper contained a more detailed assessment of the ballistic missile threat to the UK from states such as Iraq, Iran, Libya and North Korea. Extracts from the threat assessment can be found in Appendix 3 below.

A request from the USA for the upgrade of the early warning radar at RAF Fylingdales for missile defence purposes was received on 17 December 2002. In a Statement to the House on 15 January 2003 Mr Hoon outlined the Government's initial reactions to the US request:

The background to the US request is the marked increase in the threat to our security from weapons of mass destruction and their means of delivery. The Prime Minister has described weapons of mass destruction as the key issue facing the world community. It is a real threat to our security, fanned by proliferation from irresponsible regimes. As we all know, threat is a combination of intention and capability. Intentions can be debated, but they can also change at very short notice. The evidence of expanding capabilities, therefore, cannot responsibly be ignored. The hard fact is that a number of states of concern are making major investments in developing ever-longer range ballistic missiles. We are not referring here to countries developing standard military technology against the risk of conventional conflict. These ballistic missile programmes are being developed solely in order to threaten the delivery of mass destruction—nerve gas, toxins, biological agents or even nuclear warheads. It is the combination of ballistic missiles and the possession of these weapons of mass destruction, together with the demonstrated willingness to use those capabilities, that makes Iraq the most immediate state threat to global security. Elsewhere, if North Korea ends its moratorium on flight testing, it could flight test a missile with the

¹⁰² *Missile Defence: A Public Discussion Paper*, 9 December 2002, available on the MoD web site at: http://www.mod.uk/issues/cooperation/missile_defence.htm

¹⁰³ HC Deb 9 December 2002, c7-8

potential to reach Europe and the United States within weeks. Other countries may acquire similar missile systems, not least through the proliferation of missile technology from North Korea.

Based on the analysis and discussion that we have undertaken so far, I have therefore come to the preliminary conclusion that the answer to the US request must be yes, and that we should agree to the upgrade as proposed [...] Agreeing to the upgrade is not at odds with the wider approach of our NATO allies. The Prague summit agreed

“to examine options for addressing the increasing missile threat to Alliance territory, forces and population centres”.

The Danish Government have received a parallel request to upgrade the early warning radar in Greenland. Missile defence is a defensive system that threatens no one. We see no reason to believe fears that the development of missile defences will be strategically destabilising. Reactions from Russia and China have been measured. Missile defence would need to be used only if a ballistic missile has actually been fired. At that point, no matter how much we emphasise our other means of addressing the threat—non-proliferation, intelligence, law enforcement, conflict prevention, diplomacy and deterrence—those means will have failed and cannot be of further help. There would be no way of preventing a devastating impact without intercepting and destroying the missile. Once the missile is in the air, it is unthinkable that anyone could not want us to be in a position to shoot it down.

Those are the reasons for concluding that agreeing to the US request would not prejudice the UK's interests. But beyond that, the key consideration is that it would represent an invaluable extra insurance against the development of a still uncertain, but potentially catastrophic, threat to the citizens of this country. There is not yet an immediate threat to us of this kind, but there is a distinct possibility that this threat could materialise in the relatively near future. It would therefore be irresponsible for the Government to leave the United Kingdom without a route map to acquire a defence against this threat. An upgraded Fylingdales radar would be a vital building-block on which missile defence for this country and for our European neighbours could later be developed, if the need arises and if we so decide.

We are confident that agreeing to this request will not significantly increase the threat to the UK. The security interests of the UK are already closely identified with those of the US and other NATO allies. That will not change, regardless of decisions on missile defence. Keeping a low profile and hoping for the best is simply not an option. We also believe that any increased threat to RAF Fylingdales itself is negligible. For the foreseeable future, states of concern are very unlikely to have the sophisticated capability or size of arsenal to consider targeting specific points or military installations. Long-range missiles in their hands will essentially be weapons of terror, and, as with all military installations in the UK, the station is well defended against terrorist attack. But we must not forget that what drives the threat against the UK is not the deployment of missile

defences, but those states of concern who develop or acquire weapons of mass destruction and their means of delivery.

The upgrade would indicate no commitment to further involvement with missile defence deployments. Separately, we intend to agree a new technical memorandum of understanding with the United States that would give us full insight into the development of their missile defence programme and the opportunity for UK industry to reap the benefits of participation. But any UK acquisition of missile defence would be subject to a separate decision, at the relevant time. We must approach this in stages, considering each step in the light of how both the threat and the relevant technologies evolve.

The Government have not yet formally replied to the US Administration on their request to upgrade the Fylingdales radar. I await with interest the views that hon. Members will wish to put forward, today and in next week's debate. But it is only right that the House should know the Government's preliminary conclusion that it is in the UK's interests to agree to the request. From the UK's national perspective, this specific decision is one that has real potential benefits at essentially no financial cost. But it will ensure that if, in the coming years, we find that a potentially devastating threat is becoming a reality, we have the opportunity to defend against it.¹⁰⁴

In a speech to a RUSI conference on 18 November 2002, the Shadow Secretary of State for Defence, Bernard Jenkin, outlined the position of the Conservative party:

There is no dispute about the threat. The need for missile defence is beyond doubt. A Conservative government would immediately offer the US the use of UK radar facilities and offer to site missile interceptors on British soil and on ships of the Royal Navy.

