

# NAVAL POSTGRADUATE SCHOOL Monterey, California



## THESIS

**MISSILE DEFENSES IN EUROPE:  
REQUIREMENTS AND CHALLENGES**

by

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June 2003

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Submitted in partial fulfillment of the  
requirements for the degree of

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## **ABSTRACT**

The NATO Allies decided at the November 2002 Prague Summit to conduct a feasibility study concerning the protection of national territories, populations, and forces from the threat of ballistic missile attacks. This thesis examines current missile defense programs and analyzes their potential to protect the Alliance as a whole, thus maintaining the indivisibility of Allied security. The thesis investigates the political, military, economic, and technological challenges for a NATO full-spectrum missile defense and the major questions that the Allies have yet to resolve. It also examines the prospects for cooperation between NATO and Russia in missile defense and potential perils for international stability, including the non-proliferation regime. The thesis concludes that NATO missile defenses will probably enhance the transatlantic link. However, the most crucial challenges include the command and control issue and the potential reactions of Russia and China to defenses capable of protecting NATO homelands against ballistic missile attacks.

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## TABLE OF CONTENTS

<b>I.</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>A.</b>	<b>FOCUS AND PURPOSE.....</b>	<b>1</b>
<b>B.</b>	<b>SIGNIFICANCE.....</b>	<b>2</b>
<b>C.</b>	<b>METHODOLOGY .....</b>	<b>3</b>
<b>D.</b>	<b>ORGANIZATION .....</b>	<b>3</b>
<b>II.</b>	<b>NATO EUROPE AND MISSILE DEFENSES .....</b>	<b>5</b>
<b>A.</b>	<b>HISTORICAL OVERVIEW .....</b>	<b>5</b>
<b>B.</b>	<b>NATO’S PRAGUE DECISION.....</b>	<b>8</b>
<b>C.</b>	<b>TECHNOLOGICAL-OPERATIONAL CONSIDERATIONS.....</b>	<b>9</b>
<b>D.</b>	<b>CURRENT RESEARCH PROGRAMS .....</b>	<b>15</b>
<b>1.</b>	<b>Terminal Defense .....</b>	<b>16</b>
<b>2.</b>	<b>Midcourse Defense .....</b>	<b>18</b>
<b>3.</b>	<b>Boost Defense Segment (BDS).....</b>	<b>19</b>
<b>III.</b>	<b>CHALLENGES.....</b>	<b>21</b>
<b>A.</b>	<b>THREAT ASSESSMENT–NATO COUNTRIES POSITIONING.....</b>	<b>21</b>
<b>B.</b>	<b>POTENTIAL MODELS FOR COOPERATION .....</b>	<b>26</b>
<b>C.</b>	<b>COUNTERFORCE.....</b>	<b>28</b>
<b>D.</b>	<b>NATO RUSSIA RELATIONS.....</b>	<b>29</b>
<b>1.</b>	<b>Russian Arguments and Proposals for Missile Defenses Before 14 June 2002 .....</b>	<b>31</b>
<b>2.</b>	<b>Russian Arguments Since 14 June 2002.....</b>	<b>36</b>
<b>3.</b>	<b>Conclusions.....</b>	<b>40</b>
<b>E.</b>	<b>NUCLEAR PROLIFERATION AND STRATEGIC STABILITY.....</b>	<b>41</b>
<b>IV.</b>	<b>CONCLUSION .....</b>	<b>49</b>
	<b>INITIAL DISTRIBUTION LIST .....</b>	<b>55</b>

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## LIST OF FIGURES

Figure 1.	Some Components of the Missile Defense Architecture Proposed by the United States. ....	10
Figure 2.	Ballistic's Missile Trajectory.....	17
Figure 3.	Russian Proposal for Non-Strategic Missile Defense System. ....	33

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## **I. INTRODUCTION**

What problems need to be surmounted if European NATO states are to deploy missile defenses to protect their territories and populations? Although the transatlantic debate over missile defenses, and especially defenses against strategic missiles has been underway since the 1960s, it now has new importance for European security. Previous missile defense initiatives by the United States have had limited success for a variety of reasons, including technological shortcomings and the Anti-Ballistic Missile (ABM) Treaty's restrictions on the testing and development of missile defenses.

U.S. withdrawal from the ABM Treaty in 2001-2002 ended certain European objections and produced new debates within NATO about the need to develop missile defenses to protect Europe. The attitude of many Europeans has already shifted to a moderate approval of missile defenses owing to three significant events. First, the catastrophic terrorist attacks on 11 September 2001 pointed out the magnitude of asymmetric threats. Second, the United States withdrawal from the ABM Treaty took effect in June 2002 without generating the negative reactions from Russia that many Europeans had feared. In general, the Europeans considered the ABM Treaty the cornerstone of arms race stability and they favored its preservation. Third, improved U.S.–Russian relations have freed the European Allies to focus on other priorities. In addition, the potential economic benefits from the transatlantic industrial cooperation and the sharing of advanced defense technology have put aside some European concerns about U.S. missile defense policies.

### **A. FOCUS AND PURPOSE**

This thesis examines the challenges associated with deploying missile defenses in NATO Europe. After the Soviet Union's dissolution, the United States and the NATO European countries gave more attention to the proliferation of weapons of mass destruction (WMD) and their delivery means (ballistic and cruise missiles). This proliferation poses an imminent threat to European and United States interests that cannot be reliably addressed solely through deterrence via threats of retaliation. Therefore, the

United States has proposed the development of missile defenses as a central element in a revised deterrence strategy to discourage proliferant states from spending their resources on such delivery systems or using them.

This thesis describes the evolution of the missile defense debate in the United States and Europe since the terrorist attacks of 11 September 2001.<sup>1</sup> The thesis identifies the security challenges that promote interest in missile defenses and the problems that need to be surmounted to develop and deploy missile defenses in Europe. It offers assessments and recommendations for a future comprehensive NATO missile defense posture.

## **B SIGNIFICANCE**

Because the Alliance's security is indivisible,<sup>2</sup> and the United States pursuit of missile defenses has direct implications for America's European allies, any delay in developing NATO European missile defenses could disrupt the formation of future coalitions and increase the threat to European cities during crises. The specific architecture and capabilities of prospective NATO missile defenses constitute a crucial issue. Missile defenses could generate international security consequences; hence, there is a necessity for further analysis of the Alliance implications of the United States decision to deploy defenses.

The European Allies face a dilemma: they can either abstain from developing missile defenses and consequently become less linked with the United States in security matters or follow the United States lead and develop missile defenses to cover European territory, a decision which would have different strategic repercussions. Overall, the potential development of NATO European ballistic missile defenses could well enhance the trans-Atlantic link and help to deter future aggression.

Based on an evaluation of the United States decision to deploy missile defenses to protect North America and of NATO's decision in Prague on 21 November 2002 to address the increasing missile threat to Europe, this thesis explains how certain

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<sup>1</sup> As Colin Gray argues, missile defenses and reactions to the September 11 terrorist attacks need to be considered together. Gray, "European Perspectives on US Ballistic Missile Defense," *Comparative Strategy*, vol. 21, no. 4 (2002), p. 285.

<sup>2</sup> Communiqué (2002) 127, NATO's Prague Summit Declaration, 21-23 November 2002, [[www.nato.int/docu/pr/2002/p02-127e.htm](http://www.nato.int/docu/pr/2002/p02-127e.htm)], November 2002.



international security challenges create incentives for cooperative development of active defenses to protect NATO Europe. However, various problems -- technological limitations, financial constraints, environmental concerns, disagreements over command and control (C2) arrangements, political divergence over the use of counterforce and preemption, and diverse views on the implications for regional stability and non-proliferation -- have yet to be surmounted.

NATO's decisions at Prague in November 2002 suggest that there is a compelling need for missile defenses. As noted above, delay in developing missile defenses could hamper the organization of future NATO operations against rogue states, or raise the threat to European population centers during crises. Therefore, NATO must overcome the obstacles to acquiring missile defenses while considering simultaneously the potential that a decision to deploy defenses might have repercussions in international politics.

The thesis concludes that NATO European countries will probably cooperate with the United States to develop limited layered missile defenses and that this will reinforce the political and military transatlantic link. Also, it summarizes the problems that future missile defenses in and for Europe will probably face.

### **C. METHODOLOGY**

The thesis is based on a qualitative analysis of primary and secondary sources. Primary sources include official documents pertaining to United States and NATO decisions to cooperate with Russia regarding missile defense and the United States decision to withdraw from the ABM Treaty. Assessing the NATO European governments' opinions regarding the development of missile defenses has required analysis of official governmental statements. Secondary sources have provided data for analyzing technological shortcomings, financial costs and other issues.

### **D. ORGANIZATION**

This thesis is organized in four chapters.

Chapter II examines the missile defense initiatives affecting NATO Europe. It tells the history of the development of missile defenses to date, and describes the current operational and research programs. This section of the thesis examines technological and operational considerations and economic constraints that shape European efforts to

develop a defense against an attack by ballistic missiles. It provides a basis for conclusions about how these factors could delay or disrupt the development of active defenses in NATO Europe. Despite the disputes over missile defense issues and the technological gap between the United States and Europe, some of the NATO allies have invested a lot of research and development effort in theater missile defense systems. This chapter also analyzes NATO's decisions at the Prague Summit in November 2002 about missile defenses and provides an assessment of the political and security challenges.

In Chapter III, the threat assessments of the United States and the NATO European countries are analyzed. By examining the various security assessments concerning ballistic missile threats, this chapter clarifies potential political constraints and hesitations. NATO European countries, because of their varying proximity to the threats and their political diversity, have different security assessments that influence their decisions. The United States security situation, however, is not unique. The Alliance's European member states face an analogous and more urgent threat because of their geographical proximity to the regions where WMD proliferation creates concern. European states may need equivalent solutions to defend themselves from ballistic missile threats. More than twenty-five countries worldwide possess ballistic missiles.<sup>3</sup> Understanding the threats provides a basis for analyzing the growing NATO European interest in developing active defenses.

Chapter III also analyzes potential models for a NATO European missile defense structure. This analysis provides judgments about probable European decisions concerning the pursuit of integrated active defenses. Other issues examined include the repercussions of deployed NATO missile defenses on NATO-Russia relations, non-proliferation, and strategic stability. The command and control issues and the Europeans' views on counterforce operations also are considered.

Chapter IV offers conclusions and recommendations about NATO's decisions regarding missile defenses and provides recommendations in particular about possible ways to surmount the challenges identified.

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<sup>3</sup> Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington, DC: Department of Defense, January 2001), Annex A, p. 115.

## II. NATO EUROPE AND MISSILE DEFENSES

This chapter provides historical background about NATO and missile defense before reviewing NATO's recent decisions in this regard, particularly those at the November 2002 Prague Summit. It concludes by summarizing technological and operational considerations and current programs.

### A. HISTORICAL OVERVIEW

Since early in the nuclear age, the United States has pursued initiatives to develop ballistic missile defenses to protect the United States and its forces, allies and security partners.<sup>4</sup> In 1972, the United States and the Soviet Union signed the Anti-Ballistic Missile (ABM) Treaty. The logic of the treaty was that by mutually prohibiting the development of national strategic missile defenses, the two super-powers would deliberately rely on reciprocal strategic nuclear vulnerability—a concept sometimes called Mutual Assured Destruction (MAD). As Colin Gray argues, “the U.S. Government not only accepted vulnerability as a military-technical fact of contemporary life, but in the 1972 ABM Treaty, tried to make something of a virtue of that vulnerability.”<sup>5</sup> It was assumed that mutual vulnerability would lead to self-limitation in the strategic arms race and improve crisis stability by reducing first strike incentives. Except for a brief period in the mid-1970s, there were no United States deployments of strategic missile defense systems under the ABM Treaty despite various research and development initiatives by the Reagan, Bush, and Clinton Administrations because of the treaty's prohibitions, technological limitations, and economic constraints.

The Soviets developed limited ballistic missile defenses against ICBMs in accordance with the ABM Treaty regulations, and “as the twenty-first century opened, there was only one ABM system operating in the world, and it was deployed around Moscow.”<sup>6</sup>

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<sup>4</sup> The first attempt to develop ballistic missiles began with the Nike-Zeus anti-ballistic missile (ABM) system in 1958, [<http://www.cdi.org/hotspots/issuebrief/ch9>], February 2003.

<sup>5</sup> Colin Gray, “European Perspectives on US Ballistic Missile Defense” *Comparative Strategy*, vol. 21, no. 4 (2002), p. 284.

<sup>6</sup> Ivo H. Daalder and James M. Goldgeier, “Russia,” James J. Wirtz and Jeffrey A. Larsen, eds., *Rockets' Red Glare* (Boulder: Westview Press, 2001), p. 213.

The Reagan Administration accelerated the missile defense quest by launching the Strategic Defense Initiative (SDI) in 1983. Initially, there was a major effort to develop innovative space-based and directed energy technologies. However, computing and battle management challenges were among the paramount technical problems that could not be solved in a timely fashion, so SDI did not lead to any deployment of such systems.

After Reagan left office, the George H. W. Bush Administration, in response to (a) the impact of the Soviet empire's collapse on the international security environment<sup>7</sup> and (b) the Iraqi SCUD attacks during the Persian Gulf War, reoriented SDI to seek Global Protection Against Limited Strikes (GPALS), whatever their source.

In November 1991, NATO's Strategic Concept referred specifically to the need for missile defenses in light of "the proliferation of ballistic missiles and weapons of mass destruction."<sup>8</sup>

The Clinton Administration pursued a two-fold policy on missile defenses owing to increased threats from the proliferation of weapons of mass destruction (WMD) and their delivery means (ballistic and cruise missiles). First, the administration reoriented U.S. priorities to emphasize the development of theater missile defenses (TMD) to protect United States forces and allies from limited attacks. Second, it pursued a cooperation strategy with certain European NATO countries (Germany, Italy, and the Netherlands) for research, development, testing and deployment of innovative TMD systems in accordance with the ABM treaty.

