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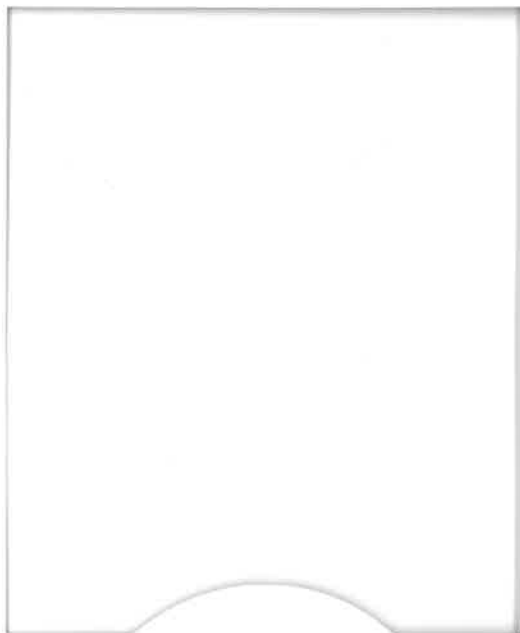
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**ABM vs BMD  
THE ISSUE OF BALLISTIC MISSILE DEFENCE**

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## ABSTRACT

Ballistic missile defence engages important Australian interests in global and regional stability, arms control and non-proliferation. Australia's interests are sharpened because the long-standing partnership with the United States in ballistic missile early warning creates a direct association with missile defences. This paper concludes that, at the present time, deferring the deployment of national missile defences would serve US interests. It also contends, however, that we should regard eventual deployment as highly probable. This means that we need to think harder about the conditions in which this can occur with the greatest benefit (or least cost) to the various interests at stake, and to work toward creating those conditions. The paper argues that the most important condition is to deal more decisively than we have with the legacy of the Cold War.



## ABM VS BMD THE ISSUE OF BALLISTIC MISSILE DEFENCE

*by Ron Huiskens*

### Introduction

One rather surprising thing about ballistic missile defence (BMD) is that there is so little of it around. The first modern ballistic missile – Nazi Germany's V-2 – was used in combat 57 years ago (in 1944), and went on to become the defining weapons system of the second half of the twentieth century. It is rare for a major new offensive capability to remain unchallenged for so long.

The relative absence of countervailing defences has certainly not been the result of a lack of interest. Research into BMD – particularly by the former Soviet Union and the United States – has gone on continuously since the early 1950s. Very limited deployment of early defences (with nuclear-tipped interceptor missiles) took place in the mid-1960s (USSR) and the mid-1970s (USA). Broadly speaking, however, each time it looked as though a sustained and determined effort would be made to make BMD a mainstream capability something happened to put it on the back burner.

The developments that de-railed BMD were not ordinary events. Indeed, they were so extraordinary that they in fact testify to the strength of the permanent battle for supremacy between offensive and defensive capabilities. In one instance it was the historic 1972 package of agreements between the USA and the USSR: the first agreement limiting strategic nuclear arms, and the Anti Ballistic Missile (ABM) treaty. In the second case, the era of Star Wars, it was nothing less than the end of the Cold War.

While a full explanation of this disjointed history is certainly complex, two inter-related factors probably tell most of the story. First, the problem was too difficult. To reliably destroy even a single small, hard object travelling at phenomenal speed (25+ thousand kilometres per hour), traversing the distinct mediums of space and the atmosphere, and probably accompanied by decoys is fiendishly difficult. To do so for many such objects simultaneously has simply been infeasible.

The second reason is nuclear weapons. Nuclear weapons enormously compounded the technological challenge of BMD because they set the standard for useful performance so high. In essence, when the small, hard objects are nuclear warheads, only perfect or near-perfect defences are of any real interest.

American interest in BMD escalated again over the course of the 1990s. Iraq's use of extended-range SCUD missiles during the Gulf War led to an intensified effort to develop theatre missile defences (TMD). In addition, circumstances obliged former President Clinton in 1999 to commit the US to deploy a limited national missile defence (NMD) by 2005. Continuing test failures, and surprisingly widespread international criticism, allowed Clinton to defer a crucial decision to make this commitment irreversible.

The new Administration, while it has yet to make any specific proposals on NMD, has made clear its resolve to put such a capability in place. Moreover, it has spoken of a comprehensive capability to protect US territory, its forces abroad, and friends and allies. In the same spirit, it has recently dropped 'national' from NMD.

The issue of ballistic missile defence engages important Australian interests. The United States, like every other member state of the United Nations, enjoys the right to provide for its own defence. As a close ally of long standing, Australia must consider carefully the considerations shaping US policy. Further, we have a compelling interest in strategic relationships among the world's major powers that are robust and stable and that provide continued scope for sensible arms control agreements, particularly regarding nuclear weapons. We also have a keen interest in maintaining and strengthening the regime that discourages the proliferation of nuclear weapons and long-range missiles, as well as the regime that, so far, has helped prevent the deployment of weapons in space. BMD could have significant implications for all of these interests.

In addition, since 1970 Australia has been a partner with the United States in collecting and processing data from early-warning satellites that gather information on ballistic missile launches from much of the Eurasian landmass. This early-warning capability played – and will continue to play – a very important part in enhancing the stability of nuclear deterrence. The same data will provide essential support to BMD, both TMD and NMD. This direct association makes it even more important that we think through the issues carefully and develop responsible policy positions. This paper seeks to contribute to that process.

### **The Road to NMD**

For most people, including successive Australian Governments, the 1972 ABM Treaty remains the outstanding arms control accomplishment of the Cold War era, an arrangement of singular importance to stable nuclear deterrence and the process of agreed reductions in offensive nuclear forces.

The treaty was an essential companion to the first agreement between the superpowers to place some limits on their offensive nuclear forces. In practical terms, the intent of the treaty was to simplify assessments of the adequacy of offensive forces for deterrence and to facilitate agreement on what constituted parity or balance to support negotiated reductions. To accomplish this, the treaty declared that neither side would seek to defend its whole territory against attack by strategic ballistic missiles. In a concession to investments already made by the USSR, and planned by the US, each side was permitted to defend two specific locations – the national capital and one area where its offensive missiles were deployed.

Further, to remove the complication of defences as completely as possible, the treaty contains strong prohibitions on putting in place the foundations of a national defence capability so as to minimise concerns about either side abrogating the treaty and quickly putting operational defences

in place. Broadly speaking, these prohibitions served their purpose in the sense that both sides remained confident that, if necessary, the offensive forces could be expanded more quickly than the other side could develop and deploy defences<sup>1</sup>.

The ABM Treaty arguably also had a deeper significance. The treaty effectively acknowledged the unique dilemma posed by nuclear weapons: their reciprocal use on any scale was essentially irrational. The treaty could be said to embody the view that allowing the normal dynamic interplay between offence and defence to run free would contribute to the mindset that nuclear weapons were normal, that they could and might be used, and that it was appropriate to build defences against them. The circumstances associated with such a mindset would place additional stress on the stability of the nuclear balance that both sides preferred to avoid. By precluding defences – and codifying the condition of mutual assured destruction – the two parties put an absolute premium on avoiding nuclear war, and indeed, any direct conflict between them that might prove to be a precursor to nuclear war<sup>2</sup>.

In retrospect, the ABM Treaty was a remarkable and somewhat improbable accomplishment. The history of the negotiations indicates that it was arrived at with some reluctance and scepticism, and that it was seen as a pragmatic device to help achieve the main political objective at the time of an agreement on offensive forces. Nevertheless, its underlining logic proved compelling and durable. An early indication of this came in 1974, just two years after the treaty was signed, when the parties agreed to reduce the number of ABM sites permitted from two to one.

The logic of the ABM Treaty has never been universally accepted. Mutual assured destruction is hardly an edifying security posture, and the perpetual infallibility of nuclear deterrence could not be guaranteed. Even for proponents, MAD was seen as a bizarre and flawed construct but the best available arrangement to minimise the risk of nuclear war and support efforts to progressively reduce the arsenals. At the same time, there has always been a strong group within the US policy community of the view that arms control agreements jeopardised national security. In the broadest terms, this group considers that the US, with its massive resources and technological strengths, can better provide for security in the long term if it is free to pursue the option available to it. This view was reinforced by the thesis that the USSR was a totalitarian state whose leadership was not subject to democratic checks and balances and capable of conducting its affairs with a degree of secrecy unimaginable in the US<sup>3</sup>. The ABM Treaty, perhaps because it was part of the grand opening of superpower nuclear arms control, and because, uniquely, it prohibited more than it permitted, has become symbolic of this ideological divide within the US.

In 1983, President Reagan launched the Strategic Defence Initiative (SDI). In Reagan's simple and compelling terms, SDI was less an assault on the logic of the ABM Treaty than a visionary declaration that the technological possibilities existed to render ballistic missiles "impotent and obsolete".

If these technologies could be perfected, the posture of mutual assured destruction could be replaced with a deterrent relationship dominated by non-nuclear defences.

The SDI provoked enormous controversy within the US and throughout the world. Australia's Labor government was amongst the first of the Western countries to formally declare, in 1985, that it could not endorse the program but it was soon part of a strong majority<sup>4</sup>. Toward the end of Reagan's second term the program began to falter. The massive research effort produced no plausible signs that the objective was feasible. More particularly, there were the growing indications under General Secretary Gorbachev of profound change within the Soviet Union and in its posture toward the West. In security terms, two key developments were the agreement to eliminate intermediate-range nuclear missiles (the INF Agreement) concluded in 1987, and the first real indications after some 15 years of negotiations that agreement to substantially cut Soviet superiority in conventional forces in Europe might be possible. The agreement on Conventional Forces in Europe (the CFE Agreement) was eventually signed in 1990. Though overshadowed by nuclear issues and SDI, it arguably conveyed the strongest signal of change on the part of the Soviet Union in that it accepted that in terms of size, structure and deployment its conventional forces in Europe were aggressive and destabilising.

Several attempts were made to salvage SDI. In 1987, the Joint Chiefs of Staff proposed that the objective of SDI be scaled back from an impenetrable shield to a capability that would preclude a disarming first strike. This proposal retained the intention to deploy defences in space as well as on the ground and would have been incompatible with the ABM Treaty.

In 1988, Senator Sam Nunn proposed an Accidental Launch Protection System (ALPS) to address the possibility of unauthorised launches of, at most, a small number of ballistic missiles. Nunn felt that ground-based interceptors at a single site might suffice for this purpose, requiring little or no amendment of the ABM Treaty<sup>5</sup>.

In 1991, President Bush, effectively amalgamated these ideas in his proposal for a Global Protection Against Limited Strikes (GPALS) system. GPALS was intended to offer protection to US territory, US forces abroad and allies against modest nuclear attack (of the order of 200 warheads). To provide this geographically extensive capability, GPALS envisaged 1000 space-based interceptors and another 750 on the ground at multiple sites. In 1991/92, Soviet President Gorbachev, and then his Russian successor, Boris Yeltsin, agreed to discuss a cooperative approach to this concept, and officials held some exploratory meetings.

The first Clinton Administration moved quickly to make TMD the unambiguous priority over national defences and amendment of the ABM treaty. SDI was formally terminated in May 1993 (the SDI Organisation was renamed the Ballistic Missile Defense Organisation, and the signature SDI project – the Brilliant Pebbles space-based interceptor – was cancelled). Later in the same year the administration formally endorsed the

traditional or narrow interpretation of the ABM treaty, and abandoned GPALS.

