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**JOINT FORCES STAFF COLLEGE  
JOINT ADVANCED WARFIGHTING SCHOOL**

**DINOSAUR OR PHOENIX: NUCLEAR BOMBERS IN THE 21<sup>ST</sup> CENTURY**

by

**John W. Morehead**

*Colonel, United States Air Force*



A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

Signature: \_\_\_\_\_

**12 April 2010**

**Thesis Adviser: Lt Gen (ret) Charles Cunningham**

## ABSTRACT

On April 9, 2009, President Barack Obama announced his desire to seek a world without nuclear weapons. He committed the United States to negotiate a new Strategic Arms Reduction Treaty with Russia as an incremental step towards reaching this desired objective. He and Russian President Dmitry Medvedev agreed to limit both nuclear delivery vehicles and nuclear warheads in July 2009. The agreed to limits are a maximum of 1,100 delivery vehicles and a maximum of 1,675 warheads. This paper recommends the United States maintain a nuclear bomber capability as part of a triad nuclear deterrent force. This force should include 300 ICBMs, 11 ballistic missile submarines and a bomber force of 24 combat coded B-52s and 16 combat coded B-2s. If current START counting rules are applied to Kosiak's recommendation, then this bomber force accounts for 256 warheads leaving 1,399 warheads to be distributed between the 300 ICBMs and 264 SLBMs and still remain under the agreed to follow-on START limits. This option gives the United States a total combat coded bomber fleet of 91 aircraft when coupled with the current 51 combat ready B-1s. This total is less than the 2010 QDR recommended 96 total bombers. The bomber nuclear and conventional capability gives the Secretary of Defense a weapons system capable in counter-insurgency, traditional state-on-state, and nuclear conflicts.

## CONTENTS

<b>INTRODUCTION</b> .....	1
<b>TRIAD, DYAD OR MONAD?</b> .....	7
<b>DARK CLOUDS</b> .....	53
<b>CONCLUSION</b> .....	69
<b>APPENDIX I: A WORLD WITHOUT NUCLEAR WEAPONS</b> .....	71
<b>BIBLIOGRAPHY</b> .....	93

## FIGURES

1. The New Triad.....	9
2. Triad .....	40
3. Traditional Deterrence.....	44
4. Rogue State Deterrence .....	45
5. 2006 QDR Challenges.....	86

## TABLES

6.	Status of World Nuclear Forces 2009 .....	24
7.	Capabilities Matrix .....	27
8.	1,700 Warhead Options .....	41
9.	1,000 Warhead Options .....	42
10.	Force Structure Options.....	49

## INTRODUCTION

On April 5, 2009, President Barack Obama set U.S. policy and his desired nuclear weapons end-state to an international audience at Hradcany Square in Prague, Czech Republic when he announced “America’s commitment to seek the peace and security of a world without nuclear weapons.”<sup>1</sup> One of his key ways of achieving this end is the negotiation of “a new Strategic Arms Reduction Treaty (START) with the Russians” as part of his strategy to achieve this objective.<sup>2</sup> Nuclear weapons reductions imposed by a new START will influence American nuclear force structure.

START is a bilateral agreement limiting the number of strategic nuclear weapons and delivery vehicles. It limits sea-launched ballistic missile (SLBM) and intercontinental ballistic missile (ICBM) warheads, cruise missiles and bombs, as well as the submarines, missiles and bombers that deliver them. These capabilities combined with non-nuclear capabilities in the 2002 Nuclear Posture Review to form the offensive strike systems corner of the “new triad.” The three corners of this new triad are offensive strike, defense, and nuclear infrastructure bound together by command and control and intelligence systems.<sup>3</sup>

Secretary of Defense Robert Gates announced his proposed Fiscal Year (FY) 2010 Defense Budget the following day on April 6, 2009. His announcement touched

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<sup>1</sup> Barack Obama, Anonymous Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009, April 5, 2009, [http://www.whitehouse.gov/the\\_press\\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered](http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered) .

<sup>2</sup> Ibid.

<sup>3</sup> *Nuclear Posture Review [Excerpts]* (: U.S. Department of Defense, 2001), <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm> (accessed October 7, 2009).

systems and infrastructure in all three corners of the triad. Secretary Gates began implementation of the President's strategy by reviewing all nuclear related programs during the 2010 Quadrennial Defense Review (QDR), the Nuclear Posture Review (NPR) and in light of the START follow-on negotiations.<sup>4</sup> There were two decisions made during this announcement that directly affect the offensive strike systems corner of the triad. They were the decision to pursue development of a replacement for the Ohio class ballistic missile submarine, but not the development of a follow-on bomber.

The 2010 Quadrennial Defense Review Report and FY 2011 Defense Budget submission continue these major themes. During a February 1, 2010 news briefing on the 2010 QDR, Undersecretary of Defense (Policy) Michèle A. Flournoy linked the vision espoused by President Obama and Secretary Gates in April 2009 to the 2010 QDR. She stated, "If this QDR were to have a bumper sticker, it would be 'Rebalance and Reform'."<sup>5</sup>

The FY 2011 budget request includes "\$4 billion over five years to maintain the U.S. bomber industrial base, study plans for a possible new bomber, and upgrade existing B-2 and B-52 bombers."<sup>6</sup> However, this increase in funding does not indicate a commitment to fielding a nuclear capable next generation bomber. Loren Thompson

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<sup>4</sup> Robert M. Gates, Anonymous Defense Budget Recommendation Statement (Arlington, VA), Washington, DC, April 6, 2009, <http://www.defenselink.mil.ezproxy6.ndu.edu/speeches/speech.aspx?speechid=1341> .

<sup>5</sup> Michèle A. Flournoy and Vice Admiral Steve Stanley, Anonymous Defense Department News Briefing on the Quadrennial Defense Review and Ballistic Missile Defense Review, Arlington, VA, February 1, 2010, <http://ezproxy6.ndu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=mth&AN=32V2537699573&site=ehost-live> (accessed March 2, 2010).

<sup>6</sup> Laicie Olson, *Fiscal Year 2011 Defense Spending Request: Briefing Book* (Washington, D.C.: The Center for Arms Control and Non-Proliferation, 2010), 12.



from the Lexington Institute estimates the cost to develop and build a new bomber at \$30 – 40 billion.<sup>7</sup> Thus, the \$4 billion over the next five years will do little in that regard.

This additional funding seems more appropriately linked to the 2010 QDR's stated desire to "expand future long-range strike capabilities."<sup>8</sup> The desire to enhance long-range strike capabilities in the 2010 QDR is linked to conventional missions since the report leaves discussion of nuclear forces for the 2010 Nuclear Posture Review.<sup>9</sup>

In his prepared statement for the Senate Armed Services Committee on February 2, 2010, Secretary Gates stated that the FY 2011 budget would sustain funding for "a nuclear triad of ICBMs, SLBMs, and heavy bombers under the New START Treaty."<sup>10</sup> However, he did not specifically highlight the \$4 billion bomber study and modernization program in his statement as he did with a variety of other programs. Thus, it appears that the future of the nuclear bomber remains somewhat uncertain in the long-term as the U.S. pursues nuclear disarmament objectives.

One can argue Secretary Gates' decision to halt development of a follow-on bomber indicates the DOD views nuclear bombers as dinosaurs no longer needed as part of the deterrent force. If this were true, is it valid? What is the best mix of capabilities required in a future nuclear deterrent force?

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<sup>7</sup> Ibid.

<sup>8</sup> *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2010), 32-33.

<sup>9</sup> Ibid. xvi.

<sup>10</sup> Robert M. Gates, Senate Armed Services Committee. Submitted Statement on the Budget to the Senate Armed Services Committee, Arlington, VA, February 2, 2010, <http://www.defense.gov/speeches/speech.aspx?speechid=1418> (accessed March 2, 2010).

This research looks at the capabilities provided by each of the nuclear capable components within the offensive strike corner of the triad in a systematic framework. This framework will connect specific options available for relative balance between the three nuclear components of the offensive strike corner of the triad (means), through the START follow-on (way), to the goal of a world without nuclear weapons (ends). In connecting the means to the ends, this study will look at risks associated with the strategy in the context of the complex mix of state and non-state actors who are stakeholders within the strategic environment and U.S. domestic pressures inducing resource constraints.<sup>11</sup>

The United States must maintain a nuclear bomber capability. This capability should be part of a balanced nuclear deterrent force along with ICBMs and SLBMs due to the unique capabilities that each provides to deter and counter threats posed by a variety of state and non-state actors within the future strategy environment.

### **Methodology**

The primary methodology used in this paper is an analysis of related literature. The literature used in this research comes from a variety of sources including speech transcripts from President Obama and Secretary of Defense Gates, studies, congressional testimony and journal articles. Sufficient information is available at the unclassified level to make review and consideration of classified sources unnecessary. One can use these sources to ascertain U.S. nuclear policy, prevalent views of the future security environment and alternative views on nuclear weapons reduction.

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<sup>11</sup> Henry C. Bartlett, G. Paul Holman Jr., and Timothy E. Somes, "The Art of Strategy and Force Planning," *Strategy and Force Planning, Fourth Edition* (2004), 17.

The study analyzes data presented both objectively and subjectively. Objective analysis is useful in discussing the numbers of warheads and delivery vehicles available by various types and under given conditions. Subjective analysis is required in determining the relative value of delivery platforms and weapons to meet deterrent objectives and support future contingencies.

### **Assumptions and Limitations**

This study looks at available nuclear force capabilities and the likely strategic environment between 2010 and 2030. This timeframe corresponds to the expected life cycle of current bombers, submarines, and missiles.<sup>12</sup> The timeframe is consistent with the period considered in a variety of strategic assessments.<sup>13</sup>

This study makes the following assumptions. First, the U.S. will move forward with President Obama's plan to address nuclear weapons reductions. Second, the procurement portion of the DOD budget will not increase between 2010 and 2030 enabling the department to recapitalize the existing conventional and nuclear arsenal capabilities at a faster rate than planned. This binds the analysis to a fiscally constrained vice an unconstrained environment. Finally, this study will not address whether a follow-on bomber should be manned or unmanned. This is a subject left for future study.

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<sup>12</sup> Ronald O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress* (Washington D.C.: Congressional Research Service, 2009), 4; Amy F. Woolf, *U.S. Nuclear Weapons: Changes in Policy and Force Structure* (Washington, DC: Congressional Research Service, 2008), 25 - 34.

<sup>13</sup> *The Joint Operating Environment (JOE) 2008*: United States Joint Forces Command, 2008), 3; *The DCDC Global Strategic Trends Programme 2007 – 2036, 3rd Edition* (United Kingdom: Development, Concepts and Doctrine Centre, 2007), iv, <http://www.dcdc-strategictrends.org.uk> (accessed October 25, 2009); *Global Trends 2025: A Transformed World* (Washington DC: U.S. Government Printing Office, 2008), 1, [www.dni.gov/nic/NIC\\_2025\\_project.html](http://www.dni.gov/nic/NIC_2025_project.html) (accessed October 10, 2009).

The research for this paper was completed on April 2, 2010. President Obama and Russian President Dmitri Medvedev signed the START follow-on in Prague on April 8, 2010. This treaty limits the number of deployed strategic warheads to 1,550, launchers to 700 and renews strategic arms inspections that ended in December 2009.<sup>14</sup> The Nuclear Posture Review Report (NPR) was released on April 11, 2010 and validated some of the points contained in the paper. Specifically, the NPR recommends maintaining a nuclear capable bomber force. A key reason articulated in the report for maintaining this capability is the bombers ability to provide a visible forward deployed deterrent capability.<sup>15</sup>

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<sup>14</sup> Peter Baker and Dan Bilefsky, "Russia and U.S. Sign Nuclear Arms Reduction Pact," *New York Times*, April 8, 2010, 2010, <http://www.nytimes.com/2010/04/09/world/europe/09prexy.html> (accessed May 10, 2010).

<sup>15</sup> *Nuclear Posture Review Report* (Washington D.C.: U.S. Department of Defense, 2010), 1, <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf> (accessed May 11, 2010), 24.

## CHAPTER 1

### TRIAD, DYAD or MONAD?

The Fiscal Year (FY) 2010 Defense Authorization Act and FY 2011 Budget requests do not fund the development and procurement of a new bomber. If one believes manned nuclear bombers are dinosaurs, then this may indicate that the Department of Defense (DOD) plans to pursue a dyad or a monad nuclear deterrent force in the follow-on Strategic Arms Reduction Treaty (START).<sup>1</sup>

As stated earlier, Secretary Gates stated in his FY 2011 Defense Budget statement that the DOD was requesting funding for a triad of bombers, ICBMs and SLBMs.<sup>2</sup> The requested budget only allocated \$199 million toward a next generation bomber.<sup>3</sup> The majority of the \$4 billion allocated towards long-range bomber programs was not dedicated toward recapitalizing the fleet.<sup>4</sup> Thus, despite a minor change in funding between FY 2010 and FY 2011 the question of the long-term viability of the nuclear bomber in the deterrent force remains a valid question.

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<sup>1</sup> *National Defense Authorization Act for Fiscal Year 2010*, Vol. H.R. 2647, 2009), 231-1251, [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111\\_cong\\_bills&docid=f:h2647enr.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2647enr.txt.pdf) (accessed 1 February 2010).

<sup>2</sup> Robert M. Gates, Senate Armed Services Committee. Submitted Statement on the Budget to the Senate Armed Services Committee, Arlington, VA, February 2, 2010, <http://www.defense.gov/speeches/speech.aspx?speechid=1418> (accessed March 2, 2010).

<sup>3</sup> Office of the Under Secretary of Defense (Comptroller) - CFO, "United States Department of Defense Fiscal Year 2011 Budget Request," Department of Defense, <http://comptroller.defense.gov/Budget.html> (accessed 03/01, 2010).

<sup>4</sup> Laicie Olson, *Fiscal Year 2011 Defense Spending Request: Briefing Book* (Washington, D.C.: The Center for Arms Control and Non-Proliferation, 2010), 12.

This chapter proposes an answer to the question what is the best mix of capabilities needed for nuclear deterrence in the future? First, the new triad is defined. Second, deterrence is defined to determine the focus of United States nuclear deterrence. Finally, the relative capabilities of the components of the offensive strike portion of the strategic triad are analyzed to determine required capabilities for a credible deterrent force in the future.

### **The Triad<sup>5</sup>**

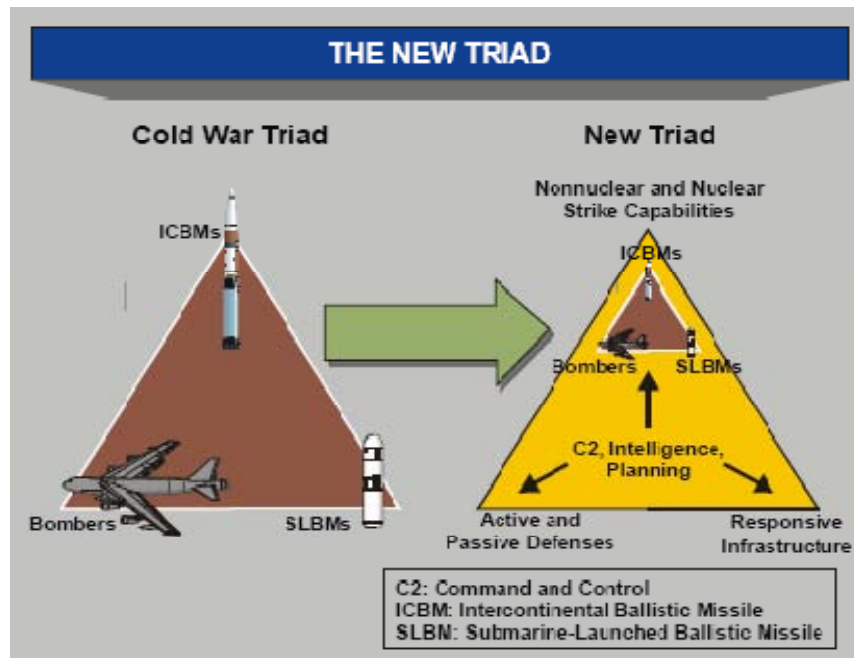
The “New Triad” was first described in the 2002 Nuclear Posture Review (NPR). The three corners of the new triad include offensive strike systems, defenses and nuclear infrastructure. The three corners are bound together by command and control (C2) and intelligence systems. The NPR states this combination of capabilities reduces dependence on nuclear weapons alone and improves deterrent capability in a world where weapons of mass destruction (WMD) are proliferating. The NPR and the new triad emphasize shift away from building a nuclear arsenal to simply deter Russia as a smaller version of the Soviet Union. It highlighted the threat posed by terrorist groups or rogue states with WMD.<sup>6</sup> “The new triad has four missions: (1) deter WMD threats, (2) assure allies of our continuing commitment to their security, (3) dissuade potential adversaries

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<sup>5</sup> The Nuclear Posture Review Report, April 2010 refers to the Nuclear Triad using the legacy Cold War descriptions. *Nuclear Posture Review Report* (Washington D.C.: U.S. Department of Defense, 2010), 1, <http://www.defense.gov/npr/docs/2010%20Nuclear%20Posture%20Review%20Report.pdf> (accessed May 11, 2010), 21 - 25.

<sup>6</sup> *Nuclear Posture Review [Excerpts]* (: U.S. Department of Defense, 2001), <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm> (accessed October 7, 2009).

from embarking on programs or activities that could threaten our vital interests, and (4) defeat threats that are not deterred.”<sup>7</sup>



**Figure 1 The New Triad<sup>8</sup>**

The strategic nuclear weapons limited under START comprised the old triad. Under the new triad, intercontinental ballistic missiles (ICBM), sea-launched ballistic missiles (SLBM) and bombers became only a portion of the capabilities available within the offensive strike systems corner of the triad. The new triad’s offensive strike systems contain both nuclear and conventional strike capabilities.<sup>9</sup> For example, a U.S. Navy ship with conventional Tomahawk Land Attack Missiles could potentially act in a role

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<sup>7</sup> James R. Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase II: Review of the DoD Nuclear Mission* (Washington D.C.: U.S. Department of Defense, 2008), 7-8.

<sup>8</sup> *Nuclear Operations, Air Force Doctrine Document 2-12* (Washington D.C.: Department of the Air Force, 2009), 6.