President Clinton established in 1996 the "3+3" national missile defense (NMD) plan: three years for development and, if warranted, three more years to deploy a system to protect the United States from limited attacks. However, because of concerns that TMD systems might diverge from the ABM Treaty's provisions, the presidents of the United States and Russia made a joint statement in 1997 about the need for effective theater missile defense systems, expressing once again their commitment to preserve the

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<sup>7</sup> The independence of the Eastern European countries and Russia's reorientation to become a more democratic society minimized fears of a deliberate massed nuclear attack against the United States. Therefore, the pursuit of a costly, space-based, technologically demanding missile defense seemed unnecessary.

<sup>8</sup> North Atlantic Council, Strategic Concept, 7 November 1991, par. 50-51.

ABM Treaty, which was viewed as “the cornerstone of strategic stability.”<sup>9</sup> The need to develop national missile defense systems in the United States was amplified when (1) the Rumsfeld Commission report on 15 July 1998<sup>10</sup> estimated that the ballistic missile threat to the United States could emerge with little warning and (2) when North Korea launched a three-stage Taepo Dong-1 missile over Japan in August 1998.<sup>11</sup>

Russia and the NATO European states perceived the U.S. NMD program and America’s potential withdrawal from the ABM Treaty as inherently problematic because they feared that these activities could cause instability and generate an arms race. The Clinton Administration nonetheless considered the renegotiation of the ABM Treaty an important step in the development of a National Missile Defense against limited attacks because the treaty failed to define the term “strategic ballistic missiles” and thus imposed many restrictions on future research.<sup>12</sup>

The George W. Bush Administration has chosen to replace the ABM Treaty with a new framework that could permit the United States to develop new technologies and effective defenses against missile attacks. Active defenses are at the core of the new strategy. As Henry Cooper notes, “active defenses could help deter missile proliferation, deter the use of such delivery systems should proliferation occur, and protect the United States and its friends and allies should deterrence fail.”<sup>13</sup>

However, Russia, China and various European countries (within and outside NATO) did not initially agree with this argument and expressed their opposition to

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<sup>9</sup> Joint Statement Concerning the Anti-Ballistic Missile Treaty, Helsinki, Finland, 21 March 1997, available as Appendix E in James J. Wirtz and Jeffrey A. Larsen, eds., *Rockets’ Red Glare* (Boulder: Westview Press, 2001), p. 315.

<sup>10</sup> Report of the Commission to assess the Ballistic Missile Threat to the United States 15 July 1998, available on-line at the Federation of American Scientists, [<http://www.fas.org/irp/threat/bm-threat.htm>], March 2003.

<sup>11</sup> North Korea characterized the system as a space launch vehicle (SVL) attempting to orbit a small satellite. However, it demonstrated several of the key technologies required to develop an ICBM, including stage separation. For more information, see *Proliferation: Threat and Response*, Department of Defense, January 2001, p. 11, [<http://www.defenselink.mil>], January 2003.

<sup>12</sup> Dennis Ward, “The Changing Technological Environment,” James Wirtz and Jeffrey A. Larsen eds., *Rockets’ Red Glare* (Boulder: Westview Press, 2001), p. 84.

<sup>13</sup> Henry Cooper, “Active Defenses to Help Counter Proliferation,” in Peter Hays et al., eds., *Countering the Proliferation and Use of Weapons of Mass Destruction* (New York: McGraw-Hill, 1998), p. 194.

United States plan to withdraw from the ABM Treaty. In addition, some European governments rejected the U.S. arguments concerning the need to develop missile defenses to protect their national territories and population.

In the event, the United States withdrawal from the ABM treaty, which became effective on 14 June 2002, did not bring about the immediate negative repercussions that many Europeans had feared. This fact facilitated the negotiations about the likely deployment of missile defenses in NATO Europe.

## **B. NATO'S PRAGUE DECISION**

The NATO Heads of State and Government agreed at the Prague Summit (21-23 November 2002) on several new defense decisions that will guide NATO's future strategic policy. The governments made commitments to implement five defense initiatives concerning weapons of mass destruction, and decided to address the increasing missile threat to the Alliance's territory, forces, and population. The latter objective is significant because the Alliance recognized for the first time that it must look carefully at the emerging threat from ballistic missiles to the territory and population centers of NATO nations.<sup>14</sup> Thus, in the Prague Summit Declaration the Allies announced that they had decided to:

Examine options for addressing the increasing missile threat to Alliance territory, forces and population centres in an effective and efficient way through an appropriate mix of political and defence efforts, along with deterrence. Today we initiated a new NATO Missile Defense feasibility study to examine options for protecting Alliance territory, forces and population centres against the full range of missile threats, which we will continue to assess. Our efforts in this regard will be consistent with the indivisibility of Allied security.<sup>15</sup>

The statement underlines the new consensus in the Alliance to address the emerging threat of ballistic missiles to NATO's territory and population centers. This consensus did not exist before the U.S. withdrawal from the ABM Treaty.

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<sup>14</sup> Robert G. Bell, "Missile Defense: A View from NATO", NATO Speeches, Dallas, Texas, 3 June 2002, p. 6, [<http://www.nato.int/docu/speech/2002/s020603a.htm>], November 2002.

<sup>15</sup> Prague Summit Declaration, NATO Press Release (2002) 127, p. 4, [<http://www.nato.int/docu/pr/2002/p02-127e.htm>], November 2002.

In addition, the declaration concerning the indivisibility of the Alliance demonstrates a shared recognition of common transatlantic values and interests and of the common perils that NATO countries will confront in the 21<sup>st</sup> century, and thereby highlights the necessity to maintain and reinforce the political and military links among the Allies. NATO acknowledges that the proliferation of weapons of mass destruction and ballistic missiles poses a future threat to international security that cannot be addressed solely with traditional deterrence theory (that is, threatening retaliation). NATO will therefore pursue the development of missile defenses in order to protect the Allies in case deterrence based on threats of retaliation fails.

Although NATO is pursuing options to deploy missile defenses against the full range of missiles, it does not intend to undermine strategic stability with Russia and China. The intention is to protect the allies against limited attacks (deliberate, unauthorized, and/or accidental) with ballistic missiles loaded with weapons of mass destruction and launched from known or unexpected locations.

### **C. TECHNOLOGICAL-OPERATIONAL CONSIDERATIONS**

Designing an effective missile defense architecture to protect NATO's territory and populations from ballistic missiles is a demanding task owing to geographical, technological, and operational limitations.

Geography is a crucial factor because it affects decisions to deploy various missile defense systems. The United States and the majority of the western and central European states pursue protection against in-coming Intercontinental Ballistic Missiles (ICBMs), hence the deployment of interceptors in the United States and north-western Europe can provide them a level of protection. In contrast, the southern and southeastern NATO European countries are more vulnerable to Short Range Ballistic Missiles (SRBMs) and thus, they need forward deployed interceptors and early warning radars.

The technological considerations are also critical. Shooting down a ballistic missile in flight is physically possible but extremely demanding due to the missile's small size and high velocity plus the fact that longer-range ballistic missiles spend part of their trajectory outside the atmosphere.

Missile defenses can operate from different types of platforms: they can be ground-based, sea-based, air-based or space-based. Depending on the radars' and interceptors' ranges these systems can protect forces, points and large areas from all ranges of missiles (e.g., SRBMs, IRBMs, and ICBMs). Each platform provides benefits and imposes costs to the overall system. It is therefore necessary to configure all platforms into layered defenses to provide autonomous and mutual support, including multiple engagement opportunities along a missile's flight path. Figure 1 below includes some components of the missile defense architecture proposed by the United States and illustrates the need for interoperability between the various elements.<sup>16</sup>

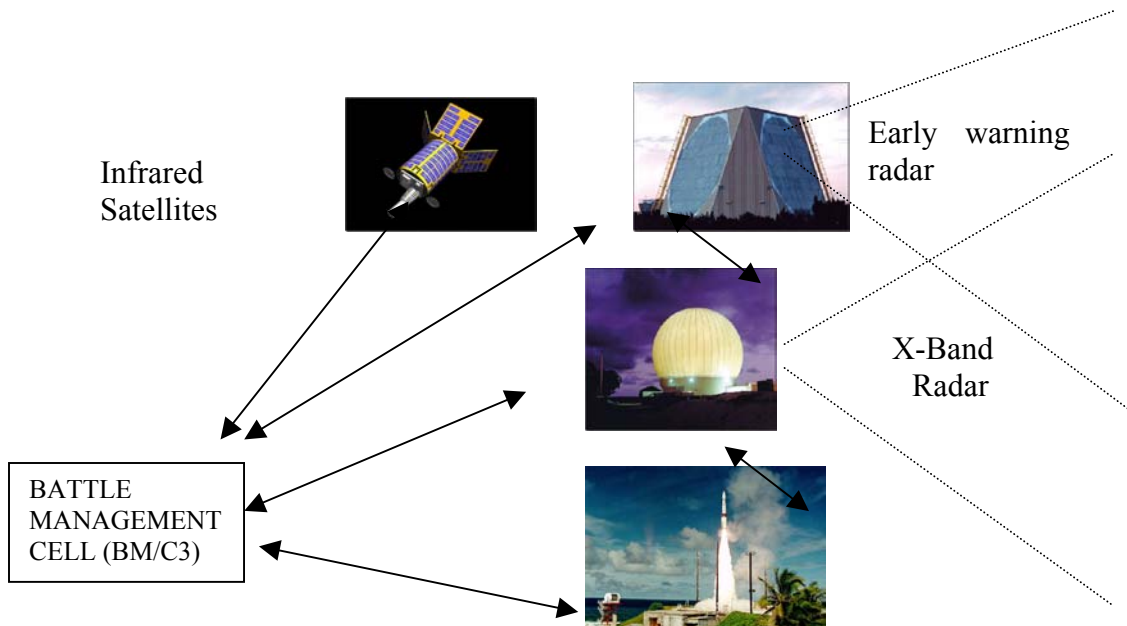


Figure 1. Some Components of the Missile Defense Architecture Proposed by the United States.

Given the imperative of destroying each and every incoming missile and reentry vehicle, a degree of redundancy – or overlap -- is a fundamental requirement in all missile defense architectures.

The ground-based missile defense system is designed to track and destroy ballistic missiles in their mid-course trajectory, inside or outside the atmosphere. NATO's dependence on ground-based systems deployed in the United States and/or in western

<sup>16</sup> More details of the missile defenses' interoperability can be found in [[http://www.defenselink.mil/specials/missile defense/ nmd. html](http://www.defenselink.mil/specials/missile%20defense/nmd.html)], March 2003.



Europe might lead to two problems, especially for the southern and southeastern NATO European countries. First, unless space-based sensors provided targeting information, there would be a lack of early warning about launched missiles until they reached the higher level of their ascending trajectory. Second, the missile's limited flight time means that its potential destruction will occur in its descending trajectory. This implies dangers for friendly forces and populations from falling debris, especially when the warhead is composed of chemical, biological or radiological materials.

Effective sea-based missile defenses in the Mediterranean Sea could intercept SRBM attacks before they could reach Europe and could thereby reduce the danger from weapons of mass destruction and debris. Effective air-based and space-based platforms could destroy ballistic missiles during their boost phase. However, the latter could generate international controversies regarding the "weaponization of space." In sum, NATO needs to develop technologies for ground-based missile defense platforms integrated with systems capable of achieving boost-phase and/or exo-atmospheric interception capabilities.

During the Cold War era both superpowers placed nuclear warheads on their anti-ballistic missiles.<sup>17</sup> If an attempted interception or a mistaken launch had ever occurred, nuclear warheads might have exploded in the atmosphere, causing electromagnetic pulse and possibly casualties. Such a risk may have been acceptable in the framework of the "massive retaliation" era, but it does not fit in the post-Cold War era. NATO therefore, needs to examine sophisticated non-nuclear technologies to intercept incoming missiles. The Americans have already made progress in this field and currently devote great resources to developing non-nuclear interceptor technologies such as directed energy (lasers) and kinetic kill mechanisms for potential sea, ground, air, and space deployment under the auspices of the Missile Defense Agency.

Given NATO's decision in Prague to address the increasing missile proliferation threat, some further fundamental considerations must be taken into account in the long term. First, American technology is vital for a NATO missile defense structure:

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<sup>17</sup> The United States placed them on the MIM-14 Nike Hercules and Nike Zeus missiles and the Soviet Union on the ABM defense system around Moscow. For more information see Jane's, *Strategic Weapon Systems*, Duncan Lennox eds., (London: Jane's Information Group, 2003), Issue Thirty Eight.

European states individually cannot develop projects of that scope. Such cooperation could be based on a general agreement in principle within NATO or on bilateral arrangements with such countries as may agree to work with the United States. If in the future the American missile defense architecture is integrated with NATO's missile defense structure, the United States will probably ask the Europeans to share the economic burden. How capable are the Europeans of making such a financial contribution, and under what circumstances will they contribute? It should be noted that all the Allies are contributing to common funding of the feasibility studies for TMD and "full spectrum" missile defenses. However, studies are inexpensive in comparison with actual procurement.

The U.S. Congress approved for fiscal year 2003 \$7.6 billion for missile defenses and the proposed budget for the fiscal year 2004 is more than \$9 billion. In addition, more than \$20 billion is programmed for the continuation of the missile defense programs in the next three years. It is significant to mention that the U.S. "Missile Defense Program allocates resources required for the BMD System, including the integration of individual elements into a single, synergistic system to defend the territories and deployed forces of the United States, allies, and friends."<sup>18</sup>

In contrast, even the NATO European states that are technologically advanced and have indigenous defense industries cannot devote the same level of financial resources to new technologies as the United States does. NATO as an organization has no capacity for financing major procurement projects and relies on each member state. One of the long-standing complaints of the United States has been the failure of other Allies to devote adequate resources to defense. Some prosperous European NATO states, like Denmark, Germany, Italy and others, spend less than two per cent of GDP on defense. Moreover, according to several estimates, the "US spending will be five times greater than European R&D spending" by 2003.<sup>19</sup> In sum, the NATO European allies spend less money than does the United States on defense, and they have specific

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<sup>18</sup> Lieutenant General Ronald T. Kadish, Director of the Missile Defense Agency, before the Senate Appropriations Committee Defense Subcommittee regarding the FY03 Missile Defense Budget, 17 April 2002, p. 9.