The Administration's preference to have just a precautionary R&D program on national defence, de-linked from deployment, could not be sustained however. Following the 1994 mid-term elections, which gave the Republicans strong majorities in both houses of Congress, the administration was subject to a gauntlet of proposals to claw back a stronger commitment to national defences. The arrangement that eventually attracted congressional support, in April 1996, provided for an R&D program on NMD that, after three years, would yield systems capable of being deployed in three years if circumstances demanded it (called the 3+3 strategy). The Administration retained its support for the ABM Treaty as "a cornerstone of strategic stability", making clear that the R&D program would be treaty compliant but indicating that a deployed system may require some amendments to the treaty.

This compromise position was subject to further Republican challenge but survived through 1998: for example, a Senate Bill in April 1998 requiring simply that the United States deploy NMD "as soon as technologically possible" was narrowly defeated 51:49.

Two events in 1998 eventually tipped this delicate political balance on NMD in favour of a commitment to deploy. The most dramatic was the launch by North Korea on 31 August of a Taepo Dong missile that narrowly failed to put an object into orbit but demonstrated the ability to build a three-stage missile. The fact that North Korea appeared to have achieved a significant technological advance surprised everyone, including in the US and other intelligence communities. The impact of this event in Washington was amplified because it vindicated a study commissioned by Congress and released just weeks earlier which contested the position of the US intelligence community that a ballistic missile threat to the US from countries other than Russia and China was unlikely to emerge before 2010.

This study, chaired by Donald Rumsfeld (Defence Secretary under President Ford in the mid-1970s and re-appointed to that position by President George W. Bush) concluded that states like North Korea and Iran could threaten the US with ballistic missiles tipped with biological or nuclear warheads within about five years of a decision to do so. Moreover, with the erosion in US intelligence capabilities and, more particularly, the lower standards of performance and reliability likely to be acceptable to these countries (resulting in fewer test and development events that could be monitored), the US might have less than five years warning of such a threat<sup>6</sup>.

These events, inescapably reinforced by the deep erosion in the Administration's authority that occurred over the course of 1998 as the Lewinsky scandal unfolded, rendered the 3+3 strategy politically untenable. On 21 January 1999, the Administration announced that it would decide in June 2000 whether to deploy a limited NMD and have it be operational by 2005. To support this intention the budget about to be presented to Congress would be revised to provide indicative funding (US \$6.6 billion) for NMD deployment.

Republicans again moved to make this commitment irreversible, proposing (as in 1998) legislation that would commit the US to deploy NMD "as soon as technologically possible". The Administration contested this position, with some success. Agreement was announced in March 1999 that the national Missile Defence Act of 1999 would have the following key provisions:

It is the policy of the United States to deploy as soon as technologically possible an effective national missile defence system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorised or deliberate) with funding subject to the annual authorisation of appropriations and the annual appropriation of funds for national missile defence.

It is the policy of the United States to seek continued negotiated reductions in Russian nuclear forces<sup>7</sup>.

The reference in the first provision to the budget process of authorising and appropriating funds made clear both that no decision had been taken at that point to deploy NMD and that any deployment program would be subject to annual review. The second provision ensured that consideration would be given to international interests, specifically the START negotiations with Russia.

The Administration in fact went further by outlining four factors that would shape the President's decision on deployment:

1. Has the threat materialised as quickly as we now expect it will?
2. Has the technology been demonstrated to be operationally effective?
3. Is the system affordable?
4. What are the implications of going toward with NMD deployment for our objectives with regard to achieving further reductions in strategic nuclear arms under START II and START III.<sup>8</sup>

The date foreshadowed for a decision on deployment - June 2000 - was missed due to delays in the conduct of the third major test of the NMD interceptor missile. The test eventually took place on 7 July and substantially failed, producing a record of one partial success and two consecutive failures.

In a hastily arranged speech at Georgetown University in Washington on 1 September 2000, Clinton announced that he would not authorise deployment, citing insufficient confidence in the technology and the operational effectiveness of the NMD system as a whole. The President went on to urge that the additional time offered by his decision be used to "ensure that NMD, if deployed, would actually enhance our overall national security". In doing so he referenced:

- The continuing need for a stable deterrent relationship with Russia simply because the US and Russia still possessed large nuclear arsenals;

- Protecting the prospects for further arms control agreements, which he described as "profoundly important";
- Addressing the concerns of NATO allies, not least because some of them would have to host key components of NMD; and
- The "need to avoid stimulating an already dangerous regional nuclear capability from China to South Asia".

Clinton acknowledged that "an effective NMD could play an important part in our national security strategy" and insisted that "no nation can ever have a veto over American security". Looked at in total, however, his 1 September speech amply confirmed the widespread view that he was no fan of NMD and that his public position was driven substantially by the need to protect Al Gore from charges of being weak on defence during the election campaign.

In the lead up to Clinton's decision, NMD proponents were torn between the instinct to seize this long-delayed opportunity to commit the US to deployment and a concern that this might lock the US into a more limited system than many considered necessary, particularly, of course, if Al Gore won the Presidency.

Presidential-candidate Bush, and his key advisers, made it abundantly clear that his Administration would push NMD unreservedly; that is, with a clear focus on the current and possible future threat and on all the technological options open to the US rather than treaty restrictions and critical rhetoric from abroad.

During the first months of the Bush administration the major development on missile defence, conveyed by Defence Secretary Rumsfeld, was a preference to regard defence of the United States, its forces abroad, and allies and friends as a single undertaking. The term 'national' was deleted in favour simply of missile defence with the latter term embracing both NMD and the more capable TMD systems.

In a short but profoundly important speech on 1 May 2001, President Bush set out in broad terms how his administration intended to approach this issue. In this speech Bush:

- Confirmed the view that the threat from the proliferation of missile and WMD technologies to the world's "least responsible" states was real and that the US would deploy missile defences "when we are ready".
- Indicated that the US would no longer seek to amend (but retain) the ABM treaty but wanted instead to move beyond it to a new framework that reflected a "clear and clean break...from the adversarial legacy of the Cold War".
- Stated that, while nuclear weapons were vital to the security of the US and its allies, the US would lead by example to change the size, composition and character of its nuclear force "in a way that reflects the reality that the Cold War is over".

## Theatre Missile Defence

The United States is separately pursuing a capability to defend against shorter-range or sub-strategic ballistic missiles. This effort has proceeded more or less independently of NMD, and with a good deal less controversy. In the US/Russia context, missiles with a range in excess of 5500 km are considered 'strategic'. The range of a 'theatre' missile from the US perspective has never been defined precisely but an agreement with Russia on the dividing line between TMD and NMD refers to missiles with a range not exceeding 3500 kilometres (see below).

The decisive impetus for TMD came from the Gulf War and Iraq's use of extended-range SCUD ballistic missiles against Israel and Saudi Arabia. The US is funding development of several systems of varying capabilities. Two of them – the Army's Theatre High Altitude Area Defence (THAAD) system, and the Navy Theatre Wide System – are long-range systems that seek to collide directly with the target warhead in space, the same principle employed in the proposed NMD system.

The ABM Treaty makes no mention of theatre defences. It does, of course, preclude circumventing the limits on ABM interceptors by boosting the performance of other systems to a level similar to ABM systems. This provision of the treaty (Article 6) was important to the United States in particular because the Soviet Union deployed a prodigious number of surface-to-air missiles throughout its territory (some 10,000), providing a large potential base for such a circumvention.

The treaty does not, however, define how good a non-ABM system can be before it would be deemed accountable under the treaty. In several pieces of defence legislation between 1991 and 1995, Congress urged the Administration to rectify this gap in the Treaty and reach agreement with Russia on the demarcation line between TMD and ABM systems.

Negotiations with Russia concluded in September 1997 with a useful but incomplete outcome. Russia's interest was to limit the capability of TMD systems as much as possible, and to an extent that would have constrained the more capable US programs – particularly the THAAD and Navy Theatre Wide programs mentioned above. The agreement on demarcation divides TMD systems into two categories: those with interceptor speeds below 3 km/sec, and those with faster interceptor speeds.

TMD systems with interceptor speeds below 3km/sec will not be limited by the ABM Treaty provided they are not tested against target missiles with speeds above 5 km/sec or ranges above 3500 km.

TMD systems with interceptor speed above 3km/sec also cannot be tested against targets with speeds above 5km/sec or ranges greater than 3500 km, and the interceptors cannot be based in space, but beyond this each side must determine for itself whether the system still remains outside the ABM Treaty<sup>9</sup>

In other words, Russia reserved the right to claim that the ABM Treaty should capture the more capable US systems. The Clinton administration

has separately certified to the Congress that *all* of its TMD programs are treaty compliant, that is, they are not accountable under the treaty.

Interestingly, the absence in the treaty of criteria on demarcation was questioned during the Senate's ratification hearings on the treaty in 1972. The outcome was that the US unilaterally and informally adopted the following yardstick: if a defensive missile was tested against a target with a speed in excess of 2km/sec, or if the engagement took place at altitudes in excess of 40 km, that system would be deemed to qualify as an ABM system accountable under the Treaty<sup>10</sup>. This shift in the permissible speed of a target missile for TMD from 2 km/sec to 5 km/sec is a small indication of what might be termed "technology creep" in the 25 years that separated the ABM Treaty and the agreement on demarcation.

Attempts have already been made in the US to have the Navy Theatre Wide System incorporated into NMD. The Clinton administration resisted this, primarily on grounds of technological limitations: it is not considered practical to give NTW an effective capability against strategic missiles which typically have speeds in excess of 7 km/sec<sup>11</sup>. But it remains an indication that the demarcation agreement will be tested in the future.

## The Australian Connection

An intercontinental ballistic missile takes less than 30 minutes to fly from any point in Russia to any point in the US, or vice versa. Quite apart from the human instinct to prefer to know sooner rather than later that someone is attacking you, earlier warning quickly became a basic ingredient in the strategic nuclear equation.

In the first place, as is true in all fields of warfare, early warning is fundamental to any aspiration to actively defend against ballistic missile attack. As noted above, ballistic missile defences have been an active interest pretty much since the ballistic missile was developed. And even though effective defences have remained out of reach, it has always been clear that additional minutes of early warning would be decisive.

Secondly, through ensuring the certainty of retaliation, early warning came to play a singularly important role in creating and perpetuating a broadly stable nuclear stalemate. Initially, the focus was on getting strategic bombers safely into the air before the attacking warheads struck (although for some years the US took the additional precaution of keeping a fraction of its bomber force permanently in the air). Later, as ballistic missiles became the dominant strategic weapon, early warning made it technically possible to launch a retaliatory strike before the attacking warheads had reached their targets and detonated. This situation inspired the quip: "I won't hit first unless you do".<sup>12</sup>

Just as it was, and remains, critically important to know quickly when an attack has been launched against you, it is no less important to be as certain as possible that what the early warning sensors suggest is a missile attack is indeed a missile attack. Since the opponent is postured in roughly the

same manner, it would make no difference in the end whether one retaliated in response to a real attack or the appearance of an attack.

This compelling interest in making early warning reliably accurate as well as quick led to US interest in redundant systems, and systems based on entirely different physical principles to minimise the possibility that some phenomenon that triggered a false alarm in one would not also do so in the other.

The United States therefore developed satellites with infrared sensors capable of detecting the exhaust plume of large ballistic missiles in the first few minutes of their flight. These satellites, known as the Defense Support Program (DSP), complement an array of powerful ground-based early warning radars located across Canada and in Greenland and the UK.

