



**STRATEGY
RESEARCH
PROJECT**

The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.

NATIONAL MISSILE DEFENSE

BY

LIEUTENANT COLONEL STEVE PETERS
United States Army

DISTRIBUTION STATEMENT A:
Approved for Public Release.
Distribution is Unlimited.

USAWC CLASS OF 2001



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

20010605 148

USAWC STRATEGY RESEARCH PROJECT

NATIONAL MISSILE DEFENSE

by

LTC Steve Peters
US Army

Mr. William T. Harris
Project Advisor

The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

DISTRIBUTION STATEMENT A:
Approved for public release.
Distribution is unlimited.

ABSTRACT

AUTHOR: LTC Steve Peters

TITLE: National Missile Defense

FORMAT: Strategy Research Project

DATE: 25 March 2001

PAGES: 43

CLASSIFICATION: Unclassified

Security and defense of the continental United States received much attention during the 2000 Presidential election campaign. One of the more controversial proposals for homeland defense is deployment of a National Missile Defense (NMD). Allies and adversaries alike are concerned that NMD could cause a shift in the balance of power and might lead to a renewed arms race.

This paper explores the NMD issue to determine whether the program should be pursued and, if so, in what form. The paper begins by setting the strategic context in which NMD is being considered, followed by a review of the currently postulated threat. After a description of three proposed NMD configurations, three possible courses of action regarding NMD deployment are discussed. The courses of action are then assessed in terms of diplomatic and economic implications.

In the final analysis, this author believes that a limited capability NMD system should be deployed. However, the United States will have to take a proactive diplomatic stance to both garner additional international support among allies and preclude a return to an arms race with emerging competitors similar to that experienced during the Cold War.

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF TABLES.....	ix
NATIONAL MISSILE DEFENSE	1
STRATEGIC BACKGROUND.....	2
THE COLD WAR ERA.....	2
THE POST COLD WAR ERA.....	2
CURRENT SETTING.....	3
THE THREAT.....	3
PLANNED NMD SYSTEM	5
COMPOSITION.....	5
Ground Based Interceptors (GBI).....	5
Battle Management/Command, Control and Communications (BM/C3).....	5
X-Band Radars.....	6
Upgraded Early Warning Radars.....	6
Space Based Systems.....	6
NMD CAPABILITY PACKAGES.....	6
Capability 1.....	6
Capability 2.....	7
Capability 3.....	7

NMD OPERATIONAL CONCEPT.....	7
DESCRIPTION OF POLICY ALTERNATIVES.....	7
IMPLICATIONS OF DEPLOYING NMD.....	8
ABM TREATY.....	9
REACTIONS TO NMD DEPLOYMENT.....	10
NATO.....	10
Russia.....	11
China.....	12
North Korea.....	12
ECONOMICS OF MISSILE DEFENSE.....	13
ANALYSIS OF IMPLICATIONS ON POSSIBLE COURSES OF ACTION.....	15
COURSE OF ACTION 1: COMPLETE RESEARCH AND DEVELOPMENT, BUT WITHHOLD A FINAL DECISION ON DEPLOYMENT.....	15
Economic Implications.....	15
Diplomatic Implications.....	16
Risks.....	16
COURSE OF ACTION 2: DEVELOP AND FIELD ONLY CAPABILITY 1 OF THE NMD SYSTEM.....	16
Economic Implications.....	16
Diplomatic Implications.....	17
Risks.....	17
COURSE OF ACTION 3: FIELD THE FULL NMD SYSTEM.....	18
Economic Implications.....	18
Diplomatic Implications.....	18

Risks.....	18
POLICY RECOMMENDATION.....	19
ENDNOTES.....	21
BIBLIOGRAPHY.....	29

LIST OF TABLES

FIGURE 1: ANTICIPATED NMD FUTURE COSTS.....	14
FIGURE 2: COURSE OF ACTION COMPARISON SUMMARY	19

NATIONAL MISSILE DEFENSE

Homeland security, meaning actions to ensure the security of the United States itself, is receiving increased emphasis in military and political circles. Inherent in homeland security is the duty of the government to provide a secure environment for its people by exercising the appropriate aspects of its economic, military and diplomatic power. One of the more controversial proposals for homeland defense is that of deploying a National Missile Defense (NMD).

Some allies, and adversaries alike, worry that NMD could shift the balance of power and might lead to a renewed arms race. Supporters cite a growing threat caused by proliferation of ballistic missile technology and expertise as justification to field the system. In light of this debate and given a disappointing series of operational tests, President Clinton decided in September 2000 to postpone a final decision on deployment of NMD.¹

The decision now falls on a new administration. During the 2000 Presidential campaign, Candidate Bush repeatedly emphasized his support of an NMD system. Now as President, Mr. Bush again confirmed his stance during a 27 February 2001 address to Congress.² However, the Bush Administration has not, as yet, committed itself to a specific NMD structure or capability thus affording themselves some latitude in the ultimate decision.

This paper explores some of the key issues surrounding NMD to determine whether the program should be pursued and, if so, in what form. The paper begins by setting the strategic context in which NMD was developed followed by a review of the threat. Following a description of the currently proposed NMD configurations, three possible courses of action regarding NMD deployment are discussed. The various courses of action are then assessed in terms of diplomatic and economic implications.

In the final analysis, this author believes that a basic capability NMD system should be deployed. However, the United States will have to take a proactive diplomatic stance to both garner additional international support among allies and preclude a return to an arms race with emerging competitors similar to that experienced during the Cold War. Simultaneously, it must pursue an aggressive intelligence collection program to ensure visibility of emerging threat capabilities.

STRATEGIC BACKGROUND.

THE COLD WAR.

During the period immediately following the end of World War II the Soviet Union and the United States competed for ideological domination of the world. The rise of nuclear weapons as the ultimate strategic weapon led to a strategy of mutual assured destruction.³ This strategy acknowledged that each side possessed sufficient nuclear weapons to destroy the other and, should one side initiate an attack, the other would respond overwhelmingly. Should even a conventional conflict occur, the potential existed for each side to escalate operations eventually causing a nuclear exchange.⁴ Given the costs of escalation, the United States and Soviet Union vied for superiority through economic and political means and proxy conflicts.

Despite Cold War tensions, the US and USSR continued diplomatic dialogue. In 1972, the United States and the USSR negotiated the Anti-Ballistic Missile (ABM) Treaty agreeing not to deploy nationwide missile defenses. The hope was that if ballistic missile defenses could be banned, then both the United States and USSR would agree to cap and ultimately reduce their offensive nuclear forces.⁵ This treaty does permit each country to deploy a limited defensive capability to protect a portion of its territory. Under the current treaty, the United States is allowed interceptors at Grand Forks, North Dakota.⁶ The Soviets have deployed an interceptor ring around Moscow.

THE POST COLD WAR ERA.

After the fall of the Soviet Union, the United States found itself as the sole remaining super power. Its people looked for a "peace dividend" after the years of high defense spending during the Reagan years with a turn to a domestic focus. This resulted in another reduction in defense spending and military manpower. Concurrently, theater-level missile defense continued to receive strong support due in large part to the limited success achieved by Patriot during the Gulf War and a recognition of the threat posed by the spread of tactical ballistic missile technology.⁷

The Clinton administration subsequently changed the emphasis of the Reagan-era SDI program from deploying a large operational system, to research and development of supporting technologies necessary to permit a rapid fielding of a more modest system, if necessary.⁸ The key to making this strategy feasible was an assessment that the United States would be able to detect emerging ballistic missile threats with enough warning to deploy an effective NMD

system.⁹ Called the "3+3 plan", the administration planned to spend three years developing the system and be prepared to deploy it three years later. Once the technology was developed, the Administration could annually revisit the need to deploy the system based on evolving threat assessments.¹⁰ The major assumption made was that the United States would be able to identify an emerging threat in sufficient time to actually deploy the system.