<sup>19</sup> U.K. House of Commons, Defense Committee Seventh Report, Session 2001-2002, *The Future of NATO*, (London: The Stationary Office Limited, July 2002), pp. 53-54.

obligations for military procurement under NATO's Prague Capabilities Commitment and the EU Headline Goal agreed at Helsinki in December 1999. In addition, they have obligations to support their peacekeeping forces in Afghanistan, Bosnia, the Former Yugoslav Republic of Macedonia, and Kosovo. These factors and domestic social expectations for economic development may constrain the Europeans from allocating further resources to missile defenses. Greece and the Netherlands are two examples of states that announced reductions in their defense budgets in 2002.<sup>20</sup> However, the latter argument may be misleading since the spending reductions may not affect European decisions to deploy missile defenses. For example, in July 2002 Greece tested the Patriot system for its Air Force and cooperatively manufactures several parts. Therefore the Europeans, considering all the previously mentioned obligations and constraints, will probably decide to contribute if there are potential gains in terms of industrial cooperation and technology transfers.

In 2002 NATO concluded two feasibility studies that were the cooperative product of two consortia of European and American industries.<sup>21</sup> The feasibility studies were intended to provide the Alliance with a broader perspective on its layered TMD options to facilitate a possible decision on proceeding with such systems in the future. Philippe Camus, Joint Chairman of the European Aeronautics, Defense, and Space (EADS) industry, stated, "I believe that the historical trend is toward the enlargement of transatlantic relations in space and defense. This trend contributes to international security and to savings on projects."<sup>22</sup> On 23 July 2002, the Italian firm Alenia Spazio

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<sup>20</sup> The Netherlands announced the biggest cutback in its defense capabilities since the end of the Cold War. Additionally the Dutch will delay the procurement of Lockheed Martin PAC-3 missiles for their Patriot air-defense systems by two years. Joris Janssen Lok, "Dutch Army Bears Brunt of Sweeping Cuts," *Jane's Defense Weekly*, 14 November 2002.

Greece reduced its defense budget for the period 2001-2005 from an initial total of around EUR 4 billion to EUR 2.1 billion or 5% of the total annual defense expenditures. Next year it will drop to 4%. "Athens Approves Four Defense Projects" *Jane's Defense Weekly*, 4 December 2002.

<sup>21</sup> NATO Press Release, *NATO's Theatre Defense Programme Reaches New Milestone*, 5 June 2001.

<sup>22</sup> Gilles Bridier et al., "EADS' Camus Reviews Industrial Strategy," *Paris La Tribune (Internet Version-www)* in French, 11 June 2001, FBIS, EUR 20010611000375.

and the EADS consortium concluded agreements with Boeing for research and cooperation in the sphere of antimissile systems that may prepare “the way for accords between governments” on the American antimissile shield program.<sup>23</sup>

Nevertheless, it is still unclear whether bilateral or multilateral cooperation between the United States and a few European countries can result in political agreements with the rest of the European Allies. In addition, this cooperation may be affected by disagreements among the NATO allies regarding the U.S.-led campaign in March-April 2003 to eliminate Iraq’s weapons of mass destruction. With respect to some technologies, the United States may share the know-how with key allies 1) which are important for the deployment of its own missile defense, 2) which are unlikely to transfer the technology to unauthorized parties, and 3) which the United States can rely on for support on various security issues in the future. The American research on countermeasures, however, will reportedly be classified.<sup>24</sup>

The command and control arrangement is also critical, and it depends on what the final model for deployment will be. The initial NATO objective is to overlay a layered TMD capability on top of the planned deployment later this decade of the new NATO extended air defense system, known as the Air Command and Control System (ACCS). Robert Bell has asserted that the deployment of a layered TMD system “using ACCS’s BMC3I [battle management and command, control, communication, and intelligence] capabilities ...could protect NATO military forces in a future conflict with an adversary possessing ballistic missiles of short- or theatre - range.”<sup>25</sup>

The total number of operationally deployed interceptors and their capabilities constitute another major concern vis-à-vis relations with Russia and China. Although the declared American intention is to deploy a few interceptors by 2004 at a test bed in Alaska to protect mainly the United States, decisions regarding the final U.S. and/or NATO missile defense architecture have not yet been reached. Michael Rühle has suggested that in a positive scenario for NATO in 2011, the United States will have

<sup>23</sup> Philippe Migault, “New EADS-Boeing Partnership in Missiles,” *Paris Le Figaro (Economic Supplement)*, 24 July 2002, FBIS, EUP 20020724000039.

<sup>24</sup> “US Will Classify Results of Anti-ABM Decoy Tests,” *Jane’s Missiles and Rockets*, 22 July 2002.

<sup>25</sup> Robert G. Bell, “Missile Defense: A View from NATO,” *NATO Speeches*, 3 June 2002, [<http://www.nato.int/docu/speech/2002/s020603a.htm>], November 2002.

deployed “a rudimentary defense against strategic missiles” whereas “several European Allies will have fielded tactical missile defenses within their armed forces.”<sup>26</sup> However, the requisite number of interceptors to protect the Europeans has yet to be determined.

To locate enemy missiles at extended ranges and high altitudes missile defenses need powerful radars on the ground. These radars transmit radiation and electromagnetic waves through the atmosphere in various directions.<sup>27</sup> Therefore, a decision to deploy additional radars in Europe must take into account the safety and the protection of the surrounding environment, the risk of communications jamming, and the safety of air transportation.<sup>28</sup> Otherwise, local communities, non-governmental organizations, and even governments may oppose such deployments.

Controversy was expected, for example, with the scheduled upgrade of the U.S. early warning radar at Fylingdales, England, which is located in a national park. It became a controversial issue when the site became an element in US missile defense plans.<sup>29</sup>

To summarize, geography, the type of missile defense platform, the total number of interceptors, the necessity to develop cutting-edge non-nuclear technologies, financial burden-sharing, industrial cooperation, technology-sharing, command and control, and finally environmental concerns constitute fundamental considerations in decisions about NATO missile defenses. Nevertheless, a major factor continues to affect European decisions to deploy missile defenses; there is not yet a tested and integrated American or European missile defense system that could effectively protect NATO as a whole.

#### **D. CURRENT RESEARCH PROGRAMS**

As Robert Bell has pointed out, the Alliance is far from being a “BMD-free zone,” at least at the level of theatre ballistic missile defenses. In addition to the previously mentioned cooperative programs, NATO Allies in September 2001

<sup>26</sup> Michael Rühle, “Imaging NATO 2011”, *NATO Review*, Autumn 2001, p. 19.

<sup>27</sup> The X-band radar weighs more than 2000 tons and uses high frequency and advanced radar signal processing technology to improve target resolution. For more information, see [[http://www.defenselink.mil/specials/missile defense /xbr.html](http://www.defenselink.mil/specials/missile%20defense/xbr.html)], November 2002.

<sup>28</sup> For more details on potential environmental consequences, see [[http://www.acq.osd.mil/bmdo/bmdolink /html /enviro.html](http://www.acq.osd.mil/bmdo/bmdolink/html/enviro.html)], November 2002.

<sup>29</sup> Kerry Gildea, “MDA Moves Closer to Deal on British Early Warning Radar Site”, *Defense Daily*, 20 November 2002.

participated in the sixth annual Dutch/U.S. TMD exercise program known as Joint Project Optic Windmill. This program was the first exercise of TMD operations at the tactical/operational level in an “out of area” scenario. In January 2003, two transatlantic industry teams submitted their study results to NATO NC3A regarding a layered TMD system. According to Bell’s assessment, “NATO should be in a position by 2004 to decide whether to field, by 2010, a layered TMD system ...that could protect NATO military forces in a future conflict with an adversary possessing ballistic missiles of short- or theatre - range.”<sup>30</sup>

In 2001-2002 the United States redefined its projects on missile defenses and made several changes from previous programs, at least in the terminology. First, Theater Missile Defense (TMD) and National Missile Defense (NMD) are no longer differentiated and are sometimes called Ground-Based Midcourse Defense (GMD) or simply Missile Defense (MD). Second, the Navy Theater Wide (NTW) will be called AEGIS–BMD in the future. The term “layered defense” involves a series of responses to various kinds of missiles during their boost phase, midcourse, and terminal stages.<sup>31</sup> Currently, the R&D efforts include programs to provide Terminal Defense, Midcourse Defense, and Boost Defense.

However, the changes in the terminology do not imply many changes in substance. NATO missile defense will probably use similar terminology, as the American research and development (R&D) is more advanced than that of the Europeans in this field. There is currently a remarkable number of national, multinational, and even NATO–wide missile defense programs.

### **1. Terminal Defense**

The Terminal Defense engages short-to medium–range ballistic missiles in the terminal phase of their trajectory.

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<sup>30</sup> Robert G. Bell, “Missile Defense: A View from NATO,” *NATO Speeches*, Dallas Texas, 03 June 2002, [<http://www.nato.int/docu/speech/2002/s020603a.htm>], See also Luke Hill, “TMD: NATO Starts the Count,” *Jane’s Defense Weekly*, January 3, 2001.

<sup>31</sup> [<http://www.acq.osd.mil/bmdo/bmdolink/html/nmd.html>], January 2003.

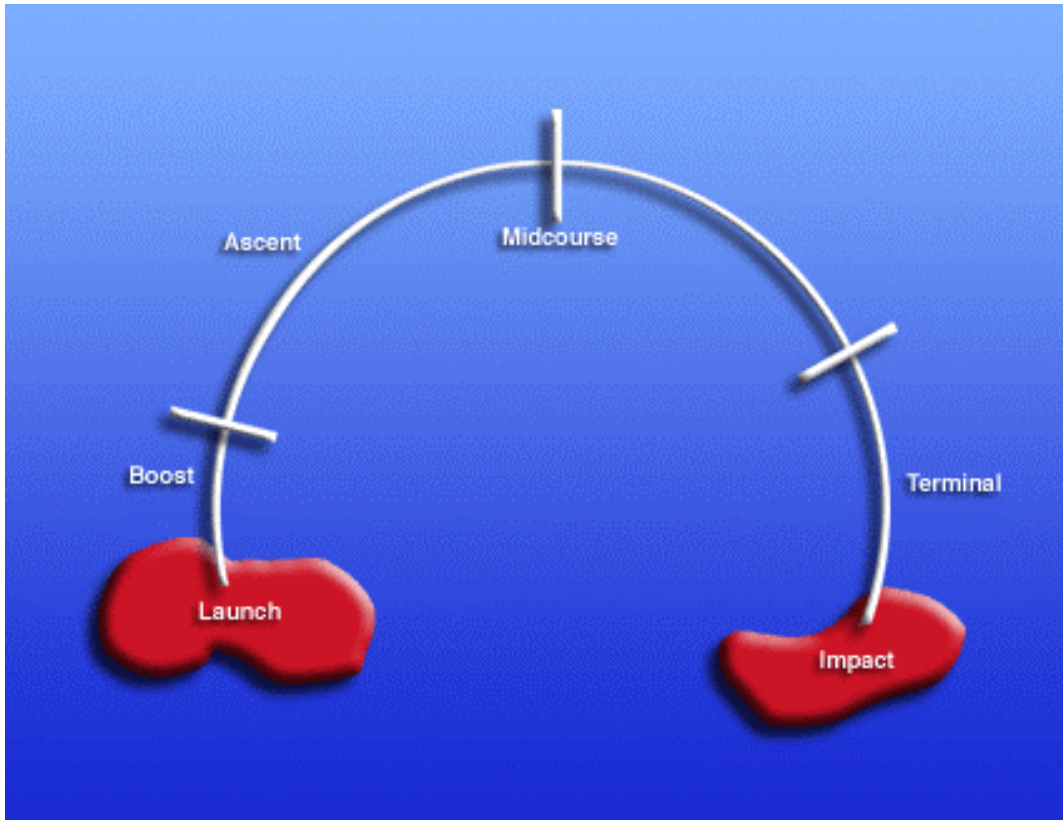


Figure 2. Ballistic's Missile Trajectory.

The missile or reentry vehicle enters the terminal phase when it enters the atmosphere and its flight in this phase lasts less than a minute. Elements in this defense include the Theater High Altitude Area Defense (THAAD), the PATRIOT Advanced Capability Level 3 (PAC-3), the Medium Extended Air Defense System (MEADS), and a sea-based terminal defense concept.<sup>32</sup>

THAAD is designed to defend against short-to-medium range ballistic missiles at endo- and exo-atmospheric altitudes, which can make effective countermeasures against THAAD difficult to employ. It also allows multiple intercept opportunities, and can significantly mitigate the effects of weapons of mass destruction. THAAD can probably protect forward-deployed American forces, broadly dispersed assets, and population centers against missile attacks.

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<sup>32</sup> Ronald Kadish (Lt. General), "The Missile Defense Program," *Fiscal Year 2003 Budget*, [<http://www.acq.osd.mil/bmdo/bmdolink/pdf/budget03.pdf>], December 2002.

PAC-3 can counter enemy short-range ballistic missiles, anti-radiation missiles, and aircraft employing advanced countermeasures and a low radar cross-section. It provides terminal missile defense capability to protect large urban areas and military targets, such as ports and command centers. Three countries, Germany, the Netherlands, and the United States, are cooperatively involved in the R&D phase.

MEADS is a synergistic effort involving Germany, Italy, and the United States. MEADS is a mobile system that provides robust, 360-degree protection for maneuver forces and other critical forward-deployed assets against short and medium-range missiles and air-breathing threats, such as cruise missiles and aircraft. In 2003, the MEADS partners will continue efforts to integrate the PAC-3 missile with MEADS.

The Improved Hawk III can defend small high-value military targets, including the key parts of amphibious landing areas. Both the Patriot and Hawk systems target ballistic missiles in their terminal phase inside the atmosphere.