DSP satellites are deployed in geosynchronous orbits (roughly an altitude of 36,000 km) so that they remain stationary over a given point on the earth's surface and give the sensor a wide field of view. DSP satellites 'parked' over the Indian Ocean provide coverage of almost the entire Eurasian landmass<sup>13</sup>.

Between 1970 and 1999, Australia hosted a ground station at Nurrungar in South Australia that received and interpreted the data from these satellites and sent the processed information to agencies in the United States that were also linked to the EW radar network, which included; in particular, the remarkable North American Aerospace Defense (NORAD) Command headquarters located deep inside Cheyenne Mountain near Colorado Springs.

Nurrungar was required to assess any relevant events and report them within minutes. Since the event it was designed to detect might last only a few minutes, the operation was in practical terms on permanent alert 24 hours a day, 365 days a year. It was, in fact, like Cheyenne Mountain, a striking metaphor of the cruel security dilemma imposed by nuclear weapons.

Hosting a ground station for DSP satellites, while of great importance in terms of the politics of the alliance, delivered little or nothing in the way of direct benefits to the ADF. To the contrary, there was occasional speculation that Nurrungar, along with Pine Gap and the ELF transmitter on North West Cape could tip the scales and put Australia on someone's map as a nuclear target. Nurrungar's exclusive focus was the strategic nuclear balance, not an arena that the ADF aspired to play in. Nurrungar did, however, contribute importantly to a compelling *global* interest in a nuclear deterrent relationship between the superpowers that was robustly stable, that is, which made the deliberate use of nuclear weapons pointless and therefore most unlikely.

As to BMD, Australia technically lost its innocence 25 years ago. For a few months in 1975-76 the United States deployed under the name Safeguard the one ABM site permitted by the ABM Treaty at Grand Forks in North Dakota where it could protect nearby ICBMs<sup>14</sup>. Data from Nurrungar

would have alerted the tracking/engagement radars directly associated with this site of the fact of a missile attack and the probable trajectory of the incoming warheads. In the jargon, this is called cueing, or telling the radars that guide the interceptors roughly where to focus their beam to find the target.

The second instance of association with BMD came in 1991 when Iraq began launching extended-range SCUD missiles at Israel and Saudi Arabia. Nurrungar provided warning of the launch of these missiles to the batteries of US Patriot missiles that tried, with limited success, to destroy the warheads in the final stages of their trajectory. Then Defence Minister Senator Robert Ray announced Nurrungar's involvement in Parliament in November 1991<sup>15</sup>.

Finally, in 1995, the Keating government officially relaxed the decade-old policy inspired by SDI of not contributing directly to US BMD programs. By that time, as we have seen, SDI had been formally abandoned and the major US focus was on TMD development. TMD raises fewer conceptual or political difficulties, and in one important scenario – where the ADF is operating in a US-led coalition in an arena of ballistic missile threat – is of immediate positive interest to Australia. It would also have been important to the government at that time that the Clinton Administration consistently put its statements on NMD in the context of the fundamental importance of the ABM Treaty.

This policy development obviously had a major political purpose in the context of the alliance: SDI had provoked perhaps the most clear and enduring policy difference on a central security issue that the alliance has had to cope with (although some might argue the CTBT was close contender). It also allowed renewed scientific cooperation. DSTO and BMDO have since collaborated in two experiments in Australia which involved observing the launch of simulated theatre missiles with a variety of sensors and seeking to fuse these disparate observations into a single data stream. BMDO is interested in data fusion for the BMD mission while DSTO, which has no directive to pursue BMD, can apply this knowledge in other contexts of interest to the ADF.

Although Nurrungar was pressed into service and played a useful role in the Gulf War, DSP satellites were not designed to reliably detect and locate smaller missiles with exhaust plumes that are less hot and which burn for a shorter time than ICBMs and SLBMs. The limitations of DSP satellites against what was expected to become targets of growing importance spurred the development of a follow-on early warning satellite system now called the Space Based Infrared System or SBIRS.

SBIRS will be significantly more sensitive than DSP. The capability to reliably detect strategic missile launches will remain but SBIRS will extend this reliability down the scale of sub-strategic missiles. How far down is classified but it is noteworthy that SBIRS may even provide useful tactical information. To this extent, Australia's continuing partnership with the US in this field could provide a capability of direct utility to the ADF<sup>16</sup>. In addition to



greater sensitivity, SBIRS will be able to make multiple observations of a particular missile target more quickly than DSP allowing more precision in estimating the trajectory the target will fly.

SBIRS has been among the more transparent US satellite programs. The additional capabilities that the US is seeking from SBIRS are intended primarily to support BMD, to provide more timely and more accurate information to cue radars linked directly to missile defence interceptors. The US does not aspire to establish formal weapon-of-mass-destruction deterrent relationships with countries like North Korea and Iran that it assesses are determined to acquire long-range ballistic missiles to threaten US territory, or shorter range missiles that could threaten US forces deployed abroad.

Australia will host a ground station for SBIRS High satellites, that is, satellites to be stationed in geostationary orbit like the current DSP satellites<sup>17</sup>. This can reasonably be inferred from a July 1996 press release foreshadowing the closure of Nurrungar and the agreement in principle to replace it with a ground station that would relay the data to the US for processing<sup>18</sup>. The press release indicated that a decision on whether the relay ground station (RGS) would in due course support SBIRS as well as DSP was then about a year away. Official confirmation that the RGS was in place, co-located with the joint defence facility at Pine Gap, came in another press release on 12 October 1999, the date of the official closure ceremony for Nurrungar (although Nurrungar actually ceased operations on 30 September)<sup>19</sup>. On present indications, the first SBIRS High satellite will be launched in 2004/5.

The closure of Nurrungar and the consolidation of the early warning data processing function in the continental United States can be attributed to a combination of new geopolitical circumstances and technological developments, particularly in the availability of secure communications. Running a major operation like Nurrungar in a distant foreign country is a very costly undertaking relative to doing it at home, even taking into account Australia's significant contribution. For 25 years, the various advantages offered by Nurrungar offset these additional costs. These advantages included, importantly, an uncluttered electromagnetic environment and a location sufficiently far inland to protect the downlink from interception or jamming.

Modern technology allows such downlinks (and onward transmissions of the data) to be made very resilient to interference of this kind. In addition, of course, the likelihood that a foreign country would have an interest in doing this had diminished significantly with the end of the Cold War.

These developments would have allowed consideration to be given to other locations for the RGS, like Diego Garcia or Guam. In addition, the option has been available for many years to transmit data across space from one satellite to another until it can be downlinked directly to the United States.

But while the case for a downlink in Australia may have been less clear cut than in the past, it is manifestly the case that the US still preferred this

option, and that the Australian government was interested in continuing the early warning partnership.

Involvement with the United States in ballistic missile early warning has in the past and will in the future associate Australia with US ballistic missile defence systems, certainly TMD and potentially NMD. DSP satellites, probably including those with a down-link to Australia, have detected the several NMD test flights conducted since 1997 over the Pacific missile test range between Vandenburg Air Force Base in California and Kwajalein atoll in the western Pacific<sup>20</sup>.

I have chosen the term 'associate' deliberately. Early warning systems, whether ground or space-based, are not considered under the ABM Treaty to be a component of an ABM system. The treaty negotiators consciously excluded systems like DSP. The TMD/NMD demarcation agreement discussed earlier extended this position to TMD systems with lower interceptor velocities (3km/sec or less)<sup>21</sup>.

For the purposes of the ABM Treaty, an ABM system consists of interceptor missiles, launchers for the interceptors, and powerful ground-based radars (called X Band radars) that guide the interceptor to the location or approximate location of the target warhead. Many of the interceptors now under development also have on-board sensors to fine-tune data from the radars and to manoeuvre in the final stages to achieve the intercept.

So long as an early warning system does no more than cue the ABM radars it remains outside the scope of the ABM treaty. As noted above, SBIRS High will provide more accurate cueing than DSP, but it remains cueing.

There is a further component of SBIRS, called SBIRS Low, intended to provide more accurate data on target warheads after they separate from the booster and are coasting through space. This is a tracking function rather than early warning. If development continues (which is presently uncertain) and if its performance meets expectations (it is more technologically challenging than SBIRS High) SBIRS Low would, in the opinion of some, be close to the threshold between an early warning system and an ABM guidance system similar to an X Band radar. If SBIRS Low were deemed to have crossed this threshold it would breach the ABM Treaty which requires that guidance systems be ground based.

As the name implies, SBIRS Low would consist of a constellation of 24 satellites in low earth orbit. It would be reasonable to presume that, as was the case with SBIRS High, any US interest in down-linking SBIRS Low data to the RGS in Australia would be the subject of a discrete agreement. There is no evidence of such an interest on the part of the US. The mission of SBIRS Low, and its orbital characteristics, makes such an interest rather unlikely.

In summary, cooperating with the United States in collecting and interpreting ballistic missile early warning data from DSP/SBIRS satellites will inescapably associate Australia with any ballistic missile defence systems

the US may deploy. Australian policy judgements on the future of this cooperation should factor in the following considerations:

- This cooperation dates back to 1970 and represents a most valuable contribution to global stability and minimising the risk of nuclear war. And there will be a continuing role for early warning so long as there are substantial nuclear arsenals.
- As noted above, the dependability of early warning data is of the utmost importance. The agreement to host the RGS at Pine Gap would therefore have been based on the strong expectation that the dependability demonstrated for 30 years at Nurrungar would extend into the long-term future. And this future clearly embraced SBIRS which was being developed in anticipation of a requirement for BMD, particularly TMD but potentially also NMD. At a 1999 press conference in Sydney former US Defense Secretary Cohen said that "Australia plays an important role in early warning, and that we would expect, and hope, that that would continue in the future, certainly if there is an NMD program".<sup>22</sup> In short, this issue has important implications for the politics of the alliance and needs to be managed accordingly.
- Although the United States manifestly still prefers to downlink early warning data to Australia, the technological and geopolitical grounds for this choice are probably significantly weaker than in the past.
- The same data processed in the same way can be used purely to support effective deterrence and to also support missile defence systems. The RGS at Pine Gap does not have to be expanded or adapted for a missile defence role.
- As it is the same data processed in the same way, Australia does not have the option of supporting one application to the exclusion of another.
- The current DSP system, and its direct follow-on, SBIRS High, are both compliant with the ABM Treaty. Australian cooperation with the US in this field is therefore consistent with our long-standing position of strong support for this treaty.

### Escalating the threat

The demise of SDI with the end of the Cold war only intensified the political feud in Washington over defence of the United States against ballistic missile attack. BMD, but especially NMD, was seen as the issue that most starkly defined alternative views on how the world worked and how the United States should approach that world.