Commenting on Mr Hoon's statement of 15 January 2003, Mr Jenkin went on to say:

We welcome the decision as far as it goes, as we believe that it is in the interests of British national security. Many of our European allies—France, Germany, the Netherlands, Italy, Greece—are already involved in missile defence programmes, particularly theatre missile defence, some of them in co-operation with the United States... On the wider issue, the Secretary of State says that the decision does not commit us to deeper involvement in missile defence, but why is it necessary to approach the issue, as he says, in stages? Surely the conclusion from his statement must be that we should be fully committed in principle to global missile defence now.¹⁰⁵

¹⁰⁴ HC Deb 15 January 2003, c696-699

¹⁰⁵ HC Deb 15 January 2003, c699-700

The Defence Committee commented in its January 2003 report on *Missile Defence*:

We have concluded that the UK should agree to the upgrade. The factors in favour of that agreement – the importance of the UK-US relationship, the improvement to the early warning capability, the opportunity to keep open the prospect of future missile defence for the UK and the potential for UK industrial participation in the programme's further development – outweigh the arguments against [...]

We see no reason to believe that agreeing to this upgrade will lead inevitably to further development or deployment at Fylingdales itself, or indeed elsewhere in the UK. But that agreement to the US request does represent at least a step or two down the path towards active participation in Missile Defence.¹⁰⁶

In a Written Ministerial Statement on 5 February 2003 Mr Hoon said he would be responding formally to the US request to upgrade the early warning radar at RAF Fylingdales:

The Government has encouraged Parliamentary and public discussion of the issues involved. On 17 October, I informed the House of current work in the US on missile defence and, on 9 December, published a discussion paper, inviting interested parties to contribute their views. We have received a large number of responses both from individuals and organisations and we have considered all contributions carefully. I have visited North Yorkshire to explain what the upgrade would involve and to hear at first hand the views of local people. We have engaged in initial discussions with the planning authorities. In an oral statement on 15 January, I informed the House of the Government's preliminary conclusion that it was in the UK's interest to agree to the US request. I gave evidence to the Defence Select Committee on the same day and addressed points raised by hon members in Defence Debate on 22 January. I welcome the Select Committee's conclusion, in their report published on 29 January, that the UK should agree to the upgrade.

In the course of these discussion we have been able to clarify that: the upgrade essentially comprises computer hardware and software modification, and involved no new development or change to the external appearance or power output of the radar; the radar will continue to fulfil its long-established Ballistic Missile Early Warning System (BMEWS) role; it will continue to be operated and staffed by the Royal Air Force, and we will continue to enjoy full access to its data; and the upgrade does not of itself commit the UK Government to any greater participation in the US missile defence programme. It does, however, keep open the prospect of acquiring missile defence capabilities for the UK, should we desire such protection at some point in the future. We will continue discussions with the local planning authorities on the detail of the upgrade work.

¹⁰⁶ Defence Committee, *Missile Defence*, HC 290-I, Session 2002-03, 29 January 2003

I am now satisfied that we have been able to take fully into account the views of all interested parties in coming to a decision. I am therefore today replying to the United States Secretary of Defense, Donald Rumsfeld, conveying the Government's agreement to the US request. We are separately negotiating a technical Memorandum of Understanding to give British industry the best possible opportunities to win work on the US programme.¹⁰⁷

The British Chief of Defence Staff, Sir Michael Boyce, previously a critic of missile defence, has expressed his support for the US request. Commenting at a RUSI conference, he stated:

If there is a defence system around which we can make use of, then it must be essential for us to investigate it. I would very much endorse the fact that we should take this [US] request seriously...It would benefit the country in the longer term. There may not be a threat today, but there will certainly be. I can guarantee it...or take a bet on it.¹⁰⁸

Dr Stephen Pullinger of the Centre for Defence Studies has also expressed support for the missile defence proposals. In a paper published in January 2003, he commented:

Fears that missile defence will spark a new arms race are largely without foundation; upgrading the radar at Fylingdales will not make the UK more of a target...This is not to deny the existence of concerns regarding the impact of missile defences on strategic stability... [Therefore] it would be prudent for the Government to agree to the US request to upgrade Fylingdales and to indicate its willingness to participate in the US missile defence programme. It should also make clear that any further investment in missile defence will depend on the nature and extent of the evolving threat, the technological capabilities demonstrated by missile defence at countering the threat, the financial (opportunity) costs involved, and our security commitments to our allies.¹⁰⁹

In contrast, the former Assistant Chief of the Defence Staff, Air Marshal Sir Timothy Garden, highlighted a number of concerns in an interview with the BBC Radio *File on 4* programme:

Taking part in US missile defence plans would put the UK at greater risk of attack... Enemies intent on using weapons of mass destruction would see the need to take on our infrastructure, of which the ballistic missile warning radars would be a very important and perhaps the most vulnerable part.¹¹⁰

¹⁰⁷ HC Deb 5 February 2003, c11WS

¹⁰⁸ Speech to RUSI by Chief of Defence Staff, Sir Michael Boyce, on 18 December 2002

¹⁰⁹ Dr Stephen Pullinger, "Missile defence: next steps in UK policy", *Centre for Defence Studies*, January 2003

¹¹⁰ *BBC File on 4*, interview with Air Marshal Sir Timothy Garden, 2 February 2003

On the issue of potential UK industrial participation, he went on to state:

I think the best estimate was that over the whole [1980s SDI star wars] project, which spent billions upon billions of dollars, we got about £1 million of business... The US is concerned, just as other nations are, about not letting work go overseas that could be done at home... I think it would be expecting a great deal that much business is going to come the way of Britain and Europe.¹¹¹

C. The Role of RAF Fylingdales

RAF Fylingdales in North Yorkshire has been a part of the US Ballistic Missile Early Warning System since 1963. Mr Hoon provided a summary of the role of the establishment during Defence Questions on 5 June 2000:

RAF Fylingdales provides the United Kingdom with early warning of potential ballistic missile attack against the United Kingdom and western Europe, and the United States with early warning for north America. It has performed that function since 1963.¹¹²

In 2000 there were nine US civilian contractor employees and one US military officer at RAF Fylingdales.¹¹³ In 1992 the original “golf ball” structures were replaced with 360° coverage, phased-array radar. Under plans for a missile defence system, Fylingdales would be one of five early warning radars, three of which would be in the USA (Massachusetts, California and Alaska), one at Thule in Greenland, and one at Fylingdales.

In his Statement to the House on 15 January 2003 Mr Hoon provided further detail on the proposals for Fylingdales:

RAF Fylingdales has operated since 1963 as a ballistic missile early warning system, which together with other radars in the United States and Greenland provides tactical warning and attack assessment of a missile attack against the United Kingdom, North America or western Europe. It has been upgraded a number of times over the years. Many hon. Members will recall the old “golf balls” that were dismantled in the late 1980s and replaced with the existing pyramid-like structure. Indeed, a life extension programme is under way to maintain its capabilities to provide early warning and track objects in space. These missions will continue to be the primary function of RAF Fylingdales...The proposal is for an upgrade of the existing radar, not some massive new construction. No change to the external appearance of the radar should be involved. The upgrade essentially comprises modification to the hardware and software of the computers within the base. There will be no change

¹¹¹ *BBC File on 4*, interview with Air Marshal Sir Timothy Garden, 2 February 2003

¹¹² HC Deb 5 June 2000, c5

¹¹³ HC Deb 12 May 2000, c513w

in the power output of the radar, which is many times below statutory safety limits. We therefore believe that no health risk to people or livestock could arise. We have already explained to the local planning authorities that we see nothing in the upgrade proposals that would require formal planning consultation, and we have promised to provide them with full supporting evidence in due course.

The upgrade of the Fylingdales radar can and should be considered as a discrete proposition. It does not commit us in any way to any deeper involvement in missile defence, although it gives us options to do so, should we decide on that at a later date. It will not involve huge costs. The upgrade will be performed at US expense, and we do not expect any significant variation in the running costs of RAF Fylingdales, which, as is appropriate for an RAF station, we already bear.¹¹⁴

The Defence Committee pointed out in its report on *Missile Defence* that:

The request, however, is not simply for a technical upgrade. It is also, and perhaps more importantly, for agreement to a change to the purpose to which the information collected by the radar will be put. Hitherto... the information provided has been used only to identify missile launched and to track their paths. For missile defence purposes the information would also be used to support the capability of the interceptor missiles. This was described to us during our visit to RAF Fylingdales as a change to the mission of the base, which would therefore require some amendment of the agreement between the UK and US governments, which governs the terms of the American use of Fylingdales. This agreement is in the form of an exchange of notes between the British Secretary of State for Foreign Affairs and the American Ambassador, dated 15 February 1960.¹¹⁵

The report went on to conclude:

We deplore the manner in which the public debate on that issue of the upgrade has been handled by the Ministry of Defence. It has shown no respect for either the views of those affected locally by the decision or for the arguments of those opposed to the upgrade [...]

We very much welcome the MoD's approach of putting its case to the planning authorities in a form that could be made public. Those who will need persuading that the local impact of the upgrade will not be significant extend beyond the planning authorities. It would seem that many of the concerns raised by various groups spring from a misplaced apprehension that the UK will inevitably field the full panoply of the Missile Defence system, and an exaggerated view of health hazards that might be caused by the proposed upgrade. But the MoD has not done as much as it could to present the full facts and explain carefully how such misgivings are misplaced. The MoD must now grasp this opportunity to clarify Fylingdales' role and its environmental impact.

¹¹⁴ HC Deb 15 January 2003, c697

¹¹⁵ Defence Committee, *Missile Defence*, HC 290-I, Session 2002-03, 29 January 2003, p.18

Furthermore, we do not believe that the UK, or the Fylingdales area, would face any material additional risks from the upgrade, in terms either of health risks from radiation or an increased likelihood of potential attackers identifying Fylingdales as a target. Nor do we believe that arguments that missile defence may cause international instability provide compelling grounds for rejecting the US request.¹¹⁶

D. Potential Role of RAF Menwith Hill

Menwith Hill in North Yorkshire was first established as a US Army signals base in the mid-1950s. The National Security Agency assumed control of Menwith Hill in 1966. Personnel from all four US Services work at the base¹¹⁷ and as of 26 April 2000 there were 415 US military personnel, 989 US civilian personnel, five UK military and 392 UK civilian personnel (excluding UK Government Communications Headquarters [GCHQ] staff) working at Menwith Hill.¹¹⁸ The base commander is a US Army officer¹¹⁹ and the executive management of the base was assumed by the US Army in 1995. The following year, Menwith Hill Station was re-designated as RAF Menwith Hill. This has no legal significance but merely brought the base into line with the usual practice of designating all major US bases in the UK as RAF bases whatever their actual US military use.¹²⁰ The practice of designating US bases as RAF stations began in the 1950s as a way of covering the extent of the US Air Force build up in Britain at that time. US-operated ‘RAF’ bases house a RAF Squadron Leader but he/she is present only for symbolic liaison purposes and has no operational control.