France and Italy are cooperating in the development of the Aster 15 system (or SAMP/T TMD) that has a range of 30 kilometers, and that may provide a basis to develop theater missile defense capabilities. On 30 October 2002, French armaments engineers conducted the first firing of a missile that intercepted its target at a distance of 6.1 km.<sup>33</sup>

## **2. Midcourse Defense**

The Midcourse Defense engages ballistic missiles in the exo-atmosphere after the booster burns out and before the reentry vehicle enters the earth's atmosphere. The United States is currently developing the Ground-based Midcourse Defense (GMD) and the Sea-based Midcourse Defense.

The Ground-based Midcourse Defense (GMD) will counter known and expected long-range missiles primarily during the descent phase of midcourse flight. The system will probably use non-nuclear exo-atmospheric kill vehicles to destroy the enemy missiles, thus employing hit-to-kill technology which is still under development.

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<sup>33</sup> J. A. C. Lewis, "French Carrier Fires First Naval Aster 15," *Jane's Defense Weekly*, 8 November 2002.



Sea-based Midcourse Defense (SMD) will develop a ship-based capability to intercept missiles early in the ascent phase of flight which, when accompanied by a ground-based system, will provide a complete midcourse layer. By engaging missiles in early ascent, sea-based systems also offer the opportunity to reduce the overall BMD system's susceptibility to countermeasures. In the future, GMD and SMD may use a common exo-atmospheric kinetic vehicle for Ground and Sea Midcourse defenses.<sup>34</sup>

### **3. Boost Defense Segment (BDS)**

To engage ballistic missiles in this phase, quick reaction times, high confidence decision-making, and multiple engagement capabilities are needed. The Boost Defense Segment employs both Directed Energy and Kinetic Energy (KE) boost phase intercept (BPI) missile defense capabilities to create a defense layer near the hostile missile's launch point. According to the Missile Defense Agency, there are four principal objectives for the BDS:

First, it will seek to demonstrate and make available the Airborne Laser (ABL). Second, it will define and evolve space-based and sea-based kinetic energy Boost Phase Intercept (BPI) concepts in the next two to four years, supporting a product line development decision in 2003-2005. Third, the BDS will execute a proof-of-concept Space-Based Interceptor Experiment (SBX). Fourth, the BDS will also continue Space-Based Laser (SBL) risk reduction on a path to a proof-of-concept SBL Integrated Flight Experiment (SBL-IFX) in 2012.<sup>35</sup>

All the prospective missile defense projects need to integrate ground and sea sensors together with Space-Based Infrared System-Low (SBIRS-Low) elements to enhance the detection capability, to improve reporting on ballistic missile launches regardless of range or launch point, and to provide critical mid-course tracking and discrimination data for the ballistic missile defense system.

The development of space-based interceptors may be the best solution to counter ballistic missiles early in the ascent phase. However, this approach evokes concern and even fear regarding the prospective weaponization of space. Similar concerns were expressed in the 1980's about the U.S. Strategic Defense Initiative and its space programs. Whatever the future of space-based missile defense systems, any U.S.-

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<sup>34</sup> [<http://www.acq.osd.mil/bmdo/bmdolink/html/midcourse.html>], January 2003.

<sup>35</sup> [<http://www.acq.osd.mil/bmdo/bmdolink/html/boost.html>], January 2003.

European missile defense cooperation will present two related challenges for the Alliance: ensuring that the system does not harm relations with Russia, and at the same time maintaining NATO's political cohesion.

### III. CHALLENGES

This chapter evaluates three major challenges for a potential NATO missile defense: first, the divergent threat assessments in the Alliance; second, the potential models for command and control of a missile defense architecture; and third, the concept of counterforce and the possible use of pre-emptive action to counter ballistic missile threats. It then examines relations with Russia and assesses the potential repercussions for international stability, particularly the non-proliferation regime.

#### A. THREAT ASSESSMENT–NATO COUNTRIES POSITIONING

NATO is an alliance of independent nation-states from different regions of Europe and North America that share values and security interests while simultaneously maintaining and promoting their own distinctive interests. While it was easy to identify the Soviet Union and the Warsaw Pact as the adversary during the Cold War era, because the threat was imminent and close, it is harder to identify adversaries in the post-Cold War era.

The threat perception, according to Raymond Cohen, is vital and, “if anything, the decisive intervening variable between event and reaction in international crisis. For when threat is not perceived, even in the face of apparently objective evidence, there can hardly be a mobilization of defensive resources.”<sup>36</sup> Threat perception, Cohen argues, is related to two elements: the capability to act and the intent to do so. While the NATO Allies have already acknowledged, in several statements, that the threat against the Alliance derives from various sources, including the proliferation of weapons of mass destruction and their delivery means,<sup>37</sup> not all European Allies have the same understanding of the magnitude of the threat. As Robert Bell has observed, “Europe is not yet convinced that the compelling evidence with regard to rogue states long range missile capabilities is matched by rogue-states intentions.”<sup>38</sup> The divergences in threat perceptions among the

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<sup>36</sup> Raymond Cohen, *Threat Perception in International Crisis* (Madison, Wisconsin: University of Wisconsin Press, 1979), p. 3.

<sup>37</sup> Ted Whiteside: Head of NATO’s WMD Center, An Interview Available in [[www.nato.int/docu/review/2001/0104-06.htm](http://www.nato.int/docu/review/2001/0104-06.htm)], October 2002.

<sup>38</sup> Robert G. Bell “Missile Defense: A view from NATO”, NATO Speeches, Dallas Texas, 3 June 2002, p. 6, [<http://www.nato.int/docu/speech/2002/s020603a.htm>], November 2002.

European allies derive partly from the fact that “these perceptions concern the future, and there can be no reliable information about the future,”<sup>39</sup> and partly from economic factors, including the limited national defense resources of the allies.

The divergence in threat assessments is actually the first vital hurdle that has to be surmounted in order to deploy active defenses in Europe. The Prague Summit Declaration’s reference to the threat from ballistic missiles to NATO’s territory and populations, and the Allies’ decision to examine options to address this threat was a significant first step to bridging the gap among the various threat perceptions.<sup>40</sup> This resulted in a shift in the Europeans’ position towards missile defenses that will further enhance the cooperation with the United States despite remaining disagreements about other security issues.

Many American scholars argue that the United States faces a strategic paradox. In the words of a 1994 Department of Defense report, “in contrast to the Cold War, today, it is the United States that has unmatched conventional military power, and it is potential adversaries who may use weapons of mass destruction to deter US power projection abroad.”<sup>41</sup>

During the Cold War, weapons of mass destruction were considered “weapons of last resort” because of the risks for those who might use them. However, today some of America’s enemies perceive them as “weapons of choice.”<sup>42</sup> A country acquiring NBC weapons is likely to seek more overt delivery methods, like ballistic missiles, to demonstrate “strategic reach,” project power beyond its borders, and deter and coerce even distant adversaries.

American intelligence sources assess that many countries possess capabilities to inflict mass casualties and destruction. According to these sources, the United States

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<sup>39</sup> Raymond Cohen, *Threat Perception in International Crisis*, (Madison, Wisconsin: University of Wisconsin Press, 1979), p. 9.

<sup>40</sup> Prague Summit Declaration, NATO Press Release (2002) 127, p. 4, [<http://www.nato.int/docu/pr/2002/p02-127e.htm>], November 2002.

<sup>41</sup> Office of the Deputy Secretary of Defense, *Report on Nonproliferation and Counterproliferation Activities and Programs* (Washington DC: Department of Defense, May 1994), p. 2, quoted in Richard A. Falkenrath, et al., *America’s Achilles’ Heel* (Cambridge: MIT Press, 1998), p. 222.

<sup>42</sup> National Security Strategy of the United States of America, (Washington D.C.: White House, 2002), p. 15.

before 2015 will probably face ICBM threats from North Korea and Iran, in addition to the long standing missile forces of Russia and China.<sup>43</sup> Moreover, short and medium range ballistic missiles (SRBMs and MRBMs) already pose a significant threat overseas to U.S. interests and military forces, and to the southern and southeastern European NATO allies. The comprehensive United States strategy to combat the above threats includes an array of non-proliferation and counterproliferation measures and in this framework the pursuit of active defenses (including ballistic missile defenses) is only one element of U.S. strategy.

Similar, for the European allies the evolution of risks and threats in and around Europe is the greatest variable with potentially the furthest-reaching consequences. Michael Rühle argues that “in the assumption that the security environment in and around Europe remains essentially benign, some US isolationists as well as some ‘Europhiles’ might feel tempted to declare the end of a need for US military engagement in Europe.”

<sup>44</sup> From this point of view, many Europeans might feel tempted to oppose cooperation with the United States in ballistic missile defense . How well founded is this hypothesis? What are the current trends? The following section reviews the official positions of several NATO countries, including the United States, towards ballistic missile defense in light of the 2002 Prague Summit Declaration to assess the trends in Alliance policy concerning a unified missile defense architecture.

Britain and France, both nuclear weapon states, initially opposed the United States withdrawal from the ABM Treaty because they were concerned about the future effectiveness of their nuclear deterrent capabilities against Russian missile defenses.<sup>45</sup> In late 2002 Britain made significant statements which indicated a growing willingness to support missile defenses despite the previous internal divisions within the British Government. On 12 October 2002, Defense Secretary Geoff Hoon emphasized that “it is in the interest of the UK and its people” to develop the capacity to defend against the

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<sup>43</sup> National Intelligence Estimate, “Foreign Missile Developments and the Ballistic Missile Threat through 2015,” [<http://www.cia.gov/nic/pubs/other-products/Unclassifiedballisticmissilefinal.htm>], October 2002.

<sup>44</sup> Michael Rühle, “Imaging NATO 2011”, NATO Review, Autumn 2001, p. 20.

<sup>45</sup> Charles Ball, “The Allies,” James J. Wirtz and Jeffrey A. Larsen, eds., *Rockets’ Red Glare* (Boulder: Westview Press, 2001), p. 265.

threat of ballistic missiles “as it is in the interest of the United States.” However, he added, “the best architecture for defending the United States or its allies in Europe and beyond has yet to be determined.”<sup>46</sup>

France followed a similar path. France’s position is significant because of its political influence and military status. Although France does not participate in NATO’s integrated military structure, it will participate in the feasibility study for missile defense to protect populations and territory. Jacques Chirac, the President of France, stated on 8 June 2001 that “France, for its part, does not ignore that the world has changed and that the very conditions of this balance [provided by the ABM Treaty] should be redefined.”<sup>47</sup> France accepts the idea that nations may choose to protect themselves against missile threats by the deployment of defensive systems. In general, France is not opposed to missile defense projects, provided that they do not undermine its nuclear deterrent, the ultimate foundation of its safety, or lessen its national sovereignty. In fact, France and Italy have developed the Aster theater missile defense, as discussed in Chapter II.

Germany initially voiced concern about the end of the ABM Treaty but took no further initiative. While pointing to the relevance of the ABM Treaty, Germany was also busily involved in the several missile defense projects that were mentioned earlier. In the framework of NATO, Germany supports the Defense Ministers’ “Statement on Capabilities” issued in June 2002 those points to “the need to deploy theatre missile defenses to protect our deployed forces.” Additionally it approved with the other Allies the Prague Summit Declaration in November 2002 that called for a feasibility study to examine the options for protecting Alliance territory and population. Therefore, it can be concluded that Germany plans to cooperate with its NATO allies including the United States, in building up a missile shield.

Denmark also has a central position in the development of NATO missile defenses because of the radar base at Thule in Greenland. On 18 December 2002 the Danish government received an official request from the United States to allow the U.S.

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<sup>46</sup> Geoff Hoon, “Intervening in the Security Environment”, Speech at Foreign Policy Centre, 12 November 2002.

<sup>47</sup> Speech By French President Jacques Chirac at the Institute of Higher National Defense Studies, IHEDN, Paris, 08 June 2001, in FBIS, EUP20010608000210.

military to upgrade the early warning radar at the Thule Airbase in Greenland. At this writing, in May 2003, no reply has been made public. If an anti-missile shield would benefit the whole of the NATO alliance, the Danes would probably give approval for the Thule radar becoming part of the project. However, the official Danish position (although not hostile to the idea of missile defense) is still vague about the Thule base, owing to political divergences within the government.<sup>48</sup>

In the north, Norway is wholeheartedly backing the idea of cooperative NATO missile defenses. The Defense Minister, Kristin Krohn Devold, has said that all the European NATO nations would benefit from cooperation with the United States in missile defenses. In November 2002 she declared that “This is more reassuring than if the United States were to go it alone.”<sup>49</sup>

Similarly, the Czech Government is already negotiating with the US government within the framework of NATO to supply the VERA-E passive radar system or to build one of the upgraded early warning or X-band radar stations or tracking stations on Czech soil in order to play a limited but noteworthy role in missile defense.<sup>50</sup>

Turkey, as the NATO country closest to the Middle East, faces more imminent threats from SRBMs. It is therefore in the country’s interest to deploy missile defense systems. In the same way, the rest of the southern European NATO countries, Greece, Italy, Portugal and Spain, although they do not currently face acute missile threats, have a positive policy, at least for theater missile defenses.

In sum, despite early European concerns about ballistic missile defenses and divergences between the NATO European allies and the United States regarding assessments of the threat, there is now a significant acceptance of their utility and a

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<sup>48</sup> Jesper Kongstand and Jette Elbaek Maressa, “Danish split over Thule MD plan; Return to anti-US ‘Footnote Policy’ Feared,” article in Viby Jyllands-Posten, FBIS, 18 December 2002, EUP 20021221000140.

<sup>49</sup> Gunnar Johnsen, “Antimissile Shield Over Norway To Be Investigated,” Article in Oslo Aftenposten, FBIS, 19 November 2002, EUP 20021119000491.

<sup>50</sup> Jane’s Defense Weekly “Czech Offer to Host Parts of US Missile Defense System,” 13 November 2002.

corresponding shift in official positions. However, two major remaining issues will influence the realization of a NATO missile defense project: the future model of cooperation and the potential use of counterforce.