Not surprisingly, the official intelligence assessment of the threat became a key target. These assessments, called the National Intelligence Estimate or NIE and prepared by the Director, Central Intelligence, are the nearest thing to a consensus assessment by the entire intelligence community of what might be around the corner in the way of challenges to US security

interests. With respect to ballistic missile threats, the 1995 NIE concluded that:

Nearly a dozen countries other than Russia and China have ballistic missile development programs. In the view of the Intelligence Community, these programs are to serve regional goals. Making the change from a short or medium range missile – which may pose a threat to US troops located abroad – to a long-range ICBM capable of threatening our citizens at home, is a major technological leap. The Intelligence Community judges that in the next 15 years no country other than the major declared nuclear powers will develop a ballistic missile that could threaten the contiguous 48 states or Canada.<sup>23</sup>

The pro-missile defence community challenged these assessments. In August 1996, the General Accounting Office (GAO) released an assessment of the 'analytical soundness' of certain NIEs. This assessment, requested by the Chairman, Committee on National Security, House of Representatives, Floyd Spence, found that the 1995 NIE in particular overstated the certainty of its key judgements, failed to identify critical assumptions, and did not offer alternative possibilities<sup>24</sup>. Also in 1996, the Congress commissioned a panel led by former DCI Robert Gates to develop an alternative assessment of the threat. The Gates Commission report, released in December 1996, was not helpful because it basically supported the official assessment. This was the case even though commission focussed explicitly on a quite subjective variable that can support very different conclusions on the imminence of the threat, namely, the extent to which a determined proliferator can accelerate a missile program through acquiring hardware and technical assistance from abroad.

In January 1998, a Senate committee published a painstaking review of the open literature on proliferation, concluding that the 1995 NIE seriously understated the foreign assistance factor and, conversely, overstated the effectiveness of the Missile Technology Control Regime. Other factors cited in the report as reinforcing the likelihood that missile proliferation would be faster than suggested by the NIE were the spreading interest in space launch vehicles (essentially identical to a ballistic missile in terms of the technologies involved), and the implicit assumption that third world proliferators would emulate the extensive test program that was typical for US missile development programs<sup>25</sup>.

The Rumsfeld Commission report followed six months later, in July 1998. This was a more serious and authoritative exercise in that it assembled a high-powered and a reasonably well-balanced group, and was given access to classified information. On the other hand, its mandate was carefully crafted to focus the assessment on how quickly a new ICBM threat to the United States could emerge.

The Commission identified North Korea and Iran as the principle near-term threats and concluded that they *could* develop a missile capable of reaching the United States, and equipped with a nuclear or biological warhead, within about five years of a decision to do so. Moreover, the Commission

suggested that US intelligence could remain unaware for several years that such a decision had been taken, reducing clear warning of the threat to as little as two or three years<sup>26</sup>.

This assessment put a minor state ballistic missile/WMD threat to the US homeland *inside* the earliest realistic time that the US could field any kind of NMD.

The assessment that supported this conclusion echoed the themes of the earlier independent reviews:

- Fifty years after the long-range, multi-stage ballistic missile had been made a reality by the USSR and the USA, information on the basic technology and engineering involved is readily available, including in university courses. The burgeoning global interest in space launch capabilities for commercial purposes also fuelled the dissemination of this knowledge.
- There was substantial international trade, official and unofficial, covert and overt in ballistic missile know-how (technologies, components, technical assistance) which could allow a determined state to reduce significantly the time needed to manufacture and deploy complete missiles.
- Given the probable motives of the states concerned, performance and reliability would not be high priorities. Missiles might be operationally deployed after just one or two tests in contrast to the extended test program that became the norm for new missiles in the case of the USSR and the USA.

Six weeks after the report appeared, North Korea tested a Taepo Dong missile with the three stages typical of ICBMs and almost succeeded in putting something into orbit (the solid-fuel third stage which surprised analysts most was later assessed to have malfunctioned).

There can be no doubt that the proliferation of ballistic missile technology, and of WMD capabilities, is a serious reality. Equally, making sensible and responsible assessments of the likelihood and timing of a ballistic missile/WMD threat to the United States is as difficult as it is consequential. Occasionally testing the official view makes good sense. At the same time, there is a disturbing sense that, for some, the main purpose has been to generate sufficient political momentum to make some form, any form, of NMD a reality and to finally cross the out-moded Rubicon of the ABM Treaty.

The Taepo Dong itself fell well short of a viable threat to the United States. The demonstration of a multiple stage capability was only partially successful, its payload was very modest, and its accuracy extremely poor<sup>27</sup>. Moreover, there was little discussion of what in the past had proved to also be a formidable challenge in missile development, namely, building compact and robust warheads capable of withstanding the rigours of launch and re-entry. What the launch of the Taepo Dong did, however, was to

make incontestable the argument that the short-cuts available to a modern proliferator could make a significant difference to missile development projections based on historical experience.

The intelligence community was thus exposed as having an unduly benign view of the potential missile threat to the United States. In addition, having failed to anticipate both the Taepo Dong launch in August 1998 and the nuclear tests by India and Pakistan a few months earlier, the intelligence community also had to endure generalised criticism that its collection and assessment capabilities had eroded.

In any event, the 1999 NIE showed that the community had absorbed the thrust of the arguments advanced by the Rumsfeld Commission and the prior studies. On missiles, the NIE projected 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, although the threats will consist of dramatically fewer weapons than today because of significant reductions we expect in Russian strategic forces.<sup>28</sup>

Compared to the 1995 assessment, a North Korean ICBM within 15 years was now "most likely". Moreover, the technological threshold had shifted from a full-range ICBM capable of reaching the contiguous 48 states to a missile capable of targeting any part of the United States, that is, including Alaska and Hawaii. This shift, while understandable from the political standpoint, reduces the range threshold by several thousand kilometres (the distance from the Aleutian islands to Washington state)<sup>29</sup>.

North Korea's Taepo Dong test in August 1998 almost single-handedly transformed the NMD debate in the US from a question of if to a question of when. The minor state assessed to have the most disturbingly different political mindset appeared to be years closer to threatening the US with nuclear (or biological) missile warheads, despite its small size and desperate economic circumstances. A very sick mouse, it seemed, had somehow roared and tipped the scales in Washington in favour of urgent deployment of national ballistic missile defences. One can only wonder what the leaderships in Moscow and Beijing thought of this action by their erstwhile ally.

Since then there has been a further paradigm shift as the political outlook on the Korean peninsula has been transformed by developments suggesting, for the first time, a *mutual* interest in normalisation. Moreover, North Korea has signalled that its long-range missile program is negotiable. While no one expects the new road to be easy, few dispute that the two Koreas have turned a corner and would find it difficult to reverse course.

These developments should provide a valuable breathing space in which the United States, and other key players, can address the NMD issue seriously and comprehensively. It should also be borne in mind, however, that the agreed, bipartisan rationale for NMD includes the possibility of accidental or unauthorised missile launches from Russia or China. This motive has been a bit of a sleeper in the debate, but it remains whatever happens on the proliferation front.

## Non-Proliferation

It is clear from the foregoing discussion that, following the demise of SDI, interest in missile defence was to an important extent sustained and ultimately re-ignited by the spread of missile and WMD capabilities. Moreover, to some significant degree this spread has been accelerated through international transfers - whether illicit, official but covert or, on rare occasions, official and acknowledged.

The performance of the international non-proliferation regime during the first decade of the present era can best be described as mixed. The two highlights were undoubtedly the conclusion of the comprehensive test ban treaty (CTBT) in 1996, and the indefinite extension in 2000 of the nuclear non-proliferation treaty (NPT). On balance, however, it is hard to avoid the conclusion that the regime took something of a battering. The highlights on this side of the ledger would include UNSCOM's revelations on the scale and diversity of Iraq's WMD program; the blizzard of nuclear tests in 1998 heralding India and Pakistan as nuclear weapon states; North Korea's suspected interest in 1993/94 in building (more?) nuclear devices; and North Korea's demonstration in 1998 of a ballistic missile capability significantly more advanced than had been considered possible.

The current official US view is that more than two dozen countries may have or are seeking nuclear, biological or chemical warfare capabilities. About half that number are seeking to develop or acquire long-range ballistic missiles<sup>30</sup>.

The 'integrity' of the non-proliferation regime depends in significant part on projecting the sense that the prohibitions and limitations in the various agreements represent strong international norms. Adherence to and compliance with these agreements is therefore 'compelled' because it is accepted that this is the collective will of the international community.

Norms can have a powerful influence, but they are also inherently fragile. Actions that flow from a view that the norms are not strong enough weaken them further. US unwillingness to ratify the CTBT is one such action. Ballistic missile defence similarly signals a lack of faith in the longer term integrity of the non-proliferation regime and is likely to contribute to weakening it further. Abandoning the ABM treaty en route will reinforce these perceptions, and have wider implications for the entire endeavour of managing international relationships through formal treaties.

It would quite wrong, however, simply to cite the United States, whether for NMD or its wider counter-proliferation program. The past decade has seen a marked increase in the volume and specificity of information coming directly or indirectly from official sources on international transactions that contravene non-proliferation instruments. It is possible that this surge is more apparent than real, that is, more information rather than more activity than in the more distant past, and with the information surge linked to the intense political battle in the US over ballistic missile defence. Nevertheless, it is hard to discount entirely the evidence that the more disaggregated

and freewheeling international system that has emerged over the past decade has also produced in a number of countries a regrettable casualness about upholding non-proliferation norms.

Clearly, to the extent that casual adherence to non-proliferation norms hardens American interest in BMD, which, in turn, is seen by some as threatening to their core national security interests, there should be scope for a markedly more determined effort to enforce these norms.

## The Strategic Ramifications of Ballistic Missile Defences

Should the United States become convinced that within, say, the next decade its homeland will be threatened by ballistic missiles with WMD in the possession of a state (or states) with a political mindset immune to any 'rationale' calculus of deterrence, it probably will deploy defences to negate that threat. It has the resources, and it believes that it has or can develop the necessary technological capabilities. It would also have every right to take this step.

These conditions do not prevail at the present time. There is, however, a substantial body of elite opinion in the United States of the view that it should proceed anyway as soon as it has developed the technologies to an acceptable extent. This would ensure that it was ready when the threat materialised, and help ensure that it could continue to meet in full its considerable responsibilities for global order and stability. The many concerns held by other states - allied, friendly, and borderline - are considered, to put it briefly, either entirely self-serving or driven by considerations that have been seriously weakened or rendered irrelevant by developments in the international system.

This is the issue that has to be addressed: should we view national ballistic missile defence systems simply as a development that was ultimately inevitable and whose time has now come? Should we, to put it another way, try harder to see this development as a sensible response to the prevailing and foreseeable reality and not as watershed for an international order that has been overtaken and cannot, perhaps should not, be restored?

Alternatively, it has to be demonstrated that, even though circumstances could arise that would compel the US to go down this path, it is not a path to be preferred as offering the United States greater scope to advance its long-term interests.

## The Post Cold War International Order

The end of the Cold War did herald profoundly important changes in the international order. The conduct during the Cold War of fierce geopolitical competition in the shadow of massive nuclear arsenals on short fuses involved risks that neither Washington nor Moscow were comfortable with, and encouraged both to secure the maximum possible control over events. Third parties behaving independently, doing the unexpected and creating

surprises represented a challenge to the careful management of these risks, that is, something to be minimised.

The international security order therefore became relatively highly globalised, with most of the regions of the world deemed important to the competition wired up to Washington or Moscow. With the end of the Cold War and the demise of the Soviet Union, these 'controls' were abruptly relaxed. Russia, as the successor to the USSR, fell precipitously from the status of superpower to that of a large, impoverished and unstable country quite incapable of being a global strategic competitor. The strategic nuclear competition was effectively turned off. Concern about the stability of the strategic nuclear balance remained but it ceased to be a matter of devising and agreeing on parameters within which the nuclear and wider geopolitical competition could be conducted with comparative safety. Rather, it became a matter of encouraging and assisting Russia to maintain the necessary total vigilance with respect to the command and control and physical security of its nuclear forces and stocks of fissile material.