The fall of the Soviet Union presented unique challenges to the Clinton Administration. In place of the old Soviet Union, the United States now found itself dealing with a Russian Federation and 14 newly independent countries.¹¹ Those new countries still possessing nuclear weapons, Russia, Belarus and Kazakhstan, have had to implement security procedures and command and control safeguards for these weapons. Control of nuclear weapons was just one of the many challenges faced by these new countries as they simultaneously had to establish, among other things, governments, economies and internal defense structures.¹²

CURRENT SETTING.

The setting today is one of continued uncertainty. The new Bush Administration is establishing itself after a particularly rancorous election. The Bush administration may face political challenges both domestically and from abroad based upon the unique situation during the 2000 Presidential election.¹³ The impact this might have on foreign policy and Bush's own ability to deal with foreign leaders will only be known with time, but certainly conditions in the United States are closely watched by friends and foes alike.

President Bush made deployment of a national missile defense system one of his core policy issues during the election. He has generally remained firm in his commitment to fielding an NMD system. However, there are indications that despite his firm statements, the President may be willing to compromise to some degree.¹⁴

THE THREAT.

The perceived threat is key to whatever decision is ultimately taken regarding deployment of NMD. Today, there are 38 countries possessing operational ballistic missiles with range capabilities over 100 kilometers.¹⁵ Many of these missiles are capable of being equipped with nuclear or other type warheads capable of causing mass destruction. The fact that so many countries currently possess ballistic missiles highlights the potential impact of the proliferation of enhanced ballistic missile technology. Most of these current missiles do not possess the range to attack the United States if launched from their owning country. However,

advances in technology may someday allow for such an attack by launch from a sea-based or other location.

Congress established two commissions to examine the future threats to the United States. The United States Commission on National Security/21st Century (Hart-Rudman Commission) examined broad threat trends attempting to draw a picture of the threat 25 years in the future. The Commission to Assess the Ballistic Missile Threat to the United States (Rumsfeld Commission) specifically examined the ballistic missile threat to the US. These two Commissions arrived at similar conclusions: the threat of attack by weapons of mass destruction is present now and likely to grow in the future.

The Hart-Rudman Commission assesses that, over the next 25 years, the United States "will become increasingly vulnerable to hostile attack on our homeland, and our military superiority will not entirely protect us."¹⁶ The Commission further postulates that: "States, terrorists, and other disaffected groups will acquire weapons of mass destruction and mass disruption, and some will use them. Americans will likely die on American soil, possibly in large numbers."¹⁷

The Rumsfeld Commission asserts that the ballistic missile threat is more mature than previously thought and evolving rapidly. Further, advances in technology coupled with proliferation of that technology may reduce intelligence warning time before a launch capability is achieved by a potential adversary.¹⁸ Therefore, the United States might conceivably be faced by a threat for which it has no defensive capability.

Alternatively, ballistic missiles provide only one means of attack by weapons of mass destruction (WMD). In testimony before the Senate in February, 2000, Mr. Robert Walpole, a CIA analyst, stated that the US is more likely to be attacked by WMD delivered by other means than ballistic missiles.¹⁹ This tends to support an argument that NMD should be a lower priority in comparison to actions necessary to address other asymmetric WMD threats. Additionally, the CIA authors of the National Intelligence Estimate (NIE) expressed concern that the Rumsfeld Commission lent too much credence to what "could" happen vice what was "likely" to happen. The result, in their opinion, was that this bias toward what could happen might potentially drive the U.S. to address threats in the wrong priority.²⁰

Despite less than unanimous agreement within the intelligence community, several indicators tend to lead to the conclusion that long-range ballistic missiles possessed by potential adversaries pose a danger to the U.S. today and that threat will likely increase over time. First, Russia has renounced the no-first use policy of the former Soviet Union and its new doctrine includes use of strategic weapons as a means of "capping" a regional, conventional conflict.²¹

Should North Korea continue development of the Taepo Dong 2 missile, it could conceivably threaten most, if not all, U.S. territory. Iran, among other countries, also appears to be actively seeking assistance in its work toward deployment of an ICBM-type missile.²² Given these indicators, it seems plausible that there is a potential threat in existence today that will only increase over time as additional nations acquire the necessary ballistic missile technology.

PLANNED NMD SYSTEM

COMPOSITION

The NMD System consists of both ground-based and space-based subsystems linked together by a battle management/command, control and communications (BMC3) system. By upgrading the capabilities of its individual subsystems, the NMD System can incrementally improve its overall effectiveness against expanded target sets to meet evolving threats. Ground-based subsystems will operate from fixed ground locations while space-subsystems will operate from a combination of fixed and adjustable orbits. NMD Subsystems are described below:²³

Ground Based Interceptors (GBI).

GBI destroy incoming ballistic missiles through kinetic energy. Initial and mid-flight guidance is provided via the BMC3 system based upon input from the various surveillance and tracking subsystems. On-board sensors and internal guidance allow the missile to accurately home in on the inbound ballistic missile to achieve a warhead to warhead intercept outside the earth's atmosphere. The ballistic missile warhead is then destroyed due to the kinetic energy developed as a result of this collision. Exo-atmospheric intercepts preclude weapon effects on the earth's surface.

Battle Management/Command, Control and Communications (BM/C3).

The BM/C3 subsystem facilitates coordination of the other components of the NMD system. It is functionally composed of the Battle Management Command and Control (BMC2) element and the In-Flight Interceptor Communications System (IFICS).

The BM/C3 is the control element for the NMD system. It consists of various displays and supporting battle management, decision support and sensor fusion hardware and software. It is the central point for system monitoring, operations and readiness.

The IFICS provides the critical, time sensitive communications link between the BM/C3 system and the GBI. IFICS is envisioned to be enabled by up to seven dispersed, unmanned ground stations.

X-Band Radars.

The supporting X-Band radars conduct surveillance and track in-bound targets. Data developed from these radars is used to provide guidance to GBIs. The radars use advanced radar signal processing technology to improve target resolution permitting the radar to more accurately discriminate actual from false targets. This improves the NMD system's ability to overcome "spoofing" and other countermeasures and to assess the results of intercepts.

Upgraded Early Warning Radars

Upgrades to the existing early warning radars leverage the existing surveillance radar net by improving their surveillance capabilities through injection of selected technological enhancements.

Space Based Systems.

Space based systems include the existing satellites of the Defense Support Program (DSP) and, when deployed, the Space Based Infrared System (SBIRS) under separate development by the US Air Force. These two satellite systems provide surveillance and early warning of ballistic missile launch. NMD will be able to use the data generated by either of these two satellite systems either separately or in conjunction with each other.

NMD CAPABILITY PACKAGES.

The NMD program evolves over time to provide increasing capabilities as technology matures. Three levels of capability define the NMD system structure.

Capability 1.

Capability 1 is the basic NMD system designed to counter an unsophisticated threat such as that posed by a rogue state. At an unclassified level, the design threat for Capability 1 is five single warhead missiles using unsophisticated decoys (decoys that can be discriminated and therefore not requiring engagement) chaff, obscurants, flares and jammers.