## **B. POTENTIAL MODELS FOR COOPERATION**

The second major challenge that NATO has to address is the model for cooperation in missile defense. Robert Bell has suggested that the allies could draw from four “established models” of past US-NATO weapons deployment experience.<sup>51</sup>

First, the “division of labor” model asserts that NATO would focus on TMD but not cross over formally into the “strategic” defense realm. The integration of TMD into NATO’s military structure is perceived to be a quite moderate financial task for the European states, and it would provide them the capability to defend sensitive point areas and/or forces. However, these defenses alone cannot protect the whole of NATO’s territory and the European populations, the objective approved in NATO’s Prague Summit Declaration, so according to this model this mission would be a United States responsibility. The United States would coordinate the array of air-, space- and ground-based sensors and interceptors and integrate them under one central agency (for example, the NATO Air Defense Committee) and would control the system protecting the whole Alliance without creating different zones of security within NATO. This scenario would probably involve the deployment of early warning and X-band radars in several European states, and would probably maintain and improve the extended deterrence protection to NATO allies that is already provided by U.S. nuclear forces and commitments, including U.S. nuclear weapons in Europe. As David Yost argues, “These [nuclear] forces and TMD are complementary capabilities.”<sup>52</sup> The question that this model raises is, who will pay for the extra interceptors and radars? If all the Allies shared the financial burden, they would probably be unwilling to assign responsibility for command and control solely to the Americans. On the other hand, if the Americans alone paid for the missile defense architecture, they would expect logically to control the system, an outcome that the European Allies might not welcome.

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<sup>51</sup> Robert G. Bell, “Missile Defense: A View from NATO”, A Speech in Dallas, Texas, 03 June 2002 during TBM International Conference, p. 4.

<sup>52</sup> David S. Yost, *The US and Nuclear Deterrence in Europe*, Adelphi Paper 326 (London: International Institute for Strategic Studies, 1999), p. 63.



The second model, the “Ground Launched Cruise Missile (GLCM) experience,” posits that the European allies would accept the deployment on their soil of US-owned and operated strategic-capable mid-course intercept missiles or radars. This model could generate disputes in some countries for political reasons arising from specific perceptions of national sovereignty; and this, could minimize the level of cooperation. However, other countries might perceive this model as beneficial for their political aspirations and accept it. However, it would be politically easier to have American personnel operate radars than interceptors on Allied soil.

Third, in the “F-16 model” the NATO allies would participate in developing or co-producing BMD hardware elements in a cooperative fashion, along the lines of the F-16 multinational program. This model might provide economic benefits for the participating countries but would not protect the Alliance effectively unless these BMD elements were merged in one defense architecture.

The fourth option draws on the NATO AWACS model. NATO allies could join to deploy commonly funded and operated interceptors and radars in Europe. This model would probably require great financial resources, but it might be politically easier for the Europeans to accept. However, transatlantic cooperation within this model is uncertain owing to the possible reluctance of the United States to permit foreign military personnel to participate in its homeland missile defense. The outcome might be the development of two separate control systems operated respectively by American and NATO European personnel. This might lead to “decoupling” the United States from its allies and creating unnecessary duplication in military procurement, and it would be important to devise measures to prevent such adverse results.

The appropriate model for cooperation has yet to be determined, though a version of the “division of labor” and the “NATO-AWACS” models is more likely to prevail over the other models. On April 2003, Robert Bell, NATO’s Assistant Secretary General for Defense Investment, reported that a consensus is emerging at the expert level in NATO to provide a Battle Management /C3/Intelligence (BMC3I) for an Active Layered

Theatre Ballistic Missile Defense (ALTBMD) system. There are, however, concerns as to whether it would be feasible to use common NATO funding to acquire TMD interceptors and most TMD sensors.<sup>53</sup>

### C. COUNTERFORCE

Counterforce operations could be conducted to seize, disable, destroy, disrupt, interdict, neutralize, or deny an adversary the use of its nuclear, biological, chemical, and missile (NBC/M) weapons.<sup>54</sup> Counterforce missions can range from special forces hunting ballistic missiles behind enemy lines to stealthy aircraft equipped with precision-guided missiles and earth-penetrating warheads destroying underground bunkers. Moreover, counterforce operations can be either conventional or nuclear (or both), and can occur pre-emptively and/or after the beginning of hostilities.

The pre-emption issue has long been debated. According to Richard Falkenrath and his co-authors, “pre-emption can be a form of defense against an imminent attack” and successful pre-emption “depends on two variables: first, an ability to locate and identify the system; and second, a capacity to destroy or disrupt it.”<sup>55</sup> The latter capability depends on good intelligence and rapid decisions. It is militarily preferable to destroy missiles loaded with NBC weapons before they have been launched, since even one such weapon could cause a great deal of death and destruction.

The United States already incorporated the option of pre-emptive action in its September 2002 National Security Strategy: “To forestall or prevent such hostile acts by our adversaries, the United States will, if necessary, act preemptively.”<sup>56</sup> In March – April 2003, the United States effectively applied this policy against Iraq. The U.S. action, taken in cooperation with the United Kingdom and other coalition partners, was opposed by some European countries. Consequently, some argue that a NATO missile defense might become a shield to permit NATO to act preventively with greater freedom

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<sup>53</sup> Remarks by Robert Bell, Missile Defense Workshop, Paris, 03 April 2003, p. 5 [<http://www.nato.int/docu/speech/2003/s030403d.htm>], June 2003.

<sup>54</sup> Charles A. Horner and Barry R. Schneider, “Counterforce” Peter Hays et al., eds., *Countering the Proliferation and Use of Weapons of Mass Destruction*, (New York: McGraw-Hill, 1998), p. 240.

<sup>55</sup> Richard Falkenrath et al., *America’s Achilles’ Heel*, (Cambridge: MIT Press, 1998), p. 249.

<sup>56</sup> *The National Security Strategy of the United States of America*, (Washington D.C.: White House, 2002), p. 15.

of action (and less vulnerability to missile attack) against other states. The future boost-phase capability might destroy enemy missiles promptly after they are launched. Charles A. Horner and Barry Schneider argue that, “Although it may be military preferable to do so, there is little or no legal justification for preemptively attacking a state’s NBC/M forces unless the United States is highly confident that is about to be attacked by the same.”<sup>57</sup> As an example of the controversy associated with preemptive and preventive action, one might consider how in early 2003 France and Germany opposed the United States decision to use force against Iraq. France refused to permit the deployment of Patriot assets to Turkey under NATO auspices before the United Nations Security Council reached a consensus authorizing the use of force. On 16 February 2003 the problem was solved in NATO’s Defense Planning Committee, a body in which France chooses not to participate.

#### **D. NATO RUSSIA RELATIONS**

This part of the thesis analyzes Russian arguments and proposals for limited European missile defenses and answers the following question: should NATO and Russia begin cooperation in a joint missile defense project? It concludes that cooperation between NATO and Russia is vital and could enhance the strategic stability of the Euro-Atlantic region.

The United States decision to unilaterally withdraw the majority of its tactical nuclear weapons from Europe in the early 1990s, the START I treaty that reduces strategic nuclear offensive weapons, and the CFE treaty that reduces conventional forces in Europe formed the framework for stability in the Euro-Atlantic region.

In 1991, the NATO Strategic Concept expanded the Alliance’s relations with its former adversaries to the east from a dual approach of dialogue and defense into “a triad of cooperation, dialogue and defense.”<sup>58</sup> In 1995, the Alliance’s enlargement study declared that “NATO-Russia relations should...be based on reciprocity, mutual respect and confidence, no ‘surprise’ decisions by either side which could affect the interest of

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<sup>57</sup> Charles A. Horner and Barry R. Schneider, “Counterforce” in Peter Hays, et. al., eds., *Countering the Proliferation and Use of Weapons of Mass Destruction*, (New York: McGraw-Hill, 1998), p. 248

<sup>58</sup> Michael Legge, “The Making of NATO’s New Strategy,” *NATO Review*, vol. 39 (December 1991), cited in David Yost, *NATO Transformed* (Washington D.C.: United States Institute of Peace Press, 1998), p. 74.

the other.”<sup>59</sup> In December 1996, the North Atlantic Council restated its “commitment to a strong, stable and enduring security partnership between NATO and Russia.”<sup>60</sup> The NATO-Russia partnership was institutionalized primarily by signing the Founding Act on Mutual Relations, Cooperation, and Security in May 1997 and by establishing the NATO-Russia Permanent Joint Council (PJC) in July 1997. The Russian arguments in 1999 against NATO’s intervention in the Kosovo conflict caused a temporary impasse in the improvement of NATO-Russian relations.<sup>61</sup> These relations improved again however, in February 2000 when the NATO Secretary General, Lord Robertson, visited Moscow and restored a broader relationship.<sup>62</sup> On 28 May 2002, NATO reiterated its determination to build together [with Russia] a lasting and inclusive peace in the Euro-Atlantic area on the principles of democracy and cooperative security and the principle that the security of all states in the Euro-Atlantic community is indivisible.<sup>63</sup>

As a result, the NATO-Russia Council was established. The Allies intend to work with Russia as equal partners in areas of common interest such as terrorism, theatre missile defense, non-proliferation and arms control. Several observers noted that the new partnership moved NATO from the PJC’s “19+1” structure to a format of “20.”<sup>64</sup>

These developments suggest that NATO in the 21<sup>st</sup> century will probably continue to pursue cooperative relations and partnership with the Russian Federation to secure international stability and order. The United States also may cooperate with Russia to create “an era of global entente.”<sup>65</sup>

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<sup>59</sup> Study on NATO Enlargement, par. 27, Quoted in Yost, “NATO Transformed,” (Washington D.C.: United States Institute of Peace Press, 1998), p. 145.

<sup>60</sup> North Atlantic Council Communiqué, 10 December 1996, par. 10.

<sup>61</sup> Mark Smith, *Contemporary Russian Perceptions of Euro-Atlanticism*, F74, (Camberley, England: Conflict Studies Research Centre, February 2002), p. 3.

<sup>62</sup> NATO Handbook, 2001, p. 81.

<sup>63</sup> Declaration by Heads of State and Government of NATO Member States and the Russian Federation, “NATO-Russia Relations: A New Quality”, Rome Summit, 28 May 2002, [[www.nato.int/docu/basicxt/b020528e.htm](http://www.nato.int/docu/basicxt/b020528e.htm)], November 2002.

<sup>64</sup> Paul Fritch, “Transforming the Alliance-Analysis: New Beginning”, *NATO Review*, Summer 2002.

<sup>65</sup> Jim Hoagland, “U.S., Russia and Global Entente,” *The Washington Post National Weekly Edition*, (9-15 September 2002), p. 5. Graham Evans and Jeffrey Neunham explain the term “Entente” as “a diplomatic term referring to a specific or non specific ‘understanding’ between two or more states and which is distinct from a formal treaty or alliance.” *The Penguin Dictionary of International Relations*, (London: Penguin Books, 1998), p. 149.

## **1. Russian Arguments and Proposals for Missile Defenses Before 14 June 2002**

According to a widely shared assessment, NATO's efforts to build missile defenses will not cause antagonism with the Russians in the short term since the Americans are currently pursuing only limited missile defenses with conventional warheads and the Europeans have many decisions yet to make. The future development of NATO layered missile defenses against intercontinental ballistic missiles (ICBMs) however, could generate Russian fears in the following three contingencies: first, if the Russians become unable to maintain and improve their own missile defenses; second, if NATO countries decide to use nuclear-kill BMD instead of hit-to-kill technology;<sup>66</sup> and third, if the Americans deploy space-based weapons for missile defense.

A NATO missile defense able to intercept ICBMs could in some circumstances degrade Russian counterforce and countervalue capability, thereby forcing Russia to rely on larger attacks to overwhelm the system. Russia might consider four options to prevent or overcome the strategic uncertainties: (a) find ways to overcome a NATO missile defense (penetration aids or MIRVing); (b) propose an indigenous limited Euro-Russian missile defense structure; (c) increase reliance on delivery systems other than ballistic missiles: and (d) control NATO missile defenses through a formal arms control agreement.

The US-Russian Treaty of Moscow in May 2002 provides Russia a "hedge" capability. It reduces the number of operationally deployed warheads to 1700-2200 until the year 2012 and it allows both countries to maintain and stockpile the downloaded warheads. Therefore, the treaty assures the Russians that their nuclear arsenal (if uploaded in a timely fashion) can maintain some capacity to overwhelm a missile defense; this may have helped to calm their opposition to the unilateral American decision to withdraw from the ABM treaty.

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<sup>66</sup> Sergey Rogov, "Surrender or Transition to Partnership: Russia Should Take Advantage of the 'Window of Opportunity'", 24 May 2002, FBIS, CEP 200020524000373. It is interesting, however, that the Russians have already ballistic missiles loaded with nuclear warheads (SH-11 Gorgon and SH-08 Gazelle), "Russia Tests ABM Interceptor" *Jane's Defense Weekly*, 1 December 2002. For more information about SH-11 and SH-08 interceptors capabilities see *Jane's Strategic Weapons Systems*, Duncan Lennox, ed, (London: Jane's Information Group, July 2002), Issue Thirty-Seven, pp. 354-356.

The Treaty of Moscow assured the Russians that their strategic concerns were taken into account and confirmed their importance in international politics. Russians also recognized the necessity to cooperate with the United States to achieve their objectives.

As Mark Smith notes,

the continued importance of strategic arms control also means that Russia cannot afford to turn her back on Washington....and the Russian desire to ensure that any US NMD system does not undermine the viability of the Russian nuclear deterrent means that Russia has to continue to deal with the USA.<sup>67</sup>

In November 2000 Russia finally provided some details about a concept first advanced in June 2000, to deploy a limited missile defense system jointly with NATO European countries. The Russians proposed a rapidly deployable Theater Missile Defense (TMD) system for intercepting short range and intermediate range ballistic missiles up to 150 km in the descent trajectory. According to Ian Kenyon and his co-authors, “The Russian scheme is ‘strategic’ neither in range (it cannot intercept ICBMs) nor purpose (it cannot be used for national territorial defense, beyond limited area defense), and thus would not be subject to [ABM Treaty] restrictions.”<sup>68</sup> In sum, the Russian system would be mobile and non-strategic, and could go to the threat when and where it existed, so it would not undermine mutual deterrent capabilities or conflict with the ABM Treaty.