In security terms, the end of the Cold War could therefore be said to have liberated the international system. In contrast to the process of economic globalisation that has been the focus of so much attention, the security arena has experienced deglobalisation<sup>31</sup>. The end of the Cold War generated everywhere a sense of additional strategic space, and of national room for manoeuvre to take advantage of this space. The security order that has taken shape over the first decade of the post-Cold War period has therefore been noticeably less structured and in a sense more democratic, with more actors seeking to shape their security environment, at least at the regional and sub-regional level. This phenomenon has been most conspicuous in East Europe but is also clearly visible in East Asia.

Another conspicuous feature of the new order has been the status of the United States. Through the combined effect of others falling away and itself flourishing, the relative standing of the United States has soared. As the sole remaining superpower, it enjoyed, but was also somewhat confused by, the luxury of being in a position to shape decisively just about any development but with the real option simply to stay away from most of them.

Nowhere has the pre-eminence of the United States become more starkly apparent than in the military arena. Relieved of the burden of maintaining the central balance, the United States has been able to focus relatively strongly on exploring the application of the information revolution to the art of warfare. The results have been little short of breath taking. In Desert Storm in 1991, and even more particularly the air campaign against Serbia over Kosovo in 1998, the US demonstrated capabilities that threaten to make obsolete the traditional indices of conventional military power.

This development has had several influential consequences. For example, the US has surged so far ahead that it has lost touch even with its major allies. Although the US may prefer, whenever possible, to approach military contingencies as part of a coalition, genuine interoperability with the

armed forces of the UK and France has already been strongly eroded. The US recognises that it may have to reach down and help its key allies to stay in touch, but protecting its edge in critical technologies and a general unwillingness among the allies to make the necessary financial investment suggest that the gap will continue to widen.

Secondly, there is the view that Washington may be tempted more readily to deal with problems through the surgical application of military force. A variation on this theme is that the capacity to use military force with great precision *and* relative immunity will reinforce Washington's already doubtful willingness to accept US casualties. In other words, it will only commit US forces where there is adequate scope to apply its comparative advantage in precision strikes. These impressions – that, depending on the circumstances, the US might be more ready or more reluctant than its allies to exercise the military option – can be damaging to allied solidarity.

Thirdly, the graphic demonstrations by the US that this is indeed a unipolar world has motivated some moves toward a collective countervailing capacity on the part of Russia, China and, to a lesser extent, India. Some also argue that it is fuelling the political will to develop a European defence capability within NATO.

Finally, there have been some interesting ramifications in the US itself. It would seem, for example, that the United States is now framing its worldview, and the options available to it, in a context that cannot really be comprehended by any other state. In a speech in Norfolk, Virginia on 13 February 2001, President Bush observed that "the best way to keep the peace is to redefine war on our terms". This is a huge statement but US pre-eminence is such that it actually sounds reasonable.

A second and related consequence is that, having acquired such decisive superiority in conventional military power, the United States has become increasingly concerned about unconventional or asymmetric challenges that would bypass this superiority. Defence of the homeland has become a resurgent theme focused on issues like chemical and biological attack by non-state actors, the destruction of critical infrastructure, cyber warfare and attacks on US satellites. The minor state with an ICBM and WMD warhead is the most defined of these asymmetric threats. It is also the asymmetric threat that is the easiest to try to address.

### **Reigniting Strategic Nuclear Competition**

Much has happened since the Berlin Wall came down just 11 years ago. So much, in fact, that the contention that the world and its challenges and opportunities have moved on to an extent that mandates new security paradigms has inherent plausibility.

In one crucial respect, however, we have moved on without dealing as decisively as we should have with the past. Although the strategic nuclear competition ended abruptly a decade ago, the number of deployed strategic nuclear warheads remains well in excess of 10,000. An investigation into the reasons for this is beyond the scope of this essay. Some very important

steps were taken – including START 1 and CTBT – but implementation and follow up has been episodic at best. Although several thousand warheads have been removed from the arsenals, the rhetoric has got well out in front of reality.

There have certainly been, as there always are, extenuating circumstances. Coming to grips with the more fluid international order and dealing with the inevitable succession of crises is one. The disarray within Russia, making it a difficult and inconsistent partner is another.

There is still the unmistakable sense that, having survived the Cold War and the nuclear arms race, we have discounted the appalling risks we assumed during this era. The priority given to nuclear arms control fell away. Whether or not one believes – as the Canberra Commission argued in 1996 – that the immediate post-Cold War period presented a clear window of opportunity to lock in a process that would make the elimination of nuclear weapons appreciably more imaginable, we have not been particularly determined to test such a proposition.

What this means in the present context is that the strategic circumstances in which NMD is being considered are not as different from the 1960s or the 1980s as some try to suggest. Stated bluntly, NMD could rekindle strategic nuclear competition among the major powers. At a minimum, it could ensure that the attitudes that drive such a competition would be reset, even if the reflection of these attitudes in the nuclear forces remains in hibernation for a time.

#### *Russia*

As Russia declined it has been understandably tenacious in protecting the prerogatives that flow from its nuclear arsenal and its formal deterrent relationship with the United States. The widespread view is that within the next decade or so the age of some of its strategic systems and the lack of resources to replace them will bring the Russian strategic nuclear arsenal down to about 1500. This is also the force level that Russia supports as a target for a START III agreement.

Russia's position on START III is conditional on the ABM Treaty remaining unchanged. This is also the condition it puts on ratifying the completed START II agreement which provides for lowering force levels from roughly 6000 at the present time to 3500.

Russia's bargaining position is weak and will remain so for some considerable time. A clear indication of this came early in 2000 when Putin succeeded Yeltsin as President of Russia. Putin capitalised skilfully on the strong concerns about NMD, and support for the ABM treaty, among US allies. In contrast to Yeltsin, he made clear that Russia would not discuss amending the ABM treaty to accommodate NMD. In April 2000, he secured approval from the Russian Parliament to ratify START II but made implementation conditional on two steps that also highlighted the centrality of the original ABM treaty<sup>32</sup>. Next, as an alternative to NMD, Putin floated

two vague proposals for international collaboration to address the potential proliferation threat: a boost phase intercept system deployed at appropriate locations in the Eurasian landmass, and a TMD system to protect all of Europe from the Atlantic to the Urals. Finally, he made a high-profile visit to North Korea and secured an indication that all that country really wanted was a space launch capability, not an ICBM.

It is likely that all interested parties recognised these actions for what they were; that is, in the absence of other forms of leverage, attempts to muddy the waters. In the circumstances prevailing at that time, however, they were not without effect<sup>33</sup>.

Even though Russia may have few hard options in the near term, it is important to bear in mind that, where nuclear weapons are concerned, the only sensible time horizon is a reasonably long term one. To discount Russian objections because it may be a decade or longer before it could seriously re-engage in strategic competition would be short sighted. Russia may have to essentially husband its strategic arsenal for the foreseeable future but it could do so in ways that would perpetuate a nuclear threat to the United States orders of magnitude larger than any conceivable threat from a minor state.

The option that Russia is most likely to consider is to retain (contrary to the provisions of START II) ICBMs with multiple warheads. And it may be more strongly attracted to keeping these weapons on alert. Nor could one rule out the development of new delivery systems. The opportunity cost for Russia may be extremely painful but if the requirement is deemed sufficiently strong that pain will be endured.

In short, the simple logical construct that underpins the ABM Treaty remains relevant and important: ruling defences out of the strategic nuclear equation simplifies and makes more stable the offensive balance and facilitates negotiated reductions.

The NMD proposal that eventually took shape during the Clinton Administration could be characterised as a minimalist development targeted at the rogue threat and requiring correspondingly modest amendments to the ABM Treaty. It has to be said, however, that no serious or consistent effort was made in the United States to discipline the debate and give priority to reassuring Russia that the US was not laying the basis for a full defence against all ballistic missile threats. Thus, even the Clinton proposal provided for second and third stages to address possible future developments in the minor state threat. The Bush administration has reinforced this impression through making clear that it would seek even greater freedom to pursue the defence capabilities considered necessary.

The impression that has been conveyed of a strong US interest in more far-reaching ballistic missile defences is of course reinforced by the stark asymmetry in the ability to develop and deploy such defences. In the case of non-nuclear defences against strategic ballistic missiles the asymmetry is close to absolute. While the United States can aspire with some confidence



to develop such defences they will be totally out of reach for Russia, or any other state for that matter, for a long time.

### *China*

These considerations apply even more pointedly to China, for the simple reason that Chinese missiles capable of reaching all or most of the United States number about 20. An NMD system designed to cope with the maximum rogue threat – variously characterised as a ‘handful’ or up to a ‘few tens’ of warheads – could therefore effectively negate China’s deterrent. The inevitable ‘worst case’ Chinese view is that it would. Moreover, the clear impression given by Chinese spokesmen is that negating China’s deterrent is seen not as a side effect but the real purpose of NMD<sup>34</sup>.

It is true that the US recognises no formal nuclear deterrent relationship with China. China is not a party to the ABM Treaty, or to any agreement limiting offensive nuclear forces. The fact that the United States has never formally accepted that Chinese nuclear weapons would always be able to strike targets in the United States is not inconsequential. At present, however, it is a point that has more technical than political merit. China is a serious and determined contender for major power status, certainly in the Asia Pacific if not globally. And the United States has formally acknowledged that this will and should be the case.

These broader and longer-term strategic concerns about missile defence are more sharply focused in respect of Taiwan. Apart from the extreme case of the US sale of a TMD system to Taiwan, China has signalled its deep concern that US NMD and a sea-based TMD that could be deployed to cover Taiwan might tip the political calculus in Taipei toward independence. China has also, of course, made it graphically clear that it would resist such a development with force regardless of objective assessments of the military balance and its prospects for success.

China is highly secretive about its nuclear force posture and plans for its development. It is plain that China has developed its nuclear force at a very deliberate pace and that its size has been determined against relatively modest criteria. China also has a significant program to modernise and diversify its nuclear force, a program that has also proceeded at a very deliberate pace.

Linking specific developments in China’s nuclear posture firmly to particular external stimuli is rather pointless. Although China is secretive, its processes cannot be totally unlike those elsewhere. Thus China will have a broad consensus on the kind of nuclear posture it needs to support the position it aspires to in the international hierarchy. The more detailed program in terms of numbers, mix of capabilities and timeframes will be a moving feast shaped by considerations like cost, technological hurdles and external developments. Reactions to major external developments will normally be determined at the point where China assesses that there is a firm intention to take a particular course. And these reactions can become more or less entrenched even if foreign intentions are later recast or abandoned.

Thus, China would have considered carefully in the early 1980s the options available to it to cope with SDI, and, more particularly perhaps, a possible Soviet counterpart. One investigation of this issue concluded, predictably, that by the mid-1980s China had settled on three potential responses: bigger nuclear forces, better countermeasures, and an anti-satellite capability to threaten the space components of SDI<sup>35</sup>. Any or all of these responses could apply to NMD and, to the extent, if any, that they may have dropped in priority since SDI they will now again be attracting greater interest.

There can be little doubt, in other words, that China will endeavour to accelerate and probably expand its offensive nuclear program if it judges that the US will proceed with NMD. This is also the judgment of the US intelligence community<sup>36</sup>.

In sum, with respect to both Russia and China, NMD will have the effect of pushing the offensive nuclear forces higher than would otherwise be the case. Moreover, this process would inevitably connote a state of strategic competition, including highlighting the fact that deterring the United States with nuclear weapons remained a basic requirement. Human nature being what it is, drawing attention to this requirement provides a rather poisonous foundation for the wider political relationship.