Capability 2.

Capability 2 builds on Capability 1 to address a more robust threat. This threat includes five single warheads with around four decoys each. These decoys would be very sophisticated and cannot be discriminated from actual warheads and, thus, must be engaged. In addition, chaff, obscurants, flares and jammers would also be employed.

Capability 3.

Capability 3 provides the objective NMD system. The Capability 3 NMD system will counter a threat anticipated to consist of 20 single warhead missiles, each with up to five decoys that cannot be discriminated or a larger number of decoys that can be discriminated. Chaff, obscurant particles, flares, jammers and other countermeasures would also be employed.

NMD OPERATIONAL CONCEPT.

The NMD system components each play a key role in the overall system operation. The satellite components, either DSP or SBIRS, will detect missile launches and then track these inbound missiles to provide critical initial information. This information is passed to the BMC3 while the ground based radars, X-Band Radar or Upgraded EW Radar, acquire and track the missiles. This information is used to make an engagement decision. Upon engagement approval, one or more GBI will be launched. The BMC3 system continues to process radar and system data to provide additional information to the GBI. The GBI uses this information to discriminate between debris, penetration aids (decoys, obscurants, etc) and true warheads. At a predetermined point, the GBI uses its on-board sensor to acquire the threat, identify the threat warhead and guide itself to a direct intercept. During and after the engagement, the radars continue to collect data to provide an assessment of the intercept's success.²⁴

DESCRIPTION OF POLICY ALTERNATIVES

With its firm stance for deploying an NMD system, the Bush Administration has significantly limited its available options. The question now becomes less whether and more what type NMD capability is developed. However, should NMD prove infeasible due to cost, technical, or other problems, the Bush Administration may find itself unable to carry out one of its major policy commitments. The political and diplomatic ramifications of such an occurrence are beyond the scope of this paper and are grounds for further study.

To return to the basic question whether the United States should deploy a missile defense system, we must consider the viable alternatives. First, the United States can complete

research and development of the NMD system but withhold a final decision on deployment. This approach is consistent with the Administration's commitment to provide a missile defense capability for the United States. This alternative brings an NMD system through development up to the point where a decision is required for deployment. This is essentially a continuation of the Clinton policy on missile defense and therefore sustains continuity between administrations on the approach to missile defense.

A second alternative is to develop and deploy only Capability 1 of the NMD system with follow on improvements deferred. This alternative allows the Bush Administration to fully meet its campaign promises by actually deploying a limited missile defense system. However, since this system would employ only basic capabilities, it will be only marginally effective. Further, deployment of this system may have an adverse effect on nuclear stability if it triggers a new arms race.

Finally, the Administration can pursue the planned NMD system. This is the most costly alternative in terms of both budgetary requirements and expenditure of diplomatic capital necessary to garner consensus to proceed. It is highly dependent on technological success to provide the capabilities envisioned and is likely to be perceived by more than a few countries as a threat to nuclear stability.

IMPLICATIONS OF DEPLOYING NMD

The following discusses some of those major implications associated with the deployment alternatives described above by analyzing the diplomatic, informational and economic impacts already known regarding NMD and the potential fallout from these impacts.

The Administration must early on ensure it has the requisite support from the American people to field NMD. While Americans appear to favor an NMD system, in one poll, only 48.2% of 1,002 people polled supported deployment of NMD.²⁵ This indicates that there is a perceived need for NMD, but that the issue does not enjoy broad-based support. The Administration should seek to enhance support of the American people in order to approach any required negotiations with allies or the Russians from a position of strength. Additionally, stronger support from the American people will place additional pressure on Congress to also support NMD initiatives. Bipartisan support will likely be essential given the current make up of both the House and Senate.

ABM TREATY.

The Administration must also determine how to approach the issue of the 1972 ABM Treaty. In the ABM Treaty, the United States and Soviet Union agreed not to deploy missile defenses to defend their entire territory.²⁶ However, the amended treaty does allow each country to build one site to protect a limited area.²⁷ Pursuant to this provision, the Soviet Union built and maintains a missile defense system around Moscow while the United States deployed, but quickly deactivated, the Safeguard missile system.²⁸

Opponents of adhering to the ABM treaty might argue that since the Soviet Union no longer exists, the treaty is no longer valid. However, the Clinton Administration negotiated and signed a series of amendments to the START agreements and the ABM treaty with Russia, Belarus, Kazakhstan and Ukraine including The Memorandum of Understanding on Succession designating Russia, Ukraine, Belarus and Kazakhstan as successor states to the Soviet Union.²⁹ This Memorandum in effect binds the signatories to the constraints of the ABM treaty. However, the US Senate has not acted on these amendments, so, technically, the United States is not officially bound by the ABM treaty.

However, the President, who is charged with the responsibility for formulating United States foreign policy, made a commitment to a foreign nation. To maintain the President's power to negotiate in good faith, the Bush Administration will be under pressure to adhere to the requirements of the ABM Treaty pending action by the Senate. It is likely that any modification to the ABM Treaty will be delayed until the new Administration has fully articulated its planned program and mapped out a suitable strategy. To the extent the Senate may have previously withheld action based on party politics, the Bush Administration might have more success in getting treaty modifications passed.³⁰

But the question remains, is an ABM Treaty even required? The United States must carefully assess what end it wants to achieve and then determine the ways and means available. If the Administration's larger goal is a reduction in the nuclear arsenals, then an ABM Treaty may be an enabler to that end. Should an ABM Treaty not exist, then, some suggest, a new arms race will begin.

The ABM Treaty is tied to the START II proposals. The Senate approved START II in 1996 which will ultimately reduce long-range nuclear arsenals to 3000 warheads for Russia and 3500 for the US.³¹ The same negotiations that led to the Memorandum of Succession mentioned earlier also led to an additional protocol to the START II Treaty. This protocol delays the required destruction of nuclear warhead delivery vehicles (missiles, bombers and launchers)

from January 2003 to December 2007. This protocol was developed as a means to encourage Russian ratification of START II. The Duma approved START II along with the protocol in April 2000. However, while the Senate has approved the basic START II agreements, it has not yet taken action on the protocol. START II will not enter into force until the Senate approves the protocol.³² However, START I is still in effect and being implemented. Under this treaty, warheads will be reduced to no more than 6,000 each for Russia and the United States.³³

There are some significant implications if the ABM treaty is abrogated and the US actually deploys an NMD system. Chief among these impacts is the risk that a further arms race may ensue. Second order effects of such an arms race run the risk of further destabilizing areas of the world already at high tension.

A potential adversary might be tempted to increase its nuclear arsenal capability with the intention of being able to overwhelm the defensive system. This might be done by increasing the sheer numbers of missiles available or by incorporating advanced technology into existing missiles.³⁴ For instance, China might be prompted to speed its nuclear modernization program to counter a US NMD. This acceleration might then, in turn, cause India and Pakistan to take similar action as they become concerned with a growth in China's capabilities³⁵. The result could be localized arms race with world-wide implications. Thus, proliferation of nuclear material and technology, already a major concern, could potentially get even worse should an ABM treaty not exist.

REACTIONS TO NMD DEPLOYMENT.

The reaction to NMD by other potential adversaries such as Russia, China and North Korea must also be considered. Each has, or is developing, nuclear technology that poses a potential threat to the United States.

