

U.S. NUCLEAR TRIAD: IS IT SUSTAINING THE COLD WAR OR 21ST CENTURY
FRAMEWORK?

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ABSTRACT

On September 28, 1991, President George H. W. Bush directed all nuclear bomber aircraft to “stand down” from day-to-day alert and download their nuclear weapons to return back to the base’s weapons storage areas. Bush also directed an Air Force missile officer crews who oversaw 150 Minuteman II intercontinental ballistic missiles (ICBM) to disable their launch control center’s capability to launch them. These ICBMs had been removed from the National War Plan. These actions were part of the forthcoming Strategic Arms Reduction Treaty (START) II which would be signed by Bush and Russian Federation (RF) President Boris Yeltsin on January 3, 1993. The treaty would reduce deployed nuclear warheads from approximately 21,000 on both sides to 3-3,500 warheads for each.

With this significant reduction 20 years ago, the U.S. and RF continue with thousands of deployed nuclear weapons. The U.S. still continues to program, fund and prioritize the U.S. nuclear triad of ICBMs, submarine-launched ballistic missiles (SLBM) and bomber aircraft. Why? As Bush stated, the cold war days are over.

Presidents in the Nuclear Age have wielded their influence and views on the role of nuclear weapons. They have led through strategic vision, innovation, policies, and treaties on nuclear weapons role in the national security strategy. The nuclear triad has declined in importance from the height of the Cold War, yet it is still perpetuated into the 21st century. To analyze the nuclear triad, one must examine the Department of Defense (DoD) which is its primary proponent. DoD has acted in a predictive bureaucratic

manner by clinging to systems and a framework that was successful in the past and perpetuates in the future. This stagnation of the successful and slow, perpetuates the nuclear triad and its associated enterprise infrastructure. Most importantly, clinging to past successful system prevents the U.S. from re-focusing its national security strategy by prioritizing, programming, and funding precious American taxpayer dollars towards the new and different 21st century threats, and emerging and future technologies and capabilities.

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INTRODUCTION

On October 26, 1962, at the height of the Cuban Missile Crisis and just four days after President John F. Kennedy announced to the American people from the Oval Office of a Soviet Union build-up of ballistic nuclear missiles in Cuba, the Secretary of the Air Force Eugene M. Zuckert wrote the president to inform him of a new milestone:

While I know the tremendous pressure under which you are working, I believe you would like to be informed that today the Air Force has achieved, on schedule as planned nearly three years ago, the initial operational capability with the Minuteman missile. The first three missiles, sited near Malmstrom Air Force Base, Montana, have had warheads installed and have been assigned targets in the USSR.¹

Later in the letter, Zuckert wrote about the missiles “in the event of the imminent national emergency...can be launched within thirty minutes.”² This was a long time ago...in a different period, the Cold War era. It’s hard to believe back then the U.S. and Soviet Union were so close to using nuclear weapons: “It shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union on the United States, requiring a full retaliatory response upon the Soviet Union.”³

Fast forward to today in which the U.S. and Russian Federation (RF) worked together and reached an agreement in September 2013 on a framework for removing chemical

¹ The George Washington University, The National Security Archive, “Letter from Secretary of the Air Force Eugene M. Zuckert to President Kennedy, 26 October 1962,” Appendix A, <http://www2.gwu.edu/~nsarchiv/NSAEBB/NSAEBB43/> Document 7, accessed on October 6, 2013.

² Ibid.

³ President John F. Kennedy, “Televised Address on Cuban Missile Crisis, Washington, DC, October 22, 1962,” Theodore C. Sorensen, Eric K. Sorensen, Stephen E. Sorensen, Philip J. Sorensen, *Let The Word Go Forth: The Speeches, Statements, and Writings of John F. Kennedy 1947 to 1963*, (Dell Publishing), New York, NY, p. 275.

weapons from Syria, and the U.S. and RF signed in 2010 another nuclear arms reduction treaty.

However, during the Cold War, things were different in this bipolar world. The U.S. and the Soviet Union sought to build-up their nuclear weapons so as to convince the other side of its seriousness and credibility of their arsenal. After World War II, the U.S. sought to develop and build their nuclear forces to ensure its superiority. The U.S. built this nuclear arsenal around a “triad” of strategic delivery systems it was developing in the early 1950’s and deployed in the early 1960’s. The components of the nuclear triad are bomber aircraft, intercontinental ballistic missiles, and submarine-launched ballistic missiles each possessing unique characteristics that enhance the triad as a whole.⁴

In Chapter 1, “Relic of a Bygone Era?” the analysis examines the history and development of the U.S. nuclear triad and its role during the Cold War and how presidents viewed it. The analysis also looks at the policies that impacted the nuclear triad and the decline of its importance after the fall of the Soviet Union. The analysis discusses the reasons the nuclear triad continues to last: deterrence is still important, symbolic value to the weapons, and a bureaucracy that sustains the nuclear triad. The analysis conducts a literature review of two studies within the Department of Defense (DoD) community that discuss the importance of nuclear weapons and each proposes a nuclear triad force structure of approximately 300 nuclear warheads sufficient for U.S. national security and its allies and interests. Both studies continue to rely on the nuclear triad structure (although smaller) and Cold War mindset without consideration of a changed world, new threats and finite funding resources.

⁴ This research thesis will focus on the strategic nuclear weapons and their delivery systems such as a B-52 bomber, not the smaller, tactical nuclear weapons deployed on fighter aircraft such as an F-15.

In analyzing the U.S. nuclear triad, one must look at its proponent, DoD as a bureaucracy that responds to the congressional-mandate, known as the Nuclear Posture Review (NPR), the quadrennial assessment of U.S. nuclear forces and posture. This analysis examines if DoD is an effective and forward-looking government agency regarding nuclear weapons, strategy and posture. Or is DoD mired in bureaucratic stagnation? In *Bureaucracy: What Government Agencies Do and Why They Do It*, James Q. Wilson discussed what a successful bureaucracy looks like: skilled executives who understand the corporate mission and organization, empower subordinates with the authority and tasks to accomplish. He compared the French and British armies' approaches to World War II to the German army's approach.

The analysis shows DoD is clinging to a "relic" of a past era and needs rethinking due to the fall of a bipolar world, high federal debt and budget deficits, new threats and new technologies and capabilities. The analysis examines two cases of how DoD bureaucracies approach new technologies and innovation: 1.) electronic medical and dental military service member records; 2.) and digitized or electronic technical orders. Through this lens of the theory on bureaucracy, the analysis reviews how policies by Presidents Reagan, Bush, Clinton, Bush and Obama impact the nuclear triad and show its decline in importance when the Soviet Union collapsed.

In Chapter 2, "Affordable Tool to Fix 21st Century Threats?" the analysis examines five areas: 1.) significant threats to the U.S. to the 2020 timeframe; 2.) nuclear-related U.S. cooperative threat reduction programs with the RF and People's Republic of China (PRC); 3.) ballistic missile threats; 4.) U. S. nuclear modernization and replacement programs; and 5.) current, emerging, and future technologies the U.S. should consider

funding and continue to pursue. For this analysis, significant threats are those threats that can catastrophically reduce Americans' confidence in the U.S. government or establishment institutions e.g., banks, electric/transportation grids or nuclear weapons. The analysis reviews the following threats to the U.S.: cyber attacks, skyrocketing national debt and budget deficits, RF and PRC nuclear modernization programs. Cyber attacks by a state or its proxy on the U.S. can encompass: cyber war, terrorism, espionage, protest, vandalism and crime. These forms of cyber attack are difficult to stop due to their asymmetry, offense and attribution. Unfortunately, there is no national strategy on cyber attacks like there is for nuclear weapons. The U.S. needs to understand and focus on this threat through the resources of funding and personnel.

Another threat to the U.S. is its skyrocketing national debt and budget deficits. At \$17.1 trillion, U.S. public debt has grown \$5 trillion in just the last five years. Being able to rise above the deep political partisanship is important because if foreign nations or organizations perceive the U.S. is no longer the safe haven for investment may impact the U.S.'s ability to raise capital, devastate financial markets and impact U.S.'s ability to project power in the world—militarily, economically, and diplomatically.

The analysis reviews the nuclear modernization programs of the RF and PRC. The RF is the nuclear peer to the U.S. and continues to upgrade and replace their nuclear weapon systems. The PRC also has a sizeable nuclear arsenal in which it is modernizing and developing new strategic delivery systems. The analysis also discusses U.S. cooperative threat reduction programs with RF and PRC. The U.S. and RF have improved bilateral relations which include 20 years of cooperative engagement activities and investment in the RF to secure its weapons storage areas and eliminate strategic systems. Like the RF,

U.S. is involved with the PRC on cooperative engagement activities concerning nuclear security. DoD and the Department of Energy have been working for the last three years with the PRC on a joint presidential-level initiative to establish a nuclear security center of excellence in Beijing, China. This center will be a regional site for nations to participate in technical exchanges and best practices on nuclear security and nuclear non-proliferation.

The analysis reviews the real and growing ballistic missile threats to the U.S. and its allies. During the early part of the Cold War, the ballistic missile threat to the U.S. was one state, the Soviet Union; today, there are more than 30 countries who have acquired or are acquiring the shorter range ballistic missiles with conventional warheads. However, the two countries the U.S. is most concerned about on ballistic missiles are: North Korea and Iran. The analysis then examines the U.S.'s continued modernization of its nuclear triad and investment in research and development (R&D) on replacement programs for its strategic delivery systems of ICBMs, bombers and submarines. The analysis reviews the FY13 budget on nuclear-related items such as a new nuclear-capable bomber force, studying a follow-on system to the current ICBM and R&D on a strategic submarine replacement fleet scheduled to be commissioned for service in 2042.

Additionally, the analysis highlights the necessity to increase U.S. capabilities such as emerging technologies like the Air Force's unmanned space plane and Boeing's unmanned airborne system. Lastly, the analysis reviews the top organizational position of U.S. Cyber Command. The bottom line to these program and budget costs is the U.S. should re-focus—strategy, policies and funding priorities from a Cold War mindset to a more agile power pursuing new capabilities and technologies to meet the latest threats in

the 2014-2020 timeframe of cyber attack, high national debt and budget deficits and RF's and PRC's nuclear forces modernization programs, and ballistic missile threats.

Finally, in Chapter 3, "Is It the Right Strategy for the 21st Century?" the analysis examines: 1.) Obama's many accomplishments in the nuclear-related areas; 2.) his June 2013 nuclear employment strategy guidance report; 3.) and critics' op-ed article on the new strategy. The analysis also presents an illustrative or notional nuclear force structure and posture that could be implemented immediately.

Concerning Obama's accomplishments, the analysis reviews the significant progress on nuclear-related milestones towards the vision he stated in a speech in Prague in 2009 of "a world without nuclear weapons." First, he signed the New START Treaty with the RF in 2010; second his administration conducted the first NPR since 2002. The third accomplishment was the Nuclear Security Summit (NSS), an initiative led by Obama and the first one conducted in April 2010. This presidential-level forum has the goal of an exchange of ideas and practice to secure vulnerable nuclear materials and weapons.

After examining Obama's accomplishments, the analysis reviews the recent June 2013 U.S. nuclear employment strategy guidance report which is a follow-up to the 2010 NPR. DoD was the lead government agency on the report. This nuclear strategy is unremarkable, bureaucratic and not transformative on U.S. nuclear policy, force structure and posture.

What would a transformative nuclear strategy look like? The analysis offers an illustrative or notional nuclear force structure, strategy and posture. First, the analysis looks at reducing the role of nuclear weapons from the U.S. national security strategy by: removal of bomber aircraft from the nuclear mission to focus solely on conventional

mission; a smaller nuclear force structure for deterrence composed of deployed ICBMs and submarine-launched ballistic missiles, and a modified posture of ICBM launch control centers. Equally important to these actions would be a presidential announcement that precedes these actions. The analysis offers changes to U.S. policy on the role of nuclear weapons and use, as well as one path in the U.S. nuclear posture to provide increased presidential decision-making time during a contingency. The presidential announcement would be an invitation for presidents of the declared nuclear weapons states and other selected leaders to remain after the next NSS and dialogue on the future steps of multilateral nuclear arms reductions. Obama's 2009 Prague speech envisioning "a world without nuclear weapons and his accomplishments in the nuclear-related areas could bring great credibility to the U.S.'s transformative actions and continue to increase its reputation in nuclear non-proliferation.

This research thesis discusses the importance and influence of presidential leadership from Truman to Obama on the role of nuclear weapons. As the Chief Executive Officer of the U.S. government, a president will have to overcome the DoD bureaucracy because it clings to past successful systems and is not innovative. With the fall of the bipolar world in December 1991, reduced threat of global nuclear attack and limited government funding, the U.S. must focus on the new threats and prioritize on emerging and future capabilities and technologies, not continue to fight the Cold War in the 21st century.

CHAPTER 1: Relic of a Bygone Era?

Introduction

With the ratification of the New Start Treaty by the U.S. Senate in 2011, one can wonder if the treaty's proposed incremental decline of 150 nuclear weapons from the previous treaty is actually just slowly kicking the can down the road. With the People's Republic of China owning \$1.2 trillion dollars of U.S. Treasuries and the Russian Federation working cooperatively with the U.S. on securing its nuclear weapons and facilities, one can rightfully ask, "In 2012 and beyond, would we really use nuclear weapons against these countries or any future adversaries?" In 2009, President Obama declared the Global Nuclear Lockdown initiative intended to assist partner nations in securing vulnerable nuclear materials and weapons. Non-proliferation of nuclear weapons and materials continues to be a major U.S. and global concern. Instead of periodically fostering a slightly less threatening nuclear strategy in the form of the triad, shouldn't the U.S. reassess the reality and symbolism of its nuclear posture? This chapter will analyze the following questions: Has the nuclear triad outlived its usefulness? Does the U.S. need a Cold War strategy in the form of the nuclear triad in the 21st century? Is there an alternative (s) to the triad that is appropriate for a national strategy?

This analysis of the nuclear triad is important because the U.S. faces serious economic challenges in the form of its budget deficits and national debt, so careful allocation of scarce resources is paramount. However, equally important is the symbolism the U.S. projects by maintaining a "Cold War" apparatus as it discusses the reduction of nuclear weapons. The U.S. can set the example for the international community on non-

proliferation and jump start long-delayed treaty discussions such as the Comprehensive Test Ban Treaty, if its nuclear posture could significantly be reduced. Also investment in the nuclear triad is less appropriate to the current and potential future strategic contexts than it used to be. The triad of U.S. nuclear forces has been maintained, since the Cold War, principally owing to the DoD bureaucracy clinging to a “relic” of the Cold War era. The thesis analysis will use the empirical method. In examining the above questions, the analysis will briefly review potential explanations why the nuclear triad has lasted, discuss literature review of two recent analyses on nuclear forces and postures reported in the media; a bureaucratic explanation and two case items; brief discussion on deterrence and review how presidents began to deal with the staling nature of the nuclear triad; and finally summarize and conclude this thesis chapter.

Possible Explanations Why the Nuclear Triad Continues

In analyzing the nuclear triad, one must first look to its primary proponent, Department of Defense (DoD, also referred to as The Pentagon) as a bureaucracy that responds to the congressional-mandate on an assessment of U.S. nuclear forces known as the Nuclear Posture Review (NPR). Is DoD an effective stakeholder with forward vision and leadership on the role of nuclear weapons as part of the national security strategy? Or is it stuck in predictable bureaucratic stasis and stagnation? The analysis looks at the policies that impacted the nuclear triad and the decline of its importance after the fall of the Soviet Union. The analysis discusses three potential reasons the nuclear triad continues to last: 1.) deterrence is still important; 2.) symbolic value to the weapons; and 3.) a bureaucracy that sustains the nuclear triad. The analysis conducts a literature review of two studies within the Department of Defense (DoD) community that discuss the

importance of nuclear weapons and each proposes a nuclear triad force structure of approximately 300 nuclear warheads as sufficient for U.S. national security and its allies and interests.

Literature Review.

Recently, news media reports have identified the National Security Council (NSC) and The Pentagon as performing analyses of three options of strategic deployed nuclear warheads ranging from 300 to 400, 700 to 800 and 1000 to 1,100. According to a *New York Times* editorial, the three options would be part of the next round of arms reduction talks with the Russians. The editorial cites Senate Republicans as outraged by a potential drastic reduction in the nuclear arsenal. However, the editorial mentioned Senator Tom Coburn, known as “Dr. No” (he’s a medical doctor) because of his reluctance to increase government spending, as “one of the few Republicans who argue that the country does not need and cannot afford its huge arsenal. He has come up with a plan to save \$79 billion over the next 10 years, including reducing the number of deployed strategic warheads to 1,220.”⁵

The Associated Press (AP) also reported Obama asked the NSC and The Pentagon to formulate similar option alternatives. The AP cited two studies in the DoD community that looked at a nuclear arsenal of about 300.⁶ The first study termed as a “Working Paper” authored by an analyst for the RAND National Defense Research Institute who discusses a quantitative approach to nuclear force structure. In the second study, three

⁵ *New York Times* Editorial, “The Nuclear Implementation Study,” March 11, 2012, <http://www.nytimes.com/2012/03/12/opinion/the-nuclear-implementation-study.html?scp=16&sq=u.s.%20nuclear%20weapons%20reduction&st=cse> accessed on April 9, 2012.

⁶ Associated Press, “US Weighing Steep Nuclear Arms Cuts,” February, 14, 2012, cited in <http://www.foxnews.com/politics/2012/02/14/us-weighing-steep-nuclear-arms-cuts/> accessed on April 9, 2012.

authors associated with the Air Force discuss deterrence and an appropriate size for the nuclear triad. The analysis will briefly examine both articles and discuss how the approach and conclusions they reach still cling to Cold War thinking, not forward-looking for the U.S. to implement.

In “Structuring Analysis to Support Future Decisions About Nuclear Forces and Postures” by Paul K. Davis who states the paper is a “think piece” and intends to describe a potential analytic framework to assist executive-level decision-making on the role of nuclear weapons. In essence, the author perpetuates a Cold War approach in formulating nuclear force structures on such issues as options for limited use of nuclear weapons against the failing leader of a rogue state. Davis lists nine generic features which he believes are good to support strategic-level decisions. He rightfully points out that “Developing good options is notoriously difficult because organizations often put forth only options reflecting current practices or desires.”⁷ In the next section, the author develops two listings called “stances” which he believes are the primary discussion issues of nuclear strategy and policy. “Stance 1,” later “Perspective 1” in his model, represents a Nuclear Non-Proliferation Treaty (NPT)-optimistic leaning while the second stance titled “Perspective 2” represents the skeptics’ approach. Both of these listings will be incorporated into the taxonomy of objectives and enablers and ultimately a summary of the options assessment on nuclear forces, policy and other related deterrence issues like conventional long-range strike and missile defenses. These perspectives, which will

⁷ Paul K. Davis, “Structuring Analysis to Support Future Decisions About Nuclear Forces and Postures”, Working Paper, Prepared for the Office of the Secretary of Defense, *RAND National Defense Research Institute*, WR-878-OSD, September 2011, http://www.rand.org/content/dam/rand/pubs/working_papers/2011/RAND_WR878.pdf p. 3, accessed on March 2, 2012.

eventually be the author's foundation for the prototype roll-up assessment, are disappointing because he uses pejorative terms and phrases to describe nuclear weapons' past deterrent value and effectiveness of previous arms control agreements as well as a lack of incorporation of current and future technologies and capabilities. For example, in Stance 1 the author lists that nuclear weapons are useless or unnecessary except for deterring nuclear weapons states and also nuclear stability is weak. While in Stance 2, the author states deterrence is "complicated" and requires thousands of nuclear weapons against rogue actors and states. Additionally, the author lists the effectiveness of arms control verification mechanisms for significantly low numbers of nuclear weapons. These types of assumptions keep the discussion on the numbers of nuclear weapons in a Cold War mindset.

Finally, Davis presents his notional summary of option assessment which has six options including a 300 nuclear weapon force structure. He scored (using 0 to 1) the effectiveness of each option by Perspectives 1 and 2 and then weighs them against various other criteria. However, as stated earlier the entering assumptions were Cold War vintage. Davis concludes his discussion by stating his assessments as purely notional and "intended to illustrate what results of analysis might look like."⁸

The second article in which the media stated DoD was assessing how to significantly reduce nuclear weapons is "Remembrance of Things Past: The Enduring Value of Nuclear Weapons"⁹. The authors begin the article with a quote from Bernard Brodie: "So long as there is a finite chance of war, we have to be interested in outcomes; and

⁸ Ibid, p. 22.

⁹ James Wood Forsyth Jr., B. Chance Saltzman, Colonel, USAF and Gary Schaub Jr., "Remembrance of Things Past: The Enduring Value of Nuclear Weapons," *Strategic Studies Quarterly*, spring 2010.

although all outcomes would be bad, some would be very much worse than others.”¹⁰ The authors could have also used a different quote from that same Brodie book to show his concern about atomic bombs: “Thus far the chief purpose of our military establishment has been to win wars. From now on its chief purpose must be to avert them. It can have almost no other useful purpose.”¹¹ By the title of the article and use of a quote by James Schlesinger, former Secretary of Defense and Chairman of the 2008 Task Force on DoD Nuclear Weapons Management the authors infer that nuclear weapons’ deterrent value has not declined.

The authors believe the nuclear triad should be perpetuated well into the 21st century. They state such phrases as: “Policy makers have forgotten the value of nuclear weapons”; “they produce strategic effects”; and “in short, nuclear weapons deter.” Against who? Nuclear weapons may deter other nuclear weapons states but not suicidal terrorists and rogue states seeking an indigenous nuclear weapons capability to further their aims. According to Franklin C. Miller, “nuclear weapons are not and never were intended to be, all-purpose deterrents. It would not be credible, for example to threaten nuclear retaliation in response to a proxy war in some foreign country, a lamentable but small-scale conventional attack on one’s own force, or even the loss of one or several orbiting satellites.”¹²

¹⁰ Bernard Brodie, ed., *The Absolute Weapon*, (New York: Harcourt, Brace, 1946), as cited in James Wood Forsythe Jr., B. Chance Saltzman, Colonel, USAF, and Gary Schaub Jr., “Remembrance of Things Past: The Enduring Value of Nuclear Weapons,” *Strategic Studies Quarterly*, Spring 2010, <http://www.au.af.mil/au/ssq/2010/spring/spring10.pdf> p.74, accessed on March 1, 2012.

¹¹ Bernard Brodie, ed., *The Absolute Weapon*, as cited in “The Development of Nuclear Security.”

¹² Franklin C. Miller, “The Need for a Strong US Nuclear Deterrent in the Twenty-First Century,” *Strategic Studies Quarterly*, Fall 2013, pp. 6-7.

The authors again use a quote from the Schlesinger Task Force which investigated and reported on the Air Force's nuclear enterprise management after a series of accidents in 2007 came to light: "Though our consistent goal has been to avoid actual weapons use, the nuclear deterrent is 'used' every day" by the U.S. to assure allies, dissuade opponents, deter attacks and defeat enemies.¹³ Actually, what the phrase refers to are the daily requirements to maintain the nuclear triad: security forces guard and secure the ICBM launch facilities, the maintenance personnel repair to ensure the weapon is ready, and missile officers are trained to be proficient in processing authentic and valid presidential orders to launch ICBMs, if directed. So, the word 'used' is an attempt to show the timeless value of the triad when in fact, the phrase is really incongruent to the real and devastating consequences nuclear weapons would have on people, culture and civilization if *ever used* again.

The authors correctly states some conventional weapons can approach the destructiveness of nuclear weapons but "a certain symbolism has come to be attached to nuclear weapons that has historically enhanced their clarifying quality and induced caution in national decision makers." It's interesting the authors cited this reference to Nina Tannenwald because her thesis was within the global community, there's been the development against the use (actual launching of them, not as a threat or deterrent) of nuclear weapons. In her article, she states this explains nuclear weapons' non-use and acquired status as "taboo" weapons, and in effect delegitimizes them as weapons of

¹³ Secretary of Defense Task Force on DoD Nuclear Weapons Management, *Phase I: The Air Force's Nuclear Mission* (Washington, DC: Office of the Secretary of the Defense, September 2008), p.1.

war.¹⁴ The catastrophic effects of Hiroshima and Nagasaki have left an indelible mark on American presidents such that at pivotal points of U.S. military conflicts in Korea, Cuba, Vietnam, and Iraq, they chose not to use a nuclear weapon.

Finally, the authors propose their version of a nuclear triad framework. They state the real question to be asked is, “What size force is needed for deterrence?” They identified and explained how 311 nuclear weapons of the triad (ICBMs, SLBMs and B-2s) could be an effective deterrent strategy. They conclude that reducing the numbers within the nuclear triad would be enough to ensure U.S. security. Although very commendable to significantly reduce nuclear weapons to just over 300, the authors did not address what the vision for a new U.S. national security strategy would look like after the reduction of nuclear weapons. What role would new technologies like ballistic missile defenses, cyber, drones, and new concepts of operation for Special Forces in place of the reduced nuclear triad? However, just shrinking the numbers of nuclear weapons would still leave unresolved the focus and continued sustainment and procurement of replacement systems of the triad and its associated infrastructure.

¹⁴ Nina Tannenwald, “The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons since 1945,” *International Organization*, Vol. 53, No. 3 (summer, 1999), <http://www.jstor.org/stable/2601286>, p. 434.

Theory

Whereas bureaucracies are noted for their conservative postures toward change, this is all more the case when one considers bureaucracies that are generally successful in meeting their strategic aims.¹⁵ Comparing the French and British armies' approaches to World War II to the German army's approach, James Q. Wilson argued that French and British success in WWI led to stability, perhaps stagnation, whereas the German army—because of its loss—was more prone to change. According to Wilson, a successful bureaucracy had “skilled executives, who correctly identified the critical tasks of their organization, distributed authority in a way appropriate to those tasks, infused their subordinates with a sense of mission, and acquired sufficient autonomy to permit them to get on with the job.”¹⁶ By contrast, the framework of the nuclear triad was successful in the Cold War, helping bring down the Soviet Union. With the nuclear enterprise infrastructure and triad still in place and receiving funding and resources, the stagnation of the successful may have set in. Two cases below continue to show the DoD will mire in the status quo and unlikely to lead and identify the critical tasks and provide the sense of mission as Wilson's theory suggests, for a new nuclear weapons force framework.

Case 1

The bureaucratic stagnation explanation of the persistence of the nuclear triad is consistent with the way that bureaucracy of DoD agencies approach new technologies and innovation. One example, digitization of health records show how defense-related

¹⁵ James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It*, (Basic Books, 1989), pp.14-18.

¹⁶ *Ibid*, p. 365.

bureaucracies are all too willing to cling to the past ways of doing business instead of forward-looking. Digitization has been a clarion call by U.S. presidents for the past twenty years as a rally to steer our nation in investing and utilizing the latest technologies of this new age of information technology (IT). In 1998, Clinton had called on DoD and the Department of Veterans Affairs (VA) to develop a life-long medical record for service members. Bush signed Executive Order 13410 on August 22, 2006 directing federal agencies to promote quality and efficient health care within government-sponsored programs to include developing interoperable systems to exchange medical data information. The implementation date was January 1, 2007.¹⁷ And now Obama has also called upon for an integrated, streamlined electronic health records system for service members and veterans. Unfortunately, an active-duty service member in DoD who serves 20+ years of honorable service, retires today and becomes a veteran does not have access to a seamless, electronic medical record.¹⁸

It's important to have one life-long virtual, computerized record because it: 1.) reduces costs to the American taxpayer; 2.) ensures high quality medical care (all the data is in a single location); 3.) avoids errors by ensuring timeliness of the information (e.g. VA doctors caring for medically-discharged service members due to traumatic combat injuries can immediately diagnose and treat); 4.) assures delivery of patient information is secure—no more lost paper records or forgotten copies at home; and 5.) streamlines the process for disability claims by the service member.

¹⁷ Executive Order 13410, <http://www.gpo.gov/fdsys/pkg/FR-2006-08-28/pdf/06-7220.pdf> accessed on April 28, 2012.

¹⁸ The author like other retiring Service members had to make three copies of the medical and dental records (about 100-150 pages each). One copy was provided to the VA in order to review my disability claims; a second one was sent to the armed forces archive in St. Louis, Mo. The last copy is a personal record copy just in case the others become lost or unavailable.

On May 8, 2007, Congress received another update on DoD's and VA's progress toward an interoperable electronic medical record system from testimony given by Valerie Melvin, Government Accountability Office (GAO) Director of Human Capital and Management Information Systems, to the Subcommittee on Oversight and Investigations of the Committee of Veterans' Affairs, House of Representatives. Based on GAO's findings, Melvin stated that despite a couple of small steps in computable exchange of pharmacy and allergy data and two-way bidirectional exchange of some categories of health data, DoD and VA hadn't made much progress toward a seamless electronic health record system.¹⁹ Committee members were flabbergasted by the lack of significant movement toward completion. When asked by the congressional members on the estimated time of completion, neither Melvin nor the next witnesses of assistant secretaries of DoD and VA could provide an answer. When pressed by the chairman of the subcommittee of a five-year completion date, the witnesses thought it might be possible.

The committee members pressed the director for her insights on why DoD and VA were dragging their feet on a seamless electronic health record system. Melvin responded that both departments recognize the importance of the project but their organizational cultures were hard to overcome; DoD had many systems to manage and were modernizing them. Melvin testified the primary reasons for the delay was the lack of an integrated strategy and defined project plan and concerted collaboration effort²⁰ The

¹⁹ Government Accountability Office, *Testimony Before the Subcommittee on Oversight and Investigations of the Committee of Veterans' Affairs, House of Representatives: VA and DoD are Making Progress on Sharing Medical Information but are Far From Comprehensive Medical Records*, May 8, 2007, <http://www.gao.gov/assets/120/116531.pdf> accessed on April 27, 2012.

²⁰ House Subcommittee on Oversight and Investigations, *Sharing of Electronic Medical Records Between the U.S. Department of Defense and the U.S. Department of Veterans Affairs*: Hearing before the

director's observations are important because strategy, project plan and collaboration documents and efforts require endorsement or signature from a departmental senior-level principal, such as an assistant secretary or deputy secretary. The congressional testimony indicates the seamless electronic health record system may not have the buy-in from DoD's skilled executives to break down paradigms, so the working-level managers seeks occasional coordination and guidance from senior leaders. In the latest report on electronic health records, GAO identified DoD and VA as having barriers in key IT management areas—strategic planning, enterprise architecture and investment management.²¹ These are the same type of shortfalls the GAO director testified to congress five years earlier.

According to Graham T. Allison and Morton H. Halperin, one consideration about government bureaucracy: "...the 'maker' of government policy is not one calculating decision maker, but rather a conglomerate of larger organizations and political actors who differ substantially about what their government should do on any particular issue and who compete in attempting to affect both governmental decisions and the actions of their government."²²

As with the DoD's life-long electronic medical health record system, the next case item will also show that DoD struggles to provide the vision, leadership and innovation with new technologies and their integration.

Committee on Veterans' Affairs, 110th Cong., 1st sess., May 8, 2007, <http://www.gpo.gov/fdsys/pkg/CHRG-110hhrg35639/html/CHRG-110hhrg35639.htm> accessed on March 1, 2012.

²¹ Government Accountability Office, *Report to Congressional Committees, Electronic Health Records: DoD and VA Should Remove Barriers and Improve Efforts to Meet Their Common System Needs*, February 2011, <http://www.gao.gov/assets/320/315520.pdf> accessed on April 27, 2012.

²² Graham T. Allison and Morton H. Halperin, "Bureaucratic Politics: A Paradigm and Some Policy Implications," *World Politics*, Vol. 24, Supplement: Theory and Policy in International Relations (Spring, 1972), <http://www.jstor.org/stable/2010559> accessed December 10, 2013, p.42.

Case 2

Like the medical and dental records of a service member turned veteran, ICBM missile officer crews (missileers) are still issued and use *paper* technical orders (TO) or user manuals to operate and troubleshoot procedures dealing with the missile and the multiple communication systems under their charge. As background, there are about 200 missileers assigned to each of the three Air Force missile wings. Each missileer has a TO for missile operations and another one for the communication systems at their duty location in the missile field called the launch control center (LCC); each TO is approximately 400 pages. In all, the crew force possesses about 600 TOs for the Minuteman III operations and 600 for the communication systems that support the ICBM mission. However, in addition to the missileers, the following agencies also possess paper TOs: the missile wing's supervising element, 20th Air Force who manages, oversees and evaluates ICBM operations and maintenance, the Air Force Systems Program Office (SPO) as well as the prime contractor supporting and advising the SPO. So, *another* 200 paper TOs are issued. Consider, within the command and control console in the LCC which the missile crew operates, there is resident within the software an electronic data library and electronic TO checklists mirroring paper TOs. Why does the Air Force still publish paper user manuals for ICBM operations when an electronic version exists now? The predominant leadership response to that question has been because crews have always used their paper TOs. Recently, in discussing this issue with two senior Air Force technical experts, both responded that the Air Force has no confidence in the currency of the electronic TO checklists—a new procedure or information may have an update or change that may not be immediately resident in the

LCC electronic data library computer. It's easier for the SPO to update the procedural change and issue the paper TO page. However, why can't the Air Force use the current technology that was intended for on missile operations? And if there is a concern on currency, why not have crews remotely download the TO change into the electronic data library? By using paper TOs that missileers must manage and carry around, the Air Force continues to spend precious American taxpayer dollars when there is an *existing* (and paperless) electronic and secure capability.

The Triad in its Time

When President Harry S. Truman ordered the crews of the “Enola Gay” and “Bock’s Car,” B-29 bombers from the Army Air Force’s Twentieth Air Force²³ to drop two atomic bombs on Hiroshima and Nagasaki, the U.S. became the only superpower in the world. With Pearl Harbor seared into the American psyche, national leaders sought to ensure its survivability in the new nuclear age; the nuclear age had created more unknown variables to a nation’s calculus on potential benefits versus costs in a war against the U.S or any other nuclear weapon power: the risk of mass annihilation of its people, culture and civilization. Bernard Brodie, the godfather of nuclear deterrence strategy wrote in 1946, “The first and most vital step in any American security program

²³Air Force Historical Research Agency, “History of the Twentieth Air Force: Genesis,” (No. 112) by James L. Cate (1945). 298 pages, <http://www.afhra.af.mil/studies/numberedusafhistoricalstudies101-150.asp> (Microfiche IRIS Reel Number (K1013), p.8, accessed on November 9, 2013. Twentieth Air Force was established on June 15, 1944; it was the forerunner to the current U.S. Air Force’s Twentieth Air Force which oversees today’s 450 ICBM force.

for the age of atomic bombs is to take measures to guarantee to ourselves in case of attack the possibility of retaliation in kind.”²⁴

Deterrence.

The doctrine of Mutual Assured Destruction (MAD) which started during the Cold War, helped keep the U.S. and the Soviet Union from nuclear annihilation. The U.S. nuclear triad was born out of this strategy. In this doctrine, each side presumes to have enough nuclear weapons to launch at and destroy the other side. And that either side, if attacked for any reason by the other, would retaliate with equal or greater devastation. The potential result is an immediate escalation of nuclear detonations which would result in both country’s mutual, absolute and assured destruction of its people and civilization.

The doctrine further assumes that each side is “deterred” by the other side—since neither will dare launch a first strike because the other side will launch on warning a counter attack (a second strike), resulting in catastrophic losses for both countries. According to Franklin C. Miller, “The simple fact is that deterrence is highly complex and rests on convincing any potential aggressor that the devastation created by our retaliation would far outweigh the benefits of any aggression, so that attacking us or allies becomes unthinkable.”²⁵ Over twenty years earlier, the complexity of nuclear deterrence was noted. In an article that discussed a series of propositions on deterrence, Colin Gray stated on the requirements of deterrence and the nuclear triad: “The US strategic nuclear triad is the agent of a deterrence policy, but candidate deterrees have to choose to be

²⁴ Bernard Brodie, ed., *The Absolute Weapon*, (New York: Harcourt, Brace, 1946) as cited in “The Development of Nuclear Security,” *International Security*, Vol. 2, No. 4 (spring 1978), p.76, <http://www.jstor.org/stable/2538458>.

²⁵ Franklin C. Miller, “The Need for a Strong US Nuclear Deterrent in the Twenty-First Century,” *Strategic Studies Quarterly*, Fall 2013, p.9.

deterred. In a deterrence relationship, intended deterrees can always decide that they are not deterred, a situation which contrasts sharply with a relationship of physical coercion wherein the enemy's behavior is controlled by our forces."²⁶ Gray summarized this proposition on the requirements of deterrence by stating: "...an adequate deterrent, let alone an enduring condition of stable deterrence, cannot be calculated with precision. Deterrence is a realm of educated guesswork. Scholars talk of the 'calculus' of deterrence and of 'risk/benefit analysis,' but those are just overblown figures of speech."²⁷ This proposition is important to remember and consider as the analysis discusses an illustrative or notional transformative nuclear strategy, posture and force structure in Chapter 3.

The first delivery system of the U.S. nuclear arsenal was the bomber aircraft, B-29 which also was the first system to be replaced at the beginning of the Cold War.

The Bombers.

The bomber element has unique characteristics—it demonstrates a visible (e.g. loading of bombs, taxiing, and take off) resolve of will during times of crisis; since it is a manned, it is also recallable. This characteristic can provide a president with flexibility, and also allows time to reconsider the attack plan or an adversary may sue for peace. The workhorse of the triad, the B-52 Stratofortress came into the military service in 1955, and still is a long-range and strategic capable bomber that could carry a vast array of nuclear and conventional munitions; it has the ability to fly 7,652 nautical miles unrefueled (can be refueled aerially).²⁸ This was the natural progression in building a future nuclear triad

²⁶ Colin S. Gray, "Deterrence Resurrected: Revisiting Some Fundamentals," *Parameters*, Winter 2010-11, p. 100. The article was first published in the Summer 1991 issue of *Parameters*.

²⁷ *Ibid.*

²⁸ <http://www.af.mil/information/factsheets/factsheet.asp?id=83> accessed on April 1, 2012.

since it was bomber aircraft, the B-29 that dropped the first two atomic bombs. Of course, over the last sixty years, the Department of Defense has invested billions of dollars in modernization programs on the B-52's avionics, data-link communications systems, and offensive and defensive systems. The Air Force estimates the service life of the B-52 will extend to 2040.²⁹ The intended replacement to the B-52 was the B-1, a long range, multi-mission bomber that the Air Force began development in the 1970's, and in 1977, President Jimmy Carter cancelled the program. As part of President Reagan's pledge to rebuild the U.S. defense infrastructure, the B-1 program was resurrected and the first bomber began military service in 1985. It carries the largest payload of both guided and unguided munitions in the Air Force inventory.³⁰ The most revolutionary (the "bat" wing design) of the bomber aircraft, the B-2 Spirit is capable of delivering nuclear and conventional weapons, and because of its low-observable, or "stealth" characteristics has the unique ability to penetrate an enemy's most sophisticated defenses and threaten its heavily defended targets.³¹ Twenty B-2s were manufactured for the Air Force.

ICBMs.

During the 1950's, the Air Force developed and deployed a new weapon system, intercontinental ballistic missiles (ICBM), the first ones, Atlas and Titan systems. These early ICBMs were stored vertically below ground and raised to be fueled with liquid propellant for launch. The Atlas ICBMs became operational on October 31, 1959 and at their peak numbered 120 but had a short operational service until 1964; the boosters were

²⁹ Ibid.

³⁰ B-1, <http://www.af.mil/information/factsheets/factsheet.asp?id=81> accessed on April 2, 2012.

³¹ B-2, <http://www.af.mil/information/factsheets/factsheet.asp?id=82> accessed on April 2, 2012.

then used in the National Aeronautical Space Administration's (NASA) Space Program. The Titan missile (a total of 54 Titan ICBMS were deployed) was developed as a backup to the Atlas program; the Air Force developed two versions, Titan I which was operationally deployed around the U.S. from 1962-1965, and the more advanced Titan II deployed from 1963-1987.³²

A revolutionary concept and technological achievement was achieved as discussed earlier, at the height of the Cuban Missile Crisis, the deployment of the next generation ICBM, the Minuteman I. By 1968, 1000 Minutemen would be deployed in the northern and central plains. It was the first solid propellant ICBM that could stand dormant in hardened underground silos for years, while being remotely controlled by missile officer crews in underground launch control centers miles away. The current version, Minuteman III is the only ICBM in the U.S. nuclear triad; it is a fast-reacting, inertially guided system with high reliability and a maintenance "remove and replace" approach to achieve a near 100 per cent alert rate.³³ The Air Force has funded significant modernization programs for the Minuteman III such as guidance replacement and solid propellant replacement which will keep the ICBM in service through 2030. The ICBM's unique value to the nuclear triad is its prompt-response capability, high alert rates, and high reliability factors.

Submarines.

The final leg of the triad is the fleet ballistic missile submarine known as "SSBNs" or "Boomers" and has the capability to patrol nearly undetected and serve as a launch

³² Titan ICBM, <http://www.nps.gov/mimi/historyculture/titan-icbm.htm> accessed on April 1, 2012.

³³ Minuteman III ICBM, <http://www.af.mil/information/factsheets/factsheet.asp?id=113> accessed on April 1, 2012.

platform for ICBMs referred to as submarine-launched ballistic missiles (SLBM).

Compared to the other two elements of the triad, the SLBM force is the most survivable and enduring. The Navy began deploying the first of the SSBNs in the early 1960's, with the current version known as *Ohio*-class design (560 feet long and 16,764 tons displacement-surfaced) which was deployed in 1981. With 14 total ships, each SSBN is capable of carrying up to 24 Trident II missiles with intercontinental range and accuracy.³⁴ And like the Minuteman force, the Trident II missiles have multiple-independently targetable reentry vehicles (MIRV)—the DoD planners could have the nuclear warheads (from the same missile) deploy and detonate on different locations.

The nuclear triad was developed in the context of the Cold War and the evolution of the nuclear triad mirrors how the U.S. viewed the Soviet Union, later Russian Federation (RF) and, ultimately, the U.S.'s understanding of nuclear deterrence in the post-Cold War era and the-9/11 attacks. With the variety and dispersal of delivery platforms mentioned above, the U.S. forged the capabilities to communicate the strategic message to other nations that it could not be defeated in one fell swoop of nuclear weapons. Over the decades, the U.S.'s enormous investments in the three legs of the triad through modernization programs, improving accuracies and incorporating new technologies provided stability by assuring the nation, allies and friends and warning its adversaries (mostly Soviet Union) that the U.S. possessed the means to confidently retaliate an aggressor's attack. The Soviets had a clear conventional forces advantage over the U.S. and Western Europe. Having a flexible, responsive, and survivable nuclear triad made

³⁴ Fleet Ballistic Missile Submarine, SSBN, http://www.navy.mil/navydata/fact_display.asp?cid=4100&tid=200&ct=4 accessed on April 2, 2012

sense for the U.S. This strategy ensured the Soviet Union thought twice about attacking the U.S. or its interests or to escalate hostilities that could get out of control.

The Weakening of the Triad

During the late 1970's and early 1980's, the nuclear triad began to show its age with nuclear modernization programs and funding coming to a halt. President Jimmy Carter had canceled the B-1 bomber program, the current Minuteman III ICBMs were not being modernized and the latest ICBM, the MX (Missile Experimental), later named Peacekeeper, was on DoD program "life-support". With President Reagan's election in 1980, his administration sought to reverse the Soviet lead in strategic forces by a "Peace through Strength" buildup to counter a decade which saw a 20% decline in defense efforts in the face of a 50% increase in Soviet military strength.³⁵ The Air Force started up the B-1 bomber production line and became operational while the Minuteman III (which originally had an operational life span of five years) underwent the first set of modernization programs. After studies and debates of basing modes and the appropriate number of missiles, the Air Force deployed 50 (down from the original 300) Peacekeeper ICBMs into former Minuteman ICBM hardened underground silos near Cheyenne, Wyoming. The Peacekeeper ICBM was huge—its first booster rocket stage (out of four) was heavier than the entire Minuteman III ICBM; it could carry and deploy 10 nuclear warheads at different targets with near pinpoint accuracy. The Peacekeeper, along with the B-1 symbolized the Reagan Administration's resolve to close the strategic gap with the Soviet Union.

³⁵ Caspar Weinberger, "U.S. Defense Strategy," *Foreign Affairs*, spring 1986, <http://www.foreignaffairs.com/articles/40800/caspar-w-weinberger/us-defense-strategy> accessed on April 6, 2012.

Reviewing the major changes of U.S. defense strategy and policy over the five years as Secretary of Defense to Ronald Reagan, Caspar Weinberger stated the essence for the buildup which would last through the mid-1990's: "The President's determination to ensure that a nuclear war will never be fought is the mandate for our defense program and arms reduction initiatives. Our goal can be stated simply: to ensure that the defense of America's vital interests never requires the United States to fight a nuclear war."³⁶ In this article, Weinberger was prescient on today's strategic environment, especially in robust conventional forces and new technologies. He addressed four enduring pillars of defense policy for the changing strategic environment: the Strategic Defense Initiative (e.g. a ballistic missile defense system against incoming nuclear weapons) and secure nuclear deterrence; uses of military force and secure conventional deterrence; and a strategy for reduction and controlling arms; and competitive strategies (e.g. stealth technologies to operate or penetrate an adversaries defenses without being detected).³⁷ These pillars will be a common theme of future U.S. nuclear policies formally known as "Nuclear Posture Review" (NPR) report—first one conducted by DoD in 1994—is the bottom-up review of U.S. nuclear forces, policy, and doctrine, supporting infrastructure, security, safety and arms control. The NPR is a legislatively-mandated review that establishes U.S. nuclear policy, strategy, capabilities and force posture for the next five to ten years.

On September 18, 1994, President William J. Clinton signed a far-reaching NPR report that outlined U.S. policy on nuclear weapons, the first since the breakup of the Soviet Union in December 1991. There were five basic themes: 1.) nuclear weapons play a smaller role in U.S. national security than at any time during the Cold War; 2.) the

³⁶ Ibid.

³⁷ Ibid.

U.S. requires a much smaller nuclear arsenal given the current global situation; 3.) there is great uncertainty about which direction the New Independent States (former Soviet Union states) would shift given that a few were in the process of denuclearization, so the U.S. “must provide a hedge against this uncertainty”³⁸—read triad; 4.) U.S.’s nuclear deterrent is both a national and international nuclear posture; 5.) continue the highest standards of safety and security of nuclear weapons, materials and command and control. The NPR identified Russia as the focus of the U.S. because it had the only nuclear arsenal which could physically destroy the U.S.³⁹ According to the document, the primary reason to retain a triad: “Hedging against system failure of a leg of a triad—either because of technical failure of a delivery platform or warhead or technological breakthroughs by potential adversaries.”⁴⁰ Briefly, there are key takeaways from the NPR to highlight the U.S.’s commitment to drastically reduce its nuclear forces. As part of Strategic Arms Reduction Treaty (START) I (signed on July 31, 1991), President George H.W. Bush announced on September 27, 1991 that the U.S. would be making significant changes to its nuclear posture. On September 28, 1991, the Secretary of Defense directed the Air Force to remove strategic bombers from day-to-day nuclear alert and Minuteman II ICBMs were removed from the strategic war plan.

Additionally, the Small ICBM which at the time was being considered for deployment was cancelled, the B-1 bomber was converted to conventional-only missions, and ICBMs and SLBMS would no longer target day-to-day their war mission targets, but

³⁸ U.S. Department of Defense, *Nuclear Posture Review*, “Introduction,” 1994, <http://www.dod.mil/execsec/adr95/npr.html> accessed on April 7, 2012.

³⁹ Ibid.

⁴⁰ Ibid, “Strategic Nuclear Forces.”

instead target open ocean areas. Finally, the NPR noted U.S. spending on strategic forces, in constant 1994 dollars was \$13.5 billion in 1994 down from \$47.8 billion in 1984. The document reiterated under START I and START II (which was never ratified by the Senate) both the U.S. and Russia would retain 3,500 warheads deployed on strategic launch delivery systems.⁴¹ The 1994 NPR was a seminal document because it addressed the significant changes in the security environment facing the U.S., and the need for a smaller, modernized nuclear arsenal going forward in the post-Cold War world. As backdrop to this the U.S. and RF had recently signed a treaty drastically reducing nuclear warheads in January 3, 1993.

In contrast to the seminal 1994 report, the 2002 NPR was transformational. With the clean-up still progressing in The Pentagon after terrorists hijacked and crashed American Airlines Flight 77 on September 11, 2001, President George W. Bush directed DoD to prepare for a new, unpredictable world. The NPR report (classified report, unclassified “Foreword” referenced) was signed by Secretary of Defense Donald Rumsfeld on January 9, 2002. The major change in the role of the nuclear triad was not only the reduction in forces but also less emphasis in the U.S.’s deterrent strategy. The Bush Administration had changed from a “threat-based” Cold War focus on a smaller Russian nuclear force to one of “capabilities-based” approach concentrated against terrorists and rogue state actors. The report established a “New Triad” composed of offensive strike systems (both nuclear and conventional/information operations); active and passive defenses e.g. ballistic missile defense systems and space warning satellite systems; and streamlined acquisition development and deployment process to field new capabilities.

⁴¹ U.S. Department of Defense, *Nuclear Posture Review*, “Context: Lead but Hedge,” 1994.

All these capabilities would be enabled by intelligence systems and command and control.⁴² Pictorially, one could view the “old” nuclear triad of ICBMs, SLBMs and bombers as a small triangle within the larger “New Triad” triangle described above. The Bush Administration believed the nuclear triad was a holdover from the Cold War period and inappropriate to posture, deter and defeat terrorists who would use airplanes filled with people as weapons of mass destruction and crash them into iconic American buildings. In the foreword, Rumsfeld recognized the changed strategic landscape in terms of threats and economics: “Constructing the New Triad, reducing our deployed nuclear weapons, and increasing flexibility in our strategic posture has resource implications. It costs money to retire old weapons systems and create new capabilities.”⁴³ Rumsfeld was a strong proponent to address the new ballistic missile threats having chaired the Commission to Assess the Ballistic Missile Threat to the U.S. just three years earlier. The ominous conclusions of the Commission appear to have influenced Bush and Rumsfeld to restructure ballistic missile and intelligence capabilities and address in the New Triad: “The newer ballistic missile-equipped nations' capabilities will not match those of U.S. systems for accuracy or reliability. However, they would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made.”⁴⁴

⁴² U.S. Department of Defense, *Nuclear Posture Review Report* (Unclassified Foreword), January 9, 2002, <http://www.defense.gov/news/jan2002/d20020109npr.pdf> accessed on April 8, 2012.

⁴³ Ibid.

⁴⁴ “Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States,” July 15, 1998, Pursuant to Public Law 201, 104th Congress, <https://www.fas.org/irp/threat/bm-threat.htm> accessed on December 19, 2013.

As a backdrop to the NPR, Bush had announced on November 13, 2001 that the U.S. would deploy (position) 1,700-2,200 nuclear warheads on ICBMs, SLBMs, and bombers—significantly down from the START I figures of 3,500 mentioned earlier. Bush later signed the Strategic Offensive Reduction Treaty (SORT) with President Putin of the Russian Federation to codify the agreement. This announcement would be buttressed by Bush’s declaration the next month, December 2001 that the U.S. intended to withdraw from the ABM Treaty in six months and giving advanced notice as prescribed by the treaty.

In April 2010, DoD highlighted the new NPR report supports Obama’s agenda for reducing nuclear danger, pursuing the goal of a world without nuclear weapons, while also advancing broader U.S. security interests. In this report, DoD focused on five key nuclear policy objectives: “1.) Preventing nuclear proliferation and nuclear terrorism; 2.) Reducing the role of nuclear weapons in U.S. national security strategy; 3.) Maintaining strategic deterrence and reassuring U.S. allies and partners; 4.) Strengthening regional deterrence and reassuring U.S. allies and partners; and 5.) Sustaining a safe, secure, and effective nuclear arsenal.”⁴⁵ The significant takeaways from the report: the top policy objective was preventing nuclear proliferation and nuclear terrorism, the second objective was to reduce the role of nuclear weapons in the national security strategy, and the fifth and final objective was to sustain a safe, secure, and effective nuclear arsenal. A repeated theme throughout the report: “As long as nuclear weapons exist, the United States must sustain a safe, secure, and effective nuclear arsenal both to deter potential adversaries and

⁴⁵ The Department of Defense Nuclear Posture Review Report, April 2010, <http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf> accessed on April 8, 2012.

to assure U.S. allies and other security partners that they count on America's security commitments."⁴⁶ In other words, if the nuclear weapons are around, then the U.S. will do the right thing as a caretaker. Two other key points have to do with the release of nuclear weapons: the U.S. would only consider the use of nuclear weapons in extreme circumstances to defend its vital interests or its allies and partners; and the U.S. would not use or threaten use against non-nuclear states that are party to the Nuclear Non-Proliferation Treaty (NPT) and complying with non-proliferation obligations.⁴⁷

This report also reiterated the Bush NPR observation that the massive nuclear arsenal carried over from the Cold War does not deter terrorists or rogue states seeking to acquire nuclear weapons. The NPR identified a logical argument for the reduced reliance on nuclear weapons: the U.S.'s unrivaled conventional military capabilities, vast improvements in its ballistic missile defenses (there are now ballistic missile interceptors in silos in Alaska and California to shield the continental U.S. from future threats from North Korea and Iran), and the overall easing of Cold War rivalries between the U.S. and the Russian Federation.⁴⁸ Additional key points concern stability during a nuclear crisis. The report continued with the Bush Administration NPR's recommendation for ICBMs to have a single nuclear warhead, not multiple ones which would be de-stabilizing because of a first-strike capability. An entirely new discussion emerged as well: the president wanted maximum decision time in the event of a crisis so strengthening the command and control system was a priority as well as the exploration of new modes of ICBM basing to reduce the incentives for prompt-launch.⁴⁹ Finally, like the Bush

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

Administration, a published NPR came after an agreed upon nuclear weapons reduction treaty with the RF. President Obama and President Medvedev signed the “New START Treaty” on April 8, 2010 (Senate ratification on February 2, 2011) which limits deployed strategic nuclear warheads (on ICBMs, SLBMs and bombers) to 1,550—“This limit is 74% lower than the limit of the 1991 START Treaty”⁵⁰ and 10% lower than the lower range (1,700) of the 2002 SORT treaty. There is no constraint on missile defense programs or long-range strike capabilities.⁵¹

What happened? After delivering a visionary speech on April 5, 2009 in Prague outlining the dangers of nuclear terrorism in the 21st century and seeking the long-term goal of a world without nuclear weapons, President Obama agreed to reduce nuclear weapons by only 150 from the previous treaty! Why such a small reduction when the voluminous 50-page NPR had significant ideas to shift the U.S.’s strategic deterrence from nuclear-centric to one that is non-nuclear or conventional and information operations? Was it the politics of seeking Republican senators’ “advise and consent” for treaty ratification? Possibly. Was DoD worried about ensuring coverage of strategic targets and threats in Russia? Probably. This seemingly status quo nuclear posture, albeit with talking points of change around the margins may have left a bad taste in the mouth of the Obama Administration.

⁵⁰ The White House, Office of the Press Secretary, “Key Facts about the New START Treaty,” March 26, 2010, <http://www.whitehouse.gov/the-press-office/key-facts-about-new-start-treaty> accessed on April 8, 2012.

⁵¹ Ibid.

Conclusion

Obama is correct that the long-term goal of the U.S. and the world should be the complete elimination of nuclear weapons. Until that time and given the RF's and PRC's nuclear arsenals as well as other nuclear weapons state's nuclear arsenals, U.S.'s comparative advantages in technologies such as stealth aircraft, remotely piloted aircraft, intelligence, surveillance and reconnaissance platforms and capabilities such as Special Forces, the U.S. should retain a much smaller portion of its current nuclear force structure. However, before just shrinking the number of nuclear weapons within the nuclear triad, the U.S. must perform a "clean sheet" approach on its deterrent strategy as part of an update to the 2010 National Security Strategy. As a bureaucracy, DoD clings to systems and frameworks like the nuclear triad that have successfully worked in the past and continue to perpetuate in the present. As discussed earlier, the U.S. nuclear triad was a viable force during and winning the Cold War against the Soviet Union.

When did the nuclear triad outlive its usefulness and sustained the Cold War? I offer October 12, 1986 when Reagan and Soviet General Secretary Mikhail Gorbachev at the Reykjavik, Iceland Summit proposed to eliminate all ballistic missiles. They would have agreed to this if the Soviets hadn't also conditioned the Strategic Defense Initiative (SDI) remain a research effort, not a test and evaluation and deployment program. Reagan refused this condition and the nuclear triad continued to exist.⁵²

Chapter 2 should look at the significant threats and challenges the U.S. faces to the 2020 timeframe. These threats are different from the Cold War and the bipolar world; in

⁵² President Ronald W. Reagan, *Address to the Nation on the Meetings with Soviet General Secretary Gorbachev in Iceland*, October 13, 1986, Ronald Reagan Presidential Library, National Archives and Records Administration, <http://www.reagan.utexas.edu/archives/speeches/1986/101386a.htm>, accessed on April 14, 2012.

2013, the multipolar world includes the increase of proliferation of nuclear weapons among more nations. Also, the “Great Recession” of 2009 caused turmoil in financial markets and the U.S. economy setting up future congressional conflicts with the White House over government spending in DoD and other departments.

CHAPTER 2: Affordable Tool to Fix 21st Century Threats?

Introduction

As discussed in Chapter 1, Reagan and Gorbachev were on the verge of signing each country's nuclear forces into oblivion if it were not for the Soviet condition on laboratory research—no test and evaluation and deployment—of new technologies of missile defense, SDI. If the two presidents were so willing to sign away nuclear force structures in 1986 only to see the eventual implosion of the Soviet Union and evaporation of the bipolar world five years later, shouldn't the U.S. conduct a clean sheet assessment of the significant threats facing it today?

With the U.S. no longer facing heightened tensions that could eminently result in a global nuclear attack, and its nuclear triad forces requiring replacement systems to function for the remainder of the 21st century, the U.S. should seriously consider its national security policy and the role and expense of nuclear weapons and the new threats. The analysis will examine the following questions: What are these significant threats the U.S. faces and is the nuclear triad the right tool to meet those threats? Given the nuclear use taboo discussed in Chapter 1 and due to the diminished nuclear threat to the U.S., the U.S. should reduce its investments in nuclear weapons systems, address growing and current threats, and invest in other, emerging, defense technologies.

This analysis is important because the threats to U.S.'s national security from 2014 to 2020 are different than the threat of global nuclear war in the 20th century. The U.S. needs to address these threats or the impacts to the U.S. economy and military and future technologies and capabilities in projecting American power will be profound. In examining the above questions, the analysis will discuss the threats to 2020 facing the

U.S: cyber attack; high national debt and budgets as well as review the RF's and PRC's nuclear threat to the U.S. and the current cooperation engagement activities; ballistic missile threats; highlight the modernizing costs of the nuclear triad; analyze current and new technologies and capabilities and their future; and finally, summarize and conclude this thesis chapter.

Threats

Today, the U.S. faces many threats and challenges such as the slower than usual economic recovery from the “Great Recession” and residual high unemployment, Euro zone's sovereign debt crises, transnational organized crime groups, and border control and illegal immigration. Additionally, Iran's pursuit of an indigenous capability to produce highly enriched uranium which it claims would be used for electricity and medical reactor use (disputed by the U.S. and the West who argue the program is for a nuclear weapons capability) and North Korea's estimated six to eight nuclear bombs⁵³ like the others are threats that could pose serious risk to the U.S. However, Iran does not have a nuclear arsenal yet and North Korea does not have a credible and robust missile system to deliver the limited nuclear weapons. The analysis will discuss the significant threats facing the U.S.'s national security: cyber attack, high national debt and budget deficits, Russia's and China's nuclear forces modernization programs and ballistic missile threats.

⁵³ Siegfried S. Hecker and William Liou, *Dangerous Dealings: North Korea's Nuclear Capabilities and the Threat of Export to Iran*, March 2007, http://www.armscontrol.org/act/2007_03/heckerliou, accessed on July 4, 2012.

Cyber Attacks.

Cyber attack is the newest form of attack a nation or its proxy wages on its adversaries. From the cyber attacks (purportedly by Russian hackers) on Estonia's government networks in 2007 and Georgia's in 2008, Chinese hackers stealing intellectual property and spying on Google's email users in 2010, a formidable weapon for national power has evolved. Cyber attack encompasses cyber war, terrorism, espionage, protest, vandalism and crime, and "possesses characteristics unique to the digital world: asymmetry, offense and attribution."⁵⁴ Regarding asymmetry, low-cost resources such as one person(s) with a computer(s), access to the Internet and hacking knowledge can attack a high-value target like a government network or bank financial database. Since the web is collaborative in nature, openness is prized over strict security and defensive measures such as a closed network or common access card use. This openness allows hacker(s) to strike first, and because it's difficult to attribute the hacker's actions, the maliciousness remains essentially anonymous and hard to track.⁵⁵

A watershed event for the U.S and DoD was the compromise in 2008 of its classified military network. "A foreign intelligence agency was responsible for placing a malicious computer code on a flash drive that was inserted into a U.S. military laptop at a base in the Middle East. That code spread undetected on both classified and unclassified systems transferring data to servers under foreign control."⁵⁶ Due to the seriousness of this

⁵⁴ Jonathan Masters, "Confronting the Cyber Threat," *Council on Foreign Relations*, <http://www.cfr.org/technology-and-foreign-policy/confronting-cyber-threat/p15577>, accessed on June 22, 2012.

⁵⁵ Ibid.

⁵⁶ William J. Lynn III, "Defending a New Domain," *Foreign Affairs*, September/October 2010, <http://www.foreignaffairs.com/articles/66552/william-j-lynn-iii/defending-a-new-domain?page=show> accessed on July 6, 2012, p.1.

incident, Secretary of Defense Robert Gates established a new military command, U.S. Cyber Command (reporting to U.S Strategic Command) led by a four-star general who would oversee and coordinate each of the military service's day-to-day cyber efforts in defending DoD networks (.mil domains) and work with other U.S. interagency partners such as the Department of Homeland Security and Justice Department. DoD continued to recognize the importance of cyber attack in the 2010 Quadrennial Defense Review—a congressionally-mandated review of DoD's strategy, programs and resources as it aligns to the National Security Strategy—"cyberspace is now as relevant a domain for DoD activities as the naturally occurring domains of land, sea, air, and space."⁵⁷

Upon assuming office, Obama understood the critical nature of cyber attack, and continued with Bush's National Cybersecurity Initiative and ordered a Cyberspace Policy Review, similar to a Nuclear Posture Review discussed in Chapter 1. Obama has already implemented a couple of the review's recommendations: established a U.S. Cybersecurity Coordinator who would have access to the president and coordinate the Executive Branch's cyber efforts and implement the Cyberspace Policy Review recommendations through the newly created Cybersecurity Office. Unlike a national strategy on nuclear weapons, there is still *no* overarching national strategy on cyberattacks that discusses the nature of threats, programs, roles and responsibilities and declaratory responses. The lack of a national strategy is disconcerting because the 2008 compromise was not the only successful penetration. By not having a national strategy on how to handle cyber attacks' potentially catastrophic consequences, leaves the U.S. vulnerable. "Every day, U.S. military and civilian networks are probed thousands of

⁵⁷ Department of Defense, "Quadrennial Defense Review, February 2010," http://www.defense.gov/qdr/images/QDR_as_of_12Feb10_1000.pdf p.37, accessed on June 22, 2012.

times and scanned millions of times...Adversaries have acquired thousands of files from U.S. networks and from the networks of U.S. allies and industry partners, including weapons blueprints, operational plans and surveillance data.”⁵⁸

On February 12, 2013, Obama issued an executive order directing federal agencies to develop a framework for combating cyberattacks on critical public and private infrastructures⁵⁹ and increase the amount of information that is shared about threats. In the president’s budget for fiscal year 2014 he allots more than \$13 billion to cyber programs, nearly 16 percent of a federal IT budget totaling about \$82 billion.

The espionage and stealing of U.S. intellectual property will eventually impact our nation’s technological and patent competitive advantage in the global economy. So far, the dozens of nations who have set up cyber units and proxies have not taken the next step: physical attack on the U.S and its citizens.

Given the asymmetry, offense and anonymity characteristics of cyber attacks, it may be only a matter of time when an entity(s) will infiltrate U.S. computer networks controlling air traffic, power grids, water treatment plants and bank accounts and wreak havoc on Americans: airplanes crashing into one another; water treatment plants not performing filtration and disinfectant; transfer of monies out of bank accounts and inoperable ATM and credit card machines.

A hostile nation or extremist group could inflict the most destructive cyber attacks by overloading the system with several attacks on our critical infrastructure at one time, in combination with a physical attack on the U.S. Attackers could then seek to disrupt or

⁵⁸ William J. Lynn III, “Defending the Domain.”

⁵⁹ President Barack Obama, “Executive Order on Improving Critical Infrastructure Cybersecurity,” February 12, 2013, <http://www.whitehouse.gov/the-press-office/2013/02/12/executive-order-improving-critical-infrastructure-cybersecurity-0> accessed on April 5, 2013.

degrade critical military systems and command, control and communication (C3) networks. According to then-Secretary of Defense Leon Panetta, “The collective result of these kinds of attacks could be a cyber Pearl Harbor; an attack that would cause physical destruction and the loss of life. In fact, it would paralyze and shock the nation and create a new, profound sense of vulnerability.”⁶⁰ One should remember that before 8:30 am on September 11, 2001 the conventional wisdom of passengers onboard a hijacked airplane was to cooperate with the hijackers and not try to fight them. American civilian and military authorities had not considered much less developed and exercised robust formal contingency response plans to Middle Eastern terrorists trained to fly airliners packed with people into the U.S.’s iconic economic and military symbols of hegemony. Although different than the cyber threat, the high national debt and deficit budgets are also significant threats the U.S. must confront.

High National Debt and Budget Deficits.

Today, our national public debt stands at \$17.1 trillion. How did U.S. get to this point of massive federal debt and expanded government that endangers our national security and solvency? In 2000, “the U.S. government’s budget was surplus, meaning that the total amount of debt was shrinking. Federal Reserve officials even publicly discussed the possibility that all of the debt might be paid off.”⁶¹ Then the George W. Bush administration had the biggest impact to the federal debt when it initiated and Congress passed the 2001 and 2003 tax cuts, which will reduce revenues by more than \$2 trillion

⁶⁰ Elisabeth Bumiller and Thom Shanker, “Panetta Warns of Dire Threat of Cyberattack on U.S.,” *The New York Times*, October 11, 2012, http://www.nytimes.com/2012/10/12/world/panetta-warns-of-dire-threat-of-cyberattack.html?_r=0 accessed on April 1, 2013.

⁶¹ Roger C. Altman and Richard N. Haass, “American Profligacy and American Power—The Consequences of Fiscal Irresponsibility,” *Foreign Affairs*, November/December 2010.

over ten years. Additionally, the costs of the prescription-drug benefit to Medicare and the wars in Afghanistan and Iraq piled on even more debt.⁶²

In 2008, the U.S. faced the most severe recession since World War II, and is now beginning to show some signs of recovery. Coupled with the Bush administration initiatives, the economic downturn—loss of federal revenues (e.g. due to high unemployment, individual and corporate bankruptcies) and the federal government’s response to it—stimulus—and other actions taken to stabilize financial markets contributed to a rapid buildup in the federal debt held by the public. “In five years the Obama administration has borrowed roughly \$5.7 trillion, which is more than the entire gross federal debt as recently as the year 2000. Debt held by the public as a share of GDP has nearly doubled in those five years to 76% from 40% in 2008.”⁶³ Under CBO’s current policies scenario, it projects the U.S. debt could reach 90% of GDP by 2022; and with the growing imbalance of revenues and spending combined with ever-spiraling interest payments on the federal debt, its share of GDP could exceed 109 percent by 2026, and 200 percent in 2037.”⁶⁴ CBO also admits that projections that far into the future are estimates and other factors could have impacts to those numbers. The significant threat is the paralysis of government because of the partisanship between the two parties and their different views on the role of government—one expansive, the other limited—prevents the medium- to long-term focus on U.S. priorities in technology,

⁶² Ibid.

⁶³ “Review and Outlook” section, *The Wall Street Journal*, “The Biggest Fiscal Losers,” http://online.wsj.com/news/articles/SB10001424052702303460004579190043997395918?mod=hp_opinion accessed on November 11, 2013.

⁶⁴ Ibid, p.3.

medicine, military, diplomatic and economic in order to maintain its competitive advantage in the global community.

Obama understood the magnitude of the harm the federal debt poses and signed an Executive Order in February 2010 to establish the National Commission on Fiscal Responsibility and Reform. It was composed of 18 members, 6 of whom were appointed by the President and 3 appointed by each of the Congressional leaders. The Commission was charged with “identifying policies to improve the fiscal situation in the medium term and to achieve fiscal sustainability over the long run...The magnitude and timing of the policy measures necessary to achieve this goal are subject to considerable uncertainty and will depend on the evolution of the economy.”⁶⁵ The Executive Order required the Commission to submit a final report by December 2010 of recommendations which had to be approved by 14 of the 18 members. Obama continued to identify the rising debt as a threat in the May 2010 National Security Strategy: “Our strategy starts by recognizing that our strength and influence abroad begins with the steps we take at home. We must grow our economy and reduce our deficit.”⁶⁶ In December 2010, the Commission completed its work, however its recommendations fell short by one member. Unfortunately, Obama did not incorporate any of the Commission’s recommendations (e.g. Social Security reform, elimination of popular itemized tax deductions) in his budget framework in April 2011.

⁶⁵ President Barack Obama, “Executive Order—National Commission on Fiscal Responsibility and Reform, February 18, 2010,” The White House, <http://www.whitehouse.gov/the-press-office/executive-order-national-commission-fiscal-responsibility-and-reform>, (accessed on April 17, 2011).

⁶⁶ President Barack Obama, “National Security Strategy, May 2010,” The White House, http://whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf (accessed on April 16, 2011).

For the remainder of the spring and summer of 2011, the Obama administration pressed Congress to raise the debt ceiling so the government would be able to borrow money to pay its obligations and fund spending programs. They cited dire consequences would severely impact Americans' lives: "...the federal government would have to eliminate all spending on discretionary spending programs, cut nearly 70% of outlays for mandatory programs, increase revenue collection by nearly two-thirds, or take some combination of those actions in the second half of FY2011."⁶⁷ Finally, this debt ceiling crisis was resolved when Speaker of the House John Boehner and Obama announced an agreement on July 31, 2011, the House and Senate passed the Budget Control Act which Obama signed. The agreement allowed the debt ceiling to be raised by \$2 trillion while a mechanism known as sequestration was part of the agreement. Beginning in January 2013 if Congress was unable to identify other spending reductions, sequestration would trigger \$1.2 trillion in budget cuts over 10 years. Half of these spending cuts, approximately \$600 billion (on top of the \$400 billion the Obama administration has already proposed for the next 10 years) would come from DoD over the next 10 years.

These cuts would severely impact the military's combat readiness. The shrinking defense budgets would impact the U.S.'s dominance in efficient and effective combat power--"tooth-to-tail".⁶⁸ The U.S. would not be able to recruit high quality people and train them to operate complex weapon systems; it would not be able to perform logistics

⁶⁷ Mindy R. Levit, Clinton T. Brass, et al., "Reaching the Debt Limit Background and Potential Effects on Government Operations," *Congressional Research Service*, February 11, 2011, http://74.125.155.132/scholar?q=cache:31xq1sMEuXKJ:scholar.google.com/+congressional+research+service+report+R41633&hl=en&as_sdt=0,47 (accessed on April 20, 2011).

⁶⁸ In DoD, the "tooth" is generally considered the forces (e.g. recruiting/training personnel, weapon systems) employed to perform core missions while the "tail" is the infrastructure to manage (e.g. administration) and support (e.g. logistics, research and development) those forces, Defense Business Board, "Task Report on Tooth-to-Tail Analysis," http://dbb.defense.gov/pdf/Tooth_to_Tail_Final_Report.pdf, p. 18, (accessed on May 2, 2011).

and supply expeditionary forces around the globe or invest in research and development (R&D) of next generation weaponry. In fiscal year 2013, sequestration cuts to DoD totaled \$37 billion, while fiscal year 2014 total could total \$52 billion.⁶⁹ According to Clark Murdock, “estimates DoD topline budget reductions are only the first piece of the “double whammy” that defense faces today. Equally serious, the defense dollar has lost—and continues to lose—its purchasing power due to the aggregate impact of internal cost growth, for personnel, for operations and maintenance, and for acquisition programs. This real spending decrease is estimated at 31% from 2010 to 2021.”⁷⁰

The fiscal crises of high national debts and budget deficits over the long-term may degrade the U.S.’s ability to project global military and economic power—weakening its defense and deterrence capabilities and thereby endangering its strategic allies and interests. Funding the modernization and maintenance programs of the full-scale nuclear triad (which will be discussed later in the chapter) is part of this problem since the U.S. government allocates taxpayer money to the nuclear triad instead of concentrating money to other current capabilities and future technologies. According to General Mark A. Welsh III, Air Force Chief of Staff, in a November meeting with defense reporters, “The cost of modernizing the nuclear infrastructure is not small, and so I think that will lead to a very honest debate about where can we afford to invest, where must we invest, and how

⁶⁹ *The Economist*, “Squeezing the Pentagon,” July 6, 2013, <http://www.economist.com/news/united-states/21580460-wrong-way-cut-americas-military-budget-squeezing-pentagon> accessed on December 18, 2013.

⁷⁰ Clark A. Murdock and Ryan A. Crotty, “A Methodology for Making the Right Trade-offs in Defense for the Decade Ahead: Defense Budgeting to Beat the “Double Whammy,” *Center for Strategic and International Studies*, https://www.google.com/url?q=http://csis.org/files/publication/130417_Murdock_DefenseBudgetingDoubleWhammy_Web.pdf&sa=U&ei=64WuUt3kGeTMsQSg4IK4Dw&ved=0CBAQFjAJ&client=internal-uds-cse&usg=AFQjCNGPKBG2kILHIXvIK3ZOCemCqv7V0g accessed on December 18, 2013, pp.1-3.

does that relate to a strategy going forward.”⁷¹ As an example, the Air Force’s next generation bomber may be deployed as a conventional weapons platform first and add nuclear capability later.⁷²

In contrast to the significant threats of cyber attacks and high national debt and budget deficits, there are still two nations, Russia and China with nuclear weapons that technically could pose a Cold War existential threat to the U.S.

Russian Federation (RF) Nuclear Modernization Program.⁷³

As discussed in Chapter 1, the U.S. and RF signed a ten-year New START Treaty (formally “Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms”) on April 8, 2010 and ratified by both countries limiting deployed strategic nuclear warheads on both sides to 1,550. There are additional constraints, deployed and non-deployed strategic launchers (intercontinental ballistic missiles {ICBM} and submarine-launched ballistic missiles {SLBM}) and heavy bombers are limited to 800, while deployed strategic launchers and heavy bombers are limited at 700 (table 1). According to the State Department, the purpose of these bilateral arms control treaties is to “increase stability in the U.S.-Russian nuclear relationship at significantly lower levels of nuclear weapons.”⁷⁴ Currently, the RF is modernizing its nuclear forces—ICBMs, submarines (SSBN) and bombers—though not with the robustness of the U.S.’s programs (discussed later in the

⁷¹ Adam J. Hebert, “The Triad: Now, But Maybe Not Forever,” *Air Force Magazine*, December 2013, p. 4.

⁷² Ibid.

⁷³ Author’s note: Unlike the U.S., the RF does not have the transparency in open-source information via internet on government expenditures or its policies on nuclear forces modernization programs. The author used research from organizations such as the U.S. State Department who monitors RF activities and the Arms Control Association.

⁷⁴ U.S. State Department, “Central Warhead and Delivery Vehicle Limits of the New START Treaty, Fact Sheet,” Bureau of Verification, Compliance and Implementation, April 8, 2010, <http://www.state.gov/t/avc/rls/139900.htm>, accessed on July 12, 2012.

chapter). Concerning ICBMs, Russia deploys six types: SS-18 (counter to the Peacekeeper ICBM discussed in Chapter 1, carries 10 nuclear warheads and backbone in terms of the total number of warheads); SS-19 (carries 6 warheads); mobile SS-25 (carries single warhead and accounts for the largest number of launchers); silo-based SS-27, mobile SS-27, and RS-24 (a multiple warhead variant of the SS-27).⁷⁵ RF is replacing older ICBMs that were deployed in the 1980's (SS-18, SS-19 and SS-25) with current technology systems, although at a slower pace. By the end of the New START Treaty (2021), Russia plans to have the SS-27s and RS-24s deployed as its ICBM force.

Concerning its other nuclear forces, Russia invests the largest portion of military spending on modernization of its SSBNs. The RF has 10 active SSBNs—six Delta IVs and four Delta IIIs which Russia is replacing with four new SSBNs, called Borey-class. This new SSBN has faced many development issues and that has delayed deployment and the new SLBM, slated to be deployed on it, Bulava has performed poorly in flight tests.⁷⁶ "For its 77 strategic bombers, Blackjack and Bear, Russia is upgrading their targeting and navigations systems, at 2-3 per year. RF has also begun the concept study phase of strategic bomber replacement that could have stealth characteristics."⁷⁷

Finally, there are key considerations about Russia's mobile ICBM force and the New START Treaty limits and provisions. Since RF has significant numbers of mobile ICBMs, the U.S. (has only silo-based ICBMs) could have played hardball and placed serious restrictions on those forces. However, the U.S. and RF came to an agreement that

⁷⁵ Volha Charnysh, "Russian Strategic Nuclear Forces under New START," *Arms Control Association*, June 2010, <http://www.armscontrol.org/factsheets/RussiaStratNukeForceNewSTART>, accessed on June 22, 2012.

⁷⁶ Ibid.

⁷⁷ Ibid.

“mobile ICBMs could enhance the survivability of Russia’s nuclear force, and therefore strengthen strategic stability under the new treaty.”⁷⁸ The U.S. is “far less concerned about Russia’s ability to break out of the treaty limits than it was in the 1980s.”⁷⁹ The treaty also limits the locations of mobile ICBMs and their launchers. The confidence in the U.S.-RF relationship is further demonstrated by the provision to conduct up to 18 short notice on-site inspections to each other’s facilities. As of March 1, 2012, Russia is already well within the New START Treaty limit of total number of warheads (1,492) compared to the U.S. (1,737), and deployed strategic launchers and heavy bombers (494) compared to the U.S. (812) (table 1).⁸⁰ The U.S. and the RF have developed their growing bilateral relationship developed upon conclusion of the Cold War and the significant arms control reductions through the New START Treaty. According to the “Report on Nuclear Employment Strategy of the United States,” “Although differences between our countries continue to arise and Russia continues to modernize its nuclear forces, Russia and the United States are no longer adversaries, and the prospects of military confrontation between us have declined dramatically.”⁸¹ Like the RF, China is also modernizing its nuclear weapons program.

⁷⁸ Amy F. Woolf, “The New START Treaty: Central Limits and Key Provisions,” *Congressional Research Service*, February 14, 2012, <http://www.fas.org/sgp/crs/nuke/R41219.pdf>, p.10-11, accessed on July 12, 2012.

⁷⁹ Ibid.

⁸⁰ U.S. State Department, “New START Treaty Aggregate Numbers of Strategic Offensive Weapons, Fact Sheet,” Bureau of Verification, Compliance and Implementation, June 1, 2012, <http://www.state.gov/t/avc/rls/191580.htm>, accessed on July 12, 2012.

⁸¹ Department of Defense, “Report on Nuclear Employment Strategy of the United States Specified in Section 491 of 10 U.S.C.,” http://www.defense.gov/pubs/reporttoCongressonUSNuclearEmploymentStrategy_Section491.pdf p. 2, accessed August 1, 2013.

People's Republic of China (PRC) Nuclear Modernization Program.⁸²

The Chinese Communist Party (CCP) runs the government of PRC and the People's Liberation Army (PLA) is the CCP's armed instrument. China's leaders' strategic priorities are "to perpetuate their party's rule over China through economic growth and development which should maintain domestic political stability and defend national sovereignty and territorial integrity."⁸³ China appears to still operate under former CCP leader Deng Xiaoping's dictum to avoid confrontation with the current global status quo order in order to claim the future prize of world class military and economic power. "China's official policy on nuclear weapons continues to focus on maintaining a nuclear force structure able to survive an attack and respond with sufficient strength to inflict unacceptable damage on an enemy."⁸⁴ The PRC realizes it does not have the size of the U.S.'s nuclear arsenal, infrastructure and command, control and communications capabilities. Therefore, China "values secrecy over transparency, since it believes transparency undermines its confidence in the survivability of its nuclear arsenal."⁸⁵ According to the "DoD Annual Report on China 2013", "China has consistently asserted

⁸² Author's note: Unlike the U.S., the PRC does not have the transparency in open-source information via internet on government expenditures or its policies on nuclear forces modernization programs. The author used research from organizations such as DoD, who monitors PRC activities, Arms Control Association and Union of Concerned Scientists.

⁸³ Office of the Secretary of Defense, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, 2011," p.13, www.defense.gov/pubs/pdfs/2011_cmpr_final.pdf

⁸⁴ Office of the Secretary of Defense, "Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, 2013 http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&ved=0CC4QFjAA&url=http%3A%2F%2Fwww.defense.gov%2Fpubs%2F2013_china_report_final.pdf&ei=qxixUozLBOPJsQS1-YHYDg&usg=AFQjCNHttW_1bmSSI0a9nbw4vUmECY3AFQ&sig2=NB1ToMiyNrN7LfTYxnHSeQ&bvm=bv.58187178,d.cWc accessed on December 17, 2013, pp. 29-30.

⁸⁵ Gregory Kulacki, "China's Nuclear Arsenal: Status and Evolution," *Union of Concerned Scientists*, May 2011, p.3

that it adheres to a “no first use” (NFU) policy, stating it would use nuclear forces only in response to a nuclear strike against China.”⁸⁶

Concerning the PRC’s nuclear arsenal, the Second Artillery controls its nuclear and conventional ballistic missiles. The Second Artillery’s nuclear modernization efforts include enhancing its silo-based ICBMs and adding more survivable mobile delivery systems. The PRC’s nuclear arsenal currently consists of approximately 50- 75 ICBMs, including the silo-based CSS-4 (DF-5); the solid-fueled, road-mobile CSS-10 Mods 1 and 2 (DF-31 and DF-31A); and the more limited range CSS-3 (DF-4). The CSS-10 Mod 2, with a range in excess of 11,200 km, can reach most locations within the continental United States. This force also includes the liquid-fueled CSS-2 intermediate-range ballistic missiles and road- mobile, solid-fueled CSS-5 (DF-21) medium-range ballistic missiles for regional deterrence missions. Additionally, China may be developing a new road-mobile ICBM, possibly MIRV-capable.”⁸⁷

Concerning submarines, China continues to modernize its nuclear-powered ballistic missile submarines (SSBN). “Three JIN-class SSBNs (Type 094) are currently operational, and up to five may enter service before China proceeds to its next generation SSBN (Type 096) over the next decade. The JIN-class SSBN will carry the new JL-2 submarine launched ballistic missile with an estimated range of more than 4,000 nm. The JIN-class and the JL-2 will give China its first credible sea-based nuclear deterrent.”⁸⁸

In light of the nuclear modernization, the U.S. still hosted then-PRC President Hu Jintao to a State Visit in January 2011. Obama and Hu jointly affirmed that a “healthy,

⁸⁶ Annual Report to Congress, 2013, p.31.

⁸⁷ Ibid.

⁸⁸ Ibid.

stable, and reliable military-to-military relationship is an essential part of [their] shared vision for a positive, cooperative, and comprehensive U.S.-China relationship.”⁸⁹

Cooperative Engagement Activities.

The U.S.’s formal cooperative engagement activities with nuclear weapons states began at the conclusion of the Cold War. On June 16, 1992, President George H.W. Bush announced with visiting Russian President Boris Yeltsin of a significant nuclear weapons reductions framework for the Strategic Arms Reduction Treaty II (formally signed on January 3, 1993). In their press conference, Bush stated the agreement took five months instead a decade as in previous treaties and that the number of nuclear warheads would be reduced from 21,000 to 6,000 for both sides.⁹⁰ He also stated “the United States can assist Russia in the required destruction of ballistic missile systems.”⁹¹ DoD’s Cooperative Threat Reduction (CTR) Program was born. The next day, Bush and Yeltsin signed an agreement to facilitate the safe and secure transportation and storage of nuclear, chemical, and other weapons in RF and the destruction of those weapons to comply with START II requirements.

In addition to Bush, Senators Nunn and Lugar were early and enduring proponents of CTR. Its mission is to work with partner nations in preventing the proliferation of weapons of mass destruction (WMD) such as nuclear, biological and chemical materials, technologies and expertise, and eliminate, secure or consolidate WMD, related materials, and associated delivery systems and infrastructure at their source. Because of CTR

⁸⁹ Ibid, p. i.

⁹⁰ President George H.W. Bush, “Remarks with President Boris Yeltsin of Russia Announcing Strategic Arms Reductions and an Exchange with Reporters,” George Bush Presidential Library and Museum, June 16, 1992, http://bushlibrary.tamu.edu/research/public_papers.php?id=4434&year=1992&month=6, accessed on July 11, 2012.

⁹¹ Ibid.

funding and its cooperative work, Kazakhstan (April 1995), Ukraine (June 1996) and Belarus (November 1996) become non-nuclear weapons states.⁹² CTR's mission supports the national security strategy in which Obama declared: "The gravest danger to the American people and global security continues to come from weapons of mass destruction, particularly nuclear weapons."⁹³ This presidential-level support has translated into CTR's budget averaging about \$400-\$500 million each year over the last three years. Its remarkable milestones in the RF and the nations mentioned above are breathtaking: Over 7,600 nuclear warheads have been deactivated; 926 ICBMS destroyed; 498 ICBM silos eliminated; modernized security at 24 of Russia's nuclear weapons storage sites; supported 616 shipments of Russian nuclear warheads to more secure storage or dismantlement sites (see Appendix A).

Since Obama's inauguration, the U.S. has expanded its cooperative work with the RF and former Soviet Union states and has also included other nuclear weapon states such as India and China. In critical ministerial-level discussions which occurred on May 3-4, 2012 Secretary of State Clinton and Secretary of the Treasury Geithner met with their Chinese counterparts to participate in the Fourth Round of U.S.-China Strategic and Economic Dialogue. Their productive talks led to outcomes that promote high-level exchanges, address regional and global challenges, enhance U.S.-China bilateral cooperation, and cooperation on climate change, energy, environment, science and technology. In the Joint Statement, outcome #34 reaffirmed the U.S.'s and China's

⁹² Cooperative Threat Reduction Program, Defense Threat Reduction Agency and USSTRATCOM Center for Combating WMD, <http://www.dtra.mil/missions/nunlugar/globalcooperationinitiative.aspx>, accessed on June 5, 2012.

⁹³ President Barack Obama, "National Security Strategy," May 2010, The White House, http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf, p.8, accessed on June 10, 2012.

commitment to establish a Center for Excellence in Nuclear Security which is a CTR project the author advises and supports.⁹⁴ This center will promote cooperation and strengthen nuclear non-proliferation, nuclear security best practices and combat nuclear terrorism.

Additionally, these high-level cooperative engagements have led to other exchanges, such as the U.S.-China Cities Forum on Economic Cooperation and Investment. This forum facilitates “investment between the local governments and companies of the two economies.”⁹⁵ Recently, it announced the U.S. and China have signed \$3.4 billion in bilateral projects that will boost each other’s trade and investment in manufacturing, new energy, property, logistics and entertainment.⁹⁶

Ballistic Missile Threats.

A real and expanding threat to the U.S., its allies and partners is the ballistic missile threat. This is not a new threat but one that has continued to grow from the Cold War, with the RF as the only ballistic missile threat to the many nations today who possess ballistic missiles. However, before discussing the current state of the ballistic missile threat to the U.S. and its allies, it’s important to provide a very brief historical overview of the threat.

During the 1950’s and 1960’s, the ballistic (nuclear) missile threats were primarily from the Soviet Union. At that time, the missile defense technology was focused mostly

⁹⁴ U.S. State Department, “Joint Statement on the U.S.-China Strategic and Economic Dialogue Outcomes of the Strategic Track May 3-4, 2012,” May 4, 2012, <http://www.state.gov/r/pa/prs/ps/2012/05/189287.htm> accessed on June 6, 2012.

⁹⁵ Amy Li, “China, U.S. Sign \$3.4 Billion in Deals,” *The Wall Street Journal*, June 23, 2012, http://online.wsj.com/article/SB10001424052702304898704577484301175648684.html?reflink=wsj_rect

⁹⁶ Ibid.

on detecting offensive launches and tracking inbound ballistic missiles; there were very limited ways to defend against them. The first U.S. anti-ballistic missile (ABM) system was the Nike Hercules which had limited ability to intercept ballistic missiles. The U.S. restructured an experimental Nike system, a computer complex with new, tracking radars, and renamed, the Sentinel program. With the Soviets deploying an ABM ring around Moscow in 1966, President Johnson proposed in 1967 the Sentinel system, which was supposed to provide protection for major cities against a ballistic missile attack, in particular one by China.”⁹⁷

The goal then which remains true today is an ABM system that defends the U.S. and its allies from a limited ballistic missile attack, not an impenetrable national shield because it would lead to a nuclear arms race. Then-Secretary of Defense, Robert McNamara stated in a speech in 1967,

Were we to deploy a heavy ABM system throughout the United States, the Soviets would clearly be strongly motivated to so increase their offensive capability as to cancel out our defensive advantage. It is futile for each of us to spend \$4 billion, \$40 billion, or \$400 billion -and at the end of all the spending, and at the end of all the deployment, and at the end of all the effort, to be relatively at the same point of balance on the security scale that we are now.... If we in turn opt for heavy ABM deployment-at whatever price- we can be certain that the Soviets will react to offset the advantage we would hope to gain.⁹⁸

In 1969, the Strategic Arms Limitation Treaty (SALT) I began, which led to the U.S. and Soviet Union signing the ABM Treaty on May 26, 1972. Both countries were limited to

⁹⁷ John W. Finney, “Safeguard ABM System to Shut Down; \$5 Billion Spent in 6 years Since Debate,” *The New York Times*, November 25, 1975, <http://select.nytimes.com/gst/abstract.html?res=F0081EF93B5F1B7493C7AB178AD95F418785F9>, accessed on, December 31, 2013, p. 1, and 74.

⁹⁸ Robert S. McNamara, “The Dynamics of Nuclear Strategy,” Department of State Bulletin, October 9, 1967, 443-51, in Morton H. Halperin, “The Decision to Deploy the ABM: Bureaucratic and Domestic Politics in the Johnson Administration,” *World Politics*, <http://www.jstor.org/stable/2010431?origin=JSTOR-pdf> accessed on December 14, 2013, p. 63.

“deploy two fixed, ground-based defense sites of 100 missile interceptors each. One site could protect the national capital, while the second could be used to guard an intercontinental ballistic missile (ICBM) field.”⁹⁹ In 1974, the U.S. and the Soviet Union amended the treaty to limit each country to one ABM site. The Soviet Union decided to keep its existing missile defense system, called the Galosh system, which ringed around Moscow. The Nixon Administration decided to deploy the Safeguard system (former Sentinel program) and its 100 missile interceptors to defend the Minuteman ICBM base at Grand Forks, ND.¹⁰⁰ Only months after activating it in October 1975, the House Appropriations Committee eliminated funding and ordered the system to be dismantled due to the “reasoning that the Soviet Union deploys multiple warheads on its ICBMs ‘the utility of Safeguard to protect Minuteman will be essentially nullified in the future.’”¹⁰¹

Ronald Reagan sought a different path from the ballistic missile threat of the Soviet Union. His initiative focused on strategic defense rather than strategic offense doctrine of Mutual Assured Destruction (MAD). On March 23, 1983, Reagan announced the SDI which would use ground-based and space-based systems to protect the United States from attack by strategic nuclear ballistic missiles. According to Lawrence Freedman, SDI was “a technical fix to reduce the nuclear danger...based on the idea that it was better to ‘protect than avenge.’ SDI sought to exploit new technology to catch missiles in their ‘boost phase’ that is just as they are launched—or at any point on their trajectory. However, the desirability of the principle behind the initiative was always easier to

⁹⁹ Arms Control Association, “The Anti-Ballistic Missile (ABM) Treaty at a Glance,” August 2012, <http://www.armscontrol.org/print/2565>, accessed on December 10, 2013.

¹⁰⁰ Finney, “Safeguard ABM System to Shut Down.”

¹⁰¹ Ibid.

explain than the feasibility of the technology.”¹⁰² By 1986, the Reagan Administration had entered a missile defense system into the defense acquisition process where the Strategic Defense Initiative Organization (forerunner to the current Missile Defense Agency) began to develop defenses against widespread missile attacks.¹⁰³

During the 1990’s, the emphasis shifted from a national missile defense to theater missile defense. President George H.W. Bush sponsored a review of the SDI program from 1989 to 1990, which “the findings of the study called for the U.S. to shift its defense research emphasis from strategic defenses over North America, to the protection of deployed forces and allies against limited attacks.”¹⁰⁴ The success of the Patriot ABM batteries against Iraqi Scud missiles during the Gulf War may have influenced the recommendation. President Clinton continued on with the pursuit of theater ballistic missiles research and development. Key elements include the Theater High Altitude Air Defense (THAAD), Patriot Advanced Capability (PAC-3), and the Aegis Ballistic Missile Defense. Two key events influenced the Clinton Administration to re-focus efforts towards a national missile defense: release of the Commission to Assess the Ballistic Missile Threat to the United States Report (commonly referred to as the Rumsfeld Commission Report) in late July 1998 and North Korea’s launch of an intercontinental-range ballistic missile called Taepo Dong on August 31, 1998. However,

¹⁰² Lawrence Freedman, “Does Deterrence Have a Future?” *Arms Control Association*, <http://www.armscontrol.org.proxy1.library.jhu.edu/print/746>, accessed on December 21, 2013.

¹⁰³ “History Resources: Strategic Defense Initiative”, Missile Defense Agency (MDA), http://www.mda.mil/news/history_resources.html accessed on December 21, 2013.

¹⁰⁴ Jeffrey A. Larsen and Kerry M. Kartchner, “Emerging Missile Challenges and Improving Active Defenses,” *The Counterproliferation Papers Future Warfare Series No. 25*, USAF Counterproliferation Center, (Air University: Maxwell Air Force Base), http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=39&cad=rja&ved=0CHQQFjAIOB4&url=http%3A%2F%2Fwww.dtic.mil%2Fget-tr-doc%2Fpdf%3FAD%3DADA446185&ei=bwvKUthfOofisAStqYGgDQ&usg=AFQjCNEqoUHH7OZpVctvLWNsFK3od_roA&sig2=UZY6mCO0rVnlpkGZUGkpCA accessed on December 21, 2013, p.6.

towards the end of his administration, Clinton had decided “to defer deployment of a national missile defense system, saying ‘the system as a whole is not yet proven,’ instead urging further research, development, and testing.”¹⁰⁵

Under President George W. Bush, missile defense became a central focus of his national security strategy because he believed the ballistic missile threat was imminent and there was available technology to implement. In June 2002, after giving a six month warning to the RF, Bush declared the U.S. had withdrawn from the ABM treaty. “The U.S. withdrew from the treaty because of the widespread proliferation of ballistic missiles” that prevented the U.S. from developing of defenses against rogue states and terrorists.¹⁰⁶

“Rumsfeld had reoriented the missile defense program with a concept for an integrated, layered defense that would be capable of attacking warheads and missiles in all phases of their flight and was expected to eventually provide global defenses against missiles of all ranges.”¹⁰⁷ By the end of the Bush Administration, the U.S. had in place a limited ballistic missile defense system to protect the homeland, its military forces, allies and partners. To defend against intermediate and intercontinental ballistic missile threats, Ground-based Midcourse Defense (GMD) interceptors were emplaced in silos at Fort Greely, Alaska and Vandenberg Air Force Base, CA. For short-range ballistic missile threats, the PAC-3 interceptor was in place, and for medium-range ballistic missile

¹⁰⁵ The White House, Office of the Press Secretary, “Remarks by the President on National Missile Defense,” Gaston Hall, Georgetown University, Washington, D.C. 1 September 2000 in Larsen and Kartchner, “Emerging Missile Challenges,” p. 23.

¹⁰⁶ Paul Bracken, *The Second Nuclear Age*, (New York: Times Book Henry Holt and Company, LLC, 2012), p. 260.

¹⁰⁷ “History Resources,” MDA.

threats, the Aegis ship Standard Missile (SM)-3 was the dedicated ballistic defense system against the medium-range missile threats.

Soon after taking office, Obama directed the DoD to conduct the first-ever Congressionally-mandated review of U.S. ballistic missile defense policies, strategies, plans, and programs. DoD released the Ballistic Missile Defense Review (BMDR) in February 2010, with Michele Flournoy, Undersecretary of Defense for Policy, one of the co-leads of the study, stated two policy priorities from the review, “We’re currently protected against a limited ballistic missile attack, and will continue to be so for the foreseeable future.”¹⁰⁸ She also noted that “U.S. homeland missile defense efforts are focused on regional actors such as North Korea and Iran, and ‘are not intended to affect the strategic balance with Russia or China.’”¹⁰⁹ There were four additional BMDR policy priorities: “Before new capabilities are deployed, they must undergo testing that enables assessment under realistic operational conditions; the commitment to new capabilities must be fiscally sustainable over the long term; U.S. BMD capabilities must be flexible enough to adapt as threats change; and the United States will seek to lead expanded international efforts for missile defense.”¹¹⁰ These last four policy priorities encapsulated the different perspectives between Bush and Obama on defending against ballistic missile threats. According to Richard Weitz, “The main difference between Obama’s policies and those of Bush is the current administration has deemphasized near-term efforts to

¹⁰⁸Jim Garamone, “Missile Defense Review Links Strategy to Threats,” February 1, 2010, *American Forces Press Service*, <http://www.defense.gov/news/newsarticle.aspx?id=57815> accessed on December 21, 2013,

¹⁰⁹ Ibid.

¹¹⁰ Department of Defense, “Ballistic Missile Defense Review Report,” February 2010, <http://www.defense.gov/bmdr/> accessed on December 16, 2013,

develop and apply new ballistic missile defense technologies and instead has sought to build on proven technologies.”¹¹¹

According to the BMDR, the global trends of ballistic missile systems are becoming more flexible, mobile, survivable, reliable, and accurate, while also increasing in range.”¹¹² Equally concerning to the U.S. is that “today, over thirty countries have acquired or are acquiring, short- and medium-range missiles to deliver conventional munitions, and some are trying to develop longer ranges to carry nuclear or other WMD warheads.”¹¹³ China, for example, is working on a range of technologies to attempt to counter U.S. and its allies’ ballistic missile defense systems, including maneuverable reentry vehicles (MaRVs), MIRVs, decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons.¹¹⁴

Since the 2010 BMDR, the ballistic missile threat to the U.S. has continued to increase particularly from North Korea and Iran. In a Missile Defense Announcement on March 15, 2013, Secretary of Defense Chuck Hagel outlined four steps the U.S. would initiate in order to defend against Iran and North Korea’s pursuit and development of longer-range ballistic missiles. First, the U.S. would add 14 more Ground-Based Interceptors (GBI) to the 30 already emplaced in silos at Fort Greely, Alaska; deploy a second early warning and tracking radar to Japan; conduct Environmental Impact Studies for another potential GBI site in the U.S. Finally, DoD would restructure the SM-3 IIB which was part of the European Phased Adaptive Approach in order for the U.S. to fund

¹¹¹ Richard Weitz, “U.S. Missile Defense: Closing the Gap,” *World Affairs*, September 5, 2013, http://www.hudson.org/index.cfm?fuseaction=publication_details&id=9712 accessed on December 18, 2013.

¹¹² *Ibid.*

¹¹³ Weitz, “U.S. Missile Defense.”

¹¹⁴ DoD, “Annual Report on China, 2013,” p.31.

additional GBIs and improve advanced hit-to-kill vehicle technology.¹¹⁵ According to Hagel, “The collective result of these four decisions will be to further improve our ability to counter future missile threats from Iran and North Korea, while maximizing increasingly scarce taxpayer resources.”¹¹⁶

U.S. should dedicate more focus and resources on the significant threats from ballistic missile threats, cyber attacks, and its high national debts and budget deficits. However, the U.S.’s focus is still on the Cold War apparatus and the tens of billions of dollars of American taxpayer money spent on the nuclear triad.

Modernization Costs of the U.S. Nuclear Triad.

As discussed in Chapter 1, DoD’s bureaucracy to focus and fight the last war—Cold War—rather than strategize and prepare for the next conflict or war, costs hundreds of billions of American taxpayer dollars for the maintenance, modernization and persistence of the U.S. nuclear triad. During the Cold War, the investments to modernize the triad with numerous replacement technologies—solid propellant ballistic missiles carrying MIRVs, strategic bomber aircraft (B-1B and B-2) with increased speed, range, payload and low observable or “stealth” (B-2) characteristics, and larger and enduring submarines carrying increased payload of ballistic missiles—were crucial elements of the U.S. deterrent strategy that contributed to the implosion of the Soviet Union on December 25, 1991. Today, the U.S. continues to still spend tens of billions of dollars on its nuclear

¹¹⁵ Secretary of Defense Chuck Hagel Speech: “Missile Defense Announcement,” DoD, March 15, 2013, <http://www.defense.gov/Speeches/Speech.aspx?SpeechID=1759> accessed December 30, 2013.

¹¹⁶ Ibid.

forces. For example, DoD spent approximately \$29 billion in 2008 to sustain, upgrade and maintain its nuclear forces and operational support.¹¹⁷

A caveat on the progress of the Fiscal Year (FY) 2013 National Defense Authorization Act (NDAA), the House of Representatives approved HR 4310 (Report of the Committee of the Armed Services) on May 16, 2012. Upon return from the summer recess, the Senate still needs to debate and vote on it, mark-up, and follow-up by House and Senate committee panels for eventual signature by the president. In HR 4310, the committee reviewed and approved (and in some cases added to) the president's budgetary request to fund DoD and DOE weapon systems and security requirements. Below is not an all-inclusive summary of the U.S. nuclear triad's budgetary items. The analysis will review the House of Representatives-approved items to highlight the modernization of strategic delivery systems through major life extension programs, commencement of the acquisition processes for follow-on systems to the Minuteman III ICBM and Ohio-class fleet ballistic missile submarine ("SSBN" or "Boomers") and a new Long Range Strike Bomber (LRSB), Air-Launched Cruise Missile (ALCM) and the nuclear stockpile.

ICBM Modernization Programs.

Currently, the U.S. deploys 450 Minuteman III ICBMs at F.E. Warren Air Force Base (AFB), Cheyenne, Wyoming, Malmstrom AFB, Great Falls Montana and Minot AFB, Minot, North Dakota. Over the last twenty years, the Air Force has performed five major modernization programs on the Minuteman III force totaling approximately \$10B with estimates extending the service life to 2030. With these service life extension programs

¹¹⁷ Stephen I. Schwartz and Deepti Choubey, "Nuclear Security Spending: Assessing Costs, Examining Priorities," *Carnegie Endowment Report*, January 2009, <http://www.carnegieendowment.org/publications/?fa=view&id=22601> accessed on June 16, 2012, p.8.

(SLEP), the Air Force has literally modernized the ICBM from nose tip to the rocket motor.

The Post-Boost System Rocket Engine (PSRE), “fourth” stage on a Minuteman III, maneuvers the platform (which holds the nuclear warheads) to a pre-designated position in the Earth’s upper atmosphere for their deployment at an adversarial target. This \$186M LEP which will be completed in FY 2013, replaces components in the post-boost control system, making it easier to maintain and sustain due to original equipment manufacturer parts are no longer available.¹¹⁸

Next, the Air Force is modifying (completion in 2012) the nuclear warheads on the PSRE platform under the Safety Enhanced Reentry System Vehicle (SERV) program which cost approximately \$106M. The reentry vehicles which house the W-87 warhead that were deployed on the Peacekeeper ICBMs (deactivated in 2005) are redeployed on the Minuteman III. According to the Air Force, this program enabled retirement of the older MK-12 reentry vehicles and avoided a \$1B LEP.¹¹⁹

Two major ICBM LEPs are near completion: Guidance Replacement Program (GRP) and Propulsion Replacement Program (PRP). The GRP cost \$1.88B in which the Air Force purchased 652 new missile on-board “computers” called guidance sets that are easier to maintain and replace the unreliable two-decade old original equipment. The GRP did not increase the accuracy of the Minuteman III. The PRP is a \$2.4B program

¹¹⁸ The author as an active-duty Air Force major was Air Force Space Command’s Lead for the PSRE LEP and PRP leading it to initial operational capability.

¹¹⁹ Air Force Major General Richard Webber, Presentation to the Senate Armed Services Committee, Subcommittee on Strategic Forces, U.S. Senate, Subject: ICBMs, Helicopters, Cruise Missiles, Bombers, and Warheads, <http://armed-services.senate.gov/statemnt/2008/March/Webber%2003-12-08.pdf>, p.6, accessed on June 16, 2012.

which the Air Force expects to complete in 2013, replaces the aging solid propellant and bonding materials in the first and second stages of the Minuteman III and the third stage (fiberglass) is remanufactured.

There are several budget line items of research, development, test and evaluation (RDT&E) for future ballistic missile and nuclear technologies and follow-on strategic systems. First, “ICBM Engineering, Manufacturing and Development (EMD)” has been funded in FY13 for about \$135M¹²⁰ (table 1) to ensure the operational life of the Minuteman III to 2030. Through this funding, the AF’s “support equipment program (\$95M) designs, develops, and tests replacement of obsolete/non-serviceable weapon system support equipment to include the ICBM’s command and control test software; new program to identify the capabilities necessary to replace the trailers used to carry the Minuteman downstage (stages 1, 2, and 3) to and from the launch facility; cryptography upgrade to increase nuclear security (\$32M); and solid rocket motor modernization (\$8M) will accomplish studies to investigate the application of new technologies into the Minuteman III booster stack.”¹²¹ Another related Air Force RDT&E effort, “ICBM Demonstration (DEM)/Validation (VAL)” is funded at \$71M¹²² and a component of this program, propulsion applications “continues to support (\$44M) solid rocket motor

¹²⁰ United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, 112th Congress, 2nd Session, Report 112-479, May 11, 2012, <http://www.gpo.gov/fdsys/pkg/CRPT-112hrpt479/pdf/CRPT-112hrpt479.pdf>, Line 78, p. 428, accessed on June 15, 2012.

¹²¹ President’s Budget (PB) 2013 Air Force, Exhibit R-2A, RDT&E Project Justification, http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0604851F_5_PB_2013.pdf, accessed on June 18, 2012.

¹²² United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, Line 38, p. 426.

research and development industrial base and critical infrastructure.”¹²³ Another project under ICBM DEM/VAL is the Ground Based Strategic Deterrence (\$11M), the beginning process to identify materiel solutions and Analysis of Alternatives for a recommended follow-on to the Minuteman III.¹²⁴

SLBM Modernization.

Like the Air Force, the Navy is also conducting research and development program for replacement of its strategic delivery system—14 Ohio-class submarines—known as “SSBNX”. The Navy will procure the first of 12 SSBNXs in FY21 and the last one in FY41. In contrast to the 24 ballistic missile launch tubes on the Ohio-class SSBNs, the SSBNX will be outfitted with 16 launch tubes.¹²⁵ The Navy had requested \$555M RDT&E money for FY13; however the committee *increased* the program funding by \$374M for a total of \$929M.¹²⁶ This program’s budget request ramps up to nearly \$1.1B in FY16; its mission description states the program “supports innovative research and development in submarine hull and combat systems technologies and the subsequent evaluation, demonstration, and validation for submarine platforms.”¹²⁷ Navy budget estimates for the first SSBNX will be \$5.6B and its reviewing ways to bring the costs to \$4.9B for the number 2 through 12 submarines.¹²⁸ However, the “Congressional Budget

¹²³ PB 2013 Air Force, Exhibit R-2A, RDT&E Project Justification, http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0603851F_4_PB_2013.pdf, accessed on June 18, 2012.

¹²⁴ *Ibid*, p.19

¹²⁵ Ronald O'Rourke, “Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program: Background and Issues for Congress,” *Congressional Research Service*, June 12, 2012, <http://www.fas.org/sgp/crs/weapons/R41129.pdf> p. 2, accessed on June 19, 2012.

¹²⁶ United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, Line 44, p. 418.

¹²⁷ PB 2013 Navy, Exhibit R-2, RDT&E Budget Item, Justification, http://www.dtic.mil/descriptivesum/Y2013/Navy/stamped/0603561N_4_PB_2013.pdf accessed on June 19, 2012.

¹²⁸ Ronald O'Rourke, “Navy Ohio Replacement (SSBN[X]) Ballistic Missile Submarine Program,” p. 12.

Office estimates the life-cycle costs for the 12 future fleet ballistic missile submarines will be \$86B (about \$7.2B each) combined with research and development of \$10 to \$15 billion, for a grand total to the American taxpayer of \$96 to \$101B.”¹²⁹

Bomber Modernization Programs.

The Air Force also requested and the House of Representatives approved funding for bomber modernization programs on B-1B, B-2, and B-52 aircraft, weapons and new LRSB totaling \$983M.¹³⁰ Recall from Chapter 1 the B-1B is a conventional only bomber aircraft. Like the Minuteman programs, the House Armed Services Committee demonstrated ebullience in spending on bombers with nuclear weapons capability. In HR 4310, the committee directs the Air Force to ensure the LRSB is capable of nuclear operations upon achieving initial operational capability.¹³¹ The appropriation for the LRSB is RDT&E funding which for FY13 is \$291M following \$192M in FY11, \$294M in FY12, and eventually ramping up to \$2.7B in FY17.¹³²

Additionally, the committee directed DoD to deliver a report by February 2013 detailing plans on costs, and ensuring a next-generation nuclear warhead equipped air-launched cruise missile (ALCM) capability.¹³³ This new ALCM, project called Long Range Standoff Weapon would replace the current inventory of aging cruise missiles and be deployed on the new LRSB. This replacement cruise missile would be designed to

¹²⁹ Congressional Budget Office, “An Analysis of the Navy’s Fiscal Year 2012 Shipbuilding Plan,” <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/122xx/doc12237/06-23-navyshipbuilding.pdf>, p.17.

¹³⁰ United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, p. 43.

¹³¹ Ibid, p. 43

¹³² PB 2013 Air Force, Exhibit R-2A, RDT&E Project Justification http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0604015F_4_PB_2013.pdf accessed on June 19, 2012.

¹³³ United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, p. 42.

penetrate sophisticated integrated air defense systems and strike strategic targets deep into the adversary's country. The president's FY13 budget request is \$2.0M, and ramps up to \$352M in FY17.¹³⁴

Nuclear Weapons LEPs.

Like the strategic delivery systems discussed above, the nuclear warheads and bombs—Minuteman III warhead fuzes and B61 gravity bomb—that are the destructive elements are also undergoing LEPs. Concerning nuclear weapons modernization, the Air Force requested and the committee recommended funding of \$73M in FY13, ramping up to \$433M in FY17 to conduct concept studies, system engineering, modeling and simulation and integration planning in the replacement of fuzes for two types of warheads for the Minuteman III.¹³⁵ The fuzing system is a critical element because it originates the electronic signal that triggers the firing system—allowing the arming and safing of a nuclear weapon. The B61 gravity bomb LEP will review feasibility, design, cost, test equipment, technical data and select the best approach and integrate it on current and future aircraft (e.g. F-35 Lightning II and LRSB). The president's budget request and committee recommended \$80M in FY13, increasing to \$185M in FY15.¹³⁶

¹³⁴ PB 2013 Air Force, Exhibit R-2A, RDT&E Project Justification, http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0604932F_5_PB_2013.pdf, accessed on June 19, 2012.

¹³⁵ PB 2013 Air Force, Exhibit R-2A, RDT&E Project Justification, http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0604933F_5_PB_2013.pdf accessed on June 19, 2012.

¹³⁶ PB 2013 Air Force, Exhibit R-2A, RDT&E Project, Justification, http://www.dtic.mil/descriptivesum/Y2013/AirForce/stamped/0101125F_5_PB_2013.pdf

Stockpile Stewardship.

Related to the industrial base, the committee recommended funding for the nuclear weapons stockpile which provides the stewardship, management, expertise, and materials to LEPs. In the FY13 president's budget request, the committee agreed and recommended \$2.1B to the Department of Energy's Directed Stockpile Work which has four sub programs: 1.) LEPs, to extend the lifetime and reliability of the nuclear stockpile without having to conduct underground nuclear detonation testing; 2.) Stockpile Systems, which are joint DOE-DoD acquisition efforts to sustain the warheads and bombs in the stockpile; 3.) Weapons Dismantlement and Disposition; and 4) Stockpile Services are the research, development and production capabilities.¹³⁷ In FY11 and FY12, Congress had appropriated approximately the same amounts to the Directed Stockpile Work activities. Given the enormous expenditures on this snapshot of the nuclear triad, it's evident the U.S. needs to perform a clean-sheet approach on its national security strategy and its priorities to achieve those objectives because its focus—policies, programs, expenditures, and manpower—still revolve around the Cold War framework. Instead, the U.S. should focus on its significant threats, strategize for the “unforeseen” threats or conflicts and continue to pursue emerging and future technologies and capabilities.

Current, Emerging and Future Technologies and Capabilities.

The analysis will look at just a few of the exciting current and new/emerging technologies that are being demonstrated in military experiments and pursued in private

¹³⁷ Department of Energy FY 2013 Congressional Budget Request National Nuclear Security Administration, February 2012, <http://www.cfo.doe.gov/budget/13budget/Content/Volume1.pdf>, accessed on June, 21, 2012, pp 49-50.

industry as well as capabilities being discussed in public forums. The U.S. should consider investing more government resources such as funding and manpower toward these current and emerging technologies and streamline organizations in order to continue its primacy in the global community. These technologies are the Air Force's unmanned space plane, Boeing's unmanned airborne system, trend watching software, transformation approach on security software and an organizational change to U.S. Cyber Command that would increase its capability.

When the U.S. retired its space shuttle fleet, it lost a means to access space both for manned operations (e.g. experiments) and insertion of space satellites. The Air Force has twice successfully demonstrated an unmanned space plane capability. The system is known as Orbital Test Vehicle, X-37B. "On June 16, 2012, the X-37B steered itself and landed at Vandenberg AFB, California, completing a 15-month clandestine mission. In 2010, the first unmanned space plane returned to Earth after seven months and 91 million miles in orbit."¹³⁸ The Air Force is testing the two OTVs robotically controlled reusable spacecraft technologies.¹³⁹ The potential capabilities for the OTV are quicker capability over a battlefield to assess bomb damage, and adversarial movements and a prompt access to space in deployment of a small satellite. Another potential capability would be to develop the OTV for humanitarian purposes in assessment of areas devastated by natural disasters such as fires and hurricanes. In his testimony before a Senate Armed Services subcommittee, General William Shelton, Air Force Space Command Commander stated the "second Orbital Test Vehicle, X-37B, mission launched in March

¹³⁸ Alicia Chang, "Air Force brings unmanned space plane home," *Associated Press* in *USA Today*, June 17, 2012, http://www.usatoday.com/USCP/PNI/Nation/World/2012-06-17-PNI0617wir-space-plane_ST_U.htm

¹³⁹ *Ibid.*

2011 is proving the flexibility of this unique system.”¹⁴⁰ The U.S. should continue to invest and test this capability and determine future applications.

Like the Air Force’s OTV the Boeing Phantom Eye is an unmanned aircraft system. However, they look and operate completely different. The Phantom Eye completed its first autonomous flight on June 1, 2012 which lasted 28 minutes.¹⁴¹ Its eventual mission would be to perform intelligence, surveillance and reconnaissance (ISR) and transfer the acquired information to military, civilian and commercial customers. “Phantom Eye brings a new level of high-altitude, long-endurance (HALE) to the aviation world. It’s efficient and environmentally responsible liquid-hydrogen propulsion system is a first of its kind, creating only water as a byproduct of its engines.”¹⁴² Phantom Eye could remain on station for days compared to hours by current unmanned drones being flown in Afghanistan. Also, the Phantom Eye’s concept of operations is ISR which is different from the current drones which are loaded with munitions. So far, no U.S. government agency has procured the Boeing prototype unmanned aircraft.

Another cutting edge technology is “Big data” mined from cell phones, social media such as Google, Facebook, Twitter and other services that provide a gauge of the collective mood of the populace. A World Economic Forum report described “personal data represents an emerging asset class, potentially every bit as valuable as other assets

¹⁴⁰ General William Shelton, “Presentation to the Subcommittee on Strategic Forces, Senate Armed Services Committee,” March 21, 2012 <http://www.armed-services.senate.gov/statemnt/2012/03%20March/Shelton%2003-21-12.pdf> p. 19, accessed on July 17, 2012.

¹⁴¹ Randy Jackson, “Phantom Eye Altitude Long Endurance Aircraft Unveiled,” Boeing, June 4, 2012, http://www.boeing.com/Features/2012/06/bds_phantomeye_first_06_04_12.html

¹⁴² Ibid.

such as traded goods, gold or oil.”¹⁴³ Personal data is stimulating innovative new products tailored to and personalized for the specific needs of individuals. Trading companies are developing software to collect sentiment data gathered from various social media and converting the data into algorithms that assigns scores on positive or negative feelings. These trends indicate whether there is an upcoming bull or bear market. Another example of big data usage is in the developing world the mobile phone is the low-income person’s only access to the interactive technology and easier to link their personal data.

Of course, this collection and manipulation of “Big data” is a new and ever-expanding area that has few rules so security of data and civil rights issues are already important concerns. For example, a trader who develops a software program to analyze and assess collective moods may be gaining an “insider information” advantage that is not available to the general public. Or there could be the unscrupulous trader who falsely generates positive or negative phrases or words about a stock or bond in the social media contributing to people buying or selling that stock or bond. The trader would profit by generating false information. This new economic asset is a new frontier that the U.S. government should focus and understand the potential good and disruptive capabilities of “Big data”; personal data collection is here to stay and may be a public and private benefit or a future threat.

Related to data collection is the penetration and propagation of computer malware. The U.S. government needs to lead an effort to solve how to develop an emerging technology that efficiently and effectively defends against a sophisticated computer virus.

¹⁴³World Economic Forum, “Rethinking Personal Data: Strengthening Trust,” May 2012, http://www3.weforum.org/docs/WEF_IT_RethinkingPersonalData_Report_2012.pdf, p. 7

According to Deputy Secretary of Defense William Lynn, commercial-off-the-shelf defense software has 5-10 million lines of code compared to the average malware of about 175 lines of code.¹⁴⁴ A company who may consider a multimillion line of defense software code a labor-intensive and cost-prohibitive might accept the risk in order to save its resources. The vulnerability if the malware is successful would be public, personal and proprietary compromise of information. The U.S. government should establish a blue ribbon commission of the technology industry, government agencies and software users as well as “white hat” hackers to once and for all cease the incentive to develop malware. This effort should be transformational—removing software, hardware, firmware and cloud computing paradigm issues in order for the solution to nearly match defense software lines of code to that of a malware’s. The emerging technology would enhance individual and collective security and instill confidence in the institutions monitoring and protecting personal and public information.

Finally, the purview of cyber security and cyber crime is U.S. Cyber Command which oversees and coordinates DoD’s efforts to counter attacks on the .mil domain. A four-star general officer leads U.S. Cyber Command which is based at Fort Meade, MD and is a sub-unified command under U.S. Strategic Command in Nebraska (also led by a four star general). U.S. Strategic Command is one of nine combatant commands whose four-star commanders report directly to the president. U.S. Cyber Command is not a combatant command. Why does a four-star general at U.S. Cyber Command have to report to another four-star general at U.S. Strategic Command instead of the president?

¹⁴⁴ William J. Lynn III, “Foreign Affairs LIVE: The Pentagon’s New Cybersecurity,” *Foreign Affairs*, October 1, 2010, <http://www.foreignaffairs.com/discussions/news-and-events/foreign-affairs-live-the-pentagons-new-cyberstrategy> accessed on July 6, 2012.

The real threat of the cyber attacks requires U.S. Cyber Command to have the focus, increased visibility across government agencies and the prestige of being a combatant command that reports directly to the president, not another layer of bureaucracy of action officers! During the Cold War, Americans knew that “SAC”—Strategic Air Command (now U.S. Strategic Command) operated and maintained the nuclear weapons. Now, in 2013, a new and expanding significant threat must be addressed and U.S. Cyber Command seen as the holder of the new codes.

Conclusion

“Cold war days are over.”¹⁴⁵ Over twenty years ago, President George H.W. Bush stated those short but succinct words. The U.S. and RF may have reduced the nuclear warheads on alert or deployed, yet the same focus on nuclear modernization is still very much alive. Why? DoD’s bureaucracy is perpetuating the system of nuclear triad. As the analysis has shown there are now significant threats of the cyber attack (and its variants of cyber crime, cyber terrorism and cyber war) and the U.S.’s high and sky rocketing national debt and budget deficits that is now impacting the U.S. There is only a finite amount of money and Americans’ confidence in its governing institutions. The U.S. government should reassess its national strategy and realize cyber attacks and its financial calamity could be just around the corner. We don’t know what new international crisis will pop up, however, the U.S. needs to have an “all hands on deck” to counter the cyber attack. Also, the U.S. needs to lead and get its fiscal house in order to

¹⁴⁵ President George H.W. Bush, “Remarks with President Boris Yeltsin of Russia Announcing Strategic Arms Reductions and an Exchange with Reporters,” *George Bush Presidential Library and Museum*, June 16, 1992, http://bushlibrary.tamu.edu/research/public_papers.php?id=4434&year=1992&month=6, accessed on July 11, 2012.

ensure its financial solvency and economic and military primacy. If the U.S. loses its reputation in the global investment community as the safe haven to invest due to its skyrocketing national debt, the U.S. may not be able to have funding for research and development of emerging technologies and capabilities to project power in the world.

In analyzing the nuclear triad's modernization and life extension programs and observing in table 2 highlighting the president's FY13 budget items totaling \$4.6B for strategic systems such as a new long range bomber and a ballistic missile capable submarine replacement program that will cost the American taxpayers over a \$100B. The U.S. should re-focus its strategy, policies, and funding to pursue emerging and future technologies and capabilities that can help solve threats and challenges facing the country.

A Research and Thesis Chapter 3 should assess the president's recent nuclear force strategy guidance, and discuss potential alternatives and concepts for a new strategic force.

<u>Category#</u>	<u>New START Treaty Limits#</u>	<u>U.S.A.*</u>	<u>Russian Federation*</u>
Deployed ICBMs, Deployed SLBMs, and Deployed Heavy Bombers	700	812	494
Warheads on Deployed ICBMs, on Deployed SLBMs, and Nuclear Warheads Counted for Deployed Heavy Bombers	1550	1737	1492
Deployed and Non-deployed Launchers of ICBMs, Deployed and Non-deployed SLBMs, and Deployed and Non-deployed Heavy Bombers	800	1040	881

Table 1

New START Treaty Aggregate Numbers of Strategic Offensive Arms

Sources:

#President Barack Obama and President Dmitry Medvedev signed “Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms,” U.S. State Department, April 8, 2010, <http://www.state.gov/t/avc/newstart/c44126.htm>, p.3, accessed on July 15, 2012.

*Declared data as of March 1, 2012; based on biannual exchange data required by the Treaty. U.S. State Department, Bureau of Arms Control, Verification and Compliance, <http://www.state.gov/t/avc/rls/191580.htm>, accessed on July 14, 2012.

<u>Program Name</u>	<u>Cost \$M (in millions)</u>
ICBM Engineering, Manufacturing and Development	135.437
ICBM Demonstration/Validation	71.181
Navy Strategic Ballistic-Missile Submarine Replacement	929.523#
B-1, B-2, and B-52 Weapons and New Long Range Strike Bomber (LRSB)	923.100
LRSB Research, Development, Test and Evaluation	291.742
Nuclear Air-launch Cruise Missile Long Range Standoff Weapons	2.0
Minuteman III Nuclear Warhead Fuzes	73.0
B61 Gravity Bomb Life Extension Program	80.0
Department of Energy's Directed Stockpile Work	2,100.0
Total	4,605.983

Table 2
Highlights of U.S. Nuclear Triad Modernization Expenditures
Fiscal Year 2013

Source:

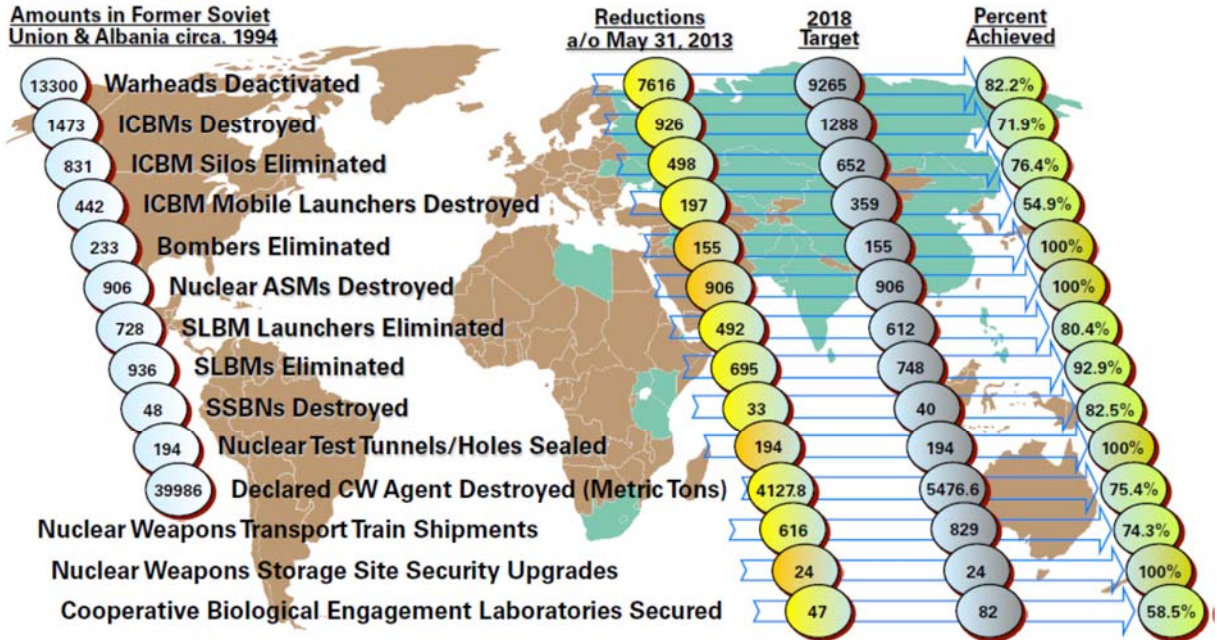
United States House of Representatives National Defense Authorization Act for Fiscal Year 2013, Report of the Committee on Armed Services on HR 4310, 112th Congress, 2nd Session, Report 112-479, approved by the House of Representatives on May 16, 2012.

#House of Representatives Armed Services Committee increased \$374M from \$555.123M.

UNCLASSIFIED

Nunn-Lugar CTR Scorecard

Ukraine, Kazakhstan, & Belarus are Nuclear Weapons Free Albania is Chemical Weapons Free



CTR partner states
 Rest of the world

UNCLASSIFIED

2

Appendix B

Nunn – Lugar Scorecard

As of May 2013

Source: Defense Threat Reduction Agency, Cooperative Threat Reduction Program website,
<http://www.dtra.mil/Missions/Nunn-Lugar/scorecards.aspx> (May 2013)

CHAPTER 3: Is It the Right Strategy for the 21st Century?

Introduction

As discussed in Chapter 2, the U.S. faces multiple threats such as its high national debt and budget deficits. This budget predicament evolves daily: On May 14, 2013, Defense Secretary Chuck Hagel directed that 650,000 government civilian employees would be furloughed for eleven days between July 8 and September 30, 2013 as part of the Department of Defense's (DoD) sequester cuts of \$37 billion to meet obligations of the 2011 Budget Control Act. This too has changed: On August 6, 2013, Hagel announced there would only be six furloughed days due to receiving congressional approval to reprogram (move) DoD money from acquisition accounts to day-to-day operations money.¹⁴⁶ Despite George H.W. Bush (41) declaring over twenty years ago that the cold war is over, the U.S. continues to spend billions of precious American taxpayer dollars on modernizing its nuclear triad strategic systems.

Since declaring his vision of a world without nuclear weapons in a speech delivered in Prague in 2009, Obama signed the New START Treaty in 2010 with the Russian Federation (RF) continuing the downward trend in both nations' nuclear arsenals. On June 19, 2013 speaking in Berlin, Obama stated he had determined that a further reduction of deployed strategic warheads—a 30% reduction from the New START Treaty—would not impact our national security. Obviously, there are both critics and advocates to Obama's approach on nuclear weapons. Who's right? Or are they both

¹⁴⁶ U.S. Department of Defense, "Hagel Announces Reduction in Civilian Furlough," August, 6, 2013, <http://www.defense.gov/news/newsarticle.aspx?id=120587>, accessed on September 1, 2013.

wrong on the future of nuclear weapons? Given the nuclear use taboo discussed in Chapter 1 and the vast expenditures of billions of American taxpayer dollars spent on nuclear forces and its enterprise discussed in Chapter 2, is a more transformative nuclear strategy and associated force structure more appropriate to meet the nation's challenges? Or is the slow trickle of the downward trajectory of arms reductions a better way to assure U.S. national security and primacy?

This analysis is important because the U.S. nuclear triad is still in place--50 years and several signed arms reduction treaties later--and appears to remain so for the foreseeable future. Along the way, the U.S. has invested billions of dollars to modernize and maintain these delivery systems and the nuclear weapons. Given the current and future challenges and threats of economic stagnation, cyber attacks, Russian and Chinese nuclear arsenals, and ballistic missile threats, the U.S. needs to address the viability of its nuclear strategy and nuclear triad. The thesis analysis will use the empirical method. In analyzing the above questions, the thesis will briefly highlight the president's accomplishments in the nuclear-related areas, analyze his recent guidance on U.S. nuclear weapons employment strategy, briefly review an op-ed article by critics of Obama's new strategy; then the thesis will present an illustrative nuclear strategy and force structure; and finally, summarize and conclude this thesis chapter.

Obama's nuclear-related accomplishments

On June 12, 2013, in front of the historic Brandenburg Gate and 4,500 invited German citizens, Obama presented his long-awaited nuclear strategy¹⁴⁷ guidance that his administration would implement. In 2009, Obama described to the people of the Czech Republic and the world that the threat of nuclear war may have dissipated but now a nuclear attack from nations seeking nuclear weapons and non-state actors is high:

“The existence of thousands of nuclear weapons is the most dangerous legacy of the Cold War... More nations have acquired these weapons. Testing has continued. Black market trade in nuclear secrets and nuclear materials abound. The technology to build a bomb has spread. Terrorists are determined to buy, build or steal one. Our efforts to contain these dangers are centered on a global non-proliferation regime, but as more people and nations break the rules, we could reach the point where the center cannot hold.”¹⁴⁸

His visionary speech in Prague outlined a future without nuclear weapons, highlighted the extreme threat of nuclear terrorism, and a call to secure vulnerable nuclear materials in four years. Since 2009, Obama has made substantive progress toward achieving this vision. This list includes three key accomplishments: 1.) The New START Treaty signed by Obama and Medvedev in April 2010 and ratified by the Senate in December 2010; overall, the treaty limits the U.S. and the RF to 1,550 deployed nuclear warheads and becomes fully implemented in 2018¹⁴⁹; 2.) The Obama administration's first Nuclear

¹⁴⁷ Throughout the 2012 presidential campaign, Republican candidate Mitt Romney often referenced a March 2012 Obama conversation (recorded by a Russian journalist and shared with a U.S. press pool reporter) with Russian President Dmitry Medvedev during the Nuclear Security Summit in Seoul, South Korea. In the recording, Obama told Medvedev that “this was my last election” and to notify then-Prime Minister Vladimir Putin (who had just been re-elected president) he needed “space.” Then Obama stated, “After the election, I have more flexibility” on strategic issues including missile defense.

¹⁴⁸ The White House, “Remarks by President Barack Obama,” Hradcany Square, Prague, Czech Republic, April 5, 2009, http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/ accessed on August 26, 2013.

¹⁴⁹ President Barack Obama and President Dmitry Medvedev signed “Treaty Between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms,” U.S. State Department, April 8, 2010, <http://www.state.gov/t/avc/newstart/c44126.htm>. Additionally, the U.S. and RF would be limited to 700

Posture Review (NPR) in April 2010 was signed by then-Secretary of Defense Robert Gates. The review identified two significant changes from previous NPRs: U.S. nuclear weapons would be reduced in scope in the national security strategy, and “the United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations”¹⁵⁰; and 3.) Obama’s initiative to host global leaders (at the presidential level) at a biennial forum called the Nuclear Security Summit (NSS). This was a framework to discuss ways on “strong nuclear security measures...the most effective means to prevent terrorists, criminals, or other unauthorized actors from acquiring nuclear materials.”¹⁵¹ *Nuclear Security Summit (NSS)*.

The NSS doesn’t get as much publicity and recognition as a bilateral arms reduction treaty or a high-level quadrennial government report like the NPR. However, this forum has developed in a short time to be a platform for the discussion of nuclear weapons, fissile materials, and nuclear security. Obama hosted the first NSS in Washington, D.C. on April 12-13, 2010 with 47 heads of state who in the communiqué stated “shared goals of nuclear disarmament, nuclear nonproliferation and peaceful uses of nuclear energy, we also share the objective of nuclear security.”¹⁵² His NSS initiative has proven to be a successful forum of cooperation and relationship-building. From the Prague speech, Obama declared that nations must be held accountable in accordance with their legal

Deployed Intercontinental Ballistic Missiles (ICBMs), Deployed SLBMs, and 800 Deployed and Non-Deployed launch vehicles.

¹⁵⁰ U.S. Department of Defense, *Nuclear Posture Review*, “Executive Summary,” April 2010, <http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf> accessed on August 12, 2013, p. ix.

¹⁵¹ The White House, Office of the Press Secretary, “Communiqué of the Washington Nuclear Security Summit,” April 13, 2010, <http://www.whitehouse.gov/the-press-office/communiqu-washington-nuclear-security-summit> accessed on August, 17, 2013.

¹⁵² *Ibid.*

commitments signed in treaties such as the 2005 Amendment to the Convention on Physical Protection of Nuclear Materials (CPPNM) and the International Convention on Suppression of Acts of Nuclear Terror (ICSANT). The NSS was born from the Prague speech, provides the legal pinning for the global nuclear security architecture—comprising of treaties, best practices, bilateral/multilateral agreements, and institutions such as the Global Initiative to Combat Nuclear Terrorism—to invite and nurture the international community of nations to accept and participate.

The NSS has not been a “schmooze” and glitzy photo session for heads of state. Rather, the NSS are productive sessions with structure and deliverables. For example, the first NSS in 2010 developed a “Work Plan” identified in its communiqué that the 47 nations pledged to continue cooperation in nuclear security against the universal threat of nuclear terrorism; reaffirmed the vital role of the International Atomic Energy Agency (IAEA) in the international nuclear security framework and to assist it in resources; support CPPNM and ICSANT; and identified and discussed improved methods and “best practices” in the nuclear security field.¹⁵³ During this summit, a key bilateral cooperative effort was announced: Obama and the President of the People’s Republic of China (PRC), Hu Jintao agreed to jointly establish a nuclear security center of excellence (COE) in Beijing.

The new partnership would establish a COE that would be a forum to exchange technical information, share best practices, develop training courses and promote technical collaborations to improve nuclear security and ensure non-proliferation of

¹⁵³ Ibid.

vulnerable nuclear materials.¹⁵⁴ The China COE will serve as a focal point to promote multilateral nuclear security throughout the Asia-Pacific region and the international community at large. In January 2011, U.S. Secretary of Energy Steven Chu and his PRC counterpart, China Atomic Energy Authority (CAEA) Chairman Chen Quifa signed the memorandum of understanding on the establishment of a U.S.-China COE, which Obama announced during Hu's State visit.¹⁵⁵ As discussed in the Chapter 2, the China COE is one of the top talking points of the formal U.S-PRC Strategic and Economic Dialogues.¹⁵⁶ The COE is scheduled to be completed in June 2015.

Finally, another important cooperative engagement was announced at the 2010 NSS. Obama, Medvedev and the President of Kazakhstan Nazarbayev, together pledged to complete the securing of plutonium in the underground Semipalatinsk nuclear test site in Kazakhstan. This was a critical partnership to secure vulnerable and abundant nuclear materials. Eben Harrell and David E. Hoffman reported that in the Degelen Mountain in Kazakhstan, the Soviet Union used the underground site during the Cold War to test its arsenal of plutonium nuclear warheads. After the Soviet Union's collapse in 1991, the test site became a haven for thieves and terrorists seeking to recover or "mine" nuclear materials left behind by the Soviet Union and sold to the highest bidders.¹⁵⁷ In the mid-

¹⁵⁴ The author is the Nuclear Surety Specialist working on the China COE project as the Advisory, Assistance and Services Contractor. Department of Energy is the U.S. Government lead agency.

¹⁵⁵ U.S. Department of Energy, National Nuclear Security Administration, "U.S., China Sign Agreement to Establish Center of Excellence on Nuclear Security," January 19, 2011,

<http://nnsa.energy.gov/mediaroom/pressreleases/chinacenterofexcellence> accessed on August 17, 2013.

¹⁵⁶ U.S. State Department, "Joint Statement on the U.S.-China Strategic and Economic Dialogue Outcomes of the Strategic Track May 3-4, 2012," May 4, 2012,

<http://www.state.gov/r/pa/prs/ps/2012/05/189287.htm>

accessed on June 6, 2012.

¹⁵⁷ Eben Harrell and David E. Hoffman, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University, "Plutonium mountain: Inside the 17-year mission to secure a dangerous legacy of Soviet nuclear testing,"

1990's, DoD's Defense Threat Reduction Agency capped what was thought to be vulnerable entrances. In 2005, after years of prodding by U.S. senior officials and scientists, cautious Russian scientists revealed the full extent of the vulnerable nuclear materials in the Delegren Mountain underground site: 220 pounds of recoverable plutonium.¹⁵⁸ This was enough to make more than a dozen nuclear bombs.

President Lee Myung-bak of South Korea hosted the second NSS on March 26-27, 2012 in Seoul. Like the 2010 NSS, the 2012 one was productive in continuing the path of cooperation on nuclear security. This summit had an increase in 53 heads of state and government in attendance compared to 2010's 47. The seven new participants were Azerbaijan, Denmark, Gabon, Hungary, Lithuania, Romania and INTERPOL. The Seoul Communique builds on the objectives and measures set out in 2010, and presented a "work plan" that identified 11 areas of concern in nuclear security and specific actions needed in each area. "The 11 areas are: the global nuclear security architecture; the role of the IAEA; nuclear materials; radioactive sources; nuclear security and safety; transportation security; combating illicit trafficking; nuclear forensics; nuclear security culture; information security; and international cooperation."¹⁵⁹

During the 2012 NSS, a major cooperative engagement that touched nearly all eleven areas of concern mentioned above, Obama, Medvedev, and Nazarbayev announced the completion of the \$150 million effort to secure the plutonium in the tunnels of the Degelen Mountain (Kazakhstan) and the surrounding bore holes by filling portions of the

<http://belfercenter.ksg.harvard.edu/files/Plutonium%20Mountain-Web.pdf>, accessed August 18, 2013, p.1.

¹⁵⁸ Ibid, p. 23.

¹⁵⁹ U.S. Department of State, "Key Facts on the 2012 Seoul Nuclear Security Summit," <http://www.state.gov/t/isn/rls/fs/187208.htm> accessed on August 26, 2013.

tunnels and holes with a special concrete.¹⁶⁰ According to Eben and Hoffman, “this greatly reduced one of the largest nuclear security threats since the collapse of the Soviet Union.”¹⁶¹ This is another example that the NSS continues to be a productive forum for nuclear weapons states and non-weapons states to seek the common ground of nuclear security and work cooperatively to enhance their nation’s and citizens’ safety.

The Netherlands will host the 2014 NSS to follow-up with the objectives and goals from the 2012 NSS and set new mileposts. During the June 2013 Berlin speech, Obama declared the U.S. would host the 2016 NSS--one way to ensure the U.S. and the international community continues on the right track to cooperatively engage on nuclear security and prevent terrorists and rogue nations from obtaining nuclear materials to build and detonate a nuclear weapon. Obama’s Prague speech framed how his new administration would approach the U.S.’s nuclear arsenal and how he viewed the U.S. role to lead the world’s non-proliferation effort in securing vulnerable nuclear materials to prevent a new generation of living in fear in the Nuclear Age.

Updated U.S. Nuclear Employment Strategy

On June 19, 2013, a week after Obama’s Berlin speech, the DoD unveiled the “Report on Nuclear Employment Strategy of the United States Specified in Section 491 of 10 U.S.C.”: the “nuclear strategy”. This new guidance marks only the third update since the end of the Cold War and the first one since 2002 that a president has issued the nuclear strategy.¹⁶² The analysis will review the “nuts and bolts” of the new nuclear

¹⁶⁰ Ibid, p1.

¹⁶¹ Ibid.

¹⁶² Department of Defense, “Report on Nuclear Employment Strategy of the United States Specified in Section 491 of 10 U.S.C.,”

strategy, specifically the sections on “NPR Follow-On Analysis,” “Modifications to Nuclear Employment Strategy,” “Implications for the U.S. Nuclear Posture and Nuclear Stockpile,” and “Additional Implications”; the two new initiatives discussed in the nuclear strategy will also be reviewed.

NPR Follow-On Analysis.

Nuclear weapons are in essence, the President’s weapons, as Commander-in-Chief of the U.S. Armed Forces. The guidance states the President’s role on nuclear weapons: “...the sole authority to order the employment of U.S. nuclear forces.”¹⁶³ Unlike other military operations such as drone attacks and cyber attacks, no general or admiral or for that matter appointed (e.g., Secretary of Defense) or other elected official (including the vice president of the U.S.) except the president, can issue orders to conduct a nuclear strike. The DoD, specifically, Military Service components, Air Force and Navy oversee and manage the triad forces—bombers (B-52 and B-2) and intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs)—are custodians of these weapons. They ensure the nuclear arsenal is safe, secure, and effective. This concept is the foundation of the four guiding principles on the role of U.S. nuclear weapons: 1.) to deter nuclear attack on the U.S. and its Allies; 2.) to use nuclear weapons in extreme circumstances to defend its strategic interests or those of its Allies; 3.) to maintain a credible nuclear deterrent so a potential adversary will determine the risks to attack outweigh the possible benefits; and 4.) to achieve a credible deterrent with the

http://www.defense.gov/pubs/reporttoCongressonUSNuclearEmploymentStrategy_Section491.pdf p. 2, accessed August 1, 2013.

¹⁶³ Ibid, p. 1.

lowest possible number of nuclear weapons for the U.S.'s and Allies' current and future requirements.¹⁶⁴

The eight and one-half pages long report is a follow-up to the quadrennial 2010 NPR and New START Treaty, identifying politically the path the U.S. intends to pursue with its nuclear weapons in the upcoming year and out to 2018. Concerning the “NPR Follow-On Analysis Section,” the president’s guidance reiterates the five objectives of U.S. policy on its nuclear weapons and posture discussed in the NPR¹⁶⁵:

1. Prevent nuclear proliferation and nuclear terrorism;
2. Reduce the role of U.S. nuclear weapons in U.S. national security strategy;
3. Maintain strategic deterrence and stability at reduced nuclear force levels;
4. Strengthen regional deterrence and reassure U.S. Allies and partners; and
5. Sustain a safe, secure, and effective nuclear arsenal.

With their updated analysis, DoD added a sixth objective to provide the president more options if deterrence fails: “Achieve U.S. and Allied objectives if deterrence fails.”¹⁶⁶

The guidance repeats Obama’s Prague speech themes of the peace and security of a world without nuclear weapons.

Overall, the president’s guidance seems bland and unremarkable and could have been promulgated by either Presidents Bill Clinton or George W. Bush. There are only a couple new items that hadn’t been addressed before in previous policy discussions; the new initiatives of Obama’s nuclear strategy may not be quickly implemented in the near future. At the beginning of the report, there appears to be a seeking of “cover” and legitimacy: “This strategy has the support of the Commander of U.S. Strategic Command, the Joint Chiefs of Staff, and the Secretary of Defense.”¹⁶⁷ Why is this

¹⁶⁴ Ibid, p.4.

¹⁶⁵ Ibid, p.1.

¹⁶⁶ Ibid, p.2.

¹⁶⁷ Ibid, p.2.

statement in the guidance? Is it to provide the reader with confidence that these leaders project the “gravitas” and expertise that Obama may feel insecure when presenting his nuclear strategy and the two new initiatives within it?

In the strategy guidance there are also redundancies of talking points, inconsistencies and questionable statements, as well as noteworthy omissions, which will be discussed later in the chapter. For example, the report twice mentions the need to take a concrete step toward the goal of a world without nuclear weapons and reduce nuclear weapons’ central role in the U.S. national security strategy. Also, the guidance stated six times that the U.S. seeks “to maintain strategic stability with Russia and China.” While immediately after this first mention, the guidance is inconsistent in this significant recognition of the U.S.-RF relationship: “Although differences between our countries continue to arise and Russia continues to modernize its nuclear forces, Russia and the United States are no longer adversaries and the prospects, and the prospects of military confrontation between us have declined dramatically.”¹⁶⁸ If the RF, which is the U.S.’s nuclear peer, isn’t the enemy and the chances unlikely of a military conflict, then, what is preventing our nation from moving to the next transformational phase of significant reduction of nuclear weapons and the accompanied dramatic changes in nuclear strategy and postures?

Modifications to Nuclear Employment Strategy.

In this section, there is a continuation of inconsistent yet significant recognition of the U.S.-RF relationship: “Although the need for numerical parity between the two countries is no longer as compelling as it was during the Cold War, large disparities in nuclear

¹⁶⁸ Ibid, p.3.

capabilities could raise concerns on both sides,” and among our allies and maintenance of long-term relationship.¹⁶⁹ The strategy paragraph concluded by stating the U.S. deemed it important that Russia be part of any lowering of nuclear weapons. From these statements, it appears that the lack of confidence in its relationship with the RF and eagerness to assure its allies hampers the U.S. transformation in its approach on nuclear strategy, and hence its force structure and postures. The U.S. appears to be dependent on RF’s approval to lower levels of nuclear warheads. As mentioned earlier this guidance also discusses the outlook on another nuclear weapon state, China and its growth and modernization efforts.

Unfortunately, the guidance only has two short paragraphs discussing the U.S.’s concern on China. According to the report, the U.S. is concerned about China’s modernization of its conventional and nuclear forces because of the PRC’s lack of transparency in its policy, strategy and doctrine. The U.S. does not have a clear understanding of China’s long-term goals in the region and the rest of the world. Although, the guidance states multiple times the U.S. is committed to “maintaining strategic stability in U.S.-China relations,” it has only one muddled sentence specifically on how the U.S. views its nuclear employment strategy towards China:

“... supports initiation of a dialogue on nuclear affairs aimed at fostering a more stable, resilient, and transparent security relationship with China.”¹⁷⁰ What is the president trying to convey to the American people, the PRC and our allies with this ambiguous and half-hearted statement? The lack of clarity on how the U.S. focuses (generally) its nuclear employment strategy vis-`a-vis China could be sending mixed signals to the PRC.

¹⁶⁹ Ibid, p.3.

¹⁷⁰ Ibid, p. 3.

Richard Betts notes, “The most dangerous long-term risk posed by Washington’s confusion over deterrence lies in the avoidance of a choice one way or the other about the strategy when it comes to China. Washington needs to determine whether to treat Beijing as a threat to be contained or a power to be accommodated.”¹⁷¹

Finally, there is a statement that captures one of the reasons why the U.S. and RF continue to deploy high numbers of nuclear warheads. The strategy refers to the NPR and the Obama administration’s goal to safely adopt a policy of making deterrence of nuclear attack the sole purpose of the U.S. nuclear weapons. The guidance then states, “Although we cannot adopt such a policy today, the new guidance reiterates the intention to work toward that goal over time.”¹⁷² What is preventing the U.S. from adopting the position now as policy? When is “over time” going to occur? As discussed in Chapter 1, the U.S. is stuck in the past paradigm of its bureaucracy thinking nuclear weapons are usable.

Implications for the U.S. Nuclear Posture and Nuclear Stockpile.

The next section discusses guidance for the employment of nuclear forces and direction for the posture of deployed forces—the nuclear triad of ICBMs, SLBMs and bombers. Here, the U.S. states that retaining the nuclear triad will “best maintain strategic stability at reasonable cost, while hedging against potential technical problems or vulnerabilities.”¹⁷³ In “maintaining strategic stability” discussed earlier, the nuclear guidance then couples it with “reasonable cost.” What is this reasonable cost, and to whom? There is no explanation in the nuclear strategy. As discussed in Chapter 2, the

¹⁷¹ Richard K. Betts, “The Lost Logic of Deterrence,” *Foreign Affairs*, March/April 2013, p. 96.

¹⁷² DoD, “Report on Nuclear Employment Strategy,” p. 5.

¹⁷³ *Ibid*, p. 5.

U.S. spent approximately \$B on the nuclear weapons enterprise in fiscal year (FY) 2012. Besides maintaining strategic stability, the nuclear guidance adds “hedging” as an additional factor in retaining the nuclear triad; it mentions six times similar phrases: “hedging against technical or geopolitical risk with fewer nuclear weapons” and “upload strategic delivery platforms in response to geopolitical or technological surprise.”¹⁷⁴ This sounds like a catchall and clinging to the same way of doing business: “just in case we’re wrong, we can re-establish.” The guidance repeats the 2010 NPR (the first one since 2001) objective of the U.S. shift from hedging with large numbers of non-deployed nuclear warheads to a responsive infrastructure that will sustain the nuclear arsenal.¹⁷⁵ Then-Secretary of Defense Robert Gates wrote in the NPR¹⁷⁶ of the critical need of investing much more money “to rebuild America’s aging nuclear infrastructure. To this end, I asked for nearly \$5 billion to be transferred from the Department of Defense to the Department of Energy over the next several years. These investments, and the NPR’s strategy for warhead life extension, represent a credible modernization plan to sustain the nuclear infrastructure and support our nation’s deterrent.”¹⁷⁷ With the U.S. facing a tough economic period, and incurring high debt and generating budget deficits, is this the right time to be transferring billions of dollars from one government department to another on a new nuclear infrastructure? Yet the U.S. government continues to program

¹⁷⁴ DoD, “Report on the Nuclear Employment Strategy, p. 7. If a technical failure occurs, the hedging option would involve the U.S. to upload another warhead type from within the similar component of the triad e.g., ICBM. If this is not possible, then the U.S. would upload additional warheads on another triad component, e.g., SLBM.

¹⁷⁵ Ibid.

¹⁷⁶ See Appendix C.

¹⁷⁷ Robert M. Gates, Secretary of Defense, “Preface,” *The Department of Defense Nuclear Posture Review Report*, April 6, 2010, <http://www.defense.gov/npr/docs/2010%20nuclear%20posture%20review%20report.pdf> accessed on April 8, 2012, p. i.

capital investment towards new national security laboratories and associated support facilities in order to sustain nuclear weapons over the long term. As one example of the vast expenditures on future nuclear complexes, National Nuclear Security Administration¹⁷⁸ (NNSA) Acting Administrator Neile Miller testified to Congress on the planned Uranium Capabilities Replacement (UCR) project in Oak Ridge, Tennessee that will:

We're modernizing our uranium capabilities. We don't always need a new construction project to get things done, but when it comes to ensuring the United States' uranium capabilities, we do. Replacing the decaying 9212 facility at the Y-12 National Security Complex is a critical investment in our future, and we're close to beginning work on the new Uranium Processing Facility that will take its place. As we near 90% design completion, we have continued to better refine our needs, how we'll meet them, and exactly how much it will cost. To help us get there, the President has requested \$326M in FY14 for the Uranium Capabilities Replacement project.¹⁷⁹

NNSA states this facility "will ensure the long-term viability, safety, and security of the EU [enriched uranium] capability in the United States. The UCR Project will support the Nation's nuclear weapons stockpile, down blending of EU in support of nonproliferation, and provide uranium as feedstock for fuel for naval reactors."¹⁸⁰ In 2004, NNSA estimated this project cost at \$1.1 billion but the U.S. Government Accountability Office (GAO) reports this permanent infrastructure is now at \$6.5

¹⁷⁸ NNSA website, <http://www.nnsa.energy.gov/ourmission>. NNSA is responsible for the management and security of the nation's nuclear weapons, nuclear nonproliferation and naval reactor programs.

¹⁷⁹ Neile Miller, "Written testimony by NNSA Acting Administrator Neile Miller as prepared for delivery, Congressional Testimony Statement on FY14 Budget Request Before the Senate Committee on Appropriations Subcommittee on Energy and Water Development," April 24, 2013, <http://www.nnsa.energy.gov/mediaroom/congressionaltestimony/20130424sewd>.

¹⁸⁰ Department of Energy, National Nuclear Security Administration, "FY 2014 Congressional Budget Request," Office of the Administrator: Weapons Activities Defense Nuclear Nonproliferation, Naval Reactors, April 2013 <http://energy.gov/sites/prod/files/2013/04/f0/Volume1.pdf>, accessed August 1, 2013, p. WA-215.

billion.¹⁸¹ However, the project construction costs are projected to increase over the next years. In 2011, the Army Corps of Engineers (ACE) provided cost estimates and the start of operations dates of the UCR for two funding scenarios. The first scenario, assumed annual appropriations were not subject to budget constraints and the cost range is \$6.5 to \$7.5 billion, and operations begin in FY 2023. Unfortunately, over \$900 million will be required annually for four consecutive fiscal years in order to complete the project.¹⁸² In the second scenario, the annual appropriations are subject to budget constraints contained in NNSA's February 2011 guidance: estimates are 35% higher than the first scenario-- \$10.3 to \$11.6 billion and the facility begins operations in FY 2035. Incredibly, to fund the construction, between \$200 and \$500 million annually would be required to complete the project.¹⁸³ In 22 years, will the U.S. still need this capability to support the nuclear warhead stockpile? And after all this capital investment, will this nuclear facility be obsolete before it even begins operations? These ACE estimates UCR project construction completion; it does not include the operations and maintenance (O&M) costs for the 50-year life cycle of the facility. Also, how many of the next generation of scientists, engineers, security and staff personnel will be recruited, hired, and trained to sustain the nuclear stockpile? What are these costs for example, to the American taxpayer? The last section of the nuclear employment strategy continues to generate more questions on the U.S. vision of national security.

¹⁸¹ U.S. GAO, "Briefing on the Uranium Processing Facility: Factors Leading to Cost Increases," April 2013, <http://www.gao.gov/assets/660/655848.pdf> accessed on September 22, 2013, p. 9.

¹⁸² Ibid, p.26.

¹⁸³ Ibid.

Additional Implications.

In the nuclear employment strategy's final section, the guidance discusses the goal of U.S. increased reliance on conventional or non-nuclear forces, and missile defenses. This section reiterates the 2010 NPR second of the five objectives of U.S. policy on nuclear weapons and posture discussed earlier in the chapter: "Reduce the role of U.S. nuclear weapons in U.S. national security strategy." The nuclear guidance attempts to explain how the U.S. will achieve this goal: "DoD will conduct deliberate planning for non-nuclear strike options to assess what objectives and effects could be achieved through integrated non-nuclear strike options, and to propose possible means to make these objectives and effects achievable."¹⁸⁴ DoD has already been doing this; it has planned and conducted integrated and non-nuclear strike military operations per commander-in-chief directives: the Persian Gulf War, the Iraq War and Afghanistan War. In fact, DoD continues to operate under two formal and legal mechanisms that conduct deliberate planning for non-nuclear strike options that are integrated. These mechanisms are called the Unified Command Plan (UCP) and Combatant Commands (COCOM) that are covered under Title 10 - Armed Forces; Subtitle A - General Military Law; Part I—Organization and General Military Powers; Chapter 6—Combatant Commands. Both of these mechanisms trace their origins to World War II. The UCP is a classified document submitted by the Chairman of Joint Chiefs of Staff (CJCS) and updated biennially. This document "assigns missions; planning, training, and operational responsibilities; and geographic areas of responsibilities to COCOMs."¹⁸⁵ Currently, there are nine

¹⁸⁴ DoD, "Report on Nuclear Employment Strategy," p. 9.

¹⁸⁵ Andrew Feickert, *Congressional Research Service*, "The Unified Command Plan and Combatant Commands:

COCOMs; functional COCOMs (e.g., U.S. Transportation Command) operate world-wide across geographic boundaries and provide unique capabilities to geographic COCOMs and the Military Services. The other type of COCOM is geographic which operate in clearly delineated areas of operation and focus on the region it is assigned (e.g., U.S. European Command).¹⁸⁶ According to Dr. Cynthia Watson, a professor at the National War College, COCOMs are: “Commands in charge of utilizing and integrating air, land, sea, and amphibious forces under their commands to achieve U.S. national security objectives while protecting national interests.”¹⁸⁷ The planning for synchronized, non-nuclear strike options and execution already exists within the UCP and COCOM structures. The nuclear guidance ends by repeating the goal of reducing the role of the nuclear weapons in the national security strategy because “non-nuclear elements will take on a greater share of the deterrence burden,” has already occurred in U.S. pre-planning and execution of military operations. Although the nuclear strategy guidance mentions numerous (nine) times the “non-nuclear elements/strike” phrase, two initiatives—future nuclear reductions and launch under attack—were briefly mentioned once.

Report on Nuclear Employment Strategy’s Two Initiatives.

The two initiatives in Obama’s nuclear employment strategy—reduction in nuclear weapons beyond the New START Treaty and DoD to review the options of launch under attack—had been mentioned in the 2010 NPR. Concerning the reduction in nuclear

Background and Issues for Congress,” January 3, 2013, <http://www.fas.org/sgp/crs/natsec/R42077.pdf> accessed on September 26, 2013, p. 2.

¹⁸⁶ Ibid.

¹⁸⁷ Cynthia A. Watson, “Combatant Commands: Origins, Structure, and Engagement,” Praeger Security International, 2011, p. 15 as cited in Andrew Feickert, *Congressional Research Service*, “The Unified Command Plan and Combatant Commands: Background and Issues for Congress,” January 3, 2013, <http://www.fas.org/sgp/crs/natsec/R42077.pdf>.

weapons post-New START Treaty, this determination appeared on page six of an eight and one-half nuclear employment strategy document. Without any special text or position designation, the declaration of one-third reduction of nuclear warheads could easily have been missed, if it were not for Obama's speech one week prior highlighting his intention. This evolved position on arms reduction follows through on Obama's speech in Berlin that "the U.S. could secure itself, its allies and partners and maintain a credible strategic deterrent with one-third reduction in deployed strategic nuclear weapons from the New START Treaty. And I intend to seek negotiated cuts with Russia to move beyond Cold War nuclear postures."¹⁸⁸

Obama's declaration for further arms cuts would bring the U.S. and RF arsenals down to approximately 1,000 to 1,100 nuclear warheads. Why not more? As discussed in Chapter 2, Bush 41 and RF President Boris Yeltsin cut nuclear warheads from 21,000 to 6,000. With the Cold War declared over in 1992, each successive president has followed the slow, downward trajectory of a few hundred nuclear warhead reductions. This nuclear strategy mentions the U.S. and RF will continue to have differences and "Russia continues to modernize its nuclear forces," however the U.S. and RF are no longer adversaries. The U.S. also continues to modernize its strategic forces as the thesis analyzed in Chapter 2.

The nuclear employment strategy discussed the analysis, as a follow-up to the 2010 NPR and examined the nuclear deterrence requirements "in order to align U.S. nuclear planning to the current and projected security environment."¹⁸⁹ However, there was no mention what the current and future threat environments were. As far as strategy

¹⁸⁸ The White House, "Remarks by President Barack Obama," Prague, Czech Republic, April 2009.

¹⁸⁹ DoD, "Report on Nuclear Employment Strategy," p. 1.

development, DoD analysts examined potential options of nuclear employment strategy and implications to the triad forces, if implemented. Obama selected the published nuclear employment strategy based on the advice from DoD and other involved U.S. government departments and agencies.¹⁹⁰ The nuclear employment strategy did not cite what references were used, methodology or even if the detailed analysis was classified. For example, what was the composition of those option models and assumptions? Did the options explore drastically lower nuclear weapons or eliminate some or all the nuclear triad forces? What threats are being (and would be) deterred by U.S. strategic forces? Probably most important, what was the analysis' desired end state and timeframe?

Unfortunately, there are still more questions on the president's determination of one-third reduction in deployed nuclear weapons beyond the New START Treaty. What is the new nuclear employment strategy's intent to declare the increased reduction when the next paragraph states the guidance "does not direct any changes to the currently deployed nuclear forces of the United States"¹⁹¹ The determination (and Obama's announcement during the Berlin Speech) may be both a diplomatic gesture—to demonstrate U.S. leadership on global nonproliferation—and Obama's belief that these are "concrete steps toward a world without nuclear weapons." However, if the U.S. and its allies' national security can be ensured, then why isn't the president directing DoD now to pursue those reduced nuclear warhead limits? This part is confusing. Equally perplexing is the bureaucratic nod the nuclear employment strategy gives to DoD. In the next step, "the new employment strategy will be translated into guidance from the Secretary of Defense and Chairman of the Joint Chiefs of Staff. That guidance will then inform the

¹⁹⁰ Ibid, p. 2.

¹⁹¹ Ibid, p. 6.

development of detailed contingency plans by the Commander, U.S. Strategic Command, and appropriate functional and Geographic Combatant Commanders.”¹⁹² This sounds like “bureaucratese,” red tape, and stovepipes in coordination. The nuclear employment strategy’s ambiguity above does not specify a deadline to implement the president’s determination to increase the reduction of nuclear weapons or the end-state of the nuclear triad. Instead, the reader is left with such questions on U.S. strategic forces as: what does “translated into guidance...” mean? And what does “inform the development of detailed contingency plans...” mean to lowering the nuclear weapons post New START Treaty?

Concerning the second initiative of the nuclear employment strategy, Launch Under Attack,¹⁹³ the guidance continues to emphasize the decrease in nuclear tensions: “Recognizing the significantly diminished possibility of a disarming surprise nuclear attack, the guidance directs DoD to examine further options to reduce the role of Launch Under Attack plays in U.S. planning, while retaining the ability to Launch Under Attack if directed.”¹⁹⁴ This appears to express Obama’s concern about the current short, critical decision-making time element in response to a satellite-detected nuclear attack on the U.S. Based on the 2010 NPR and nuclear employment strategy, Obama wants more time to carefully review definitive evidence of a potential incoming nuclear attack. Also, he may want to understand the Secretary of Defense’s and CJCS’ proposed response options, their impacts, intended effects and possible unintended effects before making the

¹⁹² Ibid, p. 6.

¹⁹³ Global Security Newswire, <http://www.nti.org/gsn/article/fresh-us-nuclear-guidance-relies-some-cold-war-elements/> June 21, 2013. “U.S. ability to shoot nuclear warheads at an adversary on short notice, triggered in this case by indications that an atomic strike is under way against the United States or its allies.” Accessed on 09/01/2013

¹⁹⁴ DoD, “Report on Nuclear Employment Strategy,” p. 5.

most critical decision a president as commander in chief can make: orders to U.S. strategic forces to execute a devastating nuclear strike(s) across the globe at an adversary. As background to the nuclear employment strategy, the NPR noted key steps to reduce the possibility of nuclear launches resulting from accidents, unauthorized actions, or misperceptions and maximize presidential decision time:

- 1.) Continuing the practice of “open-ocean targeting” of all ICBMs¹⁹⁵ and SLBMs so that, in the highly unlikely event of an unauthorized or accidental launch, the missile would land in the open ocean, and asking Russia to re-confirm its commitment to this practice.
- 2.) Further strengthening the U.S. command and control system to maximize Presidential decision-making time in a nuclear crisis.
- 3.) Exploring new modes of ICBM basing that enhance survivability and further reduce any incentives for prompt launch.¹⁹⁶

The U.S. and RF are no longer on hair-trigger alert postures as they were during the Cold War. Yet the U.S. nuclear triad forces have remained essentially in the same launch posture as in the early 1990’s.

Key questions for DoD to consider are what will be the entering assumption(s) and end state(s) for launch under attack? For example, does DoD have high confidence of nuclear first strike attack by a peer or near peer? Will the U.S. absorb a nuclear attack and allow the “dust to settle” or will it have planned quick strike options? Will DoD’s proposal to the president consist of a response to a “bolt-from-the-blue”? If it does, then DoD is still thinking its fighting the Cold War. It should not consider this response option. According to Paul Bracken,

The most vivid example of misallocation of resources and attention was the preparation for a bolt-from-the-blue surprise attack on the United States by the Soviet Union. I’d estimate that something like 70 percent of U.S. strategic

¹⁹⁵ The author as an Air Force captain stationed at F.E. Warren AFB WY oversaw as the 90th Missile Wing’s Emergency War Order targeting officer the full implementation of “open-ocean” targeting of 150 Minuteman III and 50 Peacekeeper ICBMs in accordance with the National War Plan.

¹⁹⁶ DoD, Nuclear Posture Review Report, p. 16.

attention and budget was given to this problem. Yet its likelihood was extremely low. This isn't just a retrospective judgment, it was actually made at the time. Surveys in the late 1950's and 1960's of strategic analysts at the Rand Corporation, the Hudson Institute, and other think tanks showed that their experts believed the bolt from the blue was an extremely remote possibility. Yet it was the driver of tremendous attention and billions of dollars.¹⁹⁷

Regarding the second part of the nuclear employment strategy on reducing the role, “while retaining the ability to Launch Under Attack if directed,” is confusing and could be operationally dangerous. Again, this phrase appears to maintain the paradigm of the DoD bureaucracy: “reduce or eliminate the function but we should still be able to perform the required action(s), just in case we need to.” As an example of confusion or misunderstanding of dual missions, The Secretary of Defense Task Force on DoD Nuclear Weapons Management (hereinafter Task Force) under the chairmanship of former Secretary of Defense, James Schlesinger and appointed by Secretary of Defense Robert Gates on June 12, 2008 to review and address the nuclear mission of the Air Force after serious incidents involved its nuclear enterprise. In August 2006, the Air Force had mistakenly shipped to Taiwan classified ballistic missile components—“four fuses designed to trigger nuclear and non-nuclear Minuteman III ballistic missiles—instead of batteries for utility helicopters the U.S. originally planned to send.”¹⁹⁸ The Air Force did not discover this misshipment until March 19, 2008. On August 30, 2008, Air Force officers flew their B-52 Stratofortress from Minot Air Force Base, N.D., to Barksdale Air Force Base, La., unbeknownst six nuclear warheads were attached to the B-52's wing.

¹⁹⁷ Paul Bracken, *The Second Nuclear Age*, p. 77.

¹⁹⁸ Michael Hoffman, “Missile parts shipped to Taiwan in summer 2006,” *Air Force Times*, March 25, 2008, <http://www.airforcetimes.com/article/20080325/NEWS/803250301/Missile-parts-shipped-Taiwan-summer-2006> accessed 09/01/2013.

The Air Force's mishandling of nuclear weapons and nuclear weapons-related materiel prompted DoD to investigate these incidents. According to the Task Force Report, the "investigations revealed a serious erosion of focus, expertise, mission readiness, resources, and discipline in the nuclear weapons enterprise within the Air Force."¹⁹⁹ As discussed in Chapter 1, when U.S. bombers were directed by President George H.W. Bush to permanently stand down from day-to-day nuclear alert, a very different mindset began to develop in the bomber community on the nuclear mission. According to the Task Force Report, "there was a change in bomber mission focus away from a cadre of nuclear experienced personnel to conventional-warfare experienced Airmen was accompanied by a gradual decline in nuclear expertise, including in the senior leadership."²⁰⁰ U.S. bomber crews and maintenance personnel were required to perform missions involving conventional munitions but also remain proficient in the nuclear mission and its core procedures. The operations tempo of global bomber presence shifted that delicate balance for senior AF leaders, bomber crews and maintenance personnel. As DoD reviews and recommends option(s) to the president on the ability to reduce the role of "launch under attack" yet still be capable to perform it, DoD must remember critical mistakes like the one discussed above when people lose focus on the mission. DoD should ensure senior leadership reinforce the importance of the mission to their subordinates, conduct constant and robust training of the launch/or not to launch under attack operational procedures to instill confidence and proficiency in the people who will perform this soon-to-be evolving mission. Unlike what the future

¹⁹⁹ Secretary of Defense Task Force on DoD Nuclear Weapons Management, "Phase I: The Air Force's Nuclear Mission," p. 1.

²⁰⁰ Ibid.

end-state of Launch Under Attack policy might look like, there is no confusion on what two critics think of Obama's nuclear employment strategy.

Critics' Op-Ed of Report on Nuclear Employment Strategy.

Only a few days after the administration published its report on nuclear employment strategy, two former Bush 43 senior officials harshly criticized Obama's approach on nuclear policy. Eric Edelman, former undersecretary of defense for policy (2005-2009) and Robert Joseph, former undersecretary of state for arms control and international security (2005-2007) present the view that the U.S. has made enough nuclear weapons reductions given the current international environment. Even the title of their article, "Obama is Pursuing Nuclear Folly," indicates what the tone will be. Obama demonstrates none of these descriptions because he understands and has studied the issues of nuclear security and nuclear weapons as has been discussed throughout the analysis. In their opening sentence, the authors write that Obama "announced the next step in his quixotic quest to achieve a nuclear-free world."²⁰¹ As discussed earlier, the nuclear employment strategy is unremarkable and not transformative, but it is not foolish.

The authors attempt to depict Obama as strong arming DoD, ignoring the current global political environment, and reneging on agreements with the U.S. Senate. Despite the president emphasizing DoD had studied the one-third increase in nuclear warhead reductions beyond the New START Treaty, the authors imply Obama of influencing the outcome through "political guidance to military authorities" on the requirements and that

²⁰¹Eric Edelman and Robert Joseph, "Obama is pursuing nuclear folly," *The Washington Post*, June 23, 2013, p. A19.

the “numbers would be cooked to support a disarmament agenda.”²⁰² Did Edelman and Joseph think DoD would perform this study in a complete vacuum? This is exactly what a president, as commander-in-chief of the U.S. Armed Forces is supposed to do: provide his vision and framework to DoD and other departments in order to lead the nation and accomplish the initiatives he campaigned and was elected by the American people. Early in his presidency, Obama laid out his vision on nuclear weapons and nonproliferation through speeches and in his National Security Strategy: “Pursue the goal of a world without nuclear weapons: while this goal will not be reached during this Administration, its active pursuit and eventual achievement will increase global security, keep our commitment under the NPT, build our cooperation with Russia and other states...”²⁰³

The authors continue to portray Obama as singularly focused on a “disarmament agenda” and out of touch with the nations seeking to upgrade their nuclear arsenal or delivery systems. Edelman and Joseph ask, “What has changed in the past three years to allow for further reductions?”²⁰⁴ Then, they provide a litany of nuclear weapons competitors: North Korea, Pakistan, India, Iran, China and RF who seek to expand their nuclear enterprise. At the end of this listing, the authors even include: “Russian Bear-H bombers circled Guam, the fastest-growing U.S. base in the Pacific.”²⁰⁵ What does this have to do with their argument on nuclear weapons reductions? There are no nuclear weapons on Guam, and more than likely, there were no nuclear weapons on-board that Bear-H bomber. Being former senior administration officials, the authors know but never

²⁰² Edelman and Joseph, “Obama is pursuing nuclear folly.”

²⁰³ The White House, *National Security Strategy*, May 2010, http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf p.23.

²⁰⁴ Edelman and Joseph, “Obama is pursuing nuclear folly.”

²⁰⁵ Ibid.

discuss the multiple instruments of national power the U.S. possesses—not just nuclear weapons—but also conventional forces, diplomacy, finance, trade, cyber and economic to utilize in the international community.

Instead, when discussing the above nuclear competitor nations, Edelman and Joseph neglect to mention key events that were occurring between the U.S. or allies during the time of their article publication: 1.) North and South Korea agreed in principle on June 6 to hold their first official talks for years, signaling a possible breakthrough in cross-border ties after months of escalated military tensions; 2.) U.S. was in the midst of preparation for its fifth U.S.-China Strategic and Economic Dialogue on July 10-11, 2013 in Washington, DC. The dialogue ended with many commitments including continued cooperation in nuclear nonproliferation and to establish hotlines between the Special Representatives of the Presidents in order to facilitate communication,²⁰⁶ and 3.) U.S. and RF signed the “Framework Agreement on Multilateral Nuclear Environmental Program” on June 14, 2013, which facilitates cooperation in the area of spent nuclear fuel and radioactive waste management in the RF.

Finally, the authors infer Obama is providing lip-service to the treaty process with the RF and Senate ratification and intends to unilaterally reduce U.S. deployed nuclear warheads to 1,000. They believe Obama is so ideologically committed to “nuclear zero” and “disarmament” that he does not want to be derailed either by the Russians or the Senate. Edelman and Joseph state this reduction further weakens U.S. prestige, security and extended deterrence to allies and friends. They closed the article by stating Obama

²⁰⁶ U.S. Department of State, “U.S.-China Strategic and Economic Dialogue Outcomes of the Strategic Track,” July 12, 2013, <http://www.state.gov/r/pa/prs/ps/2013/07/211861.htm> accessed on October 12, 2013.

is the only president not to follow the policy of maintaining “a nuclear capability second to none,” as President John F. Kennedy pledged fifty years ago at the Brandenburg Gate. This is incorrect because as the analysis has shown, the U.S. continues to fund its nuclear enterprise and specifically, the nuclear triad with billions of dollars annually for modernization and upgrade programs well into the 21st century. Obama has thoughtfully reduced nuclear weapons in a slow, downward trajectory as his predecessors did. What would a notional nuclear force structure and posture look like that Obama has envisioned taking concrete steps toward a world without nuclear weapons?

An Illustrative Nuclear Force Structure and Posture

As discussed above, the RF and PRC still have sizeable nuclear arsenals and other regional actors like North Korean and Iran either have ICBMs or will in the near future. This requires the U.S. to keep a credible and robust nuclear deterrent to deter attack against the homeland, its interests, NATO, Japan, the Republic of Korea, and Australia who are protected by the U.S.’s extended deterrence of nuclear weapons. For its deterrent strategy, the U.S. should continue its counterforce targeting of an adversary’s valued weapons. The U.S. should not go back in time to have a first-strike capability.

Obama should lead the effort and direct DoD to re-plan the nation’s nuclear forces to be transformative to the next phase in significant nuclear weapons reductions beyond the New START Treaty. The president should lead the “clean sheet approach” with his advisors and academia on what the current strategic threats are in this environment, who the real adversaries the U.S. is intending to deter with its nuclear forces. According to Franklin C. Miller, “an effective deterrent requires holding at risk that which the potential

enemy's leadership values most."²⁰⁷ Once the president has determined a transformative approach on the nuclear force structure based on current and emerging threats and constraints, the White House would direct DoD to implement and formalize. In testimony to the Senate Armed Services Committee, General Robert Kehler, Commander of U.S. Strategic Command²⁰⁸ confirmed in March 2013 the defense planning process on nuclear force structure: "The way we determine the size of the force, we don't start with a number. What we start with is a set of national security objectives. Those objectives eventually wind up being military tasks. Those tasks require a certain number of weapons to achieve."²⁰⁹ An illustrative nuclear force structure that provides U.S. security and credibility of deterrence for allies and friends would consist of 638 strategic nuclear weapons—362 to 462 less than the 1,000-1,100 declared in the latest DoD Nuclear Employment Strategy Report. This nuclear arsenal would be on modified alert for a short term timeframe and be should fully in place in about 90 days e.g., to ensure proper configuration of nuclear warheads, delivery platforms returned to alert status from maintenance.

The bomber aircraft is the oldest vestige of the Cold War and as discussed in Chapter 1 and were removed from day-to-day nuclear alert on September 28, 1991. Specifically, B-52s and B-2s which have the capacity to deliver both nuclear and conventional munitions, would be converted like the B-1B in the early 1990's, to

²⁰⁷ Franklin C. Miller, "The Need for a Strong US Nuclear Deterrent in the Twenty-First Century," *Strategic Studies Quarterly*, Fall 2013, p.9.

²⁰⁸ U.S. Strategic Command is responsible for military space operations, cyber operations, missile defense, global command and control, intelligence, surveillance, and reconnaissance (C4ISR), global strike and strategic nuclear forces.

²⁰⁹ U.S. Senate, "Hearing to Receive Testimony on U.S. Strategic Command and U.S. Cyber Command in Review of the Defense Authorization Request for Fiscal Year 2014 and the Future Years Defense Program, Tuesday, March 12, 2013," <http://www.armed-services.senate.gov/download/?id=214251fb-731b-4ed3-92b2-c748e970016e&download=1> p. 41.

conventional only missions. The nuclear triad would no longer exist; as the Air Force refers to its fighter aircraft as “Combat Air Forces,” the remaining components, ICBMs and SLBMs would be referred to as “Strategic Nuclear Forces,” not “dyad”—to begin breaking out of the paradigm.

ICBMS.

Today, the United States deploys 450 silo-based Minuteman III ICBMs, each with one to three warheads. According to the 2010 NPR, the United States will “deMIRV” (reduce to a single warhead) all deployed ICBMs, so that each Minuteman III ICBM has only one nuclear warhead.²¹⁰ This step enhances stability and reduces incentives for either side to execute a first strike. As part of the new approach on nuclear force structure, 100 Minuteman III ICBMs would be removed from the national war plan by presidential order through the secretary of defense down to on-alert Air Force missile crews similar to Minuteman IIs discussed in Chapter 1. This would leave 350 ICBMs with current configuration of a single nuclear warhead deployed and on-alert.

From the directive, Air Force missile crews would need to accomplish their appropriate emergency action message procedures and remove their launch capability from the launch control centers, thus preventing launch of the ICBMs. The missile wing’s maintenance personnel would dispatch to the missile field and physically enter the missile silo to place the missile in a “safe” condition (allowing work on the missile) and an added measure to prevent any unauthorized access to launch the ICBM. The maintenance personnel would remove the nuclear warhead and transport it back to the

²¹⁰ DoD, 2010 NPR, A “MIRVed” ballistic missile carries Multiple Independently targetable Reentry Vehicles (MIRVs) p. 23.

base weapon storage area. Since the 20th Air Force,²¹¹ is collocated at F.E. Warren AFB, Cheyenne WY with the 90th Missile Wing, and the 91st Missile Wing²¹² is collocated with the 5th Bomb Wing²¹³ at Minot AFB ND, the 341st Missile Wing at Malmstrom AFB, Great Falls, MT, a singular mission, would be the unit to stand down two of its three nuclear missile squadrons—100 ICBMs removed from the national war plan.

ICBMs provide significant advantages to the U.S. nuclear force structure, including prompt response, extremely secure and reliable command and control, high alert readiness rates, greater than 99%,²¹⁴ and relatively low operating costs. As analyzed in Chapter 2, the Minuteman III ICBM recently completed several life extension programs (LEP) with the aim of keeping the force in service to the year 2030.

Submarines.

Concerning the *Ohio*-class strategic submarines (SSBN), there appears to be no viable near or mid-term threats to the survivability of U.S. SSBNs, but such threats or other technical problems cannot be ruled out over the long term.²¹⁵ Currently, the Navy deploys 14 SSBNs, but as discussed in Chapter 2, it plans to begin procuring and deploying 12 “SSBNX” (replacement) submarines in 2021. Through presidential order again, this notional strategic nuclear force would consist of an 8-boat SSBN fleet of Trident II D5 missiles with 288 nuclear warheads. The SSBN’s key characteristics of

²¹¹ Twentieth Air Force oversees day-to-day operations and maintenance of the ICBM force.

²¹² The missile wings are responsible for the operations, maintenance and security of the 150 ICBMs and qualified personnel assigned to the wing mission.

²¹³ The 5th Bomb Wing is a B-52H Stratofortress wing.

²¹⁴ AF General Philip Breedlove, VCSAF Congressional Testimony HASC Readiness Subcommittee Hearing “Global Challenges to Air Force Readiness,” 26 Jul 11, <http://www.airforcemag.com/SiteCollectionDocuments/Testimony/2011/July%202011/072611breedlove.pdf> accessed on October 19, 2013, p. 2.

²¹⁵ DoD, NPR, p. 23.

survivability and stealth would continue to enhance the Strategic Nuclear Forces. Unlike ICBMs that are fixed targets, “SSBNs at sea do not depend on rapid firing for their survival and increase decision time in a nuclear crisis. SSBNs on launch patrol can be fired in twelve (12) minutes compared to two (2) minutes for the ICBMs. There are no effective defenses against submarine launched ballistic missile warheads.”²¹⁶

Bombers.

U.S. bomber aircraft haven’t been on day-to-day nuclear alert for over twenty years. By removing the bombers from the Strategic Nuclear Forces, the U.S. enhances the flexibility of its B-52s and B-2s while also complementing the nuclear forces. Currently, bomber aircrews and aircraft maintenance personnel split their day-to-day conventional mission by also performing annual refresher training and exercises on nuclear unique mission procedures. In addition to being manned and re-callable, another key attribute of the nuclear bomber force, according to the NPR is “they can be visibly forward deployed, thereby signaling U.S. resolve and commitment in crisis.”²¹⁷ The unitary bomber focus on conventional would indeed visibly demonstrate U.S. resolve in a crisis with “usable” weapons that may not be nuclear but wreaking devastating effects. For example, a behemoth weapon, the “Massive Ordnance Penetrator” (MOP) is a 30,000 pound conventional bomb manufactured by Boeing, who was awarded the contract to build and develop 20 of the “bunker buster” bombs. The Defense Threat Reduction Agency has tested and evaluated the MOP deployed from the B-2 and B-52. The MOP has been

²¹⁶ Gen (Ret) James Cartright, Amb Richard Burt, Sen Chuck Hagel, Amb Thomas Pickering, Gen (Ret) Jack Sheehan, Dr. Bruce Blair, “Global Zero U.S. Nuclear Policy Commission Report: Modernizing U.S. Nuclear Strategy, Force Structure and Posture,” *Global Zero*, http://www.globalzero.org/files/gz_us_nuclear_policy_commission_report.pdf accessed on June 17, 2013, p. 8.

²¹⁷ DoD, NPR, p. 24.

designed to reach and destroy an adversary's weapons of mass destruction located in deeply buried and hardened facilities.

Air Force and aerospace experts agree that with sufficient funding for sustainment and modernization over their expected lifespans, all three of the bombers (eighteen (18) B-2ASpirit and seventy-six (76) B-52H Stratofortress as well as the B-1) can physically continue to be credible weapon systems.²¹⁸ This could save the American taxpayer hundreds of billions of dollars by not having to fund in the near term the research, development, testing and procurement of a new long-range bomber.

Posture.

Coupled with a transformative nuclear force strategy is the projection of a forward-looking U.S. strategic posture. A Nobel Laureate for Peace who is also the president can demonstrate to the world the U.S. is committed to changing the status quo of its operational nuclear posture. DoD, a bureaucracy that clings to the nuclear triad which was successful and effective during the Cold War has not demonstrated an innovative perspective for a future without U.S. nuclear forces. DoD focuses on new strategic nuclear delivery replacement systems and modernization programs. However, a visionary nuclear posture that establishes real and concrete steps to implement the noble idea of “a world without nuclear weapons” can captivate minds and could initiate the next level in strategic arms reduction on a multilateral basis.

²¹⁸ “The Air Force has extended the operational lives of the B-52 and B-1 out to 2040 and the B-2 out to 2058.” Michael A. Miller, “U.S. Air Force Bomber Sustainment and Modernization: Background and Issues for Congress,” *Congressional Research Service*, April 23, 2013, <http://www.fas.org/sgp/crs/weapons/R43049.pdf> accessed on October 20, 2013, p. 2.

Announcement on Nuclear Posture.

Obama should set in motion posture actions which are credible to the nation, allies, and partners, and respected by Russia and China, as well as North Korea: the U.S.'s security is still strong and multidimensional but the Cold War's strategy and nuclear triad is over. Words and presence have meaning on the international stage. As JFK delivered the dramatic Cuban Missile Crisis news to fellow Americans in October 1962 from the Oval Office, Obama should also speak from the Oval Office days leading up to the next Nuclear Security Summit (NSS) in March 2014 in The Netherlands or his last one in office, March 2016 in Washington, DC. As discussed in Chapter 2 and 3, the NSS has developed into in and serves as an open, cooperative and productive forum to address and work global nuclear security issues. Obama's speech should announce the following on a new U.S. nuclear posture: 1.) Like China has in the past, the U.S. declares for the first time since the Cold War began, its policy will be no first-use of nuclear weapons; 2.) the "sole" (no longer "fundamental" as stated in the NPR and Nuclear Employment Report) purpose of nuclear weapons is to deter a nuclear attack and prevent an adversarial coercion on the U.S. and its allies; 3.) the transformative actions of elimination of the nuclear triad and the realignment and reduction of the nuclear force structure to 638 deployed nuclear warheads; the U.S. will implement through executive order but will dialogue with RF to mirror the reductions through a bilateral treaty; 4.) a new effort to push for Senate ratification of the Comprehensive Test Ban Treaty which eluded Presidents Clinton and Bush; demonstrates to the global community the U.S. has ended the Cold War and does not intend to pursue new nuclear weapons which would need to be tested; and 5.) Finally, the U.S. invites RF, China, India, Iran, Israel and North Korea,

as well as Great Britain, France and the International Atomic Energy Agency upon conclusion of the NSS to remain for a head-of-state summit. Discussions should focus on common strategic (e.g., cyber threats) and economic (e.g., slow global growth) threats and challenges; ways and ideas to reduce nuclear weapons and avoidance of potential nuclear conflicts; and finally, propose the U.S. and RF share best practices and lessons learned on nuclear arms verification and inspection as a building block for future cooperative engagement activities with other nuclear weapons states.

Nuclear Force Structure Realignment.

A cornerstone of Obama's announcements is the change in status quo on U.S. nuclear operational posture. Through orders to the Secretary of Defense and Chairman of the Joint Chiefs of Staff down to the executing commanders of nuclear weapons, Obama can immediately resolve issues raised in the NPR concerning decision-making time and the timing to implement the new U.S. policy on the purpose of nuclear weapons—to deter a nuclear attack. The commander-in-chief would direct the U.S. Air Force and Navy to implement the new nuclear posture.

ICBMs.

As Bush did in 1991, Obama can order, in this initial phase, the Air Force to immediately remove from launch control centers (LCC) the nuclear launch documents and equipment (e.g., launch keys) that facilitate missile officer crews remote launching of ICBMs. By having these launch material items removed from the “promptness” feature of ICBMs, and their realignment to only one nuclear warhead (discussed in the NPR),²¹⁹

²¹⁹ Removes the incentive to launch high-valued ICBMs with multiple independently targetable reentry vehicles (MIRV) versus leaving them in their silos and risk destruction by an adversarial first-strike nuclear attack.

the president gains more time to understand if a potential strategic situation is real or a satellite “glitch