The land on which Menwith Hill is located is owned by the Ministry of Defence, in right of the Crown, and is “made available” to the US Department of Defence.¹²¹ A “security of tenure agreement applicable solely to Menwith Hill” exists, although the exact nature of that agreement “is a confidential administrative arrangement between Her Majesty’s Government and the Government of the United States”.¹²²

The British Government has given assurances, “in connection with US funding arrangements”, both in 1956 and in 1976, that Menwith Hill would be available to the United States for periods of 21 years.¹²³ In March 1997, the Ministry of Defence (MOD) stated that “there is no requirement to review these assurances”, although this did not deny that new assurances were to be given.¹²⁴ An attempt in 1995 to discover more detail of the

¹¹⁶ Defence Committee, *Missile Defence*, HC 290-I, Session 2002-03, 29 January 2003

¹¹⁷ HC Deb 20 March 1997 c869w

¹¹⁸ HC Deb 12 May 2000 c513w

¹¹⁹ HC Deb 24 February 1997 c119w

¹²⁰ HC Deb 18 March 1996 c65w

¹²¹ HC Deb 27 May 1993 c681w

¹²² HC Deb 12 July 1995 c677w and HC Deb 21 March 1996 c85w

¹²³ HL Deb 20 March 1997 92w

¹²⁴ *Ibid.*

control of operations at Menwith Hill in the High Court in connection with MOD legal action against the peace campaigner Lindis Percy was prevented by a Public Interest Immunity certificate signed by the then Foreign Secretary, Malcolm Rifkind.¹²⁵ The radomes and most of the equipment at the base are owned by the US government.¹²⁶

In a Written Answer in November 1995 on the terms of the administrative arrangements governing the US use of Menwith Hill, the MOD stated:

The site at Menwith Hill has been made available to the United States visiting forces and their civilian component in accordance with the agreement regarding the status of forces of parties to the North Atlantic Treaty of 1951 and other arrangements which are appropriate to the relationship which exists between the United Kingdom and the United States for the purposes of our common defence.¹²⁷

The Status of Forces Agreement (SOFA), signed by NATO members in London on 19 June 1951, sets out the legal arrangements for the exchange and basing of military personnel of one NATO state in another. It was modified by an Agreed Minute and then supplemented by the addition of a Protocol in 1952. In the UK, the provisions of the SOFA were placed in statute in the *Visiting Forces Act 1952* (VFA), which replaced earlier wartime legislation governing the stationing of US forces in the UK.

The VFA provides for the exercise of extraterritorial jurisdiction by a sending state, for example the USA, over members of its armed forces and their dependents in the UK (a “receiving state”) in certain cases. Since 1961, following a ruling of the US Supreme Court that they were not subject to US military law, extraterritorial jurisdiction does not apply in the case of US civilians employed by the US DoD in the UK and all US civilian dependents.

In October 2001 the Minister for the Armed Forces, Adam Ingram, outlined the current role of RAF Menwith Hill:

RAF Menwith Hill is an integral part of the world-wide US Department of Defence communications network, which supports UK, US and NATO interests. RAF Menwith Hill is also the site for the European Relay Ground Station, which is part of the US Space Based Infra-Red System (SBIRS). SBIRS will be a world-wide satellite based system designed to provide early warning of ballistic missile launch. It will replace the ageing US Defence Support Programme (DSP) satellite system, which has for some years contributed to the security of the UK and NATO. Information on detailed operations at the base is withheld under Exemption 1 (Defence, Security and International Relations) of the Code of Practice on Access to Government Information.¹²⁸

¹²⁵ *The Guardian* 13 March 1995

¹²⁶ HC Deb 18 March 1996 c63w

¹²⁷ HC Deb 2 November 1995 c421w

¹²⁸ HC Deb 15 October 2001, c941W

In December 2002 Mr Hoon stated:

A decision was taken in 1997 to base the European relay ground station for the Space Based Infra-Red System (SBIRS) project at RAF Menwith Hill. SBIRS is a satellite system designed to give early warning of the launch of ballistic missiles anywhere in the world. It updates the existing but ageing defence support programme (DSP) satellites and is needed irrespective of any decision on missile defence.¹²⁹

Future improvements to the initial capabilities envisaged in the recent US proposals for missile defence could involve the application and upgrade of the current SBIRS capabilities at RAF Menwith Hill.

The Defence Committee stated in its report on *Missile Defence* of January 2003:

Amendment will be needed in due course in respect of RAF Menwith Hill, whose use is governed by the *NATO Status of Forces Agreement 1951* and additional confidential arrangements. MoD officials told us that if at any point the US wished to use the station's Space Based Infra Red System (SBIRS) capability for missile defence purposes, they would need to request approval for that from the UK Government. But the position differed from the Fylingdales case. The MoD argued that although Menwith Hill had already been upgraded to process SBIRS data, no US request had been required so far because the prospective SBIRS system is not yet part of any missile defence system.¹³⁰

E. Costs to the UK

The British Ministry of Defence's research budget for missile defence is currently £4 million per year.¹³¹

However, the costs to the UK of implementing a missile defence system, either as part of the US-led programme or through a NATO-led initiative, are unclear at present. NATO proposals on missile defence are examined in Section XI.