NATO

NATO's hesitancy to support NMD stems from two basic concerns. First, as discussed previously, there is the worry that NMD deployment could provoke another arms race. A second concern is that deployment of an NMD system to protect just the U.S. would leave European NATO allies vulnerable and their security "de-coupled" from America's.³⁶ This concern was partially addressed when the Administration recently indicated a willingness to deploy an NMD system capable of protecting allies as well.³⁷ NATO Secretary General George Robertson now states that, "The European leadership has stopped questioning whether the United States will build a national missile defense (NMD) and is starting to discuss how one will

be built with allied participation."³⁸ This limited acceptance of NMD is a good first step toward a solid NATO position in support of NMD. The Administration should continue diplomatic efforts to build on this emerging consensus.

Russia.

To say the Russians have significant concerns over NMD is an understatement. President Putin has stated, "We believe deployment would no doubt damage significantly the established system of international security. This would ... absolutely change the balance of power in the international arena and this itself is a threat."³⁹ Behind this statement is Putin's underlying concern that the Russian economy could not support an extended arms race.⁴⁰

The Russian economy has suffered recently. As an example, Russian trade with Canada dropped by \$139M between 1997 and 1998.⁴¹ This drop mirrors drops in trade with other partners calling into question the viability of the Russian economy overall. An economy in such a downturn would be hard-pressed to support the type of investment necessary to fund an arms race. A failure in the Russian economy could lead to increasing instability in a nation whose government is already challenged on numerous other fronts.

On a promising note, Putin appears to be ready to negotiate with the United States and identified Canada as possible intermediary on the issue of NMD citing its physical location between the US and Russia.⁴² Probably also in his mind is an awareness that Canadian influence with the United States would also make it valuable as a facilitator during any nuclear weapons negotiations. Canadian Prime Minister Chretien appears to be seeking just such a position.⁴³ However, it is unlikely that the U.S. would seek an intermediary in its nuclear discussions with Russia – Canada or anyone else.

Historically, the US and Canada have enjoyed close diplomatic ties. One need only remember that it was Canada who safeguarded US citizens in its embassy in Iran during the Iran Hostage crisis in the late 1970s to understand the strength of these ties.⁴⁴

In recent history, the US President has traditionally visited Canada for his first international office call. This changed recently when President Bush elected to travel to Mexico first to meet with President Vicente Fox. This trip may have been a deliberate response by the Bush Administration to earlier derogatory remarks made by Canada's then-ambassador to the U.S.⁴⁵ Once it became known Bush would visit Mexico first, Prime Minister Chretien reacted quickly by traveling to Washington to visit Bush before the trip to Mexico thereby remaining the first head of state to meet with the new President.⁴⁶ This appears to indicate that Chretien is

trying to ensure Canada maintains its role as "best friend" of the United States and thereby enhance its possible position as a facilitator in any negotiations between the US and Russia.

The US may want to exploit this Canadian desire to be an intermediary with Russia. Since the Russians appear to favor Canada as an intermediary, this might contribute to a freer exchange of ideas. Such a situation might make it possible to ease Russian fears of NMD and facilitate the negotiations necessary to permit deployment of NMD.

China.

China is attempting to increase its influence within Asia and the Western Pacific. This may be in response to the break up of the Soviet Union and a consequent decrease in the level of constraint Russia can now apply on China.⁴⁷ Challenges regarding Taiwan and an active ballistic missile and associated technology export program are two ways it appears China is attempting expand its influence.

A clear flashpoint is Taiwan. The United States and China confronted each other in 1996 when China fired missiles into the Taiwan Strait apparently in an attempt to influence the Taiwanese presidential election. One comment during this crisis was attributed to Lt. Gen. Xiong Guang Kai, a spokesman for Chinese policy, who questioned US willingness to trade Los Angeles for Taipei.⁴⁸ This statement is concerning for at least two reasons. First, it is a thinly veiled threat to the United States and represents a clear challenge to US power and its willingness to stand by its allies. Second, it may signal a willingness by the Chinese to risk a nuclear exchange with the United States in the belief it can absorb the resultant casualties while the United States cannot.

Further, China remains a significant exporter of ballistic missiles and associated technology with clients including Pakistan, Iran and Saudi Arabia as a means of generating income while pushing its influence further.⁴⁹ With its continued proliferation of technology, China is contributing to the very situation NMD is designed to counter, namely a limited strike by a rogue nation. China has been only partially susceptible to U.S. pressure to reduce its transfer of technology and expertise to emerging missile powers.⁵⁰

North Korea.

Another player that must be considered is North Korea. Intelligence services of the United States were previously surprised by the August 1998 launch of the three stage Taepo Dong-1 missile. The use of a third stage indicated the North Korean ballistic missile program had matured quicker than was thought possible. The Clinton Administration quickly negotiated

an end to further tests in return for economic and other aid⁵¹ North Korea has now indicated that it would consider resuming testing of long-range missiles in response to the Bush Administration's strong support for missile defense.⁵² If North Korea elects to go forward with its missile test program, it may shortly be capable of fielding a Taepo Dong-2 missile with the range to strike the United States. Certainly even a rudimentary capability provides North Korea with a negotiating weapon that could condition or limit U.S. options in a crisis.

The United States may decide to step up its aid program to Korea in return for a pledge to halt future tests. There is some indication that this provides at least a temporary solution to the problem but one that would require continued attention and adjustment. Second, the United States may elect to quickly field an NMD system. This would require action be taken to either modify or abrogate the ABM Treaty. Neither of these could happen immediately under the best cases and would be difficult politically. Finally, the Administration may decide to maintain the current NMD program schedule and accept risk in the interim while other means of countering the threat are pursued. Whether the Administration elects to choose one of these alternatives or another one, the fact remains that North Korea appears determined to strengthen its ability to influence the United States in the international arena.

ECONOMICS OF MISSILE DEFENSE

The economic implications of NMD are far-reaching. From 1957 to 1999, the United States spent roughly \$122 billion on missile defense systems. Of this, approximately \$101.8 billion has been toward ballistic missile defense, including theater level defenses, with the remainder allocated toward other missile defense systems.⁵³ This represents a significant sunk investment to date.

The costs associated with a decision to deploy NMD make it controversial in light of competing demands for funding. President Bush recently submitted his budget to Congress calling for increased spending to support other domestic programs. These include spending an additional \$5 billion for education over the next five years along with doubling Medicare funding over the next 10 years. In addition to increases for these programs, he also unveiled a tax cut plan estimated to cut taxes \$1.6 trillion over the next 10 years. These priority programs along with NMD must somehow be funded.⁵⁴

In addition, the Bush Administration has directed a special review of military strategy with a view to refining the equipment and force structure necessary to support that strategy.⁵⁵ While the results of that review are not anticipated to be available for months, certain major programs will come under scrutiny including the Joint Strike Fighter and Army Transformation.

Further, military force structure may be reduced to free up funding. Initial indications are up to two Army divisions and two carrier battle groups may be eliminated.⁵⁶ In addition, the formal Quadrennial Defense Review is currently ongoing and may result in other cost saving initiatives.