The proposed scheme is shown in Figure 3.

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<sup>67</sup> Mark Smith, *Contemporary Russian Perceptions of Euro-Atlanticism*, F74 (Camberley, England: Conflict Studies Research Centre, February 2002), p. 13.

<sup>68</sup> Ian Kenyon, et al., *Prospects for a European Ballistic Missile System*, (Southampton, England: Mountbatten Center for International Studies, 2001), p. 21.

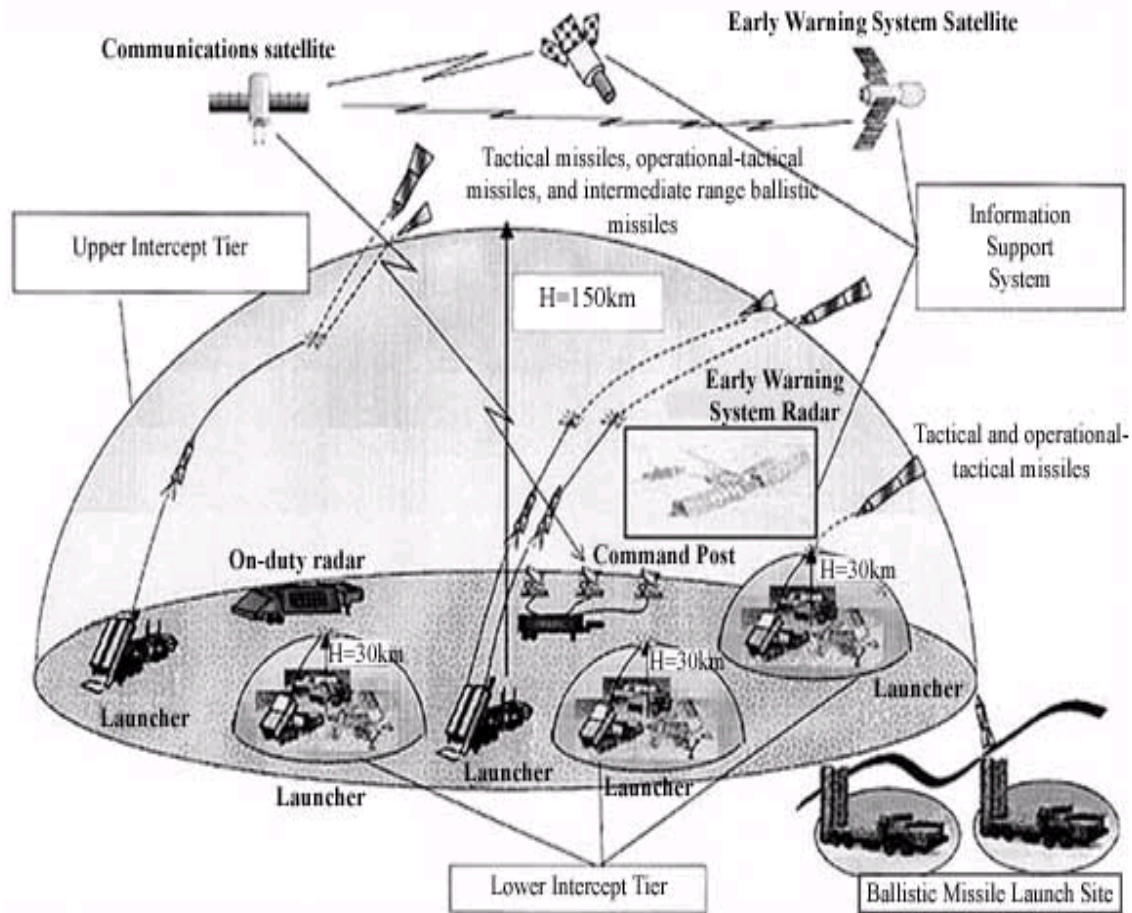


Figure 3. Russian Proposal for Non-Strategic Missile Defense System<sup>69</sup>.

The proposal was vague; but as Kenyon and his British co-authors state, it gives “a picture of current Russian thinking.” By proposing limited missile defenses the Russians might intend to achieve one or more objectives: to hinder a U.S. unilateral withdrawal from the ABM treaty; to prevent an early NATO decision to deploy strategic missile defenses in Europe; and to exploit disagreements over missile defenses between the United States and its European allies to increase Russian influence and to break the Alliance’s solidarity. The temptation to break NATO’s solidarity may become a future policy for Russia under Putin’s presidency.<sup>70</sup>

<sup>69</sup> Nikolai Sokov, “Russian Missile Defense for Europe: The February 20 Proposal is More Serious Than It Seems,” *CNS Reports*, MIIS, [www/cns.miis.edu/pubs/reports/sokrmd2.htm], February 2003.

<sup>70</sup> Mark Smith, *Contemporary Russian Perceptions of Euro-Atlanticism*, F74 (Camberley, England: Conflict Studies Research Centre, February 2002), p. 11.

What were the reasons for NATO's cautious approach to the Russian proposal? What factors may shape the prospects for future cooperation between NATO and Russia on missile defense? Despite its determination to develop a close partnership with Russia, NATO declined to accept the Russian proposal; the Alliance has instead pursued a dialogue with Russia on theater missile defense. Several factors explain this decision.

First, NATO evidently did not want to rule out pursuing a territorial missile defense structure against different missile ranges (including ICBMs, IRBMs, and SRBMs) instead of just area and point defenses against shorter-range missiles, an option that the Russian proposal did not provide. Furthermore, if the European Allies had accepted territorial protection provided by the Russians, they might have had to approve the use of nuclear warheads on the interceptors. The Russians have the most technologically advanced operationally deployed strategic ballistic missile defense in the world around Moscow. It is known in the West as the ABM-3 system and it relies heavily on nuclear warheads. The system has two types of missiles: the SH-11 Gorgon and the SH-08 Gazelle interceptors. The SH-11 is a medium-range interceptor (350 km) that carries a 10kt nuclear warhead, while the SH-08 Gazelle is a short-range interceptor (40-80 km altitude) that was initially deployed with a 10 kt warhead. There are unconfirmed reports from the United States, however, that the SH-08 missiles have been modified with a fragmenting high explosive (HE) warhead.<sup>71</sup> The Russian missile defense arsenal also includes the SA-10/20 (S-300) missile capable of intercepts up to 40 km from the launcher, and the larger 9M96/2 (S-400) missile capable of intercepts up to 100 km. Both systems are capable of theater ballistic missile defense, and it is believed that the warhead HE fragments are focused towards the target.

Therefore, the NATO European allies might have rejected the Russian proposal because they would prefer to develop territorial missile defenses without nuclear warheads and know that the United States is testing interceptors using "kinetic and

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<sup>71</sup> *Jane's Strategic Weapons Systems*, Duncan Lennox, ed., (London: Jane's Information Group, July 2002), Issue Thirty-Seven, pp. 354-356.



directed energy kill mechanisms.”<sup>72</sup> In addition, some Russian specialists expressed skeptical judgments about the Russian proposal. For example, Major General Vladimir Slipchenko stated that

Russia does not have the kind of weapons [needed for the construction of] a reliable non-strategic ABM system together with Europe.... This is a bluff. We can only rely on the S-300 and S-400 complexes. That is all we have....The Americans are studying Russian proposals that have nothing in them worthy of serious study.<sup>73</sup>

In January 2003, a Russian Foreign Ministry statement mentioned again the Russian willingness to develop a Euro Anti Ballistic Missile or “EuroABM” system as the best solution. It did not provide more details and the proposal remains vague.<sup>74</sup>

A second explanation for NATO’s cautious approach is that the Russians have not yet learned to “sell” new initiatives. The document given to Lord Robertson in February 2001 was far from a clear plan; and only three weeks later, the Russians went to NATO Headquarters in Brussels to explain their new proposal.<sup>75</sup>

The bad timing of the proposal was a third reason for NATO’s cautious approach. In the same period several NATO European states expressed opposition to the American decision to withdraw from the ABM treaty and many Europeans viewed the Russian proposal as an attempt to exploit differences between the United States and its European allies. In NATO’s view, accepting Moscow’s proposal would improve the Russians’ strategic influence in Europe and bolster the Russians’ military technology exports.<sup>76</sup>

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<sup>72</sup> Lieutenant General Ronald T. Kadish, Director Missile Defense Agency before the Senate Appropriations Committee Defense Subcommittee Regarding the FY03 Missile Defense Budget, 17 April 2002, 10.

<sup>73</sup> Slipchenko quoted in Tikhon Grigoriev, “The ABM System Is Not a Feasible Option for Russia,” *Delovoi Vtornik* 22 (2000), p. 3, Cited in Andrei Shoumikhin, “Evolving Russian Perspectives on Missile Defense: The Emerging Accommodation” *Comparative Strategy*, 21, (2002), p. 318.

<sup>74</sup> Press Release, Daily News Bulletin, Ministry of Foreign Affairs of the Russian Federation, 20 January 2003, Reference 107-17-01-2003.

<sup>75</sup> Nikolai Sokov, “Russian Missile Defense for Europe: The February 20 Proposal Is More Serious Than It Seems,” *CNS Reports*, MIIS, Available at [[www/cns.miis.edu/pubs/reports/sokrmd2.htm](http://www/cns.miis.edu/pubs/reports/sokrmd2.htm)], January 2003.

<sup>76</sup> Mark Smith, *Contemporary Russian Perceptions of Euro-Atlanticism*, F74 (Camberley, England: Conflict Studies Research Centre, February 2002), p. 5. See also U.S. Representative Curt Weldon (R-PA), “Weldon: Time for U.S. to Call Russia’s Bluff on Missile Defense,” *Inside Missile Defense*, 07 March 2001, p. 1.

## 2. Russian Arguments Since 14 June 2002

Russian concerns about missile defenses since the U.S. withdrawal from the ABM treaty took effect in June 2002 seem to be focused in two major areas. First, they are concerned about the overall scope of a NATO missile defense system. Second, they wonder if Russia be integrated in the defense system, and how much participation it will have in the production. In other words, Russia is concerned about the number of interceptors to be deployed, its integration within the system, the functions of the radars in Fylingdales and Greenland, and the economic benefits for Russia.

Lt. General Ronald Kadish, Director of the Missile Defense Agency, stated before the Senate Appropriations Committee in 17 April 2002:

The initial goal is to provide limited protection against long-range threats for the United States and potentially our allies within the 2004-2008 timeframe, while delivering more advanced capabilities against shorter-range threats.<sup>77</sup>

On 17 December 2002, President Bush announced the decision to

field missile defense capabilities [beginning in 2004 and 2005] to protect the United States, as well as our friends and allies....While modest, these capabilities will add to America's security and serve as a starting point for improved and expanded capabilities later, as further progress is made in researching and developing missile defense technologies and in light of changes in the threat.<sup>78</sup>

These statements suggest that no final decision has been made about the overall size of the U.S. missile defense posture, because this will depend on progress in R&D and on evolving threat assessments.

Owing perhaps to the above uncertainty, Igor Ivanov, the Russian Foreign Minister, stated in December 2002 that, "Now, after taking a political decision to deploy in 2004 several strategic interceptors with support from space, the realization of these plans has entered a new destabilizing phase."<sup>79</sup> Similarly, Marshal Igor Sergeev, a

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<sup>77</sup> Lieutenant General Ronald T. Kadish, Director Missile Defense Agency before the Senate Appropriations Committee Defense Subcommittee Regarding the FY03 Missile Defense Budget, 17 April 2002, pp. 4-5.

<sup>78</sup> President Bush Announces Progress in Missile Defense Capabilities, [<http://www.whitehouse.gov/news/releases/2002/12/20021217.html>], January 2003.

senior adviser to President Putin, stated “that Washington had not provided Russia with ‘any weighty arguments’ that Russia was not threatened by the new system.”<sup>80</sup> Russian fears concern short-term effects less than long-term possibilities. Some Russians are concerned that over 20 to 30 years U.S. technology might be able to neutralize Russian offensive nuclear capabilities. Ian Kenyon and his British co-authors assert:

a more profound impact will be on Russian perceptions of a US/European alliance to force other states to act in ways that support their interests.... This implies that Russia would tend to see EBMD [European Ballistic Missile Defense] as little more than an extension of US NMD: a expression of strengthening unipolarity.<sup>81</sup>

Under such assumptions, the declared American intention to rely on threat assessments to determine the scope of the missile defense program may have two implications. First, the Russians will never be sure what will be the exact size of the system and thus they may relate its development to the quality of NATO-Russian relations and future alternative political directions in Russia.<sup>82</sup> The second implication depends on the outcome of the potential U.S.–led military intervention in Iraq. If the United States and its coalition partners succeed in disarming the country, it will reduce *de facto* the long-term missile threat against Europe and may even create momentum for further missile disarmament. This outcome may lead NATO European governments to abstain from the development and deployment of expensive territorial missile defense systems, a decision that would please both the Europeans and the Russians. However, the outcome of the war may have negative repercussions, including further missile proliferation.

Russians have also expressed concern about the British and Danish decisions to endorse plans to upgrade the American early warning radars in Fylingdales and Greenland. In January 2003, Russian Defense Minister Sergei Ivanov declared that

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<sup>79</sup> Associated Press, “Russia Warns Against U.S. Missile Defense Plan,” *New York Times*, 18 December 2002.

<sup>80</sup> Ibid.

<sup>81</sup> Ian Kenyon, et al., *Prospects for a European Ballistic Missile System*, (Southampton, England: Mountbatten Center for International Studies, 2001), p. 20.

<sup>82</sup> For some reflections on alternative political directions in Russia, see David Yost, *The U.S. and Nuclear Deterrence in Europe*, Adelphi Paper 326 (London: International Institute for Strategic Studies, 1999), p. 18.