### *Allies*

Most of America’s allies, particularly in Europe, signalled a lack of enthusiasm for NMD. A few isolated observations suggested the reservations ran quite deep. This appeared to take Washington by surprise, but it was recognised as a serious development and resulted in a determined effort to build understanding and support. There was a very practical reason for this effort: the NMD system the US had in mind relied importantly on upgrading radars in the UK and Greenland. More generally, however, opposition from allies, particularly NATO allies, would be very costly to broader US interests. In addition, scepticism among the allies clearly encouraged Russia and China to be more blunt in opposing NMD and resisting any amendment of the ABM treaty.

Reactions among the allies suggest various reasons for their divergent views<sup>37</sup>. For one thing, they place a higher value on the order that derives from the structure of arms control agreements and the processes associated with them, both bilateral and multilateral. In particular, renewed antagonism between the US and Russia and the possibility of a new arms race would cloud prospects for consolidating the remarkable transformation of the European order since the end of the Cold War.

It is also apparent that many of the European allies simply do not see the missile threat from new players in the imminent and sharp manner that is widespread in the United States. A report by House of Commons Foreign Affairs Committee concludes that: “We are not convinced that the US plan to deploy NMD represents an appropriate response to the proliferation problems faced by the international community. We recommend

that the government encourage the USA to seek other ways of reducing the threat it perceives."<sup>38</sup>

It has been suggested that historical experience has made Europeans more used to and tolerant of managing a degree of military insecurity rather than seeking to address directly every threat. For some, this divergence raises the familiar theme of decoupling: if the members of a collective defence organisation do not share risks equitably it erodes confidence that the necessary consensus on giving effect to collective defence obligations will be achieved when needed.

The central US counter argument has been that it will be a more reliable partner in dealing with challenges to common security if its homeland is secure. This argument appears to have had a mixed reception. To the extent it invited speculation about contingencies where Washington considered its interests to be less at stake than those of European states, and only homeland security tipped the scales in favour of US involvement, it may have heightened concerns about decoupling.

Some also queried directly the logic of a minor state sufficiently 'driven' to acquire an ICBM with a mass-destruction warhead but resistant to deterrent threats. In so far as such states have a common characteristic, a strong candidate would be an over-developed instinct for regime preservation. And if anything would rather obviously provoke single-minded American determination to secure the removal of a regime, it would be the attempt to deliver a mass-destruction warhead to the US homeland with a ballistic missile<sup>39</sup>. It should be remembered, of course, that, courtesy of early warning satellites, an ICBM has an unambiguous 'return address'.

A somewhat more plausible variation on this theme, but apparently not one developed by US officials, is that a minor state with an ICBM may believe that the US would be deterred and pursue a course that would require a major military effort to stop and reverse. It is hard, however, to think of a candidate, either current or prospective. In short, it appears that for many Europeans the threat was neither as clear nor as urgent as the US portrayed it.

Finally, for all the European allies, and for Japan, missile defence would represent a wholly new and very costly military capability. Embracing this requirement would require either very painful choices or reversing an almost universal pattern of a stable or declining level of military effort.

### **Some Pointers for Policy**

The United States today dominates and shapes the global economic, technological and security environment to a degree that has no parallel in modern history. If this had to be the case, one would be hard put to contest the proposition that we are far better off with the United States in this position than any other imaginable contender. This contention derives from the simple observation that the United States is a vibrant and transparent democracy with a veritable thicket of institutionalised checks and balances on how government can wield its power, externally as well as internally.

This preponderance of power will diminish over time. In the meantime, this preponderance generates tensions that the United States can manage more or less well both to take advantage of and to prolong its 'unipolar moment'.

All sovereign states covet influence. Most, including most major powers, accept that there are relative degrees of power, but being eclipsed breeds resentment. Even the US' closest friends probably occasionally regard the present circumstances as too much of a good thing. Those less close to the United States are correspondingly less charitable.

From the US standpoint there is the feeling that it has been, and is being, asked to do too much (and, many Americans would argue that it has contributed to this by saying yes too often). Leadership, of course, also means exposure and being the target of choice for all those who seek more influence or who wish simply to make a statement. This perception of being the target of choice is clearly an important factor in the revival of homeland defence, including BMD.

The fact of being the leader, and the target of choice, coupled with so marked a preponderance of technological and economic strength also inevitably strengthens the view in the United States that it can and must act unilaterally to protect its interests.

If the United States concludes that it will soon face unpredictable threats of attack with weapons of mass destruction delivered by ballistic missiles - and effective defences are considered to be within reach - no political leadership could resist going down this path. Developments on the Korean peninsula have, however, opened up a valuable new window to consider the whether and how of defences against strategic missiles.

Assuming that this seemingly imminent threat slips further into the future, how should the Bush Administration assess the balance of pros and cons? For one, the United States is not yet close to a defensive system that can perform reliably in developmental tests. A system that promises to provide sufficient confidence to shape political decisions in a crisis is an even taller order. Many people in the United States, including supporters of BMD, feel that the political push to take early and irreversible steps toward missile defence has distorted development programs and made more likely a 'rush to failure'<sup>40</sup>.

Second, the credibility currently attached to official US claims that any NMD system would be strictly limited is pretty low. The NMD debate was in substantial measure an internal ideological battle. When North Korea tested its Taepo Dong missile in 1998 there was little evidence of genuine alarm in political and policy circles, let alone amongst the general public. To the contrary, its impact was confined to the political arena, accepted as a decisive gift by the pro-defence camp and greeted with corresponding despair by their opponents. The implications that prospective US actions had for partners and friends were closer to after-thoughts than major considerations in the debate. In addition, of course, for many in the pro-defence camp,



the whole point was to establish NMD as a normal and appropriate endeavour that the US would pursue to whatever extent it deemed necessary.

The result has been that Russia and China assess that the United States appears determined to deploy missile defences that might in due course challenge the viability of their nuclear deterrent capability. Nor do they exclude entirely the possibility that this is the outcome the United States really seeks. This is a recipe for an enduring downward trend in US relations with both countries, a prospect with major ramifications for both Europe and Asia.

Thirdly, America's major European allies see only disadvantages in US relations with Russia and China that are fundamentally difficult and antagonistic. They are concerned, for example, that consolidating the new order in Europe will be made even harder and that the arms control, disarmament and non-proliferation regime so painstakingly assembled will begin to unravel. They have made these concerns plain to Washington. Moreover, they have signalled (through doubts about the seriousness and urgency of the ballistic missile threat) that allied solidarity should not be presumed.

Damaging so many crucially important relationships, and provoking reactions that could harm US security interests, would be a heavy price to pay to negate a relatively improbably threat from one or two small states. There are, therefore, grounds to argue that the Bush Administration should conclude that, while the United States will deploy defences if it has to, it is not in its interests at the present time to proceed simply because it can or because it wants to make a symbolic break with the past.

I would argue that even President Bush's speech on 1 May supports this assessment in several ways. He did not, for example, speak of deployment as soon as possible or by a particular date, but of when the US was ready. He also conceded that extensive further consultations with allies and friends were required. And, most importantly, he indicated that major changes to nuclear deterrent postures were appropriate to reflect the end of the Cold War.

It remains the case, however, that the Bush administration has stated as clearly as it can its conviction that deterrence through threats of retaliation is not enough given the nature of the emerging threats. It contends that missile defences are required, that the US will deploy them when it is ready, and do so without regard to the terms of the ABM treaty.

The case for missile defences can be contested legitimately on the grounds of technological limitations, the imminence of the threat from minor states, the immunity of these potential threats to available means of dissuasion and the importance of the ABM treaty to global stability and nuclear arms control. In present and foreseeable circumstances, however, these arguments may not prove compelling.

I believe we should also be thinking much harder about the circumstances in which missile defences can be a positive development and challenging the United States to lead the effort to put those circumstances in place.

In this regard, the main game remains the strategic nuclear arsenals of the major powers. The enterprise of nuclear arms control has lost direction and focus. At present, the deployment of defences against strategic ballistic missiles risks paralysing and perhaps reversing the process of negotiated reductions in the nuclear arsenals. A reasonable inference is that in setting out to tackle tomorrow's problems, we have not shed as much of the baggage of the past as we need to.

Crucially, Bush has recognised that this has to be part of a clear and clean break with the legacy of the Cold War. His declaration that the US would change the "size, composition, and character" of US nuclear forces to reflect the end of the Cold War could be of singular importance. US nuclear targeting plans, set out in the so-called Single Integrated Operational Plan (SIOP), have been scaled back drastically since the end of the Cold War. The basic methodology, however, appears to have remained relatively intact<sup>41</sup>. The Pentagon has determined that the prevailing political guidance on what is expected of the nuclear forces – most recently revised in 1997 – means that the US needs a force of 2000-2500 weapons<sup>42</sup>. Moreover, for the first time, this is a rock-bottom figure that should stand even if Russia, for economic reasons, wants to go lower.

We have not really taken the opportunity available since the end of the Cold War to ask basic questions about nuclear weapons without the elaborate baggage of symbolism that attended the nuclear balance in the past. In particular, since nuclear threats have to have at least a shred of credibility to deter, what scale of use of nuclear weapons is actually remotely credible?

Some answers to this question could reduce the target for the third US/Russia strategic arms reduction agreement to well below the agreed 2000-2500 weapons, and even below the informal proposals that range down to about 1000 weapons<sup>43</sup>. A fundamental review of the nuclear forces could be expected to question other entrenched characteristics in addition to the overall size of the arsenals. These characteristics include, in particular, keeping weapons on a high state of alert, the requirement for a triad of forces (land, sea and air), and the option of first use which US/NATO doctrine still protects.

This would also mean that we could move more quickly than anyone thought possible to the point where controlling and reducing nuclear arsenals involved, at least, the other three acknowledged nuclear weapon states. These states – the UK, France, and China – have not to date been major league players but it would be better to bring the major league to them rather than wait for them to qualify.

As for missile defence, it would be futile to aspire to an indefinite pause. It may be possible, however, to secure broad agreement on a sequence of defensive capabilities that offers some scope to defer the more contentious ones until there is greater understanding and agreement on how they could contribute to security and stability. Such a sequence might start with tactical systems (which are already deployed) and progress through transportable ground-based theatre systems to ground or sea-based boost phase intercept systems and, ultimately, national systems<sup>44</sup>.

Many people will dismiss all this as utopian. And the obstacles are certainly formidable. US pre-eminence will present major difficulties, particularly its superiority in conventional military power and its effective monopoly for the moment of the technology for non-nuclear defences against strategic ballistic missiles. Similarly, the lesser nuclear weapon states may balk at being thrust into the limelight of the major league. This may be true, in particular, of China, not least because of its mindset that secrecy is a strategic asset and transparency a luxury that only the strong can afford.

We should be aware, however, that the deployment of strategic missile defences is likely to be a profoundly important development with major consequences beyond even those that we can discern at the present time. It is not inappropriate to think on the scale recommended here. A challenging new view on how big nuclear threats have to be to deter could be the seminal step. And President Bush appears to have signalled that he will be challenging the prevailing orthodoxy on this issue.

US leadership of this process is indispensable, but the US cannot do it alone. In the final analysis, achieving a clear break with the nuclear legacy of the Cold War will be a political process involving, in particular, all the acknowledged nuclear weapon states. Technology can be supportive but not in itself decisive. An attempt by the US to use its technological leadership in missile defence to drive others away from Cold War nuclear postures is likely to be seen as a move from the frying pan into the fire. Deterrent postures may be adjusted to accommodate US defences, but mindsets will be reinforced, not changed.