<sup>9</sup> *Nuclear Posture Review [Excerpts]*.

supporting the offensive strike systems corner of the triad. Offensive information operations capability, including electronic warfare and computer network attack, is included as offensive strike capability.<sup>10</sup>

The addition of terrorist and rogue state threats into the nuclear equation was a major reason behind the addition of defenses as a corner of the new triad. It is believed that a robust combination of active and passive defenses can deny or reduce "...the effectiveness of limited attacks...discourage attacks...and provide insurance against the failure of traditional deterrence."<sup>11</sup> Defense goes well beyond anti-ballistic missiles systems. It includes defensive information operations to protect critical information systems. Other passive means include "...concealment, hardening, redundancy, warning, dispersal, and mobility."<sup>12</sup>

A revitalized defense infrastructure forms the third corner of the new triad. The 2002 NPR did not paint a rosy picture of U.S. infrastructure. The addition of the infrastructure corner to the triad recognizes the vital importance of the defense nuclear industrial base. The NPR described the nuclear defense infrastructure as a capability that had atrophied and needed to be repaired.<sup>13</sup>

The binding together of the three corners of the triad by C2 and intelligence systems is an effort to make the triad more agile and capable. The better the intelligence

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<sup>10</sup> Kurt Guthe, *The Nuclear Posture Review: How is the "New Triad" New?* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2002), 37; *Nuclear Posture Review [Excerpts]*.

<sup>11</sup> Ibid.

<sup>12</sup> Guthe, *The Nuclear Posture Review: How is the "New Triad" New?*, 3.

<sup>13</sup> *Nuclear Posture Review [Excerpts]*.



decision makers have on the intentions and capabilities of adversaries, the more rapidly the force can be adjusted and the appropriate capabilities selected for precision engagement of the threat.<sup>14</sup>

When post-NPR writers speak of a monad, a dyad or a triad they are using legacy terminology derived from the old Cold War ICBM, SLBM and bomber triad. Secretary Gates used this term when describing funding of the nuclear deterrent force in the FY 2011 budget request.<sup>15</sup> This is perhaps an indication that the lack of understanding of the new triad reaches beyond DOD into the think tanks and academia. Or, more likely, it may simply be an easy way to describe the various mixes of potential offensive capabilities that are available to the U.S. as nuclear weapons reductions continue.<sup>16</sup>

This paper will use the legacy terms monad, dyad and triad when articulating the various options available to DOD force structure planners. The term “triad” will refer to some mix of capabilities balanced between the ICBM, SLBM and bomber force where all three components are present, as illustrated in the Cold War Triad in Figure 2 above. The term “dyad” will refer to a capabilities balance where some combinations of only two capabilities are present. The term “monad” will refer to an SLBM only option.

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<sup>14</sup> Ibid.

<sup>15</sup> Gates, *Submitted Statement on the Budget to the Senate Armed Services Committee*.

<sup>16</sup> Dana J. Johnson, Christopher J. Bowie, and Robert P. Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, Vol. Mitchell Paper 5 (Montgomery, AL: Mitchell Institute Press, 2009), 32.; Steven M. Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2006), 77.; Stephen J. Cimbala, "SORT-Ing Out START," *JFQ: Joint Force Quarterly*, no. 55 (Fall2009, 2009), 47.

## Deterrence

### Deterrence Defined

One rarely reads or hears discussion about nuclear capabilities without the nuclear capability being linked to deterrence. In fact, the term deterrence has been used several times within this paper already. What is deterrence? Joint Pub(JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms* defines deterrence as “the prevention from action by **fear** of the consequences...a state of mind brought about by the existence of a **credible threat** of unacceptable counteraction.”<sup>17</sup> (Emphasis added). The key components of this definition are credible threat and fear.

Air Force Doctrine Document 2-12, *Nuclear Operations* dated 7 May 2009 expands on this definition.

Deterrence can be described as a state of mind created in an adversary’s...leadership. Their leadership should believe the cost of aggression against the U.S., its interests, or its allies will be so high as to outweigh any possible gain...The second critical element...is the will to use nuclear weapons. If an enemy believes these tools will not be used, then their deterrent value is zero.<sup>18</sup>

The Phase II Schlesinger Report defines deterrence as “persuading an adversary not to take aggressive action or attack by convincing him that he will be denied success if he proceeds or will suffer punishment exceeding the value of the gains he hopes to achieve.”<sup>19</sup> There is no fear or threat in this definition, as in the expanded AFDD 2-12 discussion. Instead, this definition implies that the adversary or potential adversary goes

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<sup>17</sup> *Nuclear Operations, Air Force Doctrine Document 2-12, 2.*

<sup>18</sup> *Ibid. 2.*

<sup>19</sup> Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase II: Review of the DoD Nuclear Mission, 5.*

through some sort of rationale calculus to determine that the adverse consequences of a WMD attack are greater than the benefit achieved from that attack.

From these definitions, there appear to be two key elements within deterrence. First, one must demonstrate to the adversary a credible capability to respond. This involves more than merely possessing nuclear weapons. Nuclear weapons without a means to deliver them do not present a credible capability. For example, the United States possesses three distinct capabilities to deliver nuclear weapons; ICBMs, SLBMs, and bombers each possess different strengths and weaknesses when employed against a variety of potential adversaries and defenses. This presents a credible capability.

The second key element is convincing a potential adversary of your willingness to use the weapons in conflict. In the Fall of 2009, senior Russian defense leaders went public with Russia's announcement that they would utilize tactical nuclear weapons if necessary in regional conflicts.<sup>20</sup> Incorporating the use of nuclear weapons into war plans and doctrine sends a strong message to potential adversaries about the nation's political and military resolve to use nuclear weapons. Thus, in this example there appears to be a willingness to use nuclear weapons if needed.

### **Who is the U.S. deterring?**

#### **Russia**

The next important question in this section is where are U.S. deterrent efforts under START focused? START is a bilateral agreement between the U.S. and Russia

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<sup>20</sup> Fred Weir, "Would Russian really use Nuclear Weapons Against Neighbors?" *Christian Science Monitor*, November 17, 2009, <http://www.reuters.com/article/idUSL1964372720080119> (accessed January 22, 2010).

and thus there can be no discussion of deterrence and START without looking at Russia. The 2002 NPR de-emphasizes Russia in nuclear force planning by citing that although “...Russia maintains the most formidable nuclear forces...,” there is “...no ideological sources of conflict with Moscow...,” that the U.S. is seeking “...more cooperative relations...” with Russia, and that a nuclear contingency with Russia “...is not expected.”<sup>21</sup> This position is supported by actions and statements by President Obama. First, he does not mention Russia as an area of concern in his Prague speech.<sup>22</sup> Second, his decision to cancel deployment of missile defense systems to Poland and the Czech Republic in favor of a sea-based system focused on rogue states such as Iran.<sup>23</sup> Thus, Russia is not the principle concern for U.S. force planners and is not expected to become so in the near future.

### China

The 2002 NPR lists “a military confrontation over the status of Taiwan” as an area where there are concerns of an “...immediate contingency.”<sup>24</sup> Any time there is a potential conflict between nuclear armed adversaries it is a deterrent concern. The 2006 National Security Strategy (NSS) addresses China in a variety of areas. These areas include cooperation between the U.S. and China regarding eliminating North Korea’s

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<sup>21</sup> *Nuclear Posture Review [Excerpts]*.

<sup>22</sup> Barack Obama, Anonymous Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009, [http://www.whitehouse.gov/the\\_press\\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered](http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered) .

<sup>23</sup> "Poland: Risk Summary," *Emerging Europe Monitor: Central Europe & Baltic States* 16, no. 11 (11, 2009), 2.

<sup>24</sup> *Nuclear Posture Review [Excerpts]*.

nuclear capability, the U.S. desire for China to move towards a free market economy and a call for China to resolve its differences with Taiwan peacefully.<sup>25</sup> The NSS does not highlight China as a principle nuclear adversary.

Joint Forces Command's *Joint Operating Environment (JOE) 2008* states that "China's rise represents the most significant single event on the international horizon."<sup>26</sup> China is embarking on a strategic military modernization program including space, cyber, submarine and nuclear capabilities.<sup>27</sup> The nuclear modernization program includes "...greater numbers of advanced, high-yield strategic missiles with increased range to reach U.S. targets, as well as nuclear anti-ship missiles."<sup>28</sup>

There are numerous areas of tension surrounding China based on its growing economic and military power. First, China is very dependent upon foreign sources of natural resources such as oil. It receives approximately 80 percent of its oil through the Straits of Malacca. These straits constitute the most important transit point on the planet for commerce. China has a vested interest in keeping these straits open to commerce. Second, China has backed up its claim to the Spratley Islands, which are disputed between China and numerous other nations with force. Finally, China claims, as

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<sup>25</sup> George W. Bush, *The National Security Strategy of the United States of America* (Washington, DC: The White House, 2006).

<sup>26</sup> *The Joint Operating Environment (JOE) 2008*: United States Joint Forces Command, 2008), 24.

<sup>27</sup> Ibid; VADM Robert R. Monroe, "A Perfect Storm Over Nuclear Weapons," *Air & Space Power Journal* 23, no. 9 (Fall, 2009), 20.

<sup>28</sup> Ibid.

mentioned above, that Taiwan is a province of the mainland and is not an independent nation.<sup>29</sup>

Conflicts arising over these and other disputed areas will most likely start as a conventional conflict. If other nuclear powers such as the United States become involved, the conflict has the potential to become nuclear. It is unlikely that China would initiate a nuclear exchange in resolving one of these conflicts based on China's stated no-first-use policy and the significant advantage the U.S. has in nuclear capability.<sup>30</sup>

The U.S. currently possesses about 10,300 nuclear warheads to China's approximately 410 based on a high estimate.<sup>31</sup> Thus, for the purposes of this study it will be assumed that a nuclear agreement between the U.S. and Russia that gives the U.S. an advantage in nuclear weapons over China will serve as a sufficient deterrent capability against both Russia and China.

### **Other States**

It is a widely held view within the United States government that states like North Korea, Iran and terrorist networks pose a real nuclear threat to the United States and her allies. It is the nexus of unstable states, nuclear proliferation and terrorist organizations that appear to be the biggest concern to the Obama Administration regarding deterrence.

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<sup>29</sup> *The Joint Operating Environment (JOE) 2008*, 32 – 33.

<sup>30</sup> Zhenqiang Pan, "China Insistence on no-First-use of Nuclear Weapons," *China Security (World Security Institute China Program)*, no. 1 (Autumn 2005, 2005), <http://www.irchina.org/en/news/view.asp?id=403> (accessed January 22, 2010).

<sup>31</sup> Ronald J. Bee, *Seven Minutes to Midnight: Nuclear Weapons After 9/11* (New York: Foreign Policy Association, 2006), 6.

The 2002 NPR called North Korea, Iran, Syria, and Libya areas of concern.<sup>32</sup> The 2006 NSS stated the proliferation of nuclear weapons is the “...greatest threat to our national security.” Iran and North Korea were highlighted in this area.<sup>33</sup> Thus, countering the spread of nuclear weapons is a consistent theme in U.S. policy for over nine years. But, do others share the administration’s view in this area?

The United Kingdom’s Development, Concepts and Doctrine Centre (DCDC) published its Strategic Trends Programme in 2007. This assessment of the global strategic environment looks at a timeframe between 2007 and 2036. It addresses a plethora of possible futures related to numerous military, political, environmental and other areas of concern. Regarding nuclear proliferation and the stability of future nuclear weapons regimes it offers the following assessment.

Exceptional states with nuclear weapons, such as Pakistan, possibly North Korea, and potentially Iran, *will* remain vulnerable to instability until at least 2020 and the collapse of central authority in any of them would increase already significant proliferation risks. In time, other potentially unstable nations and non-state actors, may develop or acquire access to such capabilities, requiring the development of responses to both irrational use and the risk of control failure by nuclear armed states.<sup>34</sup> (Emphasis in original text)

This statement points to the nexus of the combination of nuclear weapons and a potential failed or failing state. The DCDC continues this theme by pointing to a

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<sup>32</sup> *Nuclear Posture Review [Excerpts]*.

<sup>33</sup> Bush, *The National Security Strategy of the United States of America*.

<sup>34</sup> *The DCDC Global Strategic Trends Programme 2007 – 2036, 3rd Edition* (United Kingdom: Development, Concepts and Doctrine Centre, 2007), 1, <http://www.dcdc-strategictrends.org.uk> (accessed October 25, 2009). 54.

potential linkage between unstable states and the transfer of nuclear technology to terrorist organizations.<sup>35</sup>

The proliferation of nuclear weapons... to weak and unstable states, **will** increase the risks of more uninhibited, assertive and intemperate behavior by these polities while reducing their susceptibility to conventional methods of coercion. The possession of nuclear weapons by states, whose capacity for ensuring their security and safety **may** be inadequate, **will** increase the risk of these technologies and associated materials being incompetently handled or acquired by third parties, including non-state actors such as criminals and terrorists.<sup>36</sup> (Emphasis in original text)

The *JOE* offers a similar view of pointing to challenges presented to American security by proliferating nuclear weapons. It presents two "...ominous scenarios..." that may confront the U.S. in the future. The first is a traditional conflict between nation states. It is relevant because the *JOE* asserts that; "[g]iven the proliferation of nuclear weapons, there is the considerable potential for such a conflict to involve the use of such weapons." Thus, while *JOE* asserts that regular war appears to be in a state of hibernation, it sees the potential for this type of conflict to escalate.<sup>37</sup>

The second scenario is the "failure to recognize and fully confront the irregular fight that we are in."<sup>38</sup> When one looks at the current conflict, one must do so in the context of neighboring states. Iran borders both the conflict in Iraq and Afghanistan; and Iran has already been highlighted as seeking nuclear weapons. The current conflict in Afghanistan cannot be separated from Taliban activity in Pakistan and al Qaeda

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<sup>35</sup> Ibid. 49.

<sup>36</sup> Ibid.

<sup>37</sup> *The Joint Operating Environment (JOE) 2008*, 43.

<sup>38</sup> Ibid.



operations within the border region between the two nations. Thus, as the U.S. focuses on the current fight and the irregular nature of that conflict; one cannot lose sight of the potential nuclear implications involved within the region.

The arc of nations recently acquiring nuclear weapons or actively seeking nuclear weapons runs from North Korea, through Pakistan, to Iran and Syria. These nations border countries with significant economic and diplomatic ties to the U.S. This area also corresponds to an area of significant instability. Based on the economic power and energy resources within this area, ensuring stability within this region is of considerable interest to the United States and its allies. Some within the region may not view the use of nuclear weapons as a last resort.<sup>39</sup> If efforts to counter proliferation in this region fail, an arms race within the Middle East and Pacific may result. A 2007 National Security Advisory Group study “Reducing Nuclear Threats and Preventing Nuclear Terrorism” pointed out that “[w]ith the prospects for thwarting the nuclear ambitions of North Korea and Iran now highly uncertain, several U.S. friends that would feel threatened by a nuclear-armed DPRK or Iran—including Egypt, Saudi Arabia, Turkey, Japan and South Korea—may feel compelled to re-think their own nuclear options.”<sup>40</sup>

This paper has shown that both the Obama Administration and main stream United Kingdom and U.S. military strategic assessments see nuclear proliferation as an issue. But, do others hold this same view?

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<sup>39</sup> Ibid. 37.

<sup>40</sup> *Reducing Nuclear Threats and Preventing Nuclear Terrorism: The National Security Advisory Group, 2007*).

Vice Admiral (retired) Robert R. Monroe offered a more pessimistic view of nuclear proliferation in a Fall 2009 *Air and Space Power Journal* article. VADM Monroe held positions as the Director of the Defense Nuclear Agency and advisory boards for the Department of Defense and the Department of Energy. He believes that the proliferation of nuclear weapons steadily increased the threat these weapons posed to the U.S. over of the past 20 years. He believes the nature of this threat is significantly different than the threat posed by the Soviet Union during the Cold War and that it has thus gone virtually unnoticed by the vast majority of Americans.<sup>41</sup>

VADM Monroe also believes that as nuclear technology proliferates it will likely to fall into the hands of terrorists. He specifically mentions North Korea and Iran as potential sources of this proliferation. Regarding North Korea, he states that they “...have already conducted two nuclear-weapon tests, and if they successfully begin production of capable weapons, they would probably sell them to any state or organization able to pay.”<sup>42</sup> He also believes Iran will likely transfer weapons to organizations like Hezbollah, Hamas and al-Qaeda for proxy attacks on the West.<sup>43</sup>

Zia Mian, a physicist with the Woodrow Wilson School of Public and International Affairs at Princeton University, disagrees with VADM Monroe’s assessment that nuclear weapons aren’t going away.<sup>44</sup> In a June 4, 2009 *Foreign Policy in Focus* article, Mian discusses issues related to President Obama’s Prague speech and

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<sup>41</sup> Monroe, *A Perfect Storm Over Nuclear Weapons*, 19-20.

<sup>42</sup> *Ibid.* 20.

<sup>43</sup> *Ibid.* 20.

<sup>44</sup> *Ibid.* 21.

the vision of a world without nuclear weapons. He blames the proliferation of nuclear weapons on the current nuclear weapons holding states. Mian cites a lack of effort by these states to eliminate nuclear weapons following the signing of the Non-Proliferation Treaty as encouraging non-nuclear states such as India, Pakistan and North Korea to acquire them.<sup>45</sup> Mian believes that “[w]here the United States leads, others will follow.” He cites President Obama Prague comment “the U.S. will maintain a safe, secure, and effective arsenal to deter any adversary,” as evidence.<sup>46</sup> This implies that as long as the U.S. maintains a nuclear capability that other nuclear states will too and this could lead non-nuclear states to seek them. Thus, Mian likely supports the idea that apart from a major change in nuclear policy by the U.S. and its allies that nuclear proliferation will continue.

Mary Kaldor presents similar ideas to Dr. Mian in an August 11, 2009 Open Democracy article. She offers an interesting assessment of disarmament and nuclear proliferation. Specifically, it is easy for national leaders to be “...in favour of ridding the world of nuclear weapons while supporting the maintenance of national nuclear weapons since the final goal depends on global agreement.”<sup>47</sup> Implied in this comment is that global agreement is unlikely and thus proliferation and maintenance of the status quo is likely to occur.

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<sup>45</sup> Zia Mian, "Nuclear Promises," *Foreign Policy in Focus*, June 4, 2009, <http://www.fpif.org/fpiftxt/6166> (accessed October 10, 2009).

<sup>46</sup> Ibid; Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*.