No one has ever meaningfully answered the one question as to why missile- attack warning systems are maintained there and why they are being hooked up with its missile defenses if the anticipated trajectories of the missiles of the so-called rogue countries cannot pass there by definition.<sup>83</sup>

Furthermore, a press release by the Russian Foreign Ministry the same day asserted that this decision “is unlikely to bolster international security and, quite certainly, will complicate the multilateral process of the limitation and reduction of arms, including nuclear weapons.”<sup>84</sup> The upgraded early-warning radars will cover parts of Russia’s territory. They will be extremely limited however, in their ability to discriminate real warheads from decoys or to deal with other types of countermeasures; the new phased-array X-band radars are expected to have such capabilities.

Russians are concerned about the total number of interceptors needed to protect NATO Europe. A preliminary architecture design released by the Ballistic Missile Defense Organization (BMDO) in March 1999 described the NMD system as being deployed against limited missile attacks in three phases. However, if European countries are to be protected as well the number of interceptors might be increased.<sup>85</sup>

In January 2003, Russian Defense Minister Sergei Ivanov evaluated the American decision to begin deploying limited missile defenses in 2004 as follows:

Russia still believes that the US decision to withdraw from the ABM treaty was a mistake. At the same time, he said that “We do not see any threat to our national security from this decision made by the US.”.... Theoretically we do not rule out the possibility of working with the US on individual elements of such a system, if it is created.<sup>86</sup>

As mentioned earlier, the United States in cooperation with its NATO allies is currently pursuing several missile defense development programs with different capabilities without Russian participation. If NATO concludes that cooperation with

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<sup>83</sup> Aleksandr Bogatyrev, “Russia’s Defense Minister Speaks of Missile Defense Possibilities, Cooperation,” *Moscow Krasnaya Zvezda* in Russian, 17 January 2003, FBIS, CEP 20030117000354.

<sup>84</sup> Press Release, Daily News Bulletin, Ministry of Foreign Affairs of the Russian Federation, 20 January 2003, Reference 107-17-01-2003.

<sup>85</sup> For more information about the Fylingdales radar upgrade, see [<http://cndyorks.gn.apc.org/fdales/Default.htm>], November 2002.

<sup>86</sup> Moscow Interfax, 1138 GMT 14 January 2003, FBIS, CEP 20030114000128. The order of the quotations in the original differs from the version given above.

Russia in missile defense is crucial and valuable, it has an incentive to take early decisions for joint development because it would facilitate the coordination of Russian military technology development with that of the Allies. Russian's participation in the development of a NATO missile defense system and its integration in the system against missile attacks from "rogue states" could in some circumstances enhance stability and security in the Euro-Atlantic region. In addition, this might assuage Russian fears about potential U.S. world dominance "through the structure of a futuristic global missile defense." The Russian Minister of Foreign Affairs in January 2003 proposed this view of defense cooperation :

It is evidently wiser and more responsible today to take a different path, that of unfolding cooperation among states, including the UK and the United States, in building a truly indispensable nonstrategic missile defense system allowing for the strengthening of regional stability.<sup>87</sup>

Currently, Russia and the United States are finalizing an agreement to build and jointly operate two experimental remote-sensing satellites by the end of the decade. They intend to assess whether they can track ballistic missiles using stereoscopic monitoring and non-traditional infrared (IR) wavebands. The Russian American Observation Satellite (RAMOS) program was initiated in 1992 to serve as the foundation for post-Cold War Russian-US ballistic missile defense (BMD) co-operation. "Primary among its objectives is to assess the utility of tracking ballistic missile bodies -- as opposed to the missile plumes -- in stereo against the earth's backdrop using mid-to-long IR wavebands."<sup>88</sup>

NATO-Russia missile defense cooperation may, moreover, diminish the misapprehensions and false alerts that are likely to occur if Russia is unable to distinguish an interceptor missile from a deliberate attack against its interests. An example is the incident on 25 January 1995, when Russian radar technicians detected a routine scientific rocket launch from Norway but misinterpreted it as a Trident missile from a U.S. submarine. President Boris Yeltsin hurriedly convened a threat assessment conference

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<sup>87</sup> Press Release, Daily News Bulletin, Ministry of Foreign Affairs of the Russian Federation, 20 January 2003, Reference 107-17-01-2003.

<sup>88</sup> Michael Sirak, "Russia, USA Near Deal on Satellite Experiment," *Jane's Defense Weekly*, 13 November 2002.

with his senior advisers and for about eight minutes, they deliberated whether to launch a counterattack before the incoming missile arrived. Fortunately, Russian military officers were able to determine--with only two or three minutes to spare--that the rocket was in fact heading away from Russian territory and therefore posed no threat.<sup>89</sup>

### **3. Conclusions**

Although the Alliance rationale for limited missile defenses centers on “rogue states” like Iran, and North Korea, the uncertainties about the future size and effectiveness of NATO missile defenses cause major apprehensions for Russian officials. The establishment of the new NATO - Russia Council in May 2002 helped to foster renewed cooperation and diminished Russian fears that Moscow would never be accepted as an Alliance partner or that enemies would encircle Russia. While Russia has the capability today to deliver a significant number of nuclear weapons against NATO countries, for various reasons it does not have the strength to compete with the United States and the rest of NATO. Therefore, as long as President Putin is in power, Russia will probably pursue cooperation with the United States and NATO.<sup>90</sup>

The superiority of the United States should not lead it to reject cooperation with Russia in missile defenses. Stephen Blank, an American scholar, has argued that “A truly successful U.S. policy must prevent any state from establishing unilateral hegemony in Eurasia... Without playing imperialistic games, the United States, its allies, and its partners –including Russia –must influence the security structure surrounding Russia.”<sup>91</sup> Robert Bell also argues that, “Given the plethora of missile threats confronting us, it is certain that the time has come for genuine co-operative NATO- Russian efforts to safeguard our security.”<sup>92</sup> The cooperation in missile defenses between the United States and its European allies must take into account Russia’s political and economic concerns to secure the Euro-Atlantic region and to diminish potential negative repercussions. As

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<sup>89</sup> Peter Vincent Pry, *War Scare: Russia and America on the nuclear brink* (Westport, Conn.: Praeger, 1999), pp.175-228

<sup>90</sup> A summary of the reasons that restrain Russia in opposing the United States is provided in Dimitri Trenin, “Silence of the Bear”, *NATO Review*, Spring 2002, [[www.nato.int/docu/review/2002/issue1/art3.html](http://www.nato.int/docu/review/2002/issue1/art3.html)], November 2002.

<sup>91</sup> Stephen Blank, “Putin’s Twelve –Step Program”, *The Washington Quarterly*, (Winter 2002), 25:1 p. 158.

<sup>92</sup> Robert Bell, “Ballistic Missile Threats: A NATO- Russia Strategic Challenge,” *Krasnaya Zvezda*, 27 February 2003.

Henry Kissinger has observed, “Russia will always be essential to world order and, in the inevitable turmoil associated with answering these questions [concerning its identity], a potential menace to it.”<sup>93</sup>

#### **E. NUCLEAR PROLIFERATION AND STRATEGIC STABILITY**

To what extent is there a risk that NATO missile defenses could undermine the non-proliferation regime? The regime’s most important treaty today is the 1968 Non-Proliferation Treaty (NPT). Most states are parties to the NPT, with the important exceptions of Cuba, India, Israel, and Pakistan. Moreover, on 10 January 2003 North Korea announced its withdrawal from the NPT.<sup>94</sup> A guiding principle in the non-proliferation regime is that “the spread of nuclear weapons into many hands would further jeopardize prospects for international peace and security.”<sup>95</sup> Consequently, the non-nuclear weapon states (NNWS) should not attempt to obtain such weapons and the nuclear weapon states (NWS) should not assist them in acquiring such weapons. Undermining the regime could cause horizontal proliferation (more states acquiring nuclear weapons), or vertical proliferation (increased nuclear arsenals in the states that already have nuclear weapons).

As mentioned earlier, the NATO Allies (especially the United States) have declared that they intend to deploy missile defenses to protect themselves from limited attacks, which means that they intend to deploy a limited number of interceptors. The question is whether a certain number of deployed NATO interceptors might generate Russian or Chinese fears, leading Moscow or Beijing either to increase their nuclear arsenals or to assist non-nuclear weapon states to acquire nuclear weapons. Negative reactions of this kind could undermine the non-proliferation regime and might in some circumstances generate first strike incentives. According to Julian Schofield, “Although ballistic missile defense (BMD) may address the immediate security concerns of America and its allies it is provocative to other major powers, and it undermines efforts to promote

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<sup>93</sup> Henry Kissinger, “The New World Order,” Chester A. Crocker et al., ed., in *Managing Global Chaos*, (Washington D.C. United States Institute of Peace Press, 1996), p. 177.

<sup>94</sup> Jane Macartney and Steve Holland, “N. Korea Leaves Treaty, Triggers Alarm Around World,” *Reuters*, 10 January 2003.

<sup>95</sup> Roger K. Smith, “Explaining the Non-Proliferation Régime: Anomalies for Contemporary International Relations Theory,” *International Organization* 41,2 (Massachusetts: MIT, 1987) p. 257.

nonproliferation and arms race stability.”<sup>96</sup> Moreover, as James Moltz has pointed out, “Each of the major arms control and nonproliferation regimes has withdrawal clauses that allow countries to leave these regimes if their ‘supreme national interests’ are threatened.”<sup>97</sup>

Russia today depends more than ever on its nuclear capabilities. According to the U.S. Intelligence Community’s assessments in 2000, Russia’s strategic forces in 2015 will include fewer than 2,000 deployed nuclear weapons.<sup>98</sup> However, the May 2002 Treaty of Moscow provides another indication of the probable future size of the operationally deployed Russian strategic nuclear arsenal. As mentioned earlier, the treaty permits both parties to retain 1,700 to 2,200 operationally deployed strategic nuclear warheads and to stockpile additional nuclear warheads without restrictions. Some observers consider the lack of restrictions on non-deployed weapons a serious shortcoming since it could make it more difficult for the United States to track Russian stockpiles of nuclear materials, increasing the risk of diversion for illegal use.

Although the future approximate size of Russia’s operationally deployed strategic nuclear arsenal is known, it is difficult to assess how many NATO interceptors might generate negative Russian reactions given the uncertainty of the probable kill ratio of NATO missile defense interceptors to Russian missiles and reentry vehicles. An assessment in 2001 offered the following judgment:

If one grants each interceptor an 80 percent chance of destroying the target -- an optimistic value given the MD [missile defense] test program results so far -- then four shots per inbound missile would be necessary to ensure a kill probability approaching 100 percent. This four to one formulation does not take into account many complicating variables -- countermeasures, for example -- that would affect the basic assumption of 80 percent interceptor hit probability. Despite the risk of oversimplification, however, this four to one formulation should suffice in

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<sup>96</sup> Julian Schofield, “The Future of Arms Control,” James Wirtz and Jeffrey Larsen, eds., *Rockets, Red Glare*, (Boulder, Colorado: Westview Press, 2001), p. 159.

<sup>97</sup> James Clay Moltz, “The Impact of National Missile Defense on Nonproliferation Regimes,” *The Non Proliferation Review*/Fall-Winter 2000, p. 62.

<sup>98</sup> Central Intelligence Agency, “Foreign Missile Developments and the Ballistic Missile Threat through 2015”, *National Intelligence Estimate (NIE)*, 2000, [<http://www.cia.gov/nic/pubs/otherproducts/Unclassifiedballisticmissilefinal.htm>], November 2002.



demonstrating the likely worst-case effectiveness (from a Russian perspective) of U.S. MD against Russian missiles.<sup>99</sup>

Using this estimate to perform calculations for hypothetical scenarios, NATO would need approximately 8,000 highly effective and reliable interceptors on ground- and sea-based platforms to counter a Russian attack involving 2,000 warheads, not including the countermeasures and decoys. This number of interceptors required might diminish if NATO used advanced technologies such as the airborne laser for boost-phase intercepts or space-based weapons. Owing to current operational and technical deficiencies however, NATO would probably need in any case an array of thousands of ground- and sea-based interceptors integrated with air- and space-based weapons to secure its members from a theoretical Russian first strike or from a Russian retaliatory strike. (Some Russians consider the latter case relevant because they hypothesize that the United States might attempt to conduct a disarming first strike against Russia.)

If the Russians judged that over 20 to 30 years United States technology might enable NATO to neutralize Russian offensive nuclear capabilities, they might feel compelled to increase their nuclear arsenal or to assist regional powers by providing them nuclear and ballistic missile technology. Some NATO governments already regard Russia's nuclear policy towards Iran and its missile policy towards North Korea with suspicion. As long as NATO governments do not deploy missile defense interceptors to such an extent however, they probably will not provoke such Russian reactions vis-à-vis the non-proliferation regime.

China's security perceptions may be affected to a greater degree than Russia's by NATO's missile defenses. To evaluate China's posture one must consider two parameters. First, China regulates its posture as a function of the US–Russian relationship in which the European states also have a substantial stake and over which they have some influence. Second, the United States has a substantial stake in the North East Asian region, and again the European states have an indirect stake via their own relationships with the United States and East Asian states.

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<sup>99</sup> Michael Wayne Baze, "Assessing Russian Reactions to US Missile Defense," Thesis B2499 Monterey, California, Naval Postgraduate School, 2001, p. 35.

The Chinese nuclear arsenal is significantly smaller than the American and Russian arsenals. Although the prospective NATO missile defenses are expected to be limited in scope, they might eventually be able to degrade the credibility of the Chinese nuclear deterrence posture, leading Chinese observers to fear that China could become vulnerable to nuclear attack. The Chinese might fear that missile defenses could give NATO countries, especially the United States, freedom of action and a false sense of security that might encourage them to mount pre-emptive attacks against China. In addition, if NATO missile defenses were constructed with Russian cooperation, the missile defense architecture might protect all the NPT-recognized nuclear weapon states except China. As Robert Manning and his colleagues put it, “the question for the architects of such a shield would be whether they wish to regard China as a state whose missile capabilities should be respected and preserved (as with Russia) or nullified as much as possible (as with Iraq).<sup>100</sup>

According to several Chinese scholars, a clear consensus exists in China that U.S. missile defenses definitely will influence the size of the Chinese nuclear arsenal.<sup>101</sup> In the short term China will probably assess the development of U.S. and NATO missile defenses and evaluate global proliferation trends before modifying current plans. The Chinese also may see significant parallels between China’s current situation and the Soviet overreaction to President Ronald Reagan’s Strategic Defense Initiative program, which may have contributed to the downfall of the Soviet Union.