An important supporting endeavour will be to find a mechanism to secure stronger adherence to non-proliferation norms. The more free wheeling, disaggregated international system that has emerged since the end of the Cold War appears to have encouraged a more casual attitude to compliance with these norms. Some would argue that everything possible is being done and that things are about as good as they will get. On the other hand, in addition to the United States, Russia, Japan and many European states now acknowledge that proliferation could become a major challenge. Further, we now have the unmistakable fact that proliferation is close to driving the United States to strategic defence, a development that Russia and China in particular regard as a threat to their core security interests. There may, therefore, be scope to secure a formal reaffirmation of adherence to non-proliferation norms that yields tangible improvement in national practices.

It is worth adding that the real prospect of a regime of nuclear restraint involving all the recognised nuclear weapon states could be expected to make their collective interest in non-proliferation more acute than it seems to be today. And at least their moral authority to take a firm stance would be increased immeasurably.

There is no law against developing long range ballistic missiles, (or, indeed, weapons of mass destruction unless one ratifies the relevant treaties). We will be better off, however, if the number of new players in this field is limited to those who want them enough to undertake the

sustained indigenous effort required, and if these new players emerge at the 'natural' intervals determined by their indigenous capabilities. Continued casual adherence to non-proliferation norms may, in contrast, result in a cluster of new players emerging in quick succession. As is already apparent, this is more likely to provoke reactions that, in retrospect, will be regretted as excessive.

As to Australia and early warning, we should take care not to throw the baby out with the bath water. Contributing to stable nuclear deterrence and generally bringing a measure of transparency to missile developments everywhere is a very useful role. We should regard our partnership with the US in early warning as something that sharpens our strong general interest in helping to move the nuclear weapons regime in a positive direction.

## ANNEX A

### BALLISTIC MISSILE DEFENCE SYSTEMS<sup>45</sup>

The boost phase of a ballistic missile – when its engines are propelling the missile – lasts between 2-5 minutes. Longer-range missiles have two or three stages allowing a progressively smaller and lighter vehicle to accelerate in the upper atmosphere to very high speeds. In the case of an ICBM this speed is typically just over 7 km/sec but can exceed 10 km/sec. The missile payload then loops through space for 15-20 minutes, reaching altitudes as high as 400 km, before re-entering the atmosphere and eventually striking the ground. The entire journey takes 25-30 minutes and can traverse up to 11,000 km.

These three distinct phases of a ballistic missile trajectory each present their own attractions and challenges from the standpoint of defences against them.

#### Boost Phase Intercept

This is a very attractive option because, relatively speaking, the missile presents a large, hot and slow target with its payload (including counter-measures) intact.

The difficulties are also formidable. The interceptor has to be located quite close to the launch point, within a few hundred kilometres. A sea-based interceptor would be viable for many potential launch sites, although keeping ships permanently on station and on alert, and protecting them, would be very costly.

Some potential launch points are beyond the range of a sea-based system. A land-based boost phase intercept capability would require cooperating with a third state contiguous to the launch site, an option with obvious drawbacks. For this reason, the Strategic Defense Initiative (Star Wars) of the 1980s proposed to rely heavily on boost phase intercept from platforms in space.

Boost phase intercept gives the defender just a few minutes to detect the launch, acquire the target missile with radars, and to confirm, if possible, that it is a weapon launch rather than a test missile or some space-related activity. An important consequence is that there would be no opportunity to involve the political leadership in decision-making. Full authority would have to be delegated to the officer commanding the defence system.

#### Mid-course (space) phase

The attraction here is that this the longest phase of the trajectory, offering time to locate the target accurately and to make multiple attempts to shoot it down.

Again, the difficulties are formidable. The target is now very small, it's cold and it's a long way away. Moreover, in the vacuum of space, relatively simple countermeasures can be deployed that make it very

difficult to discriminate the warhead. For chemical or biological warheads, the option exists to disperse them into sub-munitions early in the mid-course phase and require the defence to destroy them all.

Using any kind of conventional warhead on the interceptor uses up valuable space and weight to little advantage as there are no blast effects in space. A nuclear warhead, in contrast, is too effective: its destructive effects propagate over great distances in space putting at risk not just the target warhead but all space assets that are in line-of-sight of the explosion. By elimination, therefore, engaging a warhead in space requires aspiring to a hit-to-kill capability, that is, making an unarmed interceptor collide directly with the target where both objects are less than two metres long and approaching each other at 12 km/sec or more.

#### Terminal Defences

As the missile payload begins to re-enter the atmosphere, the simpler countermeasures (eg decoys) are stripped away, leaving just the warhead(s). The target warhead heats up on re-entry making attractive an interceptor with a heat-seeking sensor (provided, of course, that it can be refrigerated because the interceptor also gets very hot). Arming the interceptor with a conventional warhead again becomes an option, although one still has to weigh this benefit against its effect on the vehicle's size, weight, acceleration and manoeuvrability.

This is very much a layman's depiction of the complexities of ballistic missile defence. It should, however, suffice to support the contention that ballistic missile defences remain scarce because they have been, and in fact remain, beyond the best technological capabilities.

#### Clinton's NMD

The NMD system proposed by the Clinton administration comprised ground-based interceptors and radars, with the number and dispersion of these assets growing as the threat evolved. The concept involved engagement of the target in space with a hit-to-kill (direct collision) exoatmospheric kill vehicle (EKV) boosted into space on a high speed three-stage rocket.

Phase 1, focused on North Korea and a threat of a handful of warheads with at best very basic countermeasures provided for:

- Up to 100 interceptors based in Alaska;
- the upgrading of five early warning radars (located in the UK, Greenland, Alaska, California and Massachusetts) to improve their ability to track and project missile trajectories; and
- building a new high frequency X Band radar on Shemya Island in the Aluetian chain to discriminate between warhead and decoys and provide updated guidance to the interceptor.

Phases 2 and 3 would respond to a numerically larger and/or more sophisticated threat (countermeasures) and threats from other directions (particularly over the North Pole). Key elements included:

- At least one additional site for interceptors, probably at Grand Forks in North Dakota;
- at least three (but potentially up to eight) additional X Band radars at locations like North Dakota, the UK, Greenland, and South Korea.

### **The Bush Administration**

President Bush, building on his election campaign announcements to pursue a 'more robust' missile defence capability than promised by NMD, has stated that the system should protect US forces abroad and allies/friends in addition to US territory. This is reminiscent of the GPALS proposal of the Bush senior administration. As was then the case, such a commitment requires expanding NMD to include sea and/or space based components. (GPALS envisaged space-based interceptors carried over from SDI.) This approach, and allied reservations on de-coupling, also encouraged the Administration to drop the term 'national' and speak simply of missile defence.

President Bush has also settled on the theme that, "vulnerability for the American people is not an appropriate strategy". This is a variation on Ronald Reagan's rationale for SDI. The President and his Secretary of Defense, Donald Rumsfeld, continue to make clear, however, that Russia is the exception in that US missile defences will be limited and capable of being overwhelmed by Russia's strategic nuclear forces.

At present, there is little indication that the Bush Administration contemplates looking seriously at space-based options, not least because they are the least mature. On the other hand, there is a considerable constituency for adding a sea-based component to the NMD architecture.

In his definitive speech on missile defence on 1 May 2001, President Bush indicated that "all available technologies and basing modes" were being examined.

### **Theatre Missile Defence (TMD)**

Both the US Army and Navy are developing missile defence systems that are unambiguously non-strategic, that is, intended to defend against missiles with ranges of 1000 km or less and engaging the warhead at short range in the terminal stages of its trajectory. Payloads from missiles of this class achieve velocities of 1.5-2.5 km/sec compared to the 7-10 km/sec for an ICBM.

In addition, each of these services is developing a defence system to engage intermediate range ballistic missile (IRBM) warheads in space using the same unarmed hit-to-kill concept employed in the NMD field. The Army program is called Theater High Altitude Air Defense or THAAD, while the Navy's is called Navy Theater Wide or NTW.

IRBMs are generally considered to be missiles with ranges between 1000-3500 km. Payload velocities for these missiles fall in the 3-5 km/sec range.

THAAD will be a ground-based system transportable to theatres of operation where a ballistic missile threat exists. The THAAD interceptor will have a range of approximately 200 km horizontally and 150 km vertically, and a maximum velocity of 2.6 km/sec

The NTW interceptor will be significantly faster – 4.5 km/sec – and also capable of engaging targets at altitudes in excess of 100 km. Coupled with the mobility of sea-basing, NTW is being promoted as a boost phase intercept system (where geography makes this feasible), as well as an alternative or complement to THAAD to protect US/coalition forces in theatre operations.

### **The TMD/NMD Boundary**

As argued above, the ABM treaty effectively minimised hedging against the possibility of strategic missile defences as a significant determinant of the size and capabilities of the offensive nuclear forces. NMD in itself puts this restraining influence in doubt. This is partly because the spectrum of influential opinion on the meaning of 'limited' is quite wide. It is also because NMD includes several additional X Band radars at dispersed locations and these are the components of a thicker defence capability that take the longest to build. (In the 1980s, the construction of what was assessed to be such a radar by the Soviet Union near Krasnoyarsk in the Soviet Far East, a location banned under the ABM treaty, became a bone of bitter contention with the US.)

A related concern is that the effectiveness of the ABM Treaty could be eroded from below by TMD development at the same time as NMD whittles away from above.

As noted, THAAD and NTW aspire to do the same thing in the same way and in the same arena (space) as NMD. The key difference is the speed of the target, up to 5km/sec for sub-strategic missiles against 7 km/sec or more for strategic missiles.

The ABM treaty demarcation agreement essentially provides that any ground or sea-based missile defence system is treaty compliant provided it is not tested against a missile with a range in excess of 3500 km or which propels a payload to speeds above 5 km/sec. Some experts, however, contest the value of this restriction as a means of providing assurance that strategic defence capabilities are not being acquired through TMD development.

The contention is that, for hit-to-kill engagements in space, the key factor shaping the probability of success is the combined or closing speed of target and interceptor, not the absolute speed of either. And both THAAD and NTW can be legally tested in circumstances where the closing speeds are basically the same as those expected against strategic targets (5 km/sec for the target plus 2.6 km/sec for the THAAD interceptor or 4.5 km/sec for NTW).

## ANNEX B

### AMENDING THE ABM TREATY<sup>46</sup>

Even the most basic version of NMD – phase 1 of the Clinton proposal – would require significant modification of the ABM treaty. The most consequential in conceptual terms is Article 1.2, which provides that:

Each Party undertakes not to deploy ABM systems for a defence of the territory of its country and not to provide a base for such a defence, and not to deploy ABM systems for defence of an individual region except as provided for in Article III of this treaty.

NMD intends to provide defence of the entire territory of the United States, albeit against an attack that is very modest relative to Russia's offensive capability.

Other aspects of this minimal program that clash with one or more of the provisions of the treaty include:

- Modifying non-ABM radars to perform ABM tasks [Articles III and VI(a)];
- Deploying ABM radars in other countries [Article IX];
- Separating ABM radars from interceptors [Article III];
- Locating interceptors more than 150 kilometres from the national capital or from a deployment area for offensive missiles [Article III]

If it was considered desirable to also provide scope in the treaty to pursue the second and third phases if needed, the provisions limiting the number of ABM sites to one, and the number of interceptors to 100 would have to be amended.