In a Written Answer on 2 December 2002 the Secretary of State for Defence, Geoff Hoon, stated:

No realistic cost estimates can be made at this stage. The United States Government has made no specific decisions on the overall architecture of a US

¹²⁹ HC Deb 9 December 2002, c15W

¹³⁰ Defence Committee, *Missile Defence*, HC 290-I, Session 2002-03, 29 January 2003, p.18

¹³¹ *Ibid*, Ev27

missile defence system. No decision has been taken on the acquisition of a missile defence system by the UK.¹³²

On the cost of upgrading RAF Fylingdales, the Minister for Defence Procurement, Lord Bach, stated during Oral Questions on 10 February 2003:

The cost of upgrading RAF Fylingdales will be borne by the United States Government. The station's running costs are borne by the Ministry of Defence, as is appropriate for a station staffed and controlled by the Royal Air Force, but the impact on these costs is expected to be minimal.¹³³

He went on to state:

The present annual operating costs of RAF Fylingdales is some £15.6 million per year. The introduction of additional security measures announced by the Secretary of State following the events of 11 September 2001 – which have nothing to do with this proposed upgrade – means that this figure will rise to almost £18 million per year.¹³⁴

The costs to the UK of procuring a BMD system similar to the one under development in the US could be considerable. During evidence to the Defence Committee in February 2002 Paul Roper, the Director of Strategic Technologies at the MOD, suggested that the cost to the UK could be in region of five to ten billion pounds,¹³⁵ which *The Guardian* estimated to be around 40 per cent of the current UK defence budget.¹³⁶ The broad estimate was based on the assumption that the UK had access to data from an upgraded RAF Fylingdales and that it procured US ground-based interceptors. Brian Hawtin, the Director of General International Security Policy at the MOD, said there was a need to be very careful about formulating meaningful estimates at this stage, saying that the figure suggested by Mr Roper had been of “a very broad order of magnitude, not based on specific systems or specific architecture”.¹³⁷

¹³² HC Deb 2 December 2002, c471W

¹³³ HL Deb 10 February 2003, c460

¹³⁴ *Ibid*

¹³⁵ Defence Committee, *Missile Defence: Minutes of Evidence*, HC 290-II, Session 2002-03, 29 January 2003, Ev103

¹³⁶ ‘Missile system’s £10bn price tag’, *The Guardian*, 28 February 2002, p.7

¹³⁷ Defence Committee, *Missile Defence: Minutes of Evidence*, HC 290-II, Session 2002-03, 29 January 2003, Ev105

XI NATO Involvement in Missile Defence

The NATO Strategic Concept agreed at the Washington Summit in 1999 outlined for the first time the Alliance's formal position on missile defence.

Paragraph 56 of the Strategic Concept stated:

The Alliance's defence posture against the risks and potential threats of the proliferation of NBC weapons and their means of delivery must continue to be improved, including through work on missile defences. [...] The aim in doing so will be to further reduce operational vulnerabilities of NATO military forces while maintaining their flexibility and effectiveness despite the presence, threat or use of NBC weapons.¹³⁸

As a result of the 1999 Strategic Concept, a number of national, multinational and NATO-wide Theatre Missile Defence (TMD)¹³⁹ programmes and exercises have been pursued. At the Alliance level this work has focused on the potential for deploying, by 2010, a TMD capability on top of the planned Air Command and Control System (ACCS). The ACCS is an extended air defence system, which is intended to be fielded later this decade as a replacement for the NADGE integrated air defence system.

In August 2001 feasibility study contracts were let to two transatlantic consortia. With additional analysis from the NATO Consultation, Command and Control Agency (NC3A), a decision is expected to be taken in 2004 on taking this project forward into a second phase.

Since 11 September 2001, however, attitudes to missile defence as a strategic Alliance capability have changed. Robert Bell, NATO Assistant Secretary General for Defence Support, outlined in a speech in June 2002:

Last Fall, standing with President Bush in the Rose Garden only a few weeks after September 11th, the Secretary General of NATO, Lord Robertson, said that "defence against ballistic missiles is here to stay".

And just two months ago, when the Secretary General was back in Washington...he said in an important speech to the Council on Foreign Relations that NATO needs to give "new emphasis" to missile defence, together with other critically-needed warfighting capabilities, at its historic summit in Prague this November.¹⁴⁰

¹³⁸ The Alliance's Strategic Concept, 23 April 1999. A copy of this document is available online at: <http://www.nato.int/docu/pr/1999/p99-065e.htm>

¹³⁹ Theatre Missile Defence refers to the missile defence capabilities used to protect forces in the field.

¹⁴⁰ Speech by Robert Bell, NATO Assistant Secretary General for Defence Support on 3 June 2002. A copy of his speech is available online at: <http://www.nato.int/docu/speech/2002/s020603a.htm>

Following the formal termination of the ABM Treaty in June 2002, an opportunity was offered by the USA for NATO allies to participate in the development of a multi-layered strategic ballistic missile defence system.