The following chart summarizes the anticipated future costs to deploy NMD.⁵⁷

Name	Timeline	Coverage/Capability	Cost (\$ Bil)	Projected Annual Operating Costs
Initial Deployment System	FY2005	Total US 20 interceptors	25.6	.6
Capability 1	FY2007	Total US 100 interceptors	29.5	.6
Capability 2	FY2010	Total US 100 interceptors Limited countermeasures capability	35.6	.7
Capability 3	FY2011	Total US 250 interceptors Expanded countermeasures capability	48.8	1.1
Total:			139.5	3.0

FIGURE 1: ANTICIPATED NMD FUTURE COSTS

In light of the various competing initiatives, it is likely that some compromise in the NMD program will be necessary. The Administration will be faced with difficult decisions as it places funding against its programs. If the Administration ultimately decides to deploy NMD, it may find itself forced to fund NMD at the expense of other military and/or domestic programs. This could cause a backlash in public support unless the American people understand the rationale behind a decision to deploy NMD.

The Administration should prepare for this eventuality by beginning a serious program to inform the American people on NMD. The Administration will likely have to make a concerted effort to bring the NMD issue to the forefront, just as it did with the tax cut issue, in an effort to build a national consensus in favor of NMD.

A second challenge that the Administration will likely face is persuading Congress to support a decision to deploy NMD. Given the current thin majority enjoyed by Republicans in the Congress, overall support for NMD is not assured. Thus, the President will have to take the

lead in forging support within Congress. Given his mantle as a "uniter not a divider," the President will have to reach out to find middle ground allowing deployment to go forward. Compromise on both sides will be required.

ANALYSIS OF IMPLICATIONS ON POSSIBLE COURSES OF ACTION

The implications noted above have differing effects on each of the three potential courses of action. The following section assesses the various impacts on each course of action to identify potential issues should that particular course of action be adopted.

COURSE OF ACTION 1: COMPLETE RESEARCH AND DEVELOPMENT, BUT WITHHOLD A FINAL DECISION ON DEPLOYMENT.

This course of action takes a middle ground approach by developing a capability to counter ballistic missiles while adhering to ABM Treaty limitations. By leveraging this previously developed technology, an operational NMD system could be deployed within a relatively short amount of time, estimated to be approximately three years. This provides the US the capability to respond within a moderate timeframe to clearly identified future threats.

Economic Implications.

Current estimates place the additional development cost at approximately \$10.4 billion for a Capability 1 level NMD system.⁵⁸ These costs assume technology development proceeds at the envisioned rate and that planned tests are successful. A historical analysis of missile procurement programs indicates a normal cost growth of approximately 20 to 30 percent.⁵⁹ Therefore, a more realistic cost estimate for development of a Capability 1 NMD system is between \$12.5 and \$13.5 billion.

Since this alternative is the least costly in terms of funding, it allows the most funding currently allocated to NMD to be reallocated in support of other high priority programs. This would allow the Administration to demonstrate a degree of fiscal responsibility in light of the President's stated position to hold government spending in check. However, a portion of this funding may need to be used to enhance the overall intelligence effort related to the ballistic missile threat to mitigate risks.

Fully developing the NMD system provides the opportunity to take advantage of any technological advances associated with NMD while not committing to a major investment in deployment. The rapid pace of technological advancement today results in just as rapid obsolescence. By withholding a deployment decision and allowing additional time for

technology to mature, the Administration provides itself the opportunity to insert this advanced technology at the appropriate time thereby enhancing NMD operational capability to counter an advancing threat.

Diplomatic Implications.

This option provides the administration a degree of latitude while still adhering to the spirit of the President's intent. Developing the system demonstrates U.S. resolve to defend itself from attack. However, by withholding deployment, the U.S. exercises restraint and demonstrates a recognition that an operational NMD system could be destabilizing. By delaying a deployment decision, the Administration allows time to explore suitable diplomatic solutions to the issues surrounding the ABM Treaty while sending a less threatening message to potential adversaries like North Korea. The US could also use this opportunity to encourage efforts by all parties aimed at reducing proliferation.

Risks.

The risk with this course of action is that, although development is completed, the US may not be able to react in sufficient time to deploy NMD should a clear threat emerge. Given a three-year time lag between a decision to field the system and when it is projected to be operational means that the United States may have to face a verifiable threat for which it has no available counter for that timeframe. To mitigate this risk, the U.S. must ensure it employs an aggressive and robust intelligence collection capability that is able to accurately monitor and forecast threat trends.

A risk inherent with this type program is technology development for development's sake. While these efforts may result in enhanced capabilities, costs would like rise concurrently. If this happens, then one of the major benefits to this alternative, that of being the least cost, may disappear.

COURSE OF ACTION 2: DEVELOP AND FIELD ONLY CAPABILITY 1 OF THE NMD SYSTEM.

Economic Implications.

The cost to field Capability 1 is estimated to be \$29.5 billion as of FY2000. Again, a 20 to 30 percent cost growth brings the estimated deployment cost to between \$35.4 and \$38.4 billion or roughly three times the cost of the first alternative. However, it represents

approximately a \$100 billion savings over the current projected cost of the objective NMD system.

As in the first alternative, funding currently allocated to NMD above that necessary to support this limited fielding may be reallocated. A portion of this funding should again be used to enhance intelligence efforts regarding ballistic missile threats.

Diplomatic Implications.

Should the Bush Administration continue to go forward with an NMD system, the United States will either have to withdraw from the current ABM Treaty or it will have to amend the Treaty. Withdrawal from the ABM Treaty requires a six-month notification of intent to withdraw based upon a determination that its national interests "...are jeopardized by 'extraordinary events related to the subject matter of this Treaty'".⁶⁰ While this may be a functionally easy method to withdraw, lack of an ABM Treaty is not attractive.

Alternatively, the ABM Treaty could be amended to accommodate the NMD system envisioned under the Bush plan. A possible means to achieving this end could be to offer deeper cuts in offensive nuclear forces while relaxing the ABM Treaty restrictions to allow a nation-wide defensive capability.⁶¹ As an example, nuclear forces could be cut unilaterally to those outlined by START II with a view toward the further reductions envisioned by START III.⁶² This reduction in offensive forces might help smooth Russian concerns about the US leveraging NMD deployment as a step towards developing a first strike capability.

A reduction in US nuclear forces also appears to be consistent with Bush Administration plans. During his recent speech to Congress, President Bush indicated a desire to reduce the US nuclear arsenal.⁶³ Pursuing a weapons reduction in conjunction with modification to the ABM Treaty may allow the Administration to meet two of its objectives in a complementary manner and is an avenue worth exploring.

Risks.

As in the first alternative, there is risk associated with cost. The cost risk in this alternative increases, however, since it will now include uncertainty surrounding the remaining costs necessary to bring the system into operation. These include not only production cost risk, but cost risks associated with the construction of actual facilities.

A second significant risk is inherent to the capabilities envisioned for this NMD system. Since it deliberately employs only a basic operational capability, it may be easily jammed or

deceived by incoming missiles employing countermeasures. Thus, despite a significant investment, this system may not provide either the defensive or deterrent capability desired.

Finally, significant diplomatic effort will be necessary to execute this alternative. This hinges primarily around the future of the ABM Treaty. The Administration must determine which approach, either withdrawal or amendment, and then actively work with both allies and adversaries alike to arrive at an acceptable solution. As noted above, pursuing a strategy of reduction of nuclear forces tied to modification of the ABM treaty may be worth further study.

COURSE OF ACTION 3: FIELD THE FULL NMD SYSTEM.

Economic Implications.