Proposals to upgrade the NTW theatre defence system and make it part of the NMD architecture would require amendment of Article V (1) which bans ABM systems and components that are sea-based, air-based, space-based or mobile land-based. This also assumes that Russia will not challenge NTW under the Demarcation Agreement as a 'TMD' system that in fact poses a 'realistic threat' to its strategic nuclear forces. (Neither Russia nor the United States has yet ratified the Demarcation Agreement.)

Finally, if SBIRS Low is deployed and is arguably capable of guiding interceptors to the target, that is, to perform the function of an ABM radar, it would violate Article V (1). In addition, as SBIRS Low would be a component of an ABM system based on 'other physical principles' (infrared rather than electromagnetic), Agreed Statement D to the treaty provides that specific limits on such systems should be the subject of discussion and agreement.

## NOTES

1. The ABM Treaty came too late to stop the deployment in 1970 of missiles with Multiple Independently Targetable Re-entry Vehicles (MIRV) which dampened significantly any concerns about the rudimentary ABM capabilities then available. The technology for MIRV emerged almost naturally from the ICBM and space/ satellite programs in the US, but it was rationalised in part as a counter to Soviet ABM development. In 1962, Premier Khrushchev boasted that they could 'hit a fly in space', and deployment around Moscow of nuclear-tipped defences began in 1964. In any event, between 1969 and 1980, the number of independently targetable warheads on strategic missiles went from 1710 to 7000 in the US and from 1355 to 5920 in the USSR.

2. I have set out my views on deterrence and strategic defences more fully in 'Deterrence, Strategic Defence and Arms Control', *SDSC Working Paper No.59*, July 1985.

3. For a comprehensive review of arms control from this perspective see Patrick Glynn, *Closing Pandora's Box*, Basic Books, 1992.

4. See my 'Strategic Defence: An Australian Perspective', *ANU Peace Research Centre*, Working Paper No.58, January 1989.

5. Senator Nunn sustained his interest in the security of nuclear weapons. Following the break-up of the Soviet Union he and Senator Lugar pressed, successfully, for an innovative program under which significant funds from the Pentagon's budget (as much as US\$400 million annually) are directed at assisting Russia in preserving positive government control of nuclear weapons and fissile material. Officially, this program is called the Threat Reduction Initiative.

6. Executive Summary of the *Report of the Commission to Assess the Ballistic Missile Threat to the United States*, Pursuant to Public Law 201 104<sup>th</sup> Congress, 15 July 1998 (generally known as the Rumsfeld Commission), pp5 & 17-20.

7. Media release, Office of the Press Secretary, The White House, 17 March 1999.

8. Ibid.

9. 'Anti Ballistic Missile Treaty Demarcation and Succession Agreements: Background and Issues', *Congressional Research Service*, Washington DC, 22 May 1998.

10. Press briefing by Robert Bell, Senior Director for the NSC for Defense Policy and Arms Control, Office of the Press Secretary, The White House, 24 March 1997.

11. Statement of the Honorable William S. Cohen, Secretary of Defence, before the Senate Armed Services Committee *Hearings on National Missile Defense*, 25 July 2000.

12. Cited in Bernard Brodie, *Strategy in the Missile Age*, Princeton University Press, 1959, p.188.

13. Bhupendra Jasani (ed), *Outer Space-A New Dimension of the Arms Race*, Stockholm International Peace Research Institute, 1982, p.125.

14. Rather courageously, the US concluded that over the decade or so that the Safeguard (previously Sentinel) program had been manoeuvred through the domestic political hoops and the SALT negotiations with the Soviet Union its rationale had become hopelessly tangled. The original Sentinel program was intended

to provide some protection against a limited nuclear attack from a third party (specifically identified as China) that might be less disciplined than the Soviet Union. The program called for major cities to be ringed with nuclear-tipped ABM interceptors, a prospect that encountered vigorous public opposition. (Later, of course, with the breakthrough in US/China relations in 1971/72, it became impolitic to consider such a rationale.) In 1969, President Nixon recast Sentinel to protect ICBMs rather than cities, and renamed it Safeguard. Although a Safeguard site near Grand Forks, North Dakota, became operational in 1975, it was already accepted that it offered no protection for US citizens against a major strike (very few Americans live in North Dakota) and added little to the certainty of US retaliation. Safeguard was mothballed in 1976 and later dismantled. The United States has not since exercised its right to one ABM site.

15. Hansard (Senate), 5 November 1991, p.2374

16. See comments by a defence spokesman cited in an article by Brendan Nicholson, 'US missile plan may give us spies in the sky', *The Age*, 4 March 2001.

17. The SBIRS High constellation will comprise four satellites in geostationary orbit and two in so-called highly elliptical orbits with long dwell times over the northern hemisphere. Only some of these satellites will be linked to the ground station in Australia.

18. 'Australian Cooperation with US Early Warning Program to Continue', media release, Office of the Minister for Defence, 26 July 1996.

19. 'Early Warning Links Strengthened', media release, Office of the Minister for Defence, 12 October 1999.

20. 'Budgetary and Technical Implications of National Missile Defense', *Congressional Budget Office*, Washington DC, April 2000. p.22.

21. This point was stressed explicitly by Robert Bell in the 24 March 1997 press briefing cited above. Russia's interest in the demarcation negotiations in limiting TMD capabilities led them to propose lower interceptor speeds, lower speeds and ranges for target missiles, and to exclude links to space-based sensors like DSP/SBIRS. Russia would have been encouraged in this course by a unilateral US determination in 1994 that the THAAD system would not comply with the ABM treaty if cued by a space-based sensor. The US subsequently insisted that space-based cueing for TMD systems be permitted. Russia eventually agreed, but only for the slower systems like THAAD. This agreement does not extend to faster TMD systems – specifically Navy Theater Wide – which are subject only to national compliance review, and which the other party can dispute.

22. Joint Press Conference between Australian Minister of Defence, John Moore, and US Secretary of Defense, William Cohen, Maritime Headquarters, Sydney, 17 July 2000.

23. Quoted in Joseph Circincione, 'The Political and Strategic Imperatives of National Missile Defense', presentation to the 7<sup>th</sup> ISODARCO Beijing Seminar on Arms Control, 8-12 October 2000, p.2.

24. 'Foreign Missile Threats: Analytical Soundness of Certain National Intelligence Estimates', *US General Accounting Office*, Washington DC, August 1996, p.2.

25. 'The Proliferation Primer', A Majority Report of the Subcommittee on International Security, Proliferation, and Federal Services, *Committee on Governmental Affairs*, United States Senate, January 1998, pp.60-64.

26. Rumsfeld Commission. *op. cit.*, pp.5-6.

27. Michael R. Gordon with Steven Lee Myers, 'Politics Mixes With Strategy In Plan For Antimissile System', *New York Times*, 23 June 2000, p.1.

28. Taken from, 'Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015', September 1999, p.7. This is an unclassified version of the 1999 NIE prepared by the National Intelligence Council.

29. Circincione, *op.cit.* p.2.

30. John D. Holum (Senior Adviser to the Secretary of State for Arms Control and International Security), 'The Proliferation of Weapons of Mass Destruction: Challenges and Responses', *US Foreign Policy Agenda*, September 1999, pp 10-13.

31. See Joseph S. Nye, 'Military Deglobalisation?', *Foreign Policy*, January-February 2001, pp.82-83.

32. The conditions are US ratification of the agreements on TMD demarcation, and on updating the states party to the ABM treaty following the dissolution of the Soviet Union. Three states of the former Soviet Union in addition to Russia – Ukraine, Belarus, and Kazakhstan – also 'possess' or did possess strategic nuclear weapon systems. US ratification of these agreements is by no means assured.

33. There has been plausible speculation that Russia's decision in early 2000 to insist on retaining the ABM Treaty as it stood effectively eliminated any prospect of the Clinton Administration proceeding with NMD, as the President was loath to be the one to kill the ABM Treaty. See, Steven Lee Myers, 'Russian Resistance Key In Decision To Delay Missile Shield', *New York Times*, 3 September 2000.

34. While China could certainly quote statements from participants in the debate in the US to support this view, it is also clear that it suits China's political purpose to characterise NMD in this way.

35. Mark Stokes, 'China's Strategic Modernisation: Implications for the United States', *US Army Strategic Studies Institute*, September 1999.

36. See, for example, Robert Burns, 'Response to US Missile Defences Eyed', *Associated Press*, 8 August 2000.]

37. For a good overview see Philip H. Gordon, 'Bush, Missile Defence and the Atlantic Alliance', *Survival*, Spring 2001, pp.17-36.

38. Tom Buerkle, 'UK Panel Questions US Missile Shield Plans', *International Herald Tribune*, 3 August 2000.

39. Sir Michael Quinlan, 'United States National Missile Defence', *Royal United Service Institute Journal*, February 2001, p.41.

40. Taken from the report of the 'Panel on Reducing Risks in BMD Flight Test Programs', February 1998. Usually called the Welch report after its chairman, Gen. Larry Welch, USAF (rtd). At the height of the Cold War the SIOP contained in excess of 40,000 targets.

41. That number is now of the order of 3000, including some 2300 military, military-industrial and leadership targets in Russia. Interestingly, when the Berlin Wall fell in November 1989, it was Defense Secretary (and now Vice President) Richard Cheney and Chairman of the Joint Chiefs (now Secretary of State) Colin Powell who pushed hard to rationalise the SIOP. See David B. Ottaway and Steve Coll, 'Trying to Unplug the War Machine', *Washington Post*, 12 April 1995; and John M. Donnelly, 'Senator Confirms Secret Nuclear Targeting Plans', *Defense Week*, 12 June 2000.

42. See in particular the testimony of Adm Richard Mies, Commander in Chief US Strategic Command in, Hearings on US Strategic Nuclear Force Requirements in the DOD Strategic Integrated Operational Plan, Senate Armed Services Committee, 23 May 2000.

43. See, for example, Frank Gaffney, 'Beware the Grand Compromise', *Washington Times*, 18 January 2000; and Michael O'Hanlon, 'Russian Offer on Warheads a Good Idea', *Baltimore Sun*, 30 November 2000.

44. Three prominent Americans, a former Secretary of Defense and two former Deputy Secretaries of Defense, have proposed that the US approach NMD in this fashion, that is, gradually through TMD. See John Deutch, Harold Brown and John P. White, 'National Missile Defense: Is There Another Way?' *Foreign Policy*, Summer 2000, pp. 91-104.

45. The material in this annex was drawn from: Col Daniel Smith, 'The Ballistic Missile Threat', *Center for Defense Information*, 23 March 2001; 'Missile Defense Part 1', *Aviation Week & Space Technology*, 24 February 1997; George Lewis, Lisbeth Gronlund, David Wright, 'National Missile Defense: An Indefensible System', *Foreign Policy*, Winter 1999/2000; John Pike, 'Ballistic Missile Defense Program Status Update', e-print, July 1998; and George N. Lewis, Theodore A. Postel, 'The Hel-sinki Summit and the Demise of the ABM Treaty', *Bulletin of Atomic Scientists*, July/August 1997; Theodore A. Postel, 'Not Very Technological Challenges to Ballistic Missile Defences', paper presented at an RUSI conference, London, September 1997.

46. The material for this annex was largely drawn from Dean A. Wilkening, 'Amending the ABM Treaty', *Survival*, Spring 2000, pp 29-45.

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