An article in *Jane's Defence Weekly* outlined:

The USA has presented NATO allies with a comprehensive invitation to help build, host and share the protection of a multi-layered ballistic missile defence system up to and including the strategic level previously opposed by Europeans...the broad options for allies to participate [were mapped out]. The options ranged from simple political support to hosting a radar site to taking part in the industrial development or production phases.¹⁴¹

The article went on to comment:

There is a growing belief that the resources of terrorists should not be underestimated and Bush's argument that preparing a defence against missile attacks is prudent has struck a chord with allies. Washington has pressed on, doing away with the title NMD and adjusting the concept to include an umbrella of protection for "allies and friends".¹⁴²

In a speech to the Foreign Policy Centre on 12 November 2002 Mr Hoon commented:

NATO is already examining the threat to deployed forces from ballistic missiles. It also needs to look carefully at the emerging threat to the territory and population centres of NATO nations...as the threat grows, and technologies develop, there may come a day when we need to decide to add a further capability to our current range of responses by acquiring missile defences for the UK and Europe as a whole, in the way the US has already decided.¹⁴³

Conclusions reached at the Prague Summit confirmed the decision to broaden the focus of the Alliance from TMD towards the US concept of strategic missile defence, as outlined in July 2002.

The *Prague Summit Declaration* of 21 November 2002 stated:

[We will] examine the options for addressing the increasing missile threat to Alliance territory, forces and population centres in an effective and efficient way through an appropriate mix of political and defence efforts, along with deterrence. Today we initiated a new NATO Missile Defence feasibility study to examine

¹⁴¹ "USA pushes missile defence", *Jane's Defence Weekly*, 24 July 2002

¹⁴² *Ibid*

¹⁴³ Speech by Secretary of State for Defence, Geoff Hoon to the Foreign Policy Centre on 12 November 2002. A copy of this speech is available online at:

http://news.mod.uk/news/press/news_press_notice.asp?newsItem_id=2143

options for protecting Alliance territory, forces and population centres against the full range of missile threats, which we will continue to assess. Our efforts in this regard will be consistent with the indivisibility of Allied security.¹⁴⁴

Many analysts consider that NATO's current TMD feasibility studies will be incorporated into the larger missile defence study announced at the Prague Summit.

However, an article in *Defense News* commented:

Such a change in scope, however, could mean that two ongoing studies, expected to be concluded in 2003, may not result in a theatre ballistic missile defence (TMD) architecture by 2004, as originally envisaged.¹⁴⁵

An article in *Jane's Defence Weekly* also suggested:

Given the lag time in the NATO programme, it is too early to predict a link up with US missile defence plans.¹⁴⁶

¹⁴⁴ Prague Summit Declaration issued by NATO Heads of State and Government, 21 November 2002. A full copy of the declaration is available online at: <http://www.nato.int/docu/pr/2002/p02-127e.htm>

¹⁴⁵ "NATO allies rethink ballistic missile defence", *Defense News*, 2 December 2002, p.4

¹⁴⁶ "French turnaround on NATO missile defence", *Jane's Defence Weekly*, 13 November 2002

Appendix 1 – Text of the Anti-Ballistic Missile Treaty

TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS

Signed at Moscow May 26, 1972

Ratification advised by U.S. Senate August 3, 1972

Ratified by U.S. President September 30, 1972

Proclaimed by U.S. President October 3, 1972

Instruments of ratification exchanged October 3, 1972

Entered into force October 3, 1972

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the premise that nuclear war would have devastating consequences for all mankind,

Considering that effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons,

Proceeding from the premise that the limitation of anti-ballistic missile systems, as well as certain agreed measures with respect to the limitation of strategic offensive arms, would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament,

Desiring to contribute to the relaxation of international tension and the strengthening of trust between States,

Have agreed as follows:

Article I

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.
2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

Article II

1. For the purpose of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:

- (a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode;
- (b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and
- (c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.

2. The ABM system components listed in paragraph 1 of this Article include those which are:

- (a) operational;
- (b) under construction;
- (c) undergoing testing;
- (d) undergoing overhaul, repair or conversion; or
- (e) mothballed.

Article III

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

Article IV

The limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each Party may have no more than a total of fifteen ABM launchers at test ranges.

Article V

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.
2. Each Party undertakes not to develop, test or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, not to modify deployed launchers to provide them with such a capacity, not to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

Article VI

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by the Treaty, each Party undertakes:

- (a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and
- (b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

Article VII

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

Article VIII

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

Article IX

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

Article X

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

Article XI

The Parties undertake to continue active negotiations for limitations on strategic offensive arms.

Article XII

1. For the purpose of providing assurance or compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.
2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.
3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

Article XIII

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:
 - (a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;
 - (b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;
 - (c) consider questions involving unintended interference with national technical means of verification;
 - (d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;
 - (e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;
 - (f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty; including proposals for amendments in accordance with the provisions of this Treaty;
 - (g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.
2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

Article XIV

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five-year intervals thereafter, the Parties shall together conduct a review of this Treaty.

Article XV

1. This Treaty shall be of unlimited duration.

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

Article XVI

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.