The cost estimate for this alternative is \$139.5 billion. Applying a historically-based 20 to 30 percent cost growth factor results in a revised estimate of between \$167.4 and \$181.4 billion. This means that the Administration will likely have to identify and commit additional funding to complete the system. Since the President has committed to holding government spending in check, the additional funds will, in all probability, have to be taken from some other program.

Diplomatic Implications.

The diplomatic implications applying to the second alternative apply for this alternative as well. Diplomatic efforts for this alternative may be even more difficult since it provides capabilities expected to be far beyond that of the Capability 1 system in the previous alternative.

Risks.

This alternative has the least risk of operational failure. Since it is envisioned to incorporate advanced capabilities, the Capability 3 system will be able to counter jamming and other potential advanced penetration aids. Thus, it provides the best level of protection from ballistic missile attack.

Concurrently, the technological and diplomatic risks are the highest of the three alternatives. Since the system is dependent on extremely advanced technology, there is increased potential that the needed technology will not be available or will not perform to requirements. The risks of diplomatic failure clearly increase as the complexity of the matter to be negotiated increases. A diplomatic failure could potentially lead to more unstable world situation and precipitate a follow-on arms race.

POLICY RECOMMENDATION.

The subject of National Missile Defense is one that is surrounded by numerous issues that will require significant effort to address. However, the Bush Administration is clearly committed to NMD and actively pursuing efforts to make NMD a reality. Each of the three alternatives discussed meet the Administration's stated intent at varying levels of risk. A comparison of these alternatives is summarized in the table below:

	Cost	Diplomatic Impacts	Risks
Course of Action 1: Develop, but withhold deployment	Least Cost (\$12.5 to \$13.5 billion)	Within ABM Treaty constraints	Highest risk in ability to counter threat; lowest technological risk
Course of Action 2: Develop and Field a Capability 1 NMD	Mid Cost (\$35.4 to \$38.4 billion)	ABM Treaty revision or withdrawal required	Moderate technology risk; moderate to high risk in ability to counter threat
Course of Action 3: Field the full NMD System	Most Cost (\$167.4 and \$181.4 billion)	Clearly violates ABM Treaty	Lowest risk to countering threat

FIGURE 2: COURSE OF ACTION COMPARISON SUMMARY

After comparing the alternatives, Course of Action 2, Deploying a Capability 1 NMD system, is the most attractive alternative. Falling in between the other two alternatives in terms of cost, a decision to pursue this option would save between approximately \$130 and \$140 billion while still fielding a limited missile defense system to protect the United States. The funding saved could be reallocated to other programs, such as to enhanced intelligence efforts.

Diplomatically, this alternative would require either withdrawal from or revisions to the ABM Treaty. World opinion generally favors some type of ABM Treaty to mitigate the risk of a future arms race. Based on previous comments, the Administration may be able to negotiate a successful revision to the ABM Treaty while simultaneously cutting current stockpiles of nuclear weapons. Such an outcome would be quite attractive and worth pursuing.

Finally, this course of action also falls in the middle in terms of risk. Deployment of a Capability 1 NMD system counters only a limited threat. Through use of penetration aids, an adversary could potentially defeat this system. However, fielding this system would establish a

baseline operational capability that could be improved through technology insertion should the threat assessment dictate and such technology be affordable.

The United States has invested much effort into the NMD program and now has the opportunity to provide limited protection to the homeland by deployment of a prudent missile defense system. Such a system is consistent with the vision expressed by the President and, with appropriate diplomatic efforts, eminently achievable.

WORD COUNT = 7218

ENDNOTES

¹ Council for a Livable World, "Pushing the Limits: The Decision on National Missile Defense," Undated; available from <<http://www.clw.org/pub/clw/libbmd.htm>>; Internet; accessed 1 October 2000.

² Washington Post, "Text of Bush's Address to Congress," 27 February 2001; available from <<http://washingtonpost.com/wp-srv/onpolitics/transcripts/bushtext022701.htm>>; Internet; accessed 4 March 2001.

³ Columbia Encyclopedia, "Nuclear Strategy," available from <<http://www.bartleby.com/65/nu/nuclstra.html>>; Internet; accessed 1 March 2001.

⁴ Jasjit Singh, "Dynamics of Limited War," Undated; available from <<http://www.idsa-india.org/an-oct-00-1.html>>; Internet; accessed 1 March 2001.

⁵ The Public Broadcasting System, "Online Q&A: The ABM Treaty," 2 February 1998; available from <http://www.pbs.org/newshour/bb/military/jan-june99/nmd_qa.html>; Internet; accessed 1 October 2000.

⁶ Council for a Livable World, "Pushing the Limits: The Effect on Arms Control," Undated; available from <<http://www.clw.org/pub/clw/coalition/nmdbook00armscontrol.htm>>; Internet; accessed 1 October 2000.

⁷ Baker Spring and James H. Anderson, "Missile Defense: Ending America's Vulnerability," available from <<http://www.heritage.org/issues/chapt15.html>>; Internet; accessed 4 March 2001, 8.

⁸ Congressional Budget Office, Budgetary and Technical Implications of the Administration's Plan for National Missile Defense, April 2000; available from <http://www.fas.org/spp/starwars/congress/2000_r/000425-cbo-nmd.htm>; Internet; accessed 1 October 2000, 7.

⁹ Ibid.

¹⁰ Ibid.

¹¹ The Annenberg/CPB Project, "Russia: How has Change Affected the Former USSR?," Undated; available from <<http://www.learner.org/exhibits/russia/>>; Internet; accessed 1 March 2001.

¹² The Cold War Museum, "Fall of the Soviet Union," Undated; available from <http://www.coldwar.org/articles/90s/fall_of_the_soviet_union.html>; Internet; accessed 4 March 2001, 1.

¹³ Norman Solomon, "Media Crucial as Bush Faces 'Legitimacy Gap'," 14 December 2000; available from <<http://www.fair.org/media-beat/001214.html>>; Internet; accessed 4 March 2001.

¹⁴ Raum, Tom, "Bush Cautious on Missile System," 8 January 2001; available from <http://dailynews.yahoo.com/h/ap/20010108/el/bush_224.html>; Internet; accessed 9 January 2001.

¹⁵ Carnegie Endowment for International Peace, "Countries Possessing Ballistic Missiles," Undated; available from <<http://www.ceip.org/programs/npp/bmchart.htm>>; Internet; accessed 17 January 2001.

¹⁶ Phase I Report on the Emerging Global Security Environment for the First Quarter of the 21st Century, by Gary Hart and Warren Rudman, Chairmen (Washington, D.C.: 15 September 1999), 4.

¹⁷ Ibid.

¹⁸ Report of the Commission to Assess the Ballistic Missile Threat to the United States, by Donald H. Rumsfeld, Chairman (Washington, D.C., 15 July 1998); available from

<http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>; Internet; accessed 1 October 2000, 5.

¹⁹ Council for a Livable World, "Pushing the Limits: The Threat," Undated; available from <http://www.clw.org/pub/clw/libbmd.htm>; Internet; accessed 1 October 2000.

²⁰ Ibid

²¹ Summarized from Daniel Goure, Defense of the U.S. Homeland Against Strategic Attack (Washington D.C.: Center for Strategic and International Studies, 13 December 2000), 6.

²² Information on Iranian and Korean intentions is summarized from Ibid, 6.

²³ The description of the basic NMD components is derived from Federation of American Scientists, "National Missile Defense," Undated; available from <http://www.fas.org/spp/starwars/program/nmd/index.html>; Internet; accessed 26 February 2001.