In the long term, China might react to NATO-Russian cooperation in missile defense in three ways. First, it might be tempted to react in a hostile manner by transferring missile and nuclear technology to proliferant states. It is already known that China has supplied the Pakistani missile program, and there are allegations that Beijing

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<sup>100</sup> Robert A. Manning, Ronald Montaperto and Brad Roberts, “China, Nuclear Weapons and Arms Control: A Preliminary Assessment,” *Council on Foreign Relations Report*, (2000), p. 20 quoted in Ian Kenyon et al., *Prospects for a European Ballistic Missile Defense System* (Southampton, England: Mountbatten Center for International Studies, 2001), p. 27.

<sup>101</sup> Joanne Tompkins, “How U.S. Strategic Policy is Changing China’s Nuclear Plans” *Arms Control Today*, January/February 2003, [<http://www.armscontrol.org/act/2003-01-02/tompkins-janfebo3.asp>], April 2003.

has provided aid to Iran.<sup>102</sup> Second, as Joanne Tompkins points out, several Chinese officials reportedly support the development of a robust nuclear arsenal with as many as 1,000 ICBMs and a change in China's declared no-first use nuclear policy;<sup>103</sup> however, the prospects for pursuing this option are restricted owing to the country's technological and economic constraints. Third, China might attempt to increase the total number of warheads deployed only to a level sufficient to penetrate the missile defenses. This response might include improvements in range, payload, accuracy, survivability, and countermeasures against missile defenses including MIRVs. Moreover, the Chinese might seek capabilities to destroy space- and land-based command and control systems. However, China is a signatory party to the Comprehensive Test Ban Treaty (CTBT). As Bob Bell pointed out in 1999:

Without nuclear testing. ...China is going to be greatly constrained in any effort to put multiple warheads on its existing strategic force. This challenge for China of MIRV-ing its strategic force, which could have major impact on the strategic balance, is going to be benefited if they can conduct nuclear tests.<sup>104</sup>

In all three possibilities discussed above it seems likely that NATO missile defenses of significant magnitude would affect China's security perceptions, and thus they could in some circumstances generate negative reactions that might undermine the non-proliferation regime.

Another consideration is the likely reaction of the many small and medium countries that are members of the NPT. If countries on the periphery of Europe felt threatened by future NATO missile defenses, they might feel compelled either to withdraw from the NPT or to develop clandestine nuclear programs. The main question

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<sup>102</sup> Martin S. Navias, *Going Ballistic. The Build-up of Missiles in the Middle East* (London and New York: Brassey's, 1993), pp. 75-82, 101-122 and "Proliferation in the Middle East and the North Asian Connection," *Arms Control* (London: vol. 14, December 1993), pp. 287-310.

<sup>103</sup> Joanne Tompkins, "How U.S. Strategic Policy is Changing China's Nuclear Plans", *Arms Control Today*, January/February 2003, available at [<http://www.armscontrol.org/act/2003-01-02/tompkins-janfeb03.asp>], April 2003.

<sup>104</sup> Bob Bell, Press Briefing, The White House, Washington, D.C., 05 October 1999. At the time of this briefing, Bell was the Director for Defense and Arms Control Policy on the US National Security Council staff.

is, to what degree are NATO missile defenses likely to generate negative reactions from states on the periphery of Europe? Why should proliferant states in the Middle East and North Africa feel threatened by NATO missile defenses?

Some states might argue that NATO is attempting to create a shield over Europe to facilitate future interventions in their region. In addition, the United States National Security Strategy published in 2002 emphasizes the doctrine of preemptive strikes.

As was demonstrated by the losses on September 11, 2001, mass civilian casualties is the specific objective of terrorists and these losses would be exponentially more severe if terrorists acquired and used weapons of mass destruction.....To forestall or prevent such hostile acts by our adversaries, the United States will, if necessary, act preemptively.<sup>105</sup>

The March-April 2003 U.S.-led military intervention in Iraq may lend credibility to fears of future interventions. However, states on the periphery of Europe will react in various ways, owing to divergences among the governments and cultures, and their differing ties with European nations and the United States. The majority of the states are expected to maintain good relations with the West, whereas a few proliferant states may accelerate their clandestine programs to produce weapons of mass production and delivery means.

The proliferant states will probably pursue one or more of the following actions: complying with the international non-proliferation norms and disarming; forming alliances with other regional or major nuclear-power states opposing NATO and especially the United States; developing countermeasures technology and other delivery means; accelerating their clandestine programs for weapons of mass destruction, especially nuclear and biological weapons, as these may have the greatest deterrent potential. If even few of them succeeded in a short period of time in acquiring nuclear weapons or in developing clandestinely indigenous nuclear capabilities, the non-proliferation regime could be seriously damaged. Overall, NATO missile defense deployments will take place neither in a vacuum nor in a static environment, but instead

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<sup>105</sup> National Security Strategy of the United States of America, (Washington D.C.: White House, 2002), p. 15.

in a dynamic international context. NATO inaction in meeting missile defense requirements however, would not provide any guarantee of restraint on the part of WMD proliferants.

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## IV. CONCLUSION

Prior to 2002 many European NATO governments publicly expressed concern about the United States decision to deploy strategic missile defenses; they questioned the necessity and technical feasibility of such defenses, and noted that they might undermine international stability. Despite their past reservations the Europeans made a significant shift in policy in 2002. The May 2002 Treaty of Moscow and Russia's mild reaction to the U.S. withdrawal from the ABM Treaty played important roles in this regard. European NATO governments took significant steps towards further cooperation with the United States in missile defense systems. Indeed, the declaration at the Prague Summit in November 2002 became a milestone for the future development of NATO's TMD and full spectrum missile defense projects. While the major hurdles to achieve initial consensus in the Alliance have been overcome, the allies still face demanding political and operational challenges. It remains important, for example, to ensure that NATO's missile defenses do not undermine international stability. The thesis identified four main categories of challenges in the pursuit of full spectrum missile defense in NATO: political, military, economic, and technological.

The major political challenges examined include (a) the Europeans' questioning of the gravity of ballistic missile threats and consequently their will to develop active defenses, (b) the Europeans' political will to maintain NATO's solidarity in the long term despite disagreements over potential U.S.-led interventions, (c) the prospect of NATO cooperation with Russia in missile defenses, and (d) the likely reactions by China and other states of concern to NATO's missile defenses. The European Allies currently acknowledge the seriousness of ballistic missile threats, and they have already taken the decision to examine options to address these threats. "There is currently an Alliance consensus on the need to deploy theatre missile defenses to protect our deployed forces."<sup>106</sup> In addition, two TMD feasibility studies have been completed and a full spectrum missile defense study was initiated at the Prague Summit.

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<sup>106</sup> NATO, Press Release, Defense Ministers' *Statement on Capabilities*, (2002) 074, 6 June 2002.

The political will to maintain NATO's solidarity in the long term may be the biggest challenge affecting decisions about missile defenses. Will the European NATO nations continue to rely on United States security commitments? To what extent will some European countries pursue a more autonomous European security policy in the future? European NATO governments have acknowledged that they lack the resources to develop indigenous missile defenses and that they rely heavily on United States technology in this field. Without missile defenses the European NATO nations will be vulnerable to deliberate or accidental missile attacks by rogue states and/or terrorist organizations whereas the United States homeland will be less vulnerable to short-range missile attacks, except for sea- and air-based threats. As Robert Harkavy pointed out in a hypothetical scenario designed to illustrate his triangular deterrence/compellence theory, "A nuclear-armed Algeria threatened by the United States or France might in turn threaten Spain or Italy, or even Morocco or Tunisia."<sup>107</sup> In view of the gravity of such contingencies, this thesis concludes that the European NATO governments will probably decide not to endanger NATO's solidarity in the long term, owing in part to resource limitations. Cooperation with the United States in building a missile defense architecture for the Alliance may be expected to enhance transatlantic political-military relations, as with United States and NATO nuclear strategy during the Cold War. In this context, the European nations must recognize that the ESDP process must be pursued as it was originally envisaged: in cooperation with NATO.

Regarding the necessity for NATO to cooperate with Russia in missile defenses, this thesis concludes that the continuation of such cooperation is essential in order to promote international stability. NATO-Russia cooperation is already underway within the TMD Ad Hoc Working Group (AHWG) established on 11 June 2002 at the Ambassadorial level, and it must be augmented. As Robert Bell, the Alliance's Assistant Secretary General for Defense Investment, has pointed out,

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<sup>107</sup> Robert Harkavy, "Triangular or Indirect Deterrence/Compellence: Something New in Deterrence Theory?," *Comparative Strategy*, vol. 17, 1998, p. 75.



The main goal of TMD cooperation in the NRC [NATO-Russia Council] framework is to analyze and evaluate possible levels of interoperability among respective NATO and Russian TMD systems, and to explore opportunities for intensified practical co-operation, including joint training and exercises.<sup>108</sup>

In the same context, the Alliance's decisions concerning missile defenses must be balanced and judicious in order not to provoke China and endanger the non-proliferation regime. China might feel encircled and endangered by NATO's cooperation with Russia in missile defenses in conjunction with potential American missile defenses in the Pacific. NATO full-spectrum missile defenses might inadvertently become a factor of destabilization if they are not accompanied with consultations, threat reduction programs, and perhaps new missile defense agreements among the nuclear weapons states.

The military challenges for a NATO missile defense architecture will probably include (a) identifying the appropriate model for cooperation, (b) managing the risks of provoking weaponization of space, and (c) reaching an Alliance consensus regarding the use of counterforce to destroy enemy ballistic missiles pre-emptively. The examination of the military challenges concluded that the deployment of theatre missile defenses might be a practical step-by-step approach in the process of developing missile defenses for the Alliance. The decision to establish a joint battle management cell and the proposal to procure commonly funded sensors and interceptors could be vital and realistic steps providing valuable feedback for the development of NATO full-spectrum missile defenses.

The precise architecture of a future NATO missile defense system remains to be defined, pending the development of a certified and operationally tested system that can efficiently protect the Alliance. The many current research programs include ground-based interceptors against SRBMs and air-based and even hypothetical space-based interceptors against longer range missiles. Decisions concerning the most effective systems must take the following principles into account.

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<sup>108</sup> Robert Bell, "Ballistic Missile Threats: A NATO-Russia Strategic Challenge," *Krasnaya Zvezda*, 27 February 2003. The English version of this article was provided by Mr. Bell's office.

First, the missile defense architecture must be layered, depending on geographic and operational factors, in order to provide more opportunities to intercept missiles. This requirement could facilitate NATO member states' decisions to contribute to (and participate in) various programs according to their security needs and economic capabilities. For example, the southern and southeastern European states could concentrate on ground- and/or sea-based TMD assets to intercept SRBMs, while northern and central European countries could participate in upper-tier programs.

Second, the interceptors must be designed to use non-nuclear (hit-to-kill) technologies since the opposite option would probably cause tensions among the Allies and might incite further proliferation by other states. As T. V. Paul has pointed out, "States, especially in zones of low and moderate conflict, choose to forgo nuclear weapons to avoid generating negative security externalities and costly arms races, which may trap them in a condition of security dilemma."<sup>109</sup> Industrial cooperation in non-nuclear technology between the European NATO Allies and the United States could provide many benefits and would probably diminish remaining disagreements over the missile defense architecture.

Third, a full spectrum NATO missile defense needs to have one joint agency to command and control the system. A plausible solution concerning the appropriate model of cooperation in the Alliance might be found somewhere between the "division of labor" and the "AWACS" models. However, the distribution of roles in decision-making will probably be a major challenge for the Allies, notably regarding the application of counterforce preemptively. While rapid decisions may be imperative, timely information may be scarce. Destroying enemy missiles before they are launched might generate intense discussions within the Alliance, as the controversies associated with the U.S.-British intervention in Iraq in March-April 2003 suggest. Additionally, any decisions without previous discussions within the Alliance might generate negative reactions from some Allies. Nevertheless, the establishment of procedures to monitor threats as they gradually become more imminent and the use of rules of engagement may facilitate rapid decisions for preemptive counterforce operations and solve this dilemma.

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<sup>109</sup> T. V. Paul, *Power Versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill-Queen's University Press, 2000), p. 33.

This thesis concludes also that it is preferable for NATO countries to exercise restraint concerning the deployment of space-based interceptors in view of the risks of an arms race in space and the subsequent “weaponization of space,” although these systems could hypothetically provide more effective and timely interceptions during the boost phase of missile trajectories. The decision to exercise restraint regarding space-based interceptors may not slow the pace of ballistic missile proliferation. However, it might promote international stability by avoiding unnecessary tensions between the Alliance and non-NATO nuclear states, especially Russia and China. After all, NATO’s declared policy to develop missile defenses is oriented against limited ballistic missile threats by rogue states or terrorist organizations; it is not designed to confront the nuclear arsenals of Russia and China.

The economic challenges that might restrain the development of NATO missile defenses include the limited national defense budgets in Europe and the probable social pressures in Europe to restrict investment in the military. This thesis, however, concludes that the limited budgets may not be an insuperable hurdle since the European Allies have made commitments to enhance their military capabilities to carry out the full range of Alliance missions by increasing role reprioritization, cooperative acquisition of equipment, and multinational funding.

Similarly, the examination of the technological challenges indicated that the development of the technology could provide many alternative solutions. Additionally, technology and know-how sharing among the allies and Russia is feasible within certain constraints affecting security and intellectual property.

In sum, the thesis identified several of the future challenges that NATO has to overcome to satisfy the requirements for the development of full spectrum missile defenses. NATO missile defenses should maintain both the Alliance’s indivisible security and international stability. If the future missile defense architecture serves only one requirement while endangering the other, missile defense may cause more tensions in the Alliance. However, the Allies have already proven that they possess the experience, the political will, and the organizational structure necessary to overcome severe challenges.

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