2. This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.

DONE at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

RICHARD NIXON

President of the United States of America

FOR THE UNION OF SOVIET SOCIALIST REPUBLICS:

L. I. BREZHNEV

General Secretary of the Central Committee of the CPSU

Appendix 2 – Text of the Strategic Offensive Reductions Treaty

For Immediate Release
The White House
Office of the Press Secretary
May 24, 2002

Text of Strategic Offensive Reductions Treaty

The United States of America and the Russian Federation, hereinafter referred to as the Parties,

Embarking upon the path of new relations for a new century and committed to the goal of strengthening their relationship through cooperation and friendship,

Believing that new global challenges and threats require the building of a qualitatively new foundation for strategic relations between the Parties,

Desiring to establish a genuine partnership based on the principles of mutual security, cooperation, trust, openness, and predictability,

Committed to implementing significant reductions in strategic offensive arms,

Proceeding from the Joint Statements by the President of the United States of America and the President of the Russian Federation on Strategic Issues of July 22, 2001 in Genoa and on a New Relationship between the United States and Russia of November 13, 2001 in Washington,

Mindful of their obligations under the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Reduction and Limitation of Strategic Offensive Arms of July 31, 1991, hereinafter referred to as the START Treaty,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons of July 1, 1968, and

Convinced that this Treaty will help to establish more favorable conditions for actively promoting security and cooperation, and enhancing international stability,

Have agreed as follows:

Article I

Each Party shall reduce and limit strategic nuclear warheads, as stated by the President of the United States of America on November 13, 2001 and as stated by the President of the Russian Federation on November 13, 2001 and December 13, 2001 respectively, so that by December 31, 2012 the aggregate number of such warheads does not exceed 1700-2200 for each Party. Each Party shall determine for itself the composition and structure of its strategic offensive arms, based on the established aggregate limit for the number of such warheads.

Article II

The Parties agree that the START Treaty remains in force in accordance with its terms.

Article III

For purposes of implementing this Treaty, the Parties shall hold meetings at least twice a year of a Bilateral Implementation Commission.

Article IV

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. This Treaty shall enter into force on the date of the exchange of instruments of ratification.
2. This Treaty shall remain in force until December 31, 2012 and may be extended by agreement of the Parties or superseded earlier by a subsequent agreement.
3. Each Party, in exercising its national sovereignty, may withdraw from this Treaty upon three months written notice to the other Party.

Article V

This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.
Done at Moscow on May 24, 2002, in two copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

FOR THE RUSSIAN FEDERATION:

Source: Federation of American Scientists web site at
<http://www.fas.org/nuke/control/sort/sort.htm>

Appendix 3 – Ministry of Defence Assessment of the Ballistic Missile Threat (December 2002)

Extract from the Ministry of Defence document, *Missile Defence: A Public Discussion Paper*, 9 December 2002, pp.10-15 (maps omitted).

Full document available at: http://www.mod.uk/issues/cooperation/missile_defence.htm

The ballistic missile threat in the future

20. We assess that there is no immediate significant ballistic missile threat to the UK. But we believe that Iraq, North Korea, Iran and Libya are working to obtain longer-range ballistic missiles with the potential ability to target the UK or our deployed forces. When a capability might emerge depends not just on technical factors (in terms of range, accuracy, and ability to design a robust re-entry vehicle) but on a continued political commitment to developing ballistic missiles and the capacity to procure expertise or complete systems from proliferators. It also depends on the effectiveness of international efforts to curb missile proliferation.

21. Achievement of capability is of course not the same thing as intention to use (or to threaten to use) such capability. However, the continuing proliferation of ballistic missile technology and expertise between countries of concern makes it more rather than less likely that the UK will in due course be within range of missiles in the hands of those who may have the intent to impose their will by threat of ballistic missile attack.

Approximate distances to the United Kingdom	
North Korea	8600km
Iran	3750km
Iraq	3700km
Libya	2350km

Iraq

22. Iraq fired over 500 SCUD type missiles at Iran during the Iran-Iraq War at both civilian and military targets, and fired 93 SCUD-type missiles during the Gulf conflict, at Israel and the Coalition forces stationed in the Gulf region. Further missiles and components were declared to the UN Special Commission (UNSCOM) or discovered during challenge inspections. We believe that Iraq covertly retains up to 20 SCUD-type missiles called the Al Hussein, with a range of around 650km, after the Gulf conflict. UN Security Council Resolution 687 permits Iraq to develop missiles up to a range of 150km, and since the Gulf conflict Iraq has been openly developing Ababil 100 and Al Samoud short-range missiles. In the absence until recently of UN inspectors, Iraq has worked on extending their ranges to at least 200km. Iraq has long had ambitions to develop longer-range missile systems with ranges of over 1000km; work on such systems continues, but is able to make only relatively slow progress while UN restrictions remain in place. It would probably not be able to produce such a missile before 2007. While such a missile could be used to target British interests in Cyprus, it could not be used against mainland

UK. This prognosis could, however, be rapidly invalidated were Iraq to acquire missiles or technology from North Korea.

23. Iraq has admitted to having had offensive chemical and biological weapon capabilities, which included warheads for the Al Hussein missile filled with nerve agent, anthrax, botulinum toxin and aflatoxin. It has used chemical weapons against the Iranians and the Kurds. Iraq sought to conceal these programmes from UN inspectors and did not acknowledge its biological weapons programme until 1995. It failed to convince UN inspectors of the accuracy of its declarations about these programmes. It failed to account to UN inspectors for significant amounts of material produced under these programmes. And between 1998 and 2002 it refused to allow UN inspectors into Iraq to continue to investigate these programmes. Iraq has a useable chemical and biological weapon capability, which has included recent production of chemical and biological agents. Iraq can deliver these agents using an extensive range of delivery means including ballistic missiles. Current military planning specifically envisages the use of chemical and biological weapons.