²⁴ Ibid.

²⁵ Ballistic Missile Defense Organization, "National Missile Defense Architecture," Undated; available from <http://www.acq.osd.mil/bmdo/bmdolink/html>; Internet; accessed 1 March 2001.

²⁶ Reuters, "Bush's Star Wars Anti-Ballistic Shield Favored," 17 October 2000; available from http://dailynews.yahoo.com/h/nm/20001017/zo/starwars_1.html; Internet; accessed 24 October 2000.

²⁷ Council for a Livable World, "Pushing the Limits: Nuclear Arms Control and the ABM Treaty," Undated; available from <http://www.clw.org/pub/clw/coalition/nmdbook00abmtreaty.htm>; Internet; accessed 1 October 2000.

²⁸ Ibid.

²⁹ *ibid.*

³⁰ *ibid.*

³¹ *ibid.*

³² *ibid.*

³³ Data on the relationship and timing of START II and its protocol was summarized from Council for a Livable World, "Pushing the Limits: Nuclear Arms Control and the ABM Treaty," Undated; available from <<http://www.clw.org/pub/clw/coalition/nmdbook00abmtreaty.htm>>; Internet; accessed 1 October 2000.

³⁴ *ibid.*

³⁵ Trudy Rubin, "Rejecting missile-defense plan, Clinton avoided a bad decision," 13 September 2000; available from <<http://web.philly.com/content/inquirer/2000/09/13/opinion.COMRUBIN13.htm>>; Internet; accessed 24 October 2000.

³⁶ *ibid.*

³⁷ Brad Knickerbocker, "Allies Keep Balking at U.S. Missile Defense," 9 March 2001; available from <<http://ebird.dtic.mil/Mar2001/e20010309allies.htm>>; Internet; accessed 13 March 2001.

³⁸ Robert Burns, "Bush Planning Missile Defense," 27 January 2001; available from <http://dailynews.yahoo.com/h/ap/20010127/ts/missile_defense.html>; Internet; accessed 31 January 2001.

³⁹ Kerry Gildea, "NATO Secretary General Reports EU Shifting on Missile Defense," *Defense Daily*, 8 March 2001; available from <<http://ebird.dtic.mil/Mar2001/e20010308nato.htm>>; Internet; accessed 13 March 2001.

⁴⁰ CNN.com, "In Canada, Russia's Putin critical of U.S. missile defense plan," 18 December 2000; available from <<http://www.cnn.com/2000/WORLD/americas/12/18/canada.putin.ap/index.html>>; Internet; accessed 9 January 2001.

⁴¹ Ibid

⁴² Ibid

⁴³ Ibid

⁴⁴ Ibid

⁴⁵ South Dakota State University, "Janklow, Canadian Ag Ministers Get Friendly at NAFTA Keynote," 3 October 2000; available from <<http://www.abs.sdstate.edu/abs/10-4-2000/nafta4.htm>>; Internet; accessed 4 March 2001, 2.

⁴⁶ Bruce Cheadle, "Canada Quick to Visit U.S.," 19 January 2001; available from <<http://www.herald.ns.ca/stories/2001/01/19/p176.raw.html>>; Internet; accessed 4 March 2001.

⁴⁷ Cande News, "Chretien to Visit Bush in February," 25 January 2001; available from <http://www.allpop.com/CNEWSPolitics0101/25_bush-cp.html>; Internet; accessed 4 March 2001.

⁴⁸ Report of the Commission to Assess the Ballistic Missile Threat to the United States, 6.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Michael R. Gordon and Steven Lee Myers, "Politics Mixes With Strategy in Plan for Antimissile System," 23 June 2000; available from <<http://www.nytimes.com/2000/06/23/national/nmd.html>>; Internet; accessed 1 October 2000.

⁵³ Doug Struck, "North Korea Warns It May Test Missiles," 22 February 2001; available from <<http://www.washingtonpost.com/wp-dyn/articles/A44156-2001Feb22.html>>; Internet; accessed 5 March 2001.

⁵⁴ Council for a Livable World, "Pushing the Limits: The Cost of National Missile Defense," Undated; available from <<http://www.clw.org/pub/clw/coalition/nmdbook00cost.htm>>; Internet; accessed 1 October 2000.

⁵⁵ Washington Post, "Text of Bush's Address to Congress," 27 February 2001; available from <<http://washingtonpost.com/wp-srv/onpolitics/transcripts/bushtext022701.htm>>; Internet; accessed 4 March 2001.

⁵⁶ Ibid.

⁵⁷ Charles Aldinger, "Bush to Review U.S. Nuclear Arsenal," 9 February 2001; available from <http://dailynews.yahoo.com/h/nm/20010209/ts/arms_bush_dc_3.html>; Internet; accessed 4 March 2001.

⁵⁸ Projected cost information is summarized from Congressional Budget Office, 10-15.

⁵⁹ Office of the Press Secretary, "National Missile Defense Fact Sheet," The White House, 1 September 2000.

⁶⁰ David E. Mosher, "Understanding the Extraordinary Cost of Missile Defense," Undated; available from <<http://www.armscontrol.org/ACT/dec00/mosherdec00.html>>; Internet; accessed 9 January 2001, 2.

⁶¹ Council for a Livable World, "Pushing the Limits: Nuclear Arms Control and the ABM Treaty."

⁶² Ivo H. Daalder, James M. Goldgeier, and James M. Lindsay, "By Focusing Now, Clinton Can Renegotiate ABM Treaty," 2 April 2000; available from <<http://www.brookings.org/views/op-ed/daalder/20000402.htm>>; Internet; accessed 1 October 2000.

⁶³ Ibid

⁶⁴ Washington Post.

BIBLIOGRAPHY

- Aldinger, Charles. "Bush to Review U.S. Nuclear Arsenal." 9 February 2001. Available from http://dailynews.yahoo.com/h/nm/20010209/ts/arms_bush_dc_3.html. Internet. Accessed 4 March 2001.
- Baker, Spring and James H. Anderson. "Missile Defense: Ending America's Vulnerability." Undated. Available from <http://www.heritage.org/issues/chap15.html>. Internet. Accessed 4 March 2001.
- Ballistic Missile Defense Organization, "National Missile Defense Architecture." Undated. Available from <http://www.acq.osd.mil/bmdo/bmdolink/html>. Internet. Accessed 1 March 2001.
- Burns, Robert. "Bush Planning Missile Defense." 27 January 2001. Available from http://dailynews.yahoo.com/h/ap/20010127/ts/missile_defense.html. Internet. Accessed 31 January 2001.
- Cande News. "Chretien to Visit Bush in February." 25 January 2001. Available from http://www.allpop.com/CNEWSPolitics0101/25_bush-cp.html. Internet. Accessed 4 March 2001.
- Carnegie Endowment for International Peace. "Countries Possessing Ballistic Missiles." Undated. Available from <http://www.ceip.org/programs/npp/bmchart.htm>. Internet. Accessed 17 January 2001.
- Cheadle, Bruce. "Canada Quick to Visit U.S." 19 January 2001. Available from <http://www.herald.ns.ca/stories/2001/01/19/p176.raw.html>. Internet. Accessed 4 Mar 01.
- Clinton, William J. "Remarks by the President on National Missile Defense." Washington, DC: The White House. 1 September 2000.
- CNN.com. "Cold War Chronology." Undated. Available from <http://clinton.cnn.com/SPECIALS/cold.war/timeline/72nixon.html>. Internet. Accessed 4 March 2001.