<sup>47</sup> Mary Kaldor, *Dismantling the Global Nuclear Infrastructure*, <http://www.opendemocracy.net> ed., Vol. 2009: Open Democracy: Free Thinking for the World, 2009), October 11, 2009.

## Deterring Rogue States

Michèle Flournoy and Clark A. Murdock wrote a Center for Strategic and International Studies report *Revitalizing the U.S. Nuclear Deterrent* in July 2002. This report offers specific reasons regional rogue states seek nuclear weapons that fall into two broad categories. First, the possession and intent to use nuclear weapons will deter the U.S. and its coalition partners. The United States' demonstrated vastly superior conventional forces in recent conflicts in the Middle East and the Balkans; along with very low casualties by historical standards. In spite of these low numbers, U.S. popular support for overseas contingency operations is negatively influenced when casualties begin to increase. Thus deterrence comes from the ability to threaten the U.S. and coalition partners with sufficient military and civilian casualties.<sup>48</sup>

Second, regional rogue states want to increase their influence within their region. The threat of nuclear weapons allows them to deter other neighbors from acting while enabling the rogue state to make demands on its non-nuclear neighbors.<sup>49</sup>

Flournoy and Murdock believe regional rogues can be deterred if our declaratory policy and our willingness to act are in sync.<sup>50</sup> VADM Monroe supports this idea if the U.S. aims deterrence policy at rogue states.<sup>51</sup> Thus, there is some belief that rogue states

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<sup>48</sup> Michèle A. Flournoy and Clark A. Murdock, *Revitalizing the U.S. Nuclear Deterrent* (Washington D.C.: Center for Strategic and International Studies, 2002), 27-36.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

<sup>51</sup> Monroe, *A Perfect Storm Over Nuclear Weapons*, 21-23.

can be deterred if the U.S. presents a credible force, a strong declaratory policy and the adversary believes the U.S. will act in accordance with its stated policy.

In summary, capability and intent are essential elements in the deterrent calculus on both sides. U.S. nuclear deterrent posture must be capable of continuing to deter conventional threats as well as emerging nuclear threats from rogue nations and terrorist organizations.

### **Capabilities Assessment**

The 2009 Federation of American Scientists estimates that there are approximately 23,300 nuclear weapons in the world.<sup>52</sup> These estimates are similar to numbers used in other sources presented in this paper. The Federation of American Scientists' data was chosen because it is the most recent.<sup>53</sup> The United States and Russia account for more than 90% of these nuclear weapons. Thus, whatever weapons reductions that occur as part of a START follow-on treaty will have a significant impact on the total number of operationally deployed warheads throughout the world.

The majority of nuclear weapons are not operationally deployed. They are part of what the 2002 NPR calls a "responsive force." These weapons "...need not be available in a matter of days, but in weeks, months or even years" depending on the global

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<sup>52</sup> "Status of World Nuclear Forces," Federation of American Scientists, <http://www.fas.org/programs/ssp/nukes/nuclearweapons/nukestatus.html> (accessed January 29, 2010). Israel is not a declared nuclear state. Bee, Cimbala and the Federation of American States count Israel among the list of nuclear states.

<sup>53</sup> Bee, *Seven Minutes to Midnight: Nuclear Weapons After 9/11*, 6-7; Stephen J. Cimbala, "Russian-U.S. Nuclear Force Reductions and Nuclear Proliferation," *Comparative Strategy* 27, no. 5 (Oct, 2008), 431.

situation and provide a stockpile of warheads to serve as replacements if operationally deployed warheads experience problems.<sup>54</sup>

Status of World Nuclear Forces 2009				
Country	Strategic	Non-Strategic	Operational	Total
Russia	2,600	2,050	4,560	12,000
United States	2,126	500	2,626	9,400
France	300	n/a	300	300
China	180	unk	180	240
United Kingdom	160	n/a	160	185
Israel	80	n/a	n/a	80
Pakistan	90	n/a	n/a	90
India	80	n/a	n/a	80
North Korea	10	n/a	n/a	10
<b>Total</b>	<b>5,600</b>	<b>2,550</b>	<b>7,900</b>	<b>23,300</b>

**Table 1 Status of World Nuclear Forces 2009<sup>55</sup>**

The recently expired START counted only operationally deployed weapons. SORT allows the two individual nations to determine which warheads to count. Thus, a new START with warhead limits between 1,500 and 1,675 may not reduce the total number of nuclear weapons depending on the counting rules utilized.

This chapter does not address non-strategic operational warheads or weapons included in the response force because START addresses only strategic weapons.<sup>56</sup> Flournoy and Murdock state that the total number of non-strategic weapons in the U.S. nuclear inventory adds little to the argument in terms of target coverage and the

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<sup>54</sup> *Nuclear Posture Review [Excerpts]*.

<sup>55</sup> *Status of World Nuclear Forces*. This table adapted from FAS website estimates.

<sup>56</sup> "FACT SHEET the Joint Understanding for the START Follow-on Treaty," The White House Office of the Press Secretary, [http://www.whitehouse.gov/the\\_press\\_office/FACT-SHEET-The-Joint-Understanding-for-the-START-Follow-on\\_Treaty/](http://www.whitehouse.gov/the_press_office/FACT-SHEET-The-Joint-Understanding-for-the-START-Follow-on_Treaty/) (accessed December 21, 2009).

capabilities provided by nuclear Tomahawk land-attack missiles and fighters can generally be substituted for with bombers and air-launched cruise missiles.<sup>57</sup>

### **Deterrent Capabilities**

This section combines work done in different studies to determine what capabilities the DOD needs to provide a force capable of deterring both traditional threats and rogue states or terrorist entities.

Michèle Flournoy and Clark Murdock list 12 evaluation criteria for deterrent capability in *Revitalizing the U.S. Nuclear Deterrent*. This report was written following the release of the 2002 NPR and looks at a broad spectrum of deterrent options through 2020 tailored against four different world views. The twelve criteria are: survivability, hard target kill capability, soft target kill capability, deep underground (DUG) target capability, range, promptness, penetration, retargetability, ability to avoid overflight, ability to limit collateral damage, recallability, and robustness.<sup>58</sup>

Four of their criteria are especially relevant when deterring rogue threats. These include the ability to retarget the weapon against a new, emerging or mobile target, the ability to avoid overflight of another nuclear power or sensitive nation, the ability to limit collateral damage and the ability of the weapon to be recalled.<sup>59</sup>

A 2009 Mitchell Institute for Airpower Studies paper, written by Dr. Dana Johnson, Dr. Christopher Bowie and Dr. Robert Haffa, identifies a series of nine

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<sup>57</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 36-40.

<sup>58</sup> Ibid. 36-38.

<sup>59</sup> Ibid. 36-38.

capabilities contained in the triad to access the deterrent value of a leg of the triad. The Mitchell Institute paper focuses on “...detering the nuclear forces of peer or near-peer states” such as Russia and China.<sup>60</sup> This paper touches on many of the same capabilities outlined in the Flournoy and Murdock report and adds the ability to signal an alert readiness change which is relevant to deterrence of rogue states.<sup>61</sup>

This section combines the Flournoy and Murdock list with the Mitchell Institute list into a matrix of ten deterrent capabilities. The matrix is further subdivided into two sections “traditional” and “rogue state.” The subdivision is somewhat artificial in that many of the capabilities listed under the rogue state category may also be applicable in deterring traditional state actors and vice versa. The primary objective of the subdivision is to lump the rogue state capabilities into a concise list to allow easy comparison of capabilities between the various triad, dyad and monad options. This capability matrix is presented in Table 2 below.

Table 2 lists the capabilities evaluated in this section. The rows to the right of each capability assess that capability for each leg of the triad. The assessment is subjective based on objective data presented in other studies and will be explained more fully below. The “High,” “Medium,” and “Low” assessment criteria varies by capability. A “N/A” assessment or not applicable indicates that this leg has no capability in that area.

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<sup>60</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 8.

<sup>61</sup> *Ibid.* 10-16.



This methodology for presenting the data and the graphical indications that follow are similar to the methodology used to present this data in the Mitchell Institute paper.<sup>62</sup>

	<b>CAPABILITY</b>	<b>ICBM</b>	<b>SLBM</b>	<b>BOMBER</b>
<b>Traditional</b>	WARHEADS ON ALERT	High	Medium	N/A
	SURVIVABILITY	Low	High	Medium
	PROMPTNESS	High	Medium	N/A
	PENETRATING	High	High	Medium
	DUG TARGETS	N/A	N/A	Low
<b>Rogue State</b>	RETARGETABLE	Medium	Medium	Medium
	OVERFLIGHT	Low	Medium	High
	COLLATERAL DAMAGE	N/A	N/A	High
	RECALLABLE	N/A	N/A	High
	VISIBLE DETERRENCE	Low	Medium	High

**Table 2 Capabilities Matrix<sup>63</sup>**

**Warheads on Alert**

“Warheads on alert” comes from the Mitchell Institute paper and indicates the number of warheads available on a daily basis to respond to a nuclear crisis.<sup>64</sup> This number does not account for a heightened state of tension between nuclear armed states precipitating additional systems being generated and placed on alert status. This capability is important since it represents the nuclear force available to the President to respond immediately to an unexpected nuclear crisis.

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<sup>62</sup> Ibid.

<sup>63</sup> Flournory and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 36-38; Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 10-16. Information in this matrix was adapted from information in these documents.

<sup>64</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 11.

Dr. Cimbala modeled a 1,700 warhead triad and estimates that 802 U.S. and 609 Russian warheads would be on alert at any given time.<sup>65</sup> The 1,700 warhead model is important because it represents the bottom limit of the SORT agreement and is only 25 warheads greater than the maximum START limit from the Joint Understanding.<sup>66</sup> Cimbala's estimate correlates closely with the Mitchell Institute estimate of 829 U.S. warheads.<sup>67</sup> The number of operationally deployed warheads on alert for the U.S. and Russia under the SORT agreement and the proposed START follow-on limits are currently more than double the total warheads available to any other nuclear power.

The ICBM capability in this area is assessed as "high." This is based on 99% of deployed U.S. ICBMs on alert at any given time. The SLBM fleet is assessed as medium based on the day-to-day deployment of 4 of 14 ballistic missile submarines with only 2 positioned in firing boxes. The bomber fleet is assessed as N/A since bombers are typically not generated with nuclear weapons and sitting alert on a daily basis.<sup>68</sup>

### **Survivability**

Survivability is a capability identified in both the Mitchell Institute paper and the Flournoy and Murdock report. It refers to the ability of a leg of the triad to absorb an attack and have residual capability to respond. The key difference in definition between the two reports is that the Mitchell paper separates survivability into two categories day-

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<sup>65</sup> Cimbala, *SORT-Ing Out START*, 53.

<sup>66</sup> *FACT SHEET the Joint Understanding for the START Follow-on Treaty*, 1.

<sup>67</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 20.

<sup>68</sup> *Ibid.*

to-day and generated.<sup>69</sup> The definition of survivability used in this section will focus on day-to-day capabilities because the focus in the 2002 NPR, the 2006 NSS, and President Obama's Prague speech focus attention on countering the proliferation of nuclear weapons to rogue states and terrorist organizations.<sup>70</sup> There is an underlying assumption in U.S. policy that tensions between nuclear states will rise prior to a state launching an attack; thus, giving the U.S. time to generate forces.

This assumption is valid in light of the discussion presented above regarding China. The primary areas of concern presented above included the Straits of Malacca, Taiwan and the Spratley Islands.<sup>71</sup> A conflict in one of these areas is likely to begin as a conventional conflict.<sup>72</sup> In this scenario, the U.S. should have an opportunity to generate and deploy bombers and ballistic missile submarines, increasing overall survivability.

The survivability of the ICBM force is assessed as low. Flournoy and Murdock indicate that only 10 – 20 percent of the ICBM force will survive an initial attack.<sup>73</sup> This is based on ICBMs launching from fixed facilities likely targeted in an initial attack. This is supported by Dr. Cimbala's data. He presents an ICBM monad option for Russian nuclear forces. His data shows that in both a 1,700 warhead and 1,000 warhead option that survivability in a day-to-day state of readiness is 10 percent and 25 percent in a

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<sup>69</sup> Ibid. 20-21.

<sup>70</sup> *Nuclear Posture Review [Excerpts]*; Bush, *The National Security Strategy of the United States of America*; Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*

<sup>71</sup> *The Joint Operating Environment (JOE) 2008*, 32.

<sup>72</sup> Pan, *China Insistence on no-First-use of Nuclear Weapons*.

<sup>73</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 36.

generated “launch on warning” status.<sup>74</sup> In either case, the survivability of the ICBM force is relatively low.

In contrast, the survivability of the SLBM force is generally seen as “high.” Cimbala and Flournoy both assess the survivability of generated ballistic missile submarines at 100 percent. This makes them the most survivable leg of the triad.<sup>75</sup> This reason coupled with the Fiscal Year 2010 budget decision to fund a replacement ballistic missile submarine is the reason that no dyad or monad options are considered in the paper without an SLBM capability.

The bomber survivability is assessed as “medium.” Bomber survivability is estimated at 75 percent by Flournoy and Murdock.<sup>76</sup> This is much lower than Cimbala’s estimates of 100% survival of bombers in a generated state. This difference is significant since Cimbala’s data levies a requirement on the bomber force to provide between 416 and 616 generated warheads in a triad and dyad option respectively for the 1,700 warhead force and 308 and 314 bomber warheads for the 1,000 warhead triad and dyad options.<sup>77</sup> Thus, depending on when an attack occurs in the generation process the bomber force may not be dispersed. It also relevant to point out at this time that bombers are currently dual tasked between the nuclear and conventional missions And are not all located at bases with nuclear weapons. The B-52 is currently deploying at a one to three dwell rate

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<sup>74</sup> Cimbala, *SORT-Ing Out START*, 53-55.

<sup>75</sup> Ibid.; Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 36.

<sup>76</sup> Ibid.

<sup>77</sup> Cimbala, *SORT-Ing Out START*, 53-55.

and the B-2 at a one to seven dwell.<sup>78</sup> This means that the for every 120 day period a B-52 crew spends deployed in support of a conventional air expeditionary force tasking they can expect to spend three times that period or 360 days in garrison. It is a logical assumption that in a traditional state-on-state conflict that some portions of the bomber force will be deployed in support of another conventional requirement. Thus, the natural dispersion of bombers leads to an assessment of the overall survivability of the bomber leg of the triad as medium.

### **Promptness**

Promptness describes a leg's ability to respond immediately to an attack by a nuclear adversary. Flournoy and Murdock use a standard of one hour and the Mitchell paper uses a standard of 30 minutes.<sup>79</sup> The assessment of each leg of the triad does not change based on which of the two standards is used. The ICBM force is rated as "high" based on its high level of alert and its ability to reach pre-planned targets around the world in less than 30 minutes after launch. The SLBM force is rated as "medium." This is based on the fact that some ballistic missile submarines may not be in a launch box at the time of receipt of a launch order and may have to reposition in order to launch. However, those that are within the launch box should be able to meet the same standards as the ICBM force.<sup>80</sup> The bomber force is rated as "N/A." Bombers have relatively long response times compared to either the ICBM or SLBM force and there are no conceivable

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<sup>78</sup> Data provided by Mr. Jeffrey N. Williams, Senior Analyst, Combat Air Forces Aviation Scheduling, Headquarters Air Combat Command, 25 January 2010.

<sup>79</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 37; Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 32

<sup>80</sup> Ibid.

scenarios where the bomber force can launch and achieve weapons impact within an hour; even from a generated state.

### **Penetrating**

The ability of an element of the triad to penetrate an adversary's defense is an important capability highlighted in both reports. The ability of the U.S. ICBM and SLBM force to penetrate the defenses of a traditional nuclear state is currently viewed as high. China and Russia currently lack robust ballistic missile defense capability.<sup>81</sup> However, this assessment could change. China successfully tested a land-based missile defense system on January 11, 2010.<sup>82</sup> If China completes development and fielding of this or a similar system, it could diminish ICBM and SLBM penetration capability.

China and Russia both possess robust air defense capabilities designed to counter airborne threats. The stealth capability of the B-2 and the stand-off capability provided by the cruise missile capability of the B-52 improve bomber penetration capability. However, based on time of exposure to the threat the bombers have a lesser capability than ballistic missiles. The Mitchell paper assesses bomber penetration capability as medium and Flournoy and Murdock estimate that 50 to 75 percent of bomber warheads

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<sup>81</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 37; Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 21.

<sup>82</sup> Andrew Jacobs and Jonathon Ansfield, "With Defense Test, China shows Displeasure of U.S." *New York Times*, January 13, 2010, <http://www.nytimes.com/2010/01/13/world/asia/13china.html?pagewanted=print> (accessed March 2, 2010).

are capable of penetrating traditional defenses compared with 90 percent of ballistic missiles.<sup>83</sup> Thus, bomber capability is assessed as medium.

### **Deep Underground (DUG) Targets**

“DUG target kill capability is defined as the ability of a weapon to effectively engage and destroy DUG targets such as underground command bunkers and/or WMD production/storage facilities.”<sup>84</sup> The 2002 NPR states that over 70 countries utilize underground facilities for military purposes.<sup>85</sup> It is conceivable that targets presented by near-peer nuclear powers will include DUG targets. Flournoy and Murdock indicate that the Trident Mk5 missile has a deep underground target capability.<sup>86</sup> According to the 2002 Nuclear Posture Review only the B61 Mod 11 nuclear gravity bomb carried on bombers possesses an earth penetrating capability.<sup>87</sup> Thus, the ICBM and SLBM capability to target DUG targets is listed as not applicable. The bomber capability to strike these targets is listed as low. This is based on the NPR assessment that the B61 can only penetrate certain types of terrain where DUG targets are present and that the weapon has no capability against hard and deeply buried targets.<sup>88</sup>

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<sup>83</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 37; Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 21.

<sup>84</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 37.

<sup>85</sup> *Nuclear Posture Review [Excerpts]*.

<sup>86</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 39.

<sup>87</sup> *Nuclear Posture Review [Excerpts]*.

<sup>88</sup> *Ibid.*

### **Retargetable**

A retargeting capability allows a specific leg of the triad to adapt quickly to changing missions and to engage mobile and emerging targets.<sup>89</sup> The ICBM fleet is equipped with the most redundant communications capability to support launch and retargeting.<sup>90</sup> While the bomber and ballistic missile fleets are more limited in this regard, the bomber force is the most retargetable against rogue states with less capable air defenses.<sup>91</sup> All three legs of the triad have strengths and weaknesses in this area and are therefore all assessed as medium.

### **Overflight**

The basic definition of this capability is "...the ability to avoid overflying nuclear and/or other sensitive areas."<sup>92</sup> In their discussion of overflight, Flournoy and Murdock state, "[n]o ICBMs can be used to target China without overflying Russia. SLBMs and bombers, of course, can if given sufficient time."<sup>93</sup> This is true of the China scenario. One can assume that an attack against any land locked nation would be difficult without overflying a sensitive area. For example, it is doubtful than Pakistan and other nations in the region would have been supportive of overflight by U.S. weapons systems had the

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<sup>89</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 38.

<sup>90</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 22.

<sup>91</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 38.

<sup>92</sup> *Ibid.*

<sup>93</sup> *Ibid.*



U.S. elected a nuclear strike into Afghanistan in response to the September 11, 2001 al Qaeda attacks.

The ICBM force is rated as low in this category due to the requirement to launch from a fixed location and that there are a finite number of ballistic paths that the weapon can take from its launch point to impact. The SLBM force is rated as medium due to its ability to launch from more than one location increasing the capability to avoid overflight of a given area. The bomber force is rated high to the ability of the bomber to approach a target from a much wider range of possibilities. The integration of the cruise missile with the B-52 enables not only controlling the delivery platform, but also the flight path of the weapon to the target.

### **Collateral Damage**

This capability "...involves the ability to engage soft, hard, and DUG targets while minimizing collateral damage to other targets, both military and civilian. In holding regional rogue targets at risk, the need to reduce collateral damage by using low-yield, precise weapons would be paramount."<sup>94</sup> The only element within the triad to possess this capability is the B61 carried aboard bombers. ICBM and SLBM capability in this area is deemed not applicable and the bomber capability in this area is regarded as high.

### **Recallable**

Only one leg of the current triad has the ability to be recalled after it is launched; the bomber. Thus, SLBM and ICBM capability is rated as not applicable and the bomber

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<sup>94</sup> Ibid.

is rated as high. Flournoy and Murdock see this as “potentially an important criterion in many regional rogue scenarios.”<sup>95</sup> A scenario where this might be important is a U.S. response to a rogue state or rogue state sponsored terrorist organization attack against the U.S. or a U.S. ally. The U.S. could respond to such an attack by publically loading and launching bombers. The time taken to generate the bombers and for them to fly to the target area might provide the last opportunity for a diplomatic solution such as handing over nuclear capability or responsible leaders. If the diplomatic solution was successful, then the bombers could be recalled. This provides a link to the visible deterrence capability.

### **Visible Deterrence**

The Mitchell Institute paper presents a capability called “Signal of Alert Readiness Changes.” It is defined as the ability to send signals to an adversary regarding U.S. resolve.<sup>96</sup> Brigadier General Tim Ray, Air Force Global Strike Command A3 (Operations Directorate), refers to this as a “visible deterrent;” the ability for the United States to signal a posture change to an adversary.<sup>97</sup> The importance of the visible deterrent capability was highlighted in the Strategic Posture of the United States final report submitted to Congress in May 2009. This report stated that “[t]he bomber force is

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<sup>95</sup> Ibid.

<sup>96</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 22

<sup>97</sup> Brigadier General Timothy Ray, Col John W. Morehead. Personal Interview, December 1, 2009.

valuable particularly for extending deterrence in time of crisis, as their deployment is visible and signals U.S. commitment.”<sup>98</sup>

Two of the three legs of the triad offer little ability to provide a visible deterrence. The ICBM force ability to do this is rated as low since this force already operates at a high level of readiness. The SLBM force offers a slightly greater ability to send signals. This can be done by launching ballistic missile submarines from their bases; however, once they are launched their ability to send signals is very low without giving up their positions and reducing survivability. Thus, the SLBM force is rated as medium in this area.

The bomber force offers the greatest ability to signal changes in posture. A bomber can be generated and positioned in alert areas, launched or forward deployed to show resolve.<sup>99</sup> For example, some may see the long-term rotational deployment of B-52s and B-2s to Guam as the U.S. demonstrating their resolve in the Southwest Pacific. Thus, this deployment can be seen as a visible deterrent signal using conventional means.

### **Summary**

This discussion of deterrent capabilities illustrates capability differences between the three legs of the triad. The ICBM force is the least flexible leg of the triad while providing the capability to keep a large number of warheads on alert for a long period of time. This is coupled with a capability to provide a prompt response to a crisis situation

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<sup>98</sup> Ronald O’Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress* (Washington D.C.: Congressional Research Service, 2009), 24.

<sup>99</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 22.

with a high degree of certainty that the warheads will penetrate adversary defenses and achieve their objective. From a brief assessment of Table 2's traditional deterrent capabilities, the ICBM force can be seen as the most capable of the three legs.

The SLBM force is the most survivable leg of the triad. The ability of this leg of the triad to survive a first strike and launch a retaliatory strike with a high degree of probability of the warheads reaching their assigned targets makes this leg indispensable among the three legs of the triad.

The bomber force is the most flexible leg of the triad. Its ability to provide a visible deterrent, minimize collateral damage and be recalled if necessary makes the bomber unique among the legs of the triad. This is especially true in a deterrent posture focused against rogue states.

### **Weighing the Options**

The 2002 NPR states that in order to meet the 2012 Moscow Treaty (SORT) requirements that the 2012 force structure will be comprised of 14 Trident submarines (with two in overhaul at any given time), 76 B-52H bombers, 21 B-2 bombers and 500 ICBMs.<sup>100</sup> The 2006 Quadrennial Defense Review (QDR) directed a reduction in these numbers. The B-52 combat coded fleet decreased to 56 and the number of Minuteman III missiles decreased from 500 to 450.<sup>101</sup> The reduction of the B-52 fleet from 76 to 56

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<sup>100</sup> *Nuclear Posture Review [Excerpts]*.

<sup>101</sup> *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2006), 46 and 50.

directed in the QDR did not come to fruition. The Fiscal Year 2007 Defense Act mandated that the B-52 fleet be held at 75.<sup>102</sup>

Figure 3, Triad, provides a graphic representation of the capabilities provided by each component of the triad when combined. This chart was constructed by assigning the following values to the capabilities listed in the matrix above. A high rating is assigned a value of three, medium two, low one and not applicable a value of 0. The values are then plotted into a radar chart to easily show the relative values the deterrent option possesses compared to another deterrent option. The idea for plotting capabilities in this manner came from the Mitchell Institute's presentation of similar data.<sup>103</sup> This figure graphically illustrates that with the exception of retargeting and DUG targets capability the triad appears to provide good mix of capabilities to deter both traditional and rogue state threats. The Mitchell Institute paper supports this idea. It states, "[t]he Triad remains the most attractive overall strategic force structure option."<sup>104</sup> This is worth considering the thesis of the Mitchell Institute paper is that the U.S. should gradually shift to an SLBM/ICBM dyad in the future.<sup>105</sup>

Dr. Stephen Cimbala presents information that may counter this argument. Table 3 and Table 4 illustrate that for hypothetical 1,700 and 1,000 warhead options that the balanced triad leaves the United States with the fewest available warheads for a follow-

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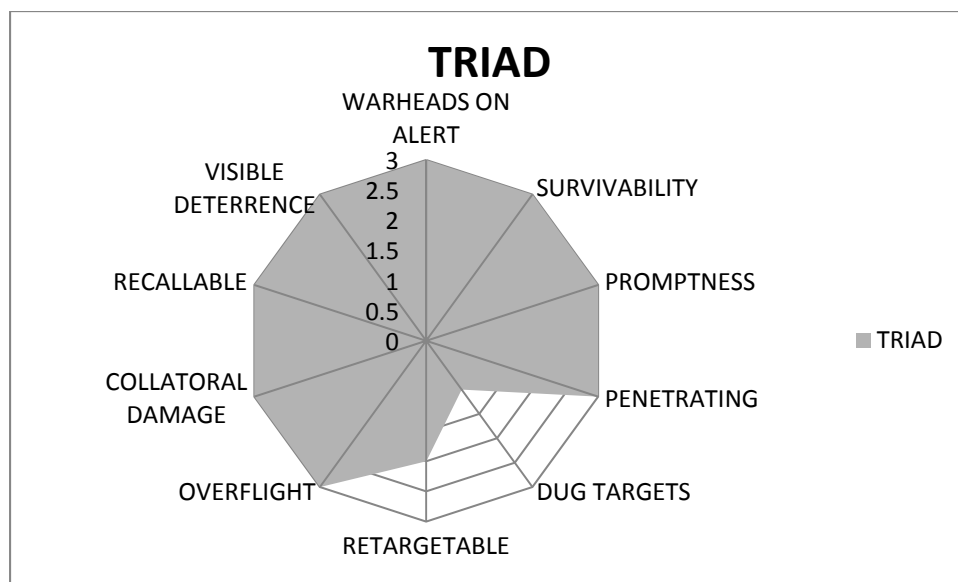
<sup>102</sup> Amy F. Woolf, *U.S. Strategic Nuclear Forces: Background, Developments, and Issues* (Washington, DC: Congressional Research Service, 2008), 21-22.

<sup>103</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 21-25.

<sup>104</sup> *Ibid.* 26.

<sup>105</sup> *Ibid.* 7.

on attack.<sup>106</sup> This data places an emphasis on the importance of survivability of a particular leg of the triad. The data was produced to address a United States versus Russia scenario to look at viable options for a START follow-on. It thus implies a massive attack by one nation or the other and the need for the other side to attack. The models that provided this data were built to provide for traditional deterrence vice deterrence against a rogue state. Looking objectively at the data one could conclude that a bomber/SLBM dyad or an SLBM only monad is the most capable.



**Figure 2 Triad**

Another way to look at this data is to ask the question, how many warheads are available to the president on a day-to-day basis? In this case, based on the current paradigm where bombers are no longer on 24/7 nuclear alert then an ICBM/SLBM dyad provides the greatest number of warheads on a day-to-day basis to counter a nuclear

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<sup>106</sup> Cimballa, *SORT-Ing Out START*, 53-55.

crisis. Thus, the interpretation of the data is largely governed by the strategic environment.

1,700 Warhead Limit	Triad	Dyad		Monad
	Triad	No ICBM	No Bomber	SLBM Only
ICBM	300	0	300	0
SLBM	980	1,078	1,372	1,568
Bomber	416	616	0	0
Total	1696	1694	1672	1568
1,700 Warhead Limit	Triad	Dyad		Monad
	Triad	No ICBM	No Bomber	SLBM Only
Generated, Launched on Warning	1,367	1,322	1,381	1,270
Generated, Riding out the attack	1,124	1,322	1,138	1,270
Day-to-day, Launched on Warning	802	585	1,015	851
Day-to-day, Riding out the attack	559	585	772	851

**Table 3 1,700 Warhead Options<sup>107</sup>**

If one looks at the strategic environment and builds a force structure to counter a traditional nation-state versus nation-state deterrent capability an objective interpretation of Dr. Cimbala's data is that at either a 1,700 or 1,000 warhead limit an acceptable level of deterrence can be maintained with either a triad, a dyad or an SLBM monad. The type of dyad one pursues is largely determined by whether one believes sufficient strategic warning is available to generate bombers or whether the conflict comes with little or no warning. If strategic warning is assumed then the enhanced survivability of the bomber leg and the ability to deploy additional SLBMs would lead one to pursue a bomber/SLBM force over an ICBM leg. If no strategic warning is available, then an SLBM only or ICBM/SLBM dyad would be a better alternative.

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<sup>107</sup> Ibid. Data in this table extracted from Dr. Cimbala's article.

1,000 Warhead Limit	Triad	Dyad		Monad
	Triad	No ICBM	No Bomber	SLBM Only
ICBM	300	0	300	0
SLBM	392	686	686	980
Bomber	308	314	0	0
Total	1000	1000	986	980

1,000 Warhead Limit	Triad	Dyad		Monad
	Triad	No ICBM	No Bomber	SLBM Only
Generated, Launched on Warning	812	785	826	794
Generated, Riding out the attack	569	785	583	794
Day-to-day, Launched on Warning	483	372	642	851
Day-to-day, Riding out the attack	240	272	399	532

**Table 4 1,000 Warhead Options<sup>108</sup>**

An alternative view is presented by Dr. Johnson, Dr. Bowie and Dr. Haffa who argue for an ICBM/SLBM dyad in their Mitchell Institute paper *Triad, Dyad, Monad? Shaping the U.S. Nuclear Force for the Future*.

The SLBM Monad does not appear attractive. Changing submarine operations, tactics, and doctrine would be required to make it a survivable force. Furthermore, it opens up the United States to technological surprise that could place the strategic deterrence at risk. Of the Dyads we examined, the ICBM/SLBM combination offers the greatest similarity to the attributes of the current Triad and appears to offer the most attractive alternative from a deterrence standpoint.<sup>109</sup>

Figure 4, Traditional Deterrence, supports this conclusion from a capabilities standpoint as well. When one compares the capabilities provided by the three legs of the triad compared to the five capabilities described earlier as most important in traditional deterrence, then one can see that the bomber leg of

<sup>108</sup> Ibid. Data in this table extracted from Dr. Cimbala's article.

<sup>109</sup> Johnson, Bowie, and Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, 26.



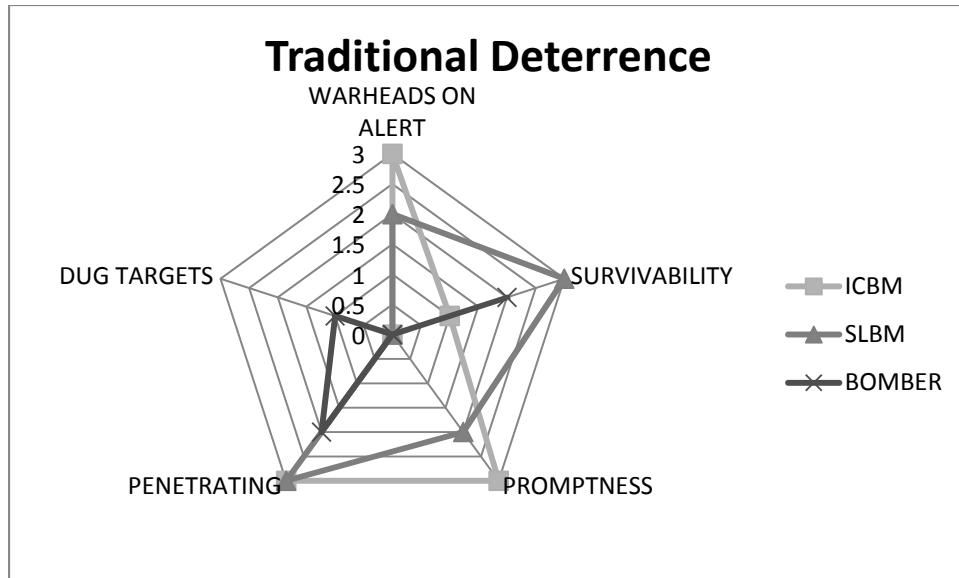
the triad provides the least amount of capability in this role. The notable exception in these capabilities is DUG targets. However, the limited ability of the B61 in this role does not appear significant enough to tip the scale in favor of a bomber capability.

An entering assumption in the Mitchell Institute paper is that the deterrent options are based on a traditional deterrent model. It is important to note that in their recommendation for a dyad that the paper calls for the United States to “[m]aintain and modernize the B-2 force to retain the capability to conduct nuclear strike.”<sup>110</sup> However, their cost analysis of this dyad does not include the cost of maintaining and modernizing the B-2 force as part of the equation. Their selected dyad also calls for the B-2 to be lumped into the same category for treaty purposes as U.S. dual-capable fighter aircraft.<sup>111</sup> This paper’s analysis of the verification and counting rules contained in the previous START treaty and the current weapons that the U.S. counts under the SORT treaty make it highly unlikely that a system with the B-2’s range, payload and stealth characteristics will be counted in the same category as dual-capable fighter aircraft. An individual arguing that nuclear bombers are a dinosaur may argue that nuclear deterrent force structure be based on deterring traditional nuclear states.

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<sup>110</sup> Ibid. 28.

<sup>111</sup> Ibid. 27.

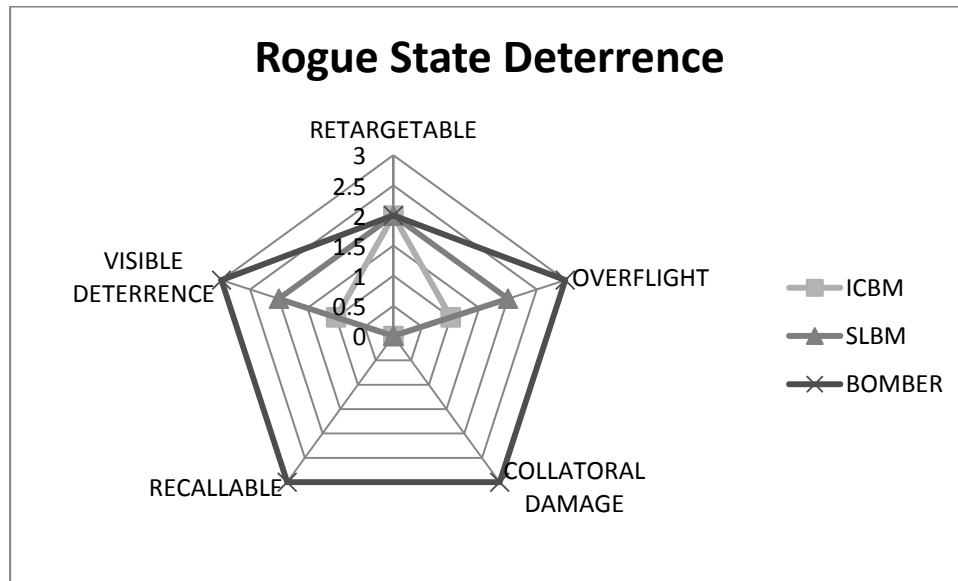


**Figure 3 Traditional Deterrence**

If one assumes a strategic environment where deterrence must be looked at beyond the context of a United States versus Russia or China nuclear exchange then other capabilities may be a driving force. As discussed earlier, the concern of nuclear weapons proliferating to rogue states or terrorist organizations has increased recently. The Nuclear Non-proliferation Treaty (NPT) was not successful in stopping the spread of nuclear weapons beyond the original five NPT declared nuclear states. Additionally, recent international pressures have not been successful in stopping Iran from seeking to develop a nuclear weapons capability. Thus, one can assume that nuclear weapons capability will continue to spread unless there is major change in the strategic environment.

Brig Gen Ray has commented that each nation uses a different deterrent calculus when determining whether or not to pursue nuclear weapons. He points out that the threat of conventional weapons alone does not deter many nations from pursuing nuclear weapons. Instead, it can promote their desire to acquire nuclear weapons as an

asymmetric means of countering U.S. conventional capability.<sup>112</sup> This idea is supported by Flournoy and Murdock who cite the overwhelming conventional success of U.S. forces in conventional state-on-state conflict as a reason rogue states pursue nuclear weapons.<sup>113</sup> Thus, a one size fits all approach to deterrence may not work in all cases.



**Figure 4 Rogue State Deterrence**

Figure 5, Rogue State Deterrence, looks at nuclear deterrent capabilities from the perspective of building a deterrent capability against a rogue state. A quick look at this chart illustrates that the bomber provides the best capability in four of the five selected areas. If one were seeking only to deter a rogue state, then one could easily argue that a bomber only monad provides the greatest flexibility to deter this threat. This is the view best represented by an individual that believes nuclear bombers are a phoenix.

<sup>112</sup> Ray, *Personal Interview*.

<sup>113</sup> Flournoy and Murdock, *Revitalizing the U.S. Nuclear Deterrent*, 29-32.

As stated earlier, based on President Obama's view of the strategic environment, the United States must maintain a deterrent force capable of deterring both a traditional threat and the increasing threat posed by rogue nations and terrorist organizations.

Barry D. Watts presents a great a variety of scenarios where long-range strike aircraft will be important in the 21<sup>st</sup> Century in his 2008 Center for Strategic and Budgetary Assessments report titled *The Case for Long-Range Strike: 21<sup>st</sup> Century Scenarios*. He presents a number of scenarios that are primarily designed to look at conventional capabilities that are important to an argument for deterrence against rogue states. The important scenarios in his report include reaching targets deep in defended airspace, uncertainties of in-theater basing and anti-access or area denial challenges.<sup>114</sup> These scenarios are more appropriate for rogue states than a traditional nuclear conflict based on the robust air defense capabilities of U.S. near peer nuclear competitors.

The first two scenarios are closely related and are best discussed in the context of U.S. actions in Afghanistan and Iraq following September 11, 2001. B-1, B-2 and B-52 bombers played a large role in the October 2001 air strikes in Afghanistan. This was based largely on the ability of the bombers to refuel in safe areas over the Indian Ocean, strike targets in Afghanistan and return. This is a classic example of reaching targets deep in defended airspace as articulated by Watts.<sup>115</sup>

Ronald Bee articulated a real world scenario where Central Intelligence Agency Director George Tenet briefed President Bush on October 11, 2001 "that al Qaeda

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<sup>114</sup> Barry D. Watts, *The Case for Long-Range Strike: 21<sup>st</sup> Century Scenarios* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2008), 19-35.

<sup>115</sup> *Ibid.* 19-25.

terrorists had evidently stolen a 10-kiloton nuclear bomb from the Russians, smuggled it into the United States, and brought it to New York City.” This prompted President Bush to evacuate Vice President Dick Cheney from Washington, D.C. and to send a Nuclear Emergency Support Team to New York to look for the weapon.<sup>116</sup>

If this device were detonated in New York City, it would have dramatically changed the options available to President Bush for forward basing of U.S. assets to launch strikes into Afghanistan. It is conceivable that a nuclear attack in New York would have deterred some coalition partners from allowing U.S. forces to operate from their countries based on fears of nuclear reprisal by the terrorists on those who assisted the U.S. This would place additional strain on U.S. forces to be able to strike from long distances. While a nuclear missile strike is a possible alternative to long-range airborne strikes, ballistic missiles would be difficult to launch into this region without overflying other nuclear states such as Russia, China, India or Pakistan or diplomatically sensitive regions. Thus, in this scenario the ability to avoid overflight becomes extremely important.

A rogue state with short or medium range nuclear ballistic missile capability could also deny U.S. access to bases within the region. During Desert Storm, Iraq’s SCUD missile attacks placed a premium on ballistic missile defenses throughout the region. The threat of nuclear attack could push U.S. and coalition partners back outside the area denied by nuclear attack placing an increased emphasis on long-range aircraft.

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<sup>116</sup> Bee, *Seven Minutes to Midnight: Nuclear Weapons After 9/11*, 8-9.

So, what type of deterrent posture provides the best alternative? In order to achieve balance between traditional deterrence and rogue state deterrence, the U.S. should maintain a triad of ICBMs, SLBMs and bombers. Steven Kosiak presents two possible options to accomplish this in his 2008 Center for Strategic and Budgetary Assessments report titled *Spending on U.S. Strategic Nuclear Forces: Plans & Options for the 21<sup>st</sup> Century*. Kosiak presents five total nuclear force structure options; three of these fall very close to or beneath the START follow-on agreed numbers.<sup>117</sup> Kosiak's Options 1 and 2 are not included in this discussion since their total numbers are above START follow-on agreed to limits. Option 3 is a 1,700 warhead option, that like Cimballa's models, is at the bottom of the SORT numbers and only 25 above the START agreed limit of 1,675.<sup>118</sup> Thus, it is valid for comparison with other potential options. In all cases, Kosiak's options fall well beneath the 500 to 1,100 delivery vehicle options agreed to in July 2009.<sup>119</sup> These options are summarized in Table 5 below.

Options three and four both keep a mix of penetrating and standoff bomber capability. Option three maintains the current B-2 fleet of 16 combat coded aircraft and reduces the B-52 fleet to 24 combat coded aircraft until 2030. After 2030, this option calls for a B-2 replacement in the penetrating role. Option four also maintains the B-2

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<sup>117</sup> Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 29-48.

<sup>118</sup> *FACT SHEET the Joint Understanding for the START Follow-on Treaty*, 1; Cimballa, *SORT-Ing Out START*, 47-58; Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 39-42.

<sup>119</sup> *FACT SHEET the Joint Understanding for the START Follow-on Treaty*, 1; Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 39-46.

fleet at 16 and further reduces the B-52 fleet to 14 until 2030. After that time, this option recommends a replacement for the B-2 to fill the penetrating role.<sup>120</sup>

KOSIAK'S FORCE STRUCTURE OPTIONS		Operationally Deployed Warheads	Reserve, Overhaul and Spare	ICBM	SSBN	Bomber
Option 3	Cut Force Structure	1,700	1,250	300	11	40
Option 4	Cut Force Structure Deeply, Buy Smaller Replacement Systems	1,000	50	150	8	30
Option 5	Cut Force Structure Deeply, Replace only SSBNs	1,000	50	0	10	0

**Table 5 Force Structure Options<sup>121</sup>**

Kosiak's options provide a mix of force structure capabilities in the nuclear bomber fleet that optimizes the qualities the bomber brings in a deterrence role against rogue states. Specifically, the B-2 with gravity weapons provides the capability to avoid overflight in many cases coupled with the ability to avoid collateral damage. The B-52 with its cruise missile capability adds the ability to avoid overflight of sensitive areas and strike at long range in higher threat environments. Both aircraft provide the ability to send a visible deterrent message, be retargeted and be recalled after launch. Both triad

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<sup>120</sup> Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 42-44.

<sup>121</sup> Ibid.

options presented above shift acquisition of a next generation bomber to the 2030 time frame easing tensions in a constrained resource environment.

Programmatic changes in the FY 2010 Defense Budget may indicate a shift away from bombers with the cancellation of the next generation bomber; and a move toward a sea-launched ballistic missile capability with the decision to begin development of a replacement for the Ohio Class ballistic missile submarine.<sup>122</sup> Minor changes in FY 2011 Defense Budget request do not obviate this shift in funding.<sup>123</sup> The FY 2011 Defense Budget request leaves little opportunity to field a replacement bomber in the 2018 timeframe originally envisioned by the Air Force.<sup>124</sup> However, it does leave open the option for a replacement long-range strike aircraft in the long-term future.

The 2010 QDR does not help the perception that the bomber is in many ways viewed as a dinosaur. The 2010 QDR makes a commitment to expand future long-range strike capabilities as a means of “countering growing threats to forward-deployed forces and bases and ensuring U.S. power projection capabilities.”<sup>125</sup> However, it proposes a

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<sup>122</sup> Robert M. Gates, Anonymous Defense Budget Recommendation Statement (Arlington, VA), Washington, DC, April 6, 2009, <http://www.defenselink.mil.ezproxy6.ndu.edu/speeches/speech.aspx?speechid=1341> .

<sup>123</sup> Gates, *Submitted Statement on the Budget to the Senate Armed Services Committee*.

<sup>124</sup> O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress*, 4.

<sup>125</sup> *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2010), 32.



bomber force structure of five wings with no more than 96 primary mission aircraft.<sup>126</sup>  
This is significantly less than the 129 available today.<sup>127</sup>

If the United States desires to develop a long-term deterrent strategy to counter the proliferation of nuclear weapons to rogue states, then the bomber leg of the triad offers four capabilities that should be included. The bombers' ability to avoid collateral damage, avoid overflight of nuclear sensitive areas, be recalled after launch and provide a visible deterrent capability are important factors that should not be ignored.

Deterring rogue states and terrorist threats may require targeting of an amorphous threat or targeting an area in close proximity to another nuclear state. A nuclear bomber with the capabilities described above mitigates risk of a nuclear strike against one of these entities escalating into a global conflict.

### **Recommendation**

This paper recommends that the U.S. adopt Steven Kosiak's 1,700 warhead option presented in *Spending on U.S. Strategic Nuclear Forces: Plans & Options for the 21<sup>st</sup> Century*. This option contains a nuclear deterrent force of 300 ICBMs, 11 ballistic missile submarines and a bomber force of 24 combat coded B-52s and 16 combat coded B-2s.<sup>128</sup> If current START counting rules are applied to Kosiak's recommendation, then this bomber force accounts for 256 warheads leaving 1,399 warheads to be distributed between the 300 ICBMs and 264 SLBMs and still remain under the agreed to follow-on

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<sup>126</sup> Ibid., 47.

<sup>127</sup> O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress*, 14.

<sup>128</sup> Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 39-42.

START limit of 1,675 warheads.<sup>129</sup> This option, when coupled with the 51 combat ready B-1s, gives a total combat coded bomber fleet of 91 aircraft; which is less than the QDR desired 96 total bombers.<sup>130</sup> This offensive strike triad provides a good balance of deterrent capabilities for deterring both traditional and rogue nuclear threats.

While this is true from a purely capabilities standpoint, there are three dark clouds hanging over the START follow-on process that could influence the force structure the United States carries into the future to meet the nuclear deterrent requirement and offer as tradeoffs under a follow-on START. These dark clouds will be discussed in the next chapter. They include resource constraints, the Schlesinger Report and doubts over the viability of a follow-on START.

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<sup>129</sup> *Status of World Nuclear Forces.*

<sup>130</sup> O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress*, 14; *Quadrennial Defense Review Report*, 47.

## CHAPTER 2

### DARK CLOUDS

A world without nuclear weapons is the desired end state and this view is not new. One way President Obama has advocated pursuing this desired end is to negotiate, sign and ratify a Strategic Arms Reduction Treaty (START) follow-on agreement with Russia.<sup>1</sup> The means to accomplish this is to reduce strategic nuclear warheads to a level between 1,500 and 1,675 and delivery vehicles to between 500 and 1,100.<sup>2</sup> This linkage of ends, ways and means is tempered by a risk that as some nations seek to eliminate nuclear weapons, entities will cheat and attempt to acquire nuclear weapons to shift the balance of power in their favor. Appendix I “A World Without Nuclear Weapons” provides a detailed analysis of ends, ways, strategic environment and risk associated with President Obama’s vision of a world without nuclear weapons. This view of the risks associated with disarmament is supported by a view of the strategic environment where a nexus exists where nuclear weapons may propagate into the hands of rogue states that may pass them off to terrorist organizations.<sup>3</sup>

The author argues that the U.S. nuclear deterrent force must deter not only traditional nuclear threats like Russia and China, but, also emerging threats including

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<sup>1</sup> Barack Obama, Anonymous Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009, [http://www.whitehouse.gov/the\\_press\\_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered](http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered) .

<sup>2</sup> "START and Beyond," *New York Times*, December 19, 2009, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=6&did=1924469621&SrchMode=2&sid=1&Fmt=3&VInst=PROD&VType=PQD&ROT=309&VName=PQD&TS=1262020230&clientId=3921> (accessed December 28, 2009).

<sup>3</sup> Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*.

rogue states. The force structure needed to do this includes all elements of the old nuclear triad.

This chapter adds complexity to the discussion by looking at two dark clouds looming over the process and their impact on the recommended force structure. The two dark clouds are resource constraints and the legacy of the Schlesinger Report.

### **Resource Constraints**

The United States' national debt exceeds \$12 trillion.<sup>4</sup> In his 2010 State of the Union Address, President Obama touched on some of the major areas competing for U.S. resources including health care, economic stimulus spending, and funding for overseas contingency operations.<sup>5</sup> These competing interests force decision makers to make difficult choices for the nation. The FY 2010 and 2011 Defense Budgets highlight the realization that the U.S. must find balance in defense capabilities.<sup>6</sup> This is very true when it comes to funding components of the new triad.

Secretary Gates' programmatic changes are driven not by merely finding a way to make the "top line" of the budget work, but primarily by a desire to shift the Department

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<sup>4</sup> "The Debt to the Penny and Who Holds it," TreasuryDirect, <http://www.treasurydirect.gov/NP/BPDLLogin?application=np> (accessed February 1, 2010).

<sup>5</sup> "Text: Obama's State of the Union Address," *New York Times*, January 27, 2010, <http://www.nytimes.com/2010/01/28/us/politics/28obama.text.html?scp=3&sq=state%20of%20the%20union%20address&st=cse> (accessed January 27, 2010).

<sup>6</sup> Robert M. Gates, Defense Budget Recommendation Statement (Arlington, VA), Washington, DC, April 6, 2009, <http://www.defenselink.mil.ezproxy6.ndu.edu/speeches/speech.aspx?speechid=1341> .; Robert M. Gates, Senate Armed Services Committee. Submitted Statement on the Budget to the Senate Armed Services Committee, Arlington, VA, February 2, 2010, <http://www.defense.gov/speeches/speech.aspx?speechid=1418> (accessed March 2, 2010).

of Defense (DOD) in a “different strategic direction.”<sup>7</sup> This statement points to a realization that the DOD “cannot expect to eliminate national security risks through higher defense budgets.”<sup>8</sup> Thus, dealing with a resource constrained environment contributed to the decision that the “DOD must set priorities and consider inescapable tradeoffs and opportunity costs.”<sup>9</sup>

The DOD is expected to make real tradeoffs in priorities and funding between now and the end of the FY2014 budget. A 2009 Congressional Research Service report indicated some military leaders advocated for a base defense budget of approximately 4% of Gross Domestic Product (GDP), expectations are that the base budget will decline over this period from 3.59% of GDP in FY2009 to 3.09% of GDP in FY2014. These reductions are planned as part of the President Obama’s Administration’s plan to reduce the federal deficit by 50% prior to the end of his first term while still funding domestic agenda items.<sup>10</sup>

President Obama announced the termination of the next generation bomber program on May 7, 2009 in an Office of Management and Budget (OMB) document stating that there was no urgent need to start an expensive development program and that

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<sup>7</sup> Gates, *Defense Budget Recommendation Statement* (Arlington, VA).

<sup>8</sup> Robert M. Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs* 88, no. 1 (Jan/Feb, 2009), 28.

<sup>9</sup> Ibid.

<sup>10</sup> Pat Towell, *Defense: FY2010 Authorization and Appropriations* (Washington, DC: Congressional Research Service, 2009), 12–16.

the next generation bomber program was not affordable over the next six years.<sup>11</sup>

Secretary Gates responded to Senate questions on whether or not he was directed by the OMB to terminate the program by stating that the dollars associated with the program were small and cutting the program was not necessary to fall under the OMB top line.<sup>12</sup>

If the dollars associated with the program were indeed insignificant then why did Secretary Gates elect to terminate the program when he had expressed support for long range strike capability in numerous documents and statements including the 2010 QDR?<sup>13</sup> A consistent theme in his long-range strike remarks revolve around China. He cites China's development of capability to "disrupt our freedom of movement and narrow our strategic options."<sup>14</sup> This led him to the conclusion that short-range fighter effectiveness would be degraded putting "a premium on being able to strike from over the horizon."<sup>15</sup>

Secretary Gates quickly added a caveat to his enthusiasm for long-range strike in the USAF. This caveat brought back another consistent theme in his remarks, the need

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<sup>11</sup> Ronald O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress* (Washington D.C.: Congressional Research Service, 2009), 23.

<sup>12</sup> Ibid. 10.

<sup>13</sup> Gates, *A Balanced Strategy: Reprogramming the Pentagon for a New Age*, 28-40; *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2010), 8.

<sup>14</sup> Robert M. Gates, Air Force Association. Air Force Association Convention, As Delivered by Secretary of Defense Robert M. Gates, National Harbor, MD, Wednesday, September 16, 2009, September 16, 2009, <http://www.defenselink.mil.ezproxy6.ndu.edu/speeches/speech.aspx?speechid=1379> .; O'Rourke, *Air Force Next-Generation Bomber: Background and Issues for Congress*, 8.

<sup>15</sup> Gates, *Air Force Association Convention, as Delivered by Secretary of Defense Robert M. Gates, National Harbor, MD, Wednesday, September 16, 2009.*

for acquisition reform within the DOD.<sup>16</sup> He reminded the USAF of the acquisition challenges associated with the B-2 that made the program so expensive that the service could only buy one-sixth of the planned fleet and how this made the loss of one aircraft “a national disaster.” His conclusion was that starting a future bomber acquisition program that threatened to repeat this history was not wise.<sup>17</sup>

Thus, while Secretary Gates’ programmatic changes in the FY2010 budget were driven more by needed changes in direction than in the necessity to bring the budget in below the top line, the department faces real fiscal changes in the future as it seeks to re-capitalize forces and conduct contingency operations in Iraq and Afghanistan.<sup>18</sup>

The United States Congress supported the idea of a Next Generation Bomber in the 2010 National Defense Authorization Act for but did not restore funding. They highlighted some of the same capabilities discussed earlier in the paper that are of specific value in deterring rogue states. Under Section 255 NEXT GENERATION BOMBER AIRCRAFT, Congress stated, “[l]ong-range strike is a critical mission in which the United States needs to retain a credible and dominant capability.” This section highlighted anti-access and area-denial capability as part of the reasoning. It also cited

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<sup>16</sup> Gates, *A Balanced Strategy: Reprogramming the Pentagon for a New Age*, 28-40; Gates, *Defense Budget Recommendation Statement* (Arlington, VA).

<sup>17</sup> Gates, *Air Force Association Convention, as Delivered by Secretary of Defense Robert M. Gates*, National Harbor, MD, Wednesday, September 16, 2009.

<sup>18</sup> Gates, *Defense Budget Recommendation Statement* (Arlington, VA).

the visible deterrent capability as an important requirement.<sup>19</sup> In summary, the Act stated that “... [i]t is the policy of the United States to support a development program for next generation bomber aircraft technologies.”<sup>20</sup>

These bomber issues address more than the nuclear capabilities of the bomber force, they also address the ability of the force to conduct operations in a conventional environment. Barry Watts highlighted the importance of long-range strike aircraft to prosecute time-sensitive and emerging targets on the battlefield of the future. He highlights the fact that over 80 percent of targets struck by airborne platforms during Enduring Freedom were flex targets, or targets assigned after the aircraft was airborne. The ability of the bomber aircraft to provide persistent unrefueled presence in close proximity to these targets is a valuable tool for Combatant Commanders.<sup>21</sup>

This capability must not be understated in the future. The U.S. Central Command Coalition Forces Air Component Commander’s number one urgent operational need was equipping the B-1 bomber with an advanced targeting pod prior to its fielding in 2008. This capability allows B-1 aircrew to share targeting pod information with ground forces and to coordinate precision strikes when necessary. It has also led to the B-1 being deployed at a higher frequency than any other manned kinetic platform in the Air Force.

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<sup>19</sup> *National Defense Authorization Act for Fiscal Year 2010*, Vol. H.R. 2647, 2009), 231-1251, [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111\\_cong\\_bills&docid=f:h2647enr.txt.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2647enr.txt.pdf) (accessed 1 February 2010).

<sup>20</sup> Ibid.

<sup>21</sup> Barry D. Watts, *The Case for Long-Range Strike: 21<sup>st</sup> Century Scenarios* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2008), 25-29.



The B-1 currently deploys at a one to two dwell ratio. This means for every six month period B-1 crews are deployed, they will spend one year in garrison. The B-1 is also the only manned kinetic platform that is deploying for periods longer than 120 days.<sup>22</sup> The B-52 currently provides similar capability during deployments to Guam in support of U.S. Pacific Command requirements. Thus, the combination of a bombers' loiter capability, coupled with precision weapons and advanced sensors is valuable during low intensity conflicts.

While resource constraints are important, it is difficult to use cost as a discriminator in choosing capabilities for a nuclear deterrent force. One key issue is determining how much cost to associate with the nuclear and conventional roles for dual-capable systems like a bomber.<sup>23</sup> The Mitchell Institute paper and the Kosiak report attempt to bring cost into the equation when determining a best force structure option. Kosiak's estimated annual cost of the 1,000 warhead triad versus the 1,000 warhead SLBM monad is \$13.5 billion and \$9.7 billion between 2006 and 2035. He caveats these numbers by stating the "estimates may overstate the cost to DOD of sustaining U.S. nuclear offensive strategic forces...because they...attribute the full cost of developing,

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<sup>22</sup> Data provided by Mr. Jeffrey N. Williams, Senior Analyst, Combat Air Forces Aviation Scheduling, Headquarters Air Combat Command, 25 January 2010.

<sup>23</sup> Steven M. Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2006), 23.

procuring, operating and supporting dual-capable bombers entirely to nuclear offensive strategic forces.”<sup>24</sup>

The Mitchell Institute paper presented similar difficulties in presenting their cost comparisons. Their estimated cost of 450 ICBMs, 14 ballistic missile submarines and 95 nuclear bombers was \$5.4 billion in annual operating costs and \$240 billion in development and acquisition costs between FY 2010 and FY 2050. Their estimated costs for the ICBM/SLBM dyad was \$3.7 billion in annual operating costs and \$151 billion in development and acquisition costs between FY 2010 and FY 2050.<sup>25</sup> The Mitchell Institute paper makes an important assumption that is not captured in their cost data. That assumption is the existence of a nuclear capable B-2 fleet.

The thesis presented in the Mitchell Institute paper is “the United States should gradually shift to a dyad of [SLBMs] and [ICBMs] as it shapes its nuclear posture for the future.”<sup>26</sup> Much of their argument for a dyad versus a triad revolves around cost and the lack of commitment from the U.S Government for development of an air-launched cruise missile replacement or next generation bomber. This becomes clear in the comparison of options when they state that a triad is the most attractive option and when their

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<sup>24</sup> Ibid. 26.

<sup>25</sup> Dana J. Johnson, Christopher J. Bowie, and Robert P. Haffa, *Triad, Dyad, Monad? Shaping the US Nuclear Force for the Future*, Vol. Mitchell Paper 5 (Montgomery, AL: Mitchell Institute Press, 2009), 27.

<sup>26</sup> Ibid. 7.

ICBM/SLBM dyad assumes the presence of a nuclear capable B-2 without accounting for the funding of the B-2 under the cost estimates for this dyad.<sup>27</sup>

Thus, the \$3.8 billion per year difference in cost between Kosiak's 1,000 warhead triad and monad forces seems somewhat insignificant when one considers the conventional capability purchased by maintaining the nuclear bomber force. This seems more important in an environment where balancing capabilities across the spectrum of conflict is important.

Another 2010 Defense Authorization Act decision highlights Congressional concern over the potential loss of Air Force kinetic strike capability. Secretary Gates' FY 2010 budget proposed the elimination of 250 fighter aircraft from the Air Force beginning in 2010. This reduction would facilitate the purchase of 513 F-35s over the five year defense plan.<sup>28</sup> In Section 1075 of the FY 2010 Defense Authorization Act, Congress prohibited the retirement of fighter aircraft until a report was submitted outlining, among other things, how the capability gap will be addressed, an assessment of the threat environment and current capabilities, and a cost estimate across the five year defense plan if the retirement is not approved.<sup>29</sup>

In a resource constrained environment, it can be argued that the nuclear capabilities of the bomber force, coupled with its proven capability in an irregular

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<sup>27</sup> Ibid. 27-28.

<sup>28</sup> Gates, *Defense Budget Recommendation Statement* (Arlington, VA).

<sup>29</sup> *National Defense Authorization Act for Fiscal Year 2010*, 231-1251.

warfare environment, provide a cost effective means of balancing capabilities across the spectrum of conflict. Thus, resource constraints add further support for the 300 ICBM, 11 ballistic missile submarines and 40 bomber fleet advocated in the previous chapter.

### **The Schlesinger Report**

Another dark cloud hanging over the nuclear free world and the follow-on START agreement are the 2008 Phase I and Phase II reports by the Secretary of Defense Task Force on DoD Nuclear Weapons Management. This report is more commonly referred to as the Schlesinger Report. A discussion of this report is relevant at this point following a discussion of resource constraints because many of the problems the Schlesinger Report identifies are directly linked to budget decisions in the past.<sup>30</sup>

In August 2007, a significant event occurred that is changing the DNA of the U.S. Air Force. Nuclear weapons were inadvertently transferred from Minot Air Force Base in North Dakota to Barksdale Air Force in Louisiana. This failure of a system that tolerates zero-defects led Secretary of Defense Robert Gates to appoint a task force, led by former Secretary of Defense James Schlesinger, to look first at the nuclear mission within the Air Force and second to look at the nuclear mission across the DOD.<sup>31</sup> The

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<sup>30</sup> James R. Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase I: The Air Force's Nuclear Mission* (Washington D.C.: U.S. Department of Defense, 2008), 1.

<sup>31</sup> *Ibid.* 13.

cascading dominoes following this event contributed to the firing of Air Force Secretary Michael Wynne and Air Force Chief of Staff General T. Michael Moseley.<sup>32</sup>

Simultaneously, the Air Force is fighting a perception that it is not doing enough in the wars in Iraq and Afghanistan. In April 2008, Secretary Gates commented during remarks at the Air War College in Montgomery, Alabama that, “our services are still not moving aggressively in wartime to provide resources needed now on the battlefield.”<sup>33</sup> He then described the process of getting additional intelligence, surveillance and reconnaissance assets into combat as “pulling teeth” since people were focused on “old ways of doing business.”<sup>34</sup> This message was interpreted by some as a direct indictment against Air Force leadership and pointed to this as contributory to the replacement of top Air Force leaders.<sup>35</sup>

The new Air Force leadership team, Secretary Michael Donley and General Norton Schwartz, accepted leadership of a service struggling with issues at opposite ends of the spectrum of conflict. Gen Schwartz’ top priorities were quickly transmitted to the service; “reinvigorate the Air Force nuclear enterprise,” and “partner with the Joint and Coalition team to win today’s fight.”<sup>36</sup> The effect of this was a re-balancing within the

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<sup>32</sup> David Stout, "Gates Selects New Air Force Leaders," *New York Times*, June 10, 2008, <http://query.nytimes.com/gst/fullpage.html?res=9C01EED81730F933A25755C0A96E9C8B63&scp=1&sq=&st=nyt> (accessed January 22, 2010).

<sup>33</sup> Robert M. Gates, Anonymous Remarks to Air War College (Montgomery, AL), Washington DC, April 21, 2008.

<sup>34</sup> Ibid.

<sup>35</sup> David Axe, "Meet the 'New' U.S. Air Force," , <http://ebird.osd.mil/ebfiles/e20090805694400.html> (accessed 08/03, 2009).

<sup>36</sup> *2008 Air Force Strategic Plan* (Washington D.C.: Department of the Air Force, 2008).

Air Force of B-2 and B-52 training away from conventional tasking with an increase in emphasis on nuclear training.<sup>37</sup> Thus, any effort to rebalance capabilities across the spectrum of conflict must be done with an eye on the nuclear enterprise.

The Phase I Schlesinger Report focused specifically on the Air Force. A key finding in this report was an “underinvestment in the nuclear deterrent mission is evident, undercutting the nation’s deterrence posture.”<sup>38</sup> The report cited evidence that Russia and China are both modernizing their nuclear weapons and that North Korea and Iran were seeking to develop nuclear weapons and delivery systems, while U.S. investment was low. A specific example of this underinvestment is a reduction in the Major Force Program for Strategic Forces by roughly 65 percent from 1990 to 2007.<sup>39</sup>

The report catalogued the decline of the nuclear mission in the bomber community by describing the dissolution of Strategic Air Command following Desert Storm and the increasing emphasis on the conventional mission. As a result, the Air Force began to devalue nuclear capabilities.<sup>40</sup> Following Desert Storm, some within Air Force leadership viewed bombers as dinosaurs. This was highlighted in the Schlesinger Report which stated “[i]n 1993, Air Force Chief of Staff General Merrill McPeak

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<sup>37</sup> Author served as Chief, Flight Operations and Training Branch and Deputy Chief, Flight Operations Division at Air Combat Command from June 2007 to June 2009. The author supervised changes in B-52 and B-2 flight training programs following Schlesinger Report publication.

<sup>38</sup> Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase I: The Air Force’s Nuclear Mission*, 14.

<sup>39</sup> Ibid. 18-19 and 25.

<sup>40</sup> Ibid.

described the B-52 as a ‘sunset system’.”<sup>41</sup> The B-52 is still flying; 27 years and 3 conflicts after General McPeak’s statement. Thus, the bomber force exhibits more characteristics of a phoenix than a dinosaur.

Key recommendations related to this include the establishment of a new major command to oversee nuclear operations and to provide resources necessary to implement the Global Deterrent Force (GDF) concept for B-52s.<sup>42</sup> The Air Force responded to this by activating Air Force Global Strike Command (AFGSC) on August 7, 2009 to oversee nuclear operations. This command will eventually have command of the Air Force ICBM and bomber force. AFGSC will oversee the assignment of bombers within the Global Deterrent Force. This concept is similar to the Air Expeditionary Force construct utilized throughout the Air Force for conventional deployments. The GDF will rotationally align nuclear bomber units into the deterrent force. During these assigned periods, the bombers will focus on the nuclear mission. This is in addition to increased nuclear training in the B-2 and B-52 force. It is important to note that this is being done while the B-2 and B-52 forces are deploying on a rotational basis in support of U.S. Pacific Command conventional requirements.

When it appears the Air Force is being pulled simultaneously toward two diverse ends of the spectrum of conflict it is finding a way to balance the diverse requirements. Brigadier General Tim Ray was asked: Did the establishment of Global Strike Command and the increase in emphasis on nuclear training increase the risk to the U.S. mission in

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<sup>41</sup> Ibid. 22.

<sup>42</sup> Ibid.

the current fight by pulling away scarce resources? General Ray responded by stating that “risk is really about making tough choices and the Air Force was making tough choices in an environment where it is considered over-matched to combat most adversaries.”<sup>43</sup> He also noted that “AFGSC provides the Air Force with a conscience to the mission of U.S. Strategic Command.”<sup>44</sup> This conscience should assist the Air Force with not falling into traps from the past regarding the nuclear mission.

The Phase II Schlesinger Report of the DOD at large found a “loss of attention and focus,” and that “both the Services and individual commands have diverted resources away from sustaining the deterrent to other purposes, which appeared more pressing.”<sup>45</sup> The report also highlighted that “deterrence is a larger national and international mission; it cannot be viewed solely in terms of military cost-effectiveness.”<sup>46</sup>

One important finding that is of particular relevance to this discussion is a recommendation that the DOD provide a “nuclear capabilities roadmap for modernization and sustainment of the nuclear deterrent force.”<sup>47</sup> The U.S. Congress provided direction

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<sup>43</sup> Brigadier General Timothy Ray, Col John W. Morehead. Personal Interview, December 1, 2009.

<sup>44</sup> Ibid.

<sup>45</sup> James R. Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase II: Review of the DoD Nuclear Mission* (Washington D.C.: U.S. Department of Defense, 2008), cover letter.

<sup>46</sup> Ibid.

<sup>47</sup> Ibid. vi.



in the FY 2010 Defense Authorization Act that appears to support this recommendation.<sup>48</sup>

Section 1251 of the Defense Authorization Act tasks the President to provide Congress with a report outlining a plan to enhance the safety and security of the nuclear weapons stockpile and to provide a plan to modernize the nuclear weapons complex and maintain the delivery vehicles.<sup>49</sup> A group of 41 Senators has recently pointed to this report's recommendations regarding the safety and operations of U.S. nuclear weapons. This group believes the U.S. needs new warheads and nuclear research facilities.<sup>50</sup>

The FY 2011 President's Budget request is attempting to assuage some of these concerns, including \$17.7 billion in additional defense-related dollars flow for the Department of Energy for nuclear weapons programs. This funding will primarily support improvements in the nuclear infrastructure in Los Alamos, New Mexico and Oak Ridge, Tennessee. It also funds a life extension program for the B-61 nuclear bomb, but does not include funding for a reliable replacement warhead.<sup>51</sup> Whether or not these steps garner bi-partisan support for a new START remains to be seen.

Thus, the legacy of the Schlesinger Report is that there is concern in Congress and with Air Force leadership that hasty decisions may lead to long-term consequences. Congress is likely to take a longer term view and impose limits on changes to nuclear

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<sup>48</sup> *National Defense Authorization Act for Fiscal Year 2010*, 231-1251.

<sup>49</sup> *Ibid.*

<sup>50</sup> "A False Nuclear Start," *Wall Street Journal*, January 5, 2010.

<sup>51</sup> Laicie Olson, *Fiscal Year 2011 Defense Spending Request: Briefing Book* (Washington, D.C.: The Center for Arms Control and Non-Proliferation, 2010), 9-10, 12.

infrastructure that will result in the U.S. maintaining some type of triad deterrent structure based on lessons from the Schlesinger Report. This conclusion is supported by decisions in the FY 2010 Defense Authorization Act highlighted above. In a dynamic security environment where the list of nuclear actors is likely to change rapidly, maintaining a bomber leg of the triad reduces the risk of being caught ill-prepared for potential future threats.

The legacy of the Schlesinger Report and the uncertainties of the future security environment support the thesis of this paper that the U.S. should maintain all three legs of the old nuclear triad. This will enable the U.S. to maintain the necessary industrial base to ensure a safe and secure nuclear arsenal. Weapons reductions are possible to meet current and planned reduction goals. However, there is still significant enough uncertainty in the domestic and international political environment that it would be wise not to take irrevocable budgetary or force structure actions to eliminate a leg of the triad.

When one looks at the dark clouds described in this chapter, they add support for the argument that the U.S. should maintain a balanced triad. First, the bomber's dual-capability (nuclear and conventional) provides combatant commanders a valuable asset across the spectrum of conflict. This provides more "bang for the buck" than capabilities only designed for one mission. Second, the decision to deemphasize the nuclear mission following Desert Storm contributed to mistakes in handling nuclear weapons...a business that tolerates zero mistakes. The uncertainty of the current security environment with respect to the proliferation of nuclear weapons indicates that the prudent choice is to maintain the triad and the associated bomber industrial base.

## CONCLUSION

Secretary Gates decision not to fund a replacement bomber should not be seen as an ominous sign. This research has shown that the capabilities inherent in the nuclear bomber provide a superb deterrent capability against rogue states. Current U.S. policy highlights rogue states and terrorist organizations as the greatest future nuclear threats to the U.S. and our allies. Thus, the U.S. needs a nuclear force structure focused to counter these threats. A nuclear bomber force provides unique capabilities within the strategic nuclear triad to address these threats. The bombers ability to be recalled and to minimize collateral damage makes it unique among the legs of the triad. The bomber also provides the best capability among legs of the triad to avoid overflight of sensitive areas and to send a visible deterrent message to potential adversaries. Based on these unique capabilities, this paper recommends the United States maintain a nuclear bomber capability as part of a triad nuclear deterrent force.

These capabilities coupled with the bombers ever increasing conventional prowess should lead DOD decision makers to not see bombers as dinosaurs. Instead, the bomber should be seen as a phoenix poised to deter the most likely nuclear threats in the foreseeable future while providing proven conventional capability across the spectrum of conflict.

The 21<sup>st</sup> Century security environment contains a great deal of uncertainty regarding the proliferation of nuclear weapons to rogue states and terrorist organizations. A deterrent force with unique capabilities is required to address nuclear threats from these new and emerging nuclear powers. Nuclear capable bombers are best able to

provide the capabilities to deter these threats, while enhancing deterrent capability against traditional threats.

The ability to deter rogue states is important. President Obama's view of the current strategic environment illustrates that the most likely entities to employ nuclear weapons are rogue states and terrorist organizations. This view is supported by British and American strategic assessments. Therefore, advocating for a nuclear deterrent force that is focused solely on Russia and China is counter to the majority of mainstream thinking on the future security environment.

A nuclear bomber force of 24 combat coded B-52s and 16 combat coded B-2s, when coupled with a mix of SLBMs and ICBMs provide a robust nuclear deterrent against traditional nuclear threats and rogue states. A nuclear deterrent force of 300 ICBMs, 11 ballistic missile submarines and 40 bombers will allow the U.S. to meet the delivery vehicle and warhead targets proposed within START follow-on limits agreed to between Presidents Medvedev and Obama in July 2009.

Additionally, this option gives the United States a total combat coded bomber fleet of 91 aircraft when coupled with the current 51 combat ready B-1s. This total is less than the 2010 QDR recommended 96 total bombers. The nuclear capability of B-52s and B-2s, coupled with the conventional capability provided by all three bombers gives the Secretary of Defense a weapons system capable in counter-insurgency, traditional state-on-state, and nuclear conflicts.

## **APPENDIX I: A WORLD WITHOUT NUCLEAR WEAPONS**

This Appendix provides an overview of the strategic environment as it was prior to the signing of the follow-on START treaty on April 9, 2010. The original research was completed prior to the April 9, 2010 signing of a START follow-on treaty and release of the Nuclear Posture Review Report on April 11, 2010.

President Barack Obama's speech in Prague, Czech Republic provides the foundation for a vision of a world without nuclear weapons. One must understand the linkage between the ends, ways and means presented in this speech, coupled with the administration's view of the strategic framework in order to appreciate the problem facing Department of Defense (DOD) leadership in presenting nuclear force structure options for President Obama and Congress to consider in response to START follow-on reductions.

### **Ends – A World Without Nuclear Weapons**

President Obama's goal of a nuclear free world is a clear statement of U.S. policy even though the administration had not published a National Security Strategy or Nuclear Posture Review. He clearly articulated this desired end-state along with the ways and some associated risks during this speech. His proposed strategy (ways) is an aggressive four part approach to move in this direction. This strategy includes nuclear weapons reductions, enhanced efforts to counter-proliferation of nuclear weapons technology,

increased measures for securing nuclear materials from terrorists and U.S. hosting of a 2010 Global Nuclear Security Summit.<sup>1</sup>

This vision is bounded on the right by those who believe that it is impossible to un-invent nuclear weapons.<sup>2</sup> Those who espouse this opinion, such as VADM (ret) Robert R. Monroe, believe that nuclear weapons will always be with us and the best that humanity can hope for is to reduce numbers and enhance control. Specifically, the nuclear weapons holding states can, through negotiation limit the number of weapons necessary for each side to feel safe, while stopping or minimizing the spread of weapons to other states and non-state actors.<sup>3</sup>

One conclusion from this view is that as long as there are nuclear weapons, a strong incentive will exist for non-nuclear nations to acquire them regardless of guarantees. They see nations such as Iran as having a desire to pursue nuclear weapons as a means of defending against U.S. led or supported "regime change."<sup>4</sup> Those in this camp believe that the only way to stop proliferation is through enforcement, which

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<sup>1</sup> Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*; "Addressing the Nuclear Threat: Fulfilling the Promise of Prague at the L'Aquila Summit," The White House, Office of the Press Secretary, [http://www.whitehouse.gov/the\\_press\\_office/Addressing-the-Nuclear-Threat-Fulfilling-the-Promise-of-Prague-at-the-LAquila-Summit/](http://www.whitehouse.gov/the_press_office/Addressing-the-Nuclear-Threat-Fulfilling-the-Promise-of-Prague-at-the-LAquila-Summit/) (accessed 08/28, 2009).

<sup>2</sup> Barry D. Watts, *The Case for Long-Range Strike: 21<sup>st</sup> Century Scenarios* (Washington D.C.: Center for Strategic and Budgetary Assessments, 2008), 38.

<sup>3</sup> VADM Robert R. Monroe, "A Perfect Storm Over Nuclear Weapons," *Air & Space Power Journal* 23, no. 9 (Fall, 2009), 27; Watts, *The Case for Long-Range Strike: 21<sup>st</sup> Century Scenarios*, 38.

<sup>4</sup> Ibid.

requires a strong nuclear deterrent force and a robust nuclear weapons modernization and production infrastructure.<sup>5</sup>

The left boundary believes disarmament is possible, but some who hold this view are not optimistic about the commitment to move beyond promises.<sup>6</sup> Mary Kaldor, the Professor of Global Governance at the London School of Economics, has written widely in support of nuclear disarmament is representative of this group. She points out that Article VI of the Nuclear Non-Proliferation Treaty (NPT) calls for the signatories of the treaty to work toward universal nuclear disarmament.<sup>7</sup> She sees little real progress toward nuclear disarmament since the treaty went into effect in 1970.<sup>8</sup> She believes possession of nuclear weapons should be declared illegal under international law as a “crime against humanity.” This was proposed to the United Nations in various forums but never adopted.<sup>9</sup>

President Obama’s goal is widely supported. G8 leaders endorsed this vision at the L’Aquila Summit in July 2009 and agreed to the U.S. hosted Global Nuclear Security

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<sup>5</sup> Monroe, *A Perfect Storm Over Nuclear Weapons*, 27-28.

<sup>6</sup> Zia Mian, "Nuclear Promises," *Foreign Policy in Focus*, June 4, 2009, <http://www.fpif.org/fpiftxt/6166> (accessed October 10, 2009).

<sup>7</sup> Mary Kaldor, *Dismantling the Global Nuclear Infrastructure*, <http://www.opendemocracy.net> ed., Vol. 2009: Open Democracy: Free Thinking for the World, 2009), October 11, 2009.

<sup>8</sup> Mian, *Nuclear Promises*; Kaldor, *Dismantling the Global Nuclear Infrastructure*, October 11, 2009.

<sup>9</sup> Ibid.

Summit in March 2010 proposed by President Obama.<sup>10</sup> The United Nations Security Council followed this by approving a resolution aimed “at ridding the world of nuclear weapons” by stepping up efforts to counter the spread of nuclear weapons and reducing the probability of nuclear terrorism.<sup>11</sup>

A world without nuclear weapons is not a new vision. Many American leaders had this vision and sought to reduce the number of and the emphasis on nuclear weapons since 1945. These leaders include Presidents Harry S. Truman and Ronald W. Reagan, Secretaries of State George P. Schulz and Henry Kissinger, Secretary of Defense William J. Perry, and former chairman of the Senate Armed Services Committee Sam Nunn.<sup>12</sup>

After President Truman ordered the use of the atomic bomb on Hiroshima and Nagasaki to end the war with Japan in 1945, his administration announced a plan in 1946 to give fissile material control over to the international community. This plan was presented to the United Nations by Bernard Baruch, but was rejected by the Soviets, thus ending early hope of a world without nuclear weapons. Following this rejection, nuclear

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<sup>10</sup> *Addressing the Nuclear Threat: Fulfilling the Promise of Prague at the L'Aquila Summit.*

<sup>11</sup> "U.N. Security Council Approves Resolution to Rid World of Nuclear Weapons," *Fox News*, September 24, 2009, <http://www.foxnews.com/politics/2009/09/24/security-council-approves-resolution-rid-world-nuclear-weapons/> (accessed September 24, 2009).

<sup>12</sup> J. P. Scoblic, "Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative," *Bulletin of the Atomic Scientists* 64, no. 1 (Mar, 2008), 35, <http://ezproxy6.ndu.edu/login?url=http://search.ebscohost.com.ezproxy6.ndu.edu/login.aspx?direct=true&db=aph&AN=32587049&site=ehost-live> (accessed October 12, 2009).



weapons became a centerpiece of U.S. defense policy and remained such until the 1980's. In spite of this, numerous U.S. Presidents made disarmament progress.<sup>13</sup>

President John F. Kennedy signed the Limited Test Ban Treaty.<sup>14</sup> President George H. W. Bush signed the Strategic Arms Reduction treaties.<sup>15</sup> President William J. Clinton negotiated for the denuclearization of Ukraine, Belarus, and Kazakhstan following the dissolution of the Soviet Union and the still un-ratified Comprehensive Test Ban Treaty (CTBT) in 1996.<sup>16</sup> President George W. Bush signed the Moscow Treaty (also known as the Strategic Offensive Reductions Treaty or SORT) with Russia in 2002.<sup>17</sup> While these efforts are important in the development of U.S. nuclear policy,

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<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid; Mikhail Gorbachev, "Two First Steps on Nuclear Weapons," *New York Times*, September 25, 2009, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=1&did=1206520461&SrchMode=2&sid=5&Fmt=3&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1262015012&clientId=3921> (accessed December 28, 2009).

<sup>16</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative*, 36; "START and Beyond," *New York Times*, December 19, 2009, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=6&did=1924469621&SrchMode=2&sid=1&Fmt=3&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1262020230&clientId=3921> (accessed December 28, 2009).

<sup>17</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative*, 336-37; Woolf, *Strategic Arms Control After START: Issues and Options*, 10.

moves by President Ronald Reagan appear to be most similar to the current disarmament debate.<sup>18</sup>

Senator John McCain pointed this out when he added bi-partisan support to President Obama's disarmament vision in a floor statement released on June 3, 2009. His statement quoted President Reagan's address before the Japanese Diet on November 11, 1983; "our dream is to see the day when the nuclear weapons will be banished from the face of the Earth."<sup>19</sup> President Reagan's call for nuclear disarmament caught many by surprise. His statements appeared strange coming from the man who restarted the B-1 bomber, accelerated development of the Trident II missile and B-2 bomber, and deployed 3,000 nuclear cruise missiles.<sup>20</sup>

J. Peter Scoblic offers insight into the paradoxical nuclear statements of President Reagan in a March/April 2008 article in *Bulletin of the Atomic Scientists*. Scoblic believes, "[d]espite his nuclear buildup and his long-standing dismissal of arms control, Reagan was at heart a nuclear abolitionist, viscerally frightened by the prospect of atomic holocaust."<sup>21</sup> He points out that Reagan made a sincere offer to Soviet leader Mikhail Gorbachev to eliminate all nuclear weapons at the 1986 Reykjavik Summit. Gorbachev

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<sup>18</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative*, 36; Kaldor, *Dismantling the Global Nuclear Infrastructure*, October 11, 2009.

<sup>19</sup> John McCain, United States Senate. World Without Nuclear Weapons, June 3, 2009, [http://mccain.senate.gov/public/index.cfm?FuseAction=PressOffice.Speeches&ContentRecord\\_id=A6759149-FC5A-31F0-47DD-B6ED8292A7CA](http://mccain.senate.gov/public/index.cfm?FuseAction=PressOffice.Speeches&ContentRecord_id=A6759149-FC5A-31F0-47DD-B6ED8292A7CA) (accessed October 7, 2009).

<sup>20</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative*, 36.

<sup>21</sup> *Ibid.*

agreed in principle with Reagan's suggestion to eliminate all nuclear weapons. They reached an impasse on the issue over Reagan's desire to continue the Strategic Defense Initiative which was envisioned to provide a ballistic missile shield to defend the United States from attack.<sup>22</sup> Disagreement over U.S. missile defense plans continues to be a stumbling block between the U.S. and Russia.<sup>23</sup>

We cannot know the outcome of this proposal had Reagan and Gorbachev reached an agreement on this issue. However, within three years of this offer the balance of power between the two nations shifted with the end of the Cold War. Thus, it appears that Reagan's tough nuclear stance including missile defense and bomber production led to real results. His successor, George H. W. Bush, continued his vision.

The Cold War ended on November 9, 1989 with the fall of the Berlin Wall ushering in an opportunity for President George H. W. Bush to order nuclear bombers off alert September 29, 1991 and to sign the recently expired START Treaty the same year.<sup>24</sup> These events dramatically reduced the fear that many Americans had over nuclear weapons early in the Reagan era when 76 percent believed a nuclear war would erupt

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<sup>22</sup> Ibid.

<sup>23</sup> Fred Weir, "Why Prime Minister Putin may be Throwing a Wrench in US-Russia Arms Talks; Russia Prime Minister Putin Said there were Problems with Arms Talks Aimed at Finalizing a New Strategic Arms Reduction Deal. Is it a Hardball Tactic Or a Bid to Derail the Negotiations Altogether?" *The Christian Science Monitor*, December 30, 2009.

<sup>24</sup> Robert D. McFadden, "Camor in the East; the Berlin Wall: A Monument to the Cold War, Triumphs, and Trajedies," *New York Times*, November 10, 1989, <http://www.nytimes.com/1989/11/10/world/camor-east-berlin-wall-monument-cold-war-triumphs-tragedies.html?scp=2&sq=berlin+wall&st=nyt> (accessed October 15, 2009).; Gorbachev, *Two First Steps on Nuclear Weapons*, A. 29

within a few years.<sup>25</sup> Recent events such as North Korea's acquisition of nuclear weapons and the on-going stand-off, between first Iraq and now Iran with respect to the development of nuclear weapons programs has brought the issue back into the public eye again.<sup>26</sup>

A January 4, 2007 *Wall Street Journal* article entitled "A World Free of Nuclear Weapons" articulated a vision and a strategy for global disarmament that is very similar to President Obama's Prague Speech. The authors of this article carried significant international and U.S. political influence. They are former Secretaries of State Henry Kissinger and George Schultz, former Secretary of Defense William Perry and former Chairman of the Senate Armed Services Committee Sam Nunn.<sup>27</sup>

They pointed specifically to North Korea's nuclear tests and Iran's nuclear enrichment as indicators that "the world is now on the precipice of a new and dangerous nuclear era."<sup>28</sup> The article closed with a call for a return to a previous vision of nuclear disarmament when they stated:

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<sup>25</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and beyond deterrence—a Global Security Imperative*, 36.

<sup>26</sup> Susan F. Burk, Geneva Center for Security Policy. Strengthening the Nuclear Nonproliferation Regime: A Blueprint for Success, August 12, 2009, <http://www.state.gov.ezproxy6.ndu.edu/t/isn/rls/rm/127886.htm> (accessed September 10, 2009).

<sup>27</sup> George P. Shultz et al., "A World Free of Nuclear Weapons," *Wall Street Journal*, January 4, 2007, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=1&did=1189149711&SrchMode=2&sid=2&Fmt=3&VInst=PROD&VType=PQD&ROT=309&VName=PQD&TS=1262014382&clientId=3921> (accessed December 21, 2009).

<sup>28</sup> Ibid.

Reassertion of the vision of a world free of nuclear weapons and practical measures toward achieving that goal...would be perceived as, a bold initiative consistent with America's moral heritage...could have a profoundly positive impact on the security of future generations. Without the bold vision, the actions will not be perceived as fair or urgent. Without the actions, the vision will not be perceived as realistic or possible.<sup>29</sup>

Former Russian President Mikhail Gorbachev followed this article with a supporting op-ed piece in the *Wall Street Journal* on January 31 the same year.

Gorbachev highlighted efforts undertaken during his administration along with efforts by Presidents Reagan and Bush toward this vision. His statement that "the goal of the eventual elimination of nuclear weapons has been essentially forgotten," was a sobering testament to changes in the global political environment following the Cold War.<sup>30</sup>

The push by these world leaders is credited by some with reigniting the disarmament fire. As a result, a growing list of world leaders banded together as part of the Global Zero campaign. In December 2008, this campaign was launched and called for "a legally binding and verifiable agreement, including all nations, to eliminate nuclear weapons by a date certain."<sup>31</sup>

There are many similar themes between the January 2007 *Wall Street Journal* op-ed article and President Obama's Prague Speech. This should not come as a surprise to anyone familiar with the issue. Vice President Joseph Biden, then chairman of the Senate

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<sup>29</sup> Ibid.

<sup>30</sup> Mikhail Gorbachev, "The Nuclear Threat," *Wall Street Journal*, January 31, 2007, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=1&did=1206520461&SrchMode=2&sid=5&Fmt=3&VInst=PROD&VType=PQD&ROT=309&VName=PQD&TS=1262015012&clientId=3921> (accessed December 21, 2009).

<sup>31</sup> Kaldor, *Dismantling the Global Nuclear Infrastructure*, October 11, 2009.

Foreign Relations Committee, called this article “vitally important,” and “a new center in American politics, where realist conservative Republicans and tough-minded Democrats find common ground.”<sup>32</sup>

The desired end state of a world without nuclear weapons is not new. It is a long-standing desire of many American and international leaders. Thus, it is a noble vision, but, one which we may never achieve. There will always be those who think the process towards disarmament is not moving fast enough and those who believe it is moving too fast. However, the process appears to be moving forward. As President Obama indicated at Prague, this goal may not be achievable in our lifetime but we must move incrementally in that direction.<sup>33</sup> His choice to emphasize early in his administration a clear articulation of the way forward sends a powerful message to U.S. allies and potential adversaries regarding the importance of this vision. The next section looks at the strategy outlined by President Obama to achieve this end-state.

### **Ways – International Cooperation Through Treaties**

President Obama’s strategy for addressing the nuclear threat and reaching his desired end-state depends heavily on international agreements. He calls for U.S. ratification of the Comprehensive Test Ban Treaty; negotiation of a Fissile Material Cutoff Treaty; and the negotiation of a follow-on agreement to the expired START Treaty as

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<sup>32</sup> Scoblic, *Disarmament Redux: The U.S. Foreign Policy Establishment is Beginning to Consider Progress Toward "the d-Word"—above and Beyond deterrence—a Global Security Imperative*, 38.

<sup>33</sup> Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*.

specific incremental steps toward disarmament.<sup>34</sup> The focus will now narrow to look specifically at the now expired START Treaty.

President Obama and President Medvedev came to an agreement on warhead and delivery vehicle limits under the new treaty in July 2009. “The Joint Understanding commits the United States and Russia to reduce their strategic warheads to a range of 1,500-1,675, and their strategic delivery vehicles to a range of 500-1000.”<sup>35</sup> This is significantly lower than the Strategic Arms Reduction Treaty (START I) which went into effect on December 5, 1994 and expired December 5, 2009. START limited deployed strategic nuclear delivery vehicles to 1,600 and deployed warheads to 6,000. The Joint Understanding does not significantly reduce warheads and delivery vehicles below current Strategic Offensive Reductions Treaty (SORT) or Moscow Treaty that went into effective on June 1, 2003. This agreement is effective until December 31, 2012. It limits warheads to a range between 1,700 and 2,200. The U.S. and Russia are currently working towards reaching these warhead limits.<sup>36</sup>

A major difference between START and SORT is in counting rules. START imposes a rigorous set of counting rules and focuses on operationally deployed

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<sup>34</sup> Ibid.

<sup>35</sup> "FACT SHEET the Joint Understanding for the START Follow-on Treaty," The White House Office of the Press Secretary, [http://www.whitehouse.gov/the\\_press\\_office/FACT-SHEET-The-Joint-Understanding-for-the-START-Follow-on-Treaty/](http://www.whitehouse.gov/the_press_office/FACT-SHEET-The-Joint-Understanding-for-the-START-Follow-on-Treaty/) (accessed December 21, 2009).

<sup>36</sup> Bee, *Seven Minutes to Midnight: Nuclear Weapons After 9/11*, 18; Cimbala, *SORT-Ing Out START*, 48; Woolf, *Strategic Arms Control After START: Issues and Options*, 9 - 10.

warheads.<sup>37</sup> For example, the U.S. had 3,950 operational deployed warheads on intercontinental ballistic missiles (ICBM), sea-launched ballistic missiles (SLBMs) and bombers (deployed on aircraft or in weapons storage areas on bomber bases).<sup>38</sup> This number is well under the 6,000 warhead limit imposed under START. However, the U.S. possessed approximately 6,000 additional warheads for a total of about 10,000. These warheads include active warheads associated with vehicles in overhaul or available as spares, non-strategic warheads (weapons for fighter aircraft and sea-launched cruise missiles) and over 4,000 inactive warheads.<sup>39</sup> Since START only counts operationally deployed warheads, the 6,000 non-deployed warheads did not place the U.S. above START imposed limits.

Defining counting rules and verification procedures presents a challenge to reaching agreement on a new START. The President's START follow-on negotiator, Rose Gottemoeller, understood this challenge early in the negotiating process. Speaking at a conference in Williamsburg, Virginia in August 2009 she pointed out that the difficult part in reaching the agreed to reduction windows was determining which vehicles and warheads to keep in the face of a changing world where more and more

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<sup>37</sup> Ibid.

<sup>38</sup> Kosiak, *Spending on US Strategic Nuclear Forces: Plans and Options for the 21<sup>st</sup> Century*, 30.

<sup>39</sup> Ibid.



states can acquire nuclear weapons.<sup>40</sup> However, the most pressing issue that stalled negotiations and prevented an agreement prior to the treaty's expiration was how the two nations will verify compliance with the treaty.<sup>41</sup>

START contained rigorous verification and monitoring processes not replicated in the SORT. The two nations agreed that vigorous verification was no longer necessary. Some see these rigorous procedures as a holdover of Cold War thinking not warranted in today's environment.<sup>42</sup> There was an underlying assumption that the two nations collect enough data to verify SORT. There was an additional assumption made that between the ratification of SORT and the expiration of START a new treaty would be negotiated and ratified allowing for additional transparency of SORT compliance.<sup>43</sup> This assumption did not hold true.

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<sup>40</sup> Thom Shanker and Mark Landler, "Pentagon Checks Arsenal in Race for Nuclear Treaty," *New York Times*, September 9, 2009, [http://www.nytimes.com/2009/09/09/world/09arms.html?\\_r=1&scp=1&sq=pentagon%20checks%20arsenal%20in%20race%20for%20nuclear%20treaty&st=cse](http://www.nytimes.com/2009/09/09/world/09arms.html?_r=1&scp=1&sq=pentagon%20checks%20arsenal%20in%20race%20for%20nuclear%20treaty&st=cse) (accessed September 9, 2009).

<sup>41</sup> Mary Beth Sheridan, "U.S. Says Nuclear Agreement is Near," *Washington Post*, December 19, 2009, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=0&did=1924488071&SrchMode=2&sid=2&Fmt=3&VInst=PROD&VType=PQD&ROT=309&VName=PQD&TS=1262020327&clientId=3921> (accessed December 28, 2009); *START and Beyond*, A. 22

<sup>42</sup> Cimbala, *SORT-Ing Out START*, 48.

<sup>43</sup> Woolf, *Strategic Arms Control After START: Issues and Options*, 10.

A bilateral arms control agreement between the U.S. and Russia is important. The U.S. and Russia combine to account for 95% of the world's nuclear warheads.<sup>44</sup> If the two nations can reach an agreement that continues the process toward disarmament it strengthens the importance of other agreements such as the 1968 Non-proliferation Treaty. Mikhail Gorbachev summed up the international importance of the two nations reaching an agreement in a September 25, 2009 *New York Times* article.

Unless they show the world they are serious, the two major nuclear powers will be accused, again and again, of not keeping their word and told that if it is acceptable for 5 or 10 countries to have nuclear weapons as their "ultimate security guarantee," why should it not be the case for 20 or 30 others?<sup>45</sup>

From these statements, it is apparent the START negotiations are taking place in a complex strategic environment. The Obama Administration's view of this environment specifically will have a tremendous impact on how these negotiations proceed.

### **The Obama Administration View of the Current Strategic Environment**

The Obama Administration's view of the current strategic environment and its relationship to nuclear force structure was articulated in various venues. It builds upon a similar foundation as views expressed during the latter portion of President George W. Bush's administration. Specifically, that the Department of Defense is not properly structured to face threats from failing states and terrorist organizations which are the most

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<sup>44</sup> George P. Shultz et al., "Toward a Nuclear-Free World," *Wall Street Journal*, January 15, 2008, <http://proquest.umi.com.ezproxy6.ndu.edu/pqdweb?index=0&did=1412798561&SrchMode=2&sid=4&Fmt=3&VInst=PROD&VType=PQD&ROT=309&VName=PQD&TS=1262014769&clientId=3921> (accessed December 21, 2009).

<sup>45</sup> Gorbachev, *Two First Steps on Nuclear Weapons*, A. 29.

likely threat in the future. Included in this vision, is the belief that a terrorist organization or failing state may acquire and use weapons of mass destruction.

Secretary of Defense Robert Gates articulated this view in a February 2009 *Foreign Affairs* article. He pointed out that the most likely avenue of a catastrophic attack against the United States would come from a failing state and there is a potentially toxic mix of rogue nations, terrorists and weapons of mass destruction.<sup>46</sup> He specifically named Iran and North Korea as part of this mix.<sup>47</sup> If one views a nuclear attack against the United States as the “most dangerous” potential conflict the services must prepare for, then it can be argued from this statement that Secretary Gates views rogue and non-state actors as the “most likely” source of a nuclear attack.

This vision is not significantly different from his predecessor Donald Rumsfeld in the 2006 Quadrennial Defense Review (QDR). The 2006 QDR depicted the future threat environment as being subdivided into four broad categories: Irregular challenges, catastrophic challenges, disruptive challenges and traditional challenges. The 2006 QDR emphasized that the DOD force structure was tailored for traditional state-on-state major combat operations and that DOD force structure needed to shift to better counter

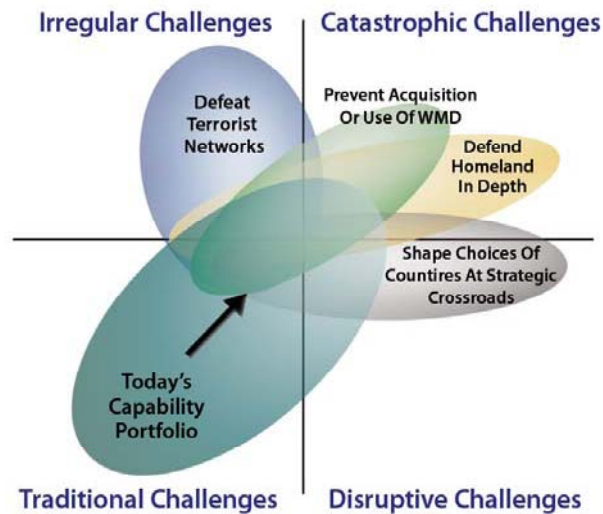
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<sup>46</sup> Robert M. Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs* 88, no. 1 (Jan/Feb, 2009), 28.

<sup>47</sup> *Ibid.*

challenges presented in the other three areas.<sup>48</sup> Figure 1 shows the dangerous nexus where terrorist networks and weapons of mass destruction come together.

Secretary Gates did not obviate the potential for conflict between traditional nation states that possess nuclear weapons. He highlighted the Russian invasion of Georgia in August 2008 along with increasing Russian defense spending as evidence that the U.S. needs to continue to maintain a robust defense capability against other nation-states.<sup>49</sup> One can surmise from the FY 2010 and 2011 budget decisions that the administration believes the likelihood of this type of conflict is low with the real emphasis being on rogue or failing states.



**Figure 5 2006 QDR Challenges<sup>50</sup>**

<sup>48</sup> *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2006), 1.

<sup>49</sup> Gates, *A Balanced Strategy: Reprogramming the Pentagon for a New Age*, 28-40

<sup>50</sup> *Quadrennial Defense Review Report* (Washington D.C.: U.S. Department of Defense, 2006),

President Obama continued this same theme in describing the strategic environment in Cairo in June 2009. He described the interaction of forces within a globalized society and pointed out that when a nation seeks to gain access to a nuclear weapon that the risk of nuclear attack raises for all nations. The President then pointed out several areas of tension between the United States and the Middle East region that are exacerbated by this globalized society. He identified Iran as the primary country of concern in this region. He was careful to separate Iran's desire for peaceful nuclear power from a desire to obtain nuclear weapons; where their pursuit of a nuclear weapon could facilitate a nuclear arms race in the Middle East and lead the region down a dangerous path.<sup>51</sup> His view of the strategic environment quickly shaped his decisions regarding the deployment of anti-ballistic missile systems in Europe.

On September 17, 2009, President Obama made a decision to change a Bush Administration plan to field a ballistic missile defense radar system in the Czech Republic and ballistic missile interceptors in Poland. Russia saw the planned deployment as undermining the nuclear deterrent balance in Europe and a point of contention in START negotiations.<sup>52</sup> U.S. officials were careful to characterize the decision to deploy the SM3 system in this area instead of the original system as being based on the threat posed by potential Iranian acquisition of nuclear ballistic missile technology, not a

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<sup>51</sup> Barack Obama, "The President's Speech in Cairo: A New Beginning," The White House, Office of the Press Secretary, <http://www.whitehouse.gov/blog/NewBeginning/> (accessed 08/28, 2009).

<sup>52</sup> Anne Gearan and Desmond Butler, "US to Reveal Euro Missile Defense Plan," *Washington Post*, September 17, 2009.

potential threat posed by Russia.<sup>53</sup> While some argue that the cancellation of the ballistic missile defense systems was an effort to encourage Moscow to support the U.S. in seeking sanctions against Iran, it can be argued these decisions provide a good linkage between the most likely sources of nuclear proliferation and funding to mitigate the risk proposed by this threat.<sup>54</sup>

Others within the administration share these same views of the strategic environment. Susan Burk, Special Representative of the President for Nuclear Nonproliferation, highlighted similar areas of concern in a speech at the Geneva Center for Security Policy in Switzerland in August 2009. She highlighted difficulties in bringing North Korea and Iran into compliance with the NPT and the discovery of a covert reactor in Syria. The concern over nuclear technology falling into the hands of terrorist or criminal networks was also highlighted as she mentioned the activities of A. Q. Khan to obtain nuclear technology.<sup>55</sup>

There is bi-partisan support for this view. Senator John McCain highlighted some of the same concerns in a floor statement on the FY2010 Defense Authorization Act. He

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<sup>53</sup> Peter Spiegel, "U.S. to Shelve Nuclear-Missile Shield," *Wall Street Journal*, September 17, 2009.

<sup>54</sup> Ibid.

<sup>55</sup> Burk, *Strengthening the Nuclear Nonproliferation Regime: A Blueprint for Success*.

offered support for President Obama's vision of a nuclear-free world and voiced similar concerns about many of the same elements in the security environment as the President.<sup>56</sup>

I believe we must also be prudent and practical in our reductions and remain vigilant about the global proliferation of advance missile and nuclear technology. While recently much of our national defense posture supports combating terrorists, we cannot grow complacent to the danger rogue nations like North Korea and Iran pose to us—whether it's missile launches within range of Hawaii, or transferring weapons to Hezbollah or Hamas.<sup>57</sup>

It is thus a widely held view within the United States government that North Korea, Iran and terrorist networks pose a real nuclear threat to the United States and her allies. When DOD decisions are linked together with President Obama's policy statements in Cairo and Prague this becomes very clear. One can surmise from these statements that there is a level of comfort that exists in the current strategic environment where only a few nations possess nuclear weapons.

### **Risk – People Will Cheat**

The most significant risk pointed out by President Obama in Prague is that countries and non-state actors will break the rules. He specifically pointed to actions by North Korea and Iran as evidence that countries will seek development of nuclear weapons despite international agreements or United Nations direction. His primary

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<sup>56</sup> John McCain, FY 2010 National Defense Authorization Act Floor Statement by Senator John McCain, July 13, 2009, [http://mccain.senate.gov/public/index.cfm?FuseAction=PressOffice.Speeches&ContentRecord\\_id=74C87D7D-F563-2B66-5ED6-3F6476DFD505](http://mccain.senate.gov/public/index.cfm?FuseAction=PressOffice.Speeches&ContentRecord_id=74C87D7D-F563-2B66-5ED6-3F6476DFD505) (accessed October 7, 2009).

<sup>57</sup> Ibid.

means of mitigating this risk is dialogue with the affected countries and stronger, more enforceable international agreements.<sup>58</sup>

Some see promise in international agreements and U.S. leadership in mitigating the risks of proliferation. Dr. Zia Mian, a physicist with Princeton University and director of the Project on Peace and Security in South Asia, believes that “[w]here the United States leads, others will follow.” He points to international agreements as essential to stopping the spread of nuclear weapons. Like Mary Kaldor, he advocates criminalizing nuclear weapons.<sup>59</sup>

Others, like Shultz, Perry, Kissinger, and Nunn, believe that the risk of maintaining the status quo or continuing to slide down the slippery slope of proliferation is greater than the risk of the international agreements not working.<sup>60</sup> They are partnering with Mikhail Gorbachev to advocate for many of the same international treaties to mitigate this risk as President Obama. Specifically, they are advocating the ratification of the Comprehensive Test Ban Treaty and strengthening penalties under the Nuclear Non-Proliferation Treaty (NPT).<sup>61</sup>

The NPT was not successful in stopping the spread of nuclear technology. There were five nations declared as nuclear weapons states under the NPT, the United States,

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<sup>58</sup> Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*.

<sup>59</sup> Mian, *Nuclear Promises*.

<sup>60</sup> Shultz et al., *Toward a Nuclear-Free World*, A. 13.

<sup>61</sup> Shultz et al., *A World Free of Nuclear Weapons*, A.15; Shultz et al., *Toward a Nuclear-Free World*, A. 13; Gorbachev, *The Nuclear Threat*, A. 13; Kaldor, *Dismantling the Global Nuclear Infrastructure*, October 11, 2009.



Russian Federation (Soviet Union), China, France, and United Kingdom. This list expanded with the breakup of the Soviet Union. Belarus, Kazakhstan and South Africa reduced the number of nuclear states by agreeing to abstain from nuclear weapons. North Korea, India and Pakistan are non-NPT countries that have developed nuclear weapons since the treaty was signed. Israel is a non-NPT state suspected of having nuclear weapons. Meanwhile, Iran is seeking to develop nuclear weapons.<sup>62</sup>

Thus, there is a danger that even under a strengthened NPT that one or more entities will be successful in developing nuclear technology in spite of international efforts under a potentially strengthened NPT. This leads to a discussion of President Obama's second, more subtly articulated, risk mitigation strategy. Deterrence is the second means of countering nuclear weapons proliferation. His statement, "[a]s long as these weapons exist, the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies," points out that for the foreseeable future, the U.S. will maintain a nuclear deterrent force.<sup>63</sup> This statement will comfort the roughly thirty allied nations covered under the U.S. nuclear umbrella.<sup>64</sup>

### **Summary**

This chapter provided an overview of the current U.S. policy on nuclear disarmament. The discussion of ends, ways, strategic environment and risks provides a

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<sup>62</sup> Bee, *Seven Minutes to Midnight: Nuclear Weapons After 9/11*, 6 - 7.

<sup>63</sup> Obama, *Remarks by President Barack Obama, Hradcany Square, Czech Republic, April 5, 2009*.

<sup>64</sup> James R. Schlesinger, *Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management; Phase I: The Air Force's Nuclear Mission* (Washington D.C.: U.S. Department of Defense, 2008), cover letter.

broad view of the overall problem and the strategic environment. This overview provides the foundation on which the remainder of the paper will be built.

There are key items that one should draw from this chapter. First, the goal of a world without nuclear weapons was not invented in 2009. This vision has been held by many leaders around the world since the advent of nuclear weapons. There are those that argue that the process is not moving fast enough and others who will claim that it is moving too fast. As one looks at the strategic environment and the associated risks, it is understandable that the environment is complex and that there are more variables in the nuclear weapons reduction equation than the United States and Russia.

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## **Biography**

Col John W. Morehead (USAF) most recently served as Deputy Chief, Flight Operations Division, Headquarters Air Combat Command with responsibility for Combat Air Forces fighter, bomber and rescue training. He was commissioned in 1988 through the U.S. Air Force Academy. He served in various assignments as a B-1 Weapons Systems Officer including a tour as an instructor at the U.S. Air Force Weapons School. His other assignments include, Director, Operations and Training for USAFCENT/A3 and Commander, 505<sup>th</sup> Combat Training Squadron.

Col Morehead holds a B.S. in Economics from the U.S. Air Force Academy; an M.A. in Aeronautical Science from Embry-Riddle Aeronautical University; an M.A. in National Security and Strategic Studies from the Naval War College; and is pursuing an M.A. in Religion from Liberty University.