24. Iraq has also long sought a nuclear weapons capability, and continues to do so. We believe it has retained much of its former expertise, but currently lacks certain key components and materials. We believe that if sanctions were lifted, it would take at least five years for Iraq to produce an indigenous nuclear weapon. However, if Iraq obtained fissile material and other essential components from foreign sources Iraq could produce a nuclear weapon in between one and two years.

North Korea

25. North Korea has some hundreds of SCUD missiles in service, with ranges of up to 500km. It can produce these itself and they are available for export. It also has in service No Dong missiles, with a range of up to 1300km.

26. In August 1998, North Korea launched a three-stage Taepo Dong-1 as a satellite launch vehicle. This demonstrated that North Korea could produce a missile with a range of about 2000km. It also demonstrated expertise in multi-stage missile technology. The Taepo Dong-2 (another multi-stage missile) is under development, variants of which could have ranges in excess of 5000km and 10,000km. North Korea has since 1999 observed a moratorium on the flight-testing of long range missiles. However, ground-testing and other development activities have continued and a flight test of a Taepo Dong-2 could be carried out within weeks if the moratorium ended. If a Taepo Dong-2 variant with a range of at least 8,600km is developed successfully, North Korea would then have the capability to reach the UK.

27. A particular cause for concern is North Korea's willingness to sell its missiles and technology widely. North Korea is the world's biggest supplier of ballistic missiles and related technology to countries of concern. Its unique, state-driven missile export industry is primarily motivated by the need to acquire hard currency. Missiles are North Korea's most significant export and, by channelling profits back into the programme, an almost self-sustaining missile industry has been developed, supporting the requirements of both the domestic programme and the export market. Foreign sales may also allow North Korea to obtain flight test data from foreign customers during North Korea's own moratorium on flight-testing. North Korea has provided No Dong missile technology to Iran and Pakistan, enabling them to acquire their own versions. SCUD technology is also available for export, and has been sold to Iran, Syria, Egypt, Libya, UAE and Yemen. Over the last 15 years North Korea has exported at least 400 missiles.

28. North Korea acceded to the Nuclear Non-Proliferation Treaty (NPT) in 1985. An associated safeguards agreement with the International Atomic Energy Authority (IAEA) entered into force in 1992. But in 1993 North Korea refused to accept an IAEA inspection to clarify suspicions that it had not declared past production of enough plutonium for at least one nuclear weapon. It gave notice of its withdrawal (subsequently suspended) from the NPT. A 1994 agreement with the US

to freeze plutonium production made some progress. But North Korea still has sufficient plutonium in spent fuel rods under IAEA supervision for additional nuclear weapons.

29. Then, in October this year, North Korean admissions to the United States confirmed suspicions that it had been pursuing a covert nuclear weapons programme based on the production of Highly Enriched Uranium, which can be used in nuclear weapons as an alternative to plutonium. This has again raised questions about North Korean intentions and nuclear aspirations, as have statements by North Korean representatives abroad. The IAEA now believe that North Korea is in violation of her international commitments, including the 1992 safeguards agreement. North Korea also has the infrastructure to support the development of chemical and biological weapons.

Iran

30. Iran currently has in service several hundred short-range SCUD and SCUD-type missiles with ranges up to 500km. In addition, based on North Korean No Dong technology, Iran is developing the Shahab-3 missile, with a range of up to 1300km. Following successful tests in 2002, it should be able now to field a limited number, and is working to produce a substantial force. Iran has made no secret of its aspirations to develop a satellite launch vehicle capability. This technology is very similar to that required for longer-range and intercontinental ballistic missiles (as described in paragraph 17). We believe Iran could test such systems by the end of the decade. If it acquired a complete long-range ballistic missile system, it could achieve such a capability more quickly.

31. Iran is seeking to master the full nuclear fuel cycle so that it can develop a totally indigenous civil nuclear power programme. Any such legitimate programme could be exploited for use in a covert nuclear weapon programme. We have longstanding concerns that Iran may be seeking to acquire nuclear weapons. Iran signed the Chemical Weapons Convention in 1993, and has acknowledged a past chemical weapons programme. It has also signed the Biological and Toxin Weapons Convention, but is capable of producing biological weapons.

Libya

32. Libya has an ageing force of SCUDs. It is now seeking to produce extended-range SCUD missiles, with extensive North Korean assistance that includes the provision of components and equipment. Libya also has an interest in procuring a longer-range capability. We are concerned by persistent reports that Libya retains aspirations for weapons of mass destruction. Libya has subscribed to the International Code of Conduct against Ballistic Missile Proliferation.

Non-state actors

33. As the Prime Minister has stated, there is a clear link between the terrorist threat and weapons of mass destruction. However, using long-range ballistic missiles as a means of delivering terrorist weapons is less likely. Developing ballistic missiles from scratch would be beyond the means of a terrorist organisation. Acquisition of a capability off-the-shelf is conceivable, but unlikely in the absence of state sponsorship or complicity. Likewise, a non-state entity is very unlikely to be in a position to operate a ballistic missile force without extensive state-sponsored or state-condoned assistance with land, training, maintenance and spares support. Operating liquid-propellant systems is particularly demanding, because of the need to acquire, store and handle the propellants; but even solid-propellant ballistic missile systems require extensive in-service support. As such, ballistic missiles are a more attractive capability for state actors than for non-state actors. The latter are more likely to seek covert means of delivering weapons of mass destruction, a potential threat we also take very seriously.