- _____. "In Canada, Russia's Putin critical of U.S. missile defense plan." 18 December 2000. Available from <<http://www.cnn.com/2000/WORLD/americas/12/18/canada.putin.ap/index.html>>. Internet. Accessed 9 January 2001.
- Columbia Encyclopedia. "Nuclear Strategy." Available from <<http://www.bartleby.com/65/nu/nuc1stra.html>>. Accessed 4 March 2001.
- Congressional Budget Office. Budgetary and Technical Implications of the Administration's Plan for National Missile Defense. April 2000. Available from <http://www.fas.org/spp/starwars/congress/2000_r/000425-cbo-nmd.htm>. Internet. Accessed 1 October 2000.
- Council for a Livable World. "Pushing the Limits: Nuclear Arms Control and the ABM Treaty." Available from <<http://www.clw.org/pub/clw/coalition/nmdbook00abmtreaty.htm>>. Internet. Accessed 1 October 2000.
- _____. "Pushing the Limits: The Cost of National Missile Defense." Available from <<http://www.clw.org/pub/clw/coalition/nmdbook00cost.htm>>. Internet. Accessed 1 October 2000.
- _____. "Pushing the Limits: The Decision on National Missile Defense." Undated. Available from <http://www.clw.org/pub/clw/libbmd.htm>. Internet. Accessed 1 October 2000.
- Daalder, Ivo H., James M. Goldgeier, and James M. Lindsey. "By Focusing Now, Clinton Can Renegotiate ABM Treaty." 2 April 2000. Available from <<http://www.brookings.org/views/op-ed/daalder/20000402.htm>>. Internet. Accessed 1 October 2000.
- Encyclopaedia Britannica. "Afghanistan." Undated. Available from <<http://www.britannica.com/bcom/eb/article/4/0,5716,108474+14+106010,00.htm>>. Internet. Accessed 1 March 2001.
- Federation of American Scientists. "National Missile Defense." Undated. Available from <<http://www.fas.org/spp/starwars/program/nmd/index.html>>. Internet. Accessed 26 February 2001.

- George Gedda. "Experts Differ on Missile Defense." 3 January 2001. Available from http://dailynews.yahoo.com/h/ap/20010103/us/missile_defense_1.html. Internet. Accessed 9 January 2001.
- Gildea, Kerry. "NATO Secretary General Reports EU Shifting on Missile Defense." Defense Daily, 8 March 2001. Available from <http://ebird.dtic.mil/Mar2001/e20010308nato.htm>. Internet. Accessed 13 March 2001.
- Gordon, Michael R. and Steven Lee Myers. "Politics Mixes With Strategy in Plan for Antimissile System." 23 June 2000. Available from <http://www.nytimes.com/2000/06/23/national/nmd.html>. Internet. Accessed 1 October 2000.
- Goure, Daniel. Defense of the U.S. Homeland Against Strategic Attack. Washington D.C.: Center for Strategic and International Studies, 13 December 2000.
- Knickerbocker, Brad. "Allies Keep Balking at U.S. Missile Defense." 9 March 2001. Available from <http://ebird.dtic.mil/Mar2001/e20010309allies.htm>. Internet. Accessed 13 March 2001.
- Mackenzie, Hilary and Mike Trickey. "Bush picks Mexico for first foreign trip." 23 January 2001. Available from <http://www.ottawacitizen.com/national/010123/5046535.html>. Internet. Accessed 4 March 2001.
- Mosher, David E. "Understanding the Extraordinary Cost of Missile Defense." Undated. Available from <http://www.armscontrol.org/ACT/dec00/mosherdec00.html>. Internet. Accessed 9 January 2001.
- Phase I Report on the Emerging Global Security Environment for the First Quarter of the 21st Century. By Gary Hart and Warren Rudman, Chairmen. Washington, D.C.: 15 September 1999.
- Raum, Tom. "Bush Cautious on Missile System." 8 January 2001. Available from http://dailynews.yahoo.com/h/ap/20010108/el/bush_224.html. Internet. Accessed 9 January 2001.
- Report of the Commission to Assess the Ballistic Missile Threat to the United States. By Donald H. Rumsfeld, Chairman. Washington, D.C. Available from <http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>. Internet. Accessed 1 October 2000.

- Reuters. "Bush's Star Wars Anti-Ballistic Shield Favored." 17 October 2000. Available from <http://dailynews.yahoo.com/h/nm/20001017/zo/starwars_1.html>. Internet. Accessed 24 October 2000.
- Rubin, Trudy. "Rejecting missile-defense plan, Clinton avoided a bad decision." 13 September 2000. Available from <<http://web.philly.com/content/inquirer/2000/09/13/opinion/COMRUBIN13.htm>>. Internet. Accessed 24 October 2000.
- Singh, Jasjit. "Dynamics of Limited War." Undated. Available from <<http://www.idsa-india.org/an-oct-00-1.html>>. Internet. Accessed 4 March 2001.
- Solomon, Norman. "Media Crucial as Bush Faces 'Legitimacy Gap'," 14 December 2000. Available from <<http://www.fair.org/media-beat/001214.html>>. Internet. Accessed 4 March 2001.
- South Dakota State University. "Janklow, Canadian ag ministers get friendly at NAFTA keynote." 3 October 2000. Available from <<http://www.abs.sdstate.edu/abs/10-4-2000/nafta4.htm>>. Internet. Accessed 4 March 2001.
- Struck, Doug. "North Korea Warns It May Test Missiles." 22 February 2001. Available from <<http://www.washingtonpost.com/wp-dyn/articles/A44156-2001Feb22.html>>. Internet. Accessed 5 March 2001.
- Tehrani, Majid. "Hostage to History." 4 November 1997. Available from <<http://www.iranian.com/History/Nov97/444/>>. Internet. Accessed 4 March 2001.
- The Annenberg/CPB Project. "Russia: How Has Change Affected the Former USSR?" Undated. Available from <<http://www.learner.org/exhibits/russia/>>. Internet. Accessed 1 March 2001.
- The Cold War Museum. "Fall of the Soviet Union." Undated. Available from <http://www.coldwar.org/articles/90s/fall_of_the_soviet_union.html>. Internet. Accessed 4 March 2001.
- The History Place. "Vietnam War 1969-1975." Undated. Available from <http://www.historyplace.com/united_states/vietnam/index-1969.html>. Internet. Accessed 4 March 2001.

The Public Broadcasting System. "Online Q&A: The ABM Treaty." 2 February 1998. Available from <http://www.pbs.org/newshour/bb/military/jan-jun99/nmd_qa.html>. Internet. Accessed 4 March 2001.

_____. "The American Experience – Ronald Reagan." Undated. Available from <<http://www.pbs.org/wgbh/amex/presidents/nf/resource/reagan/reagscript.html>>. Internet. Accessed 4 March 2001.

The Ronald Reagan and the Soviet Union Homepage. "Reagan and the Soviets." Undated. Available from <<http://www.reagan.dk/newsdi.htm>>. Internet. Accessed 4 March 2001.

Turabian, Kate L. A Manual for Writers. 5th ed. Chicago: University of Chicago Press, 1987.

Washington Post. "Text of Bush's Address to Congress." 27 February 2001. Available from <<http://washingtonpost.com/wp-srv/onpolitics/transcripts/bushtext022701.htm>>. Internet. Accessed 4 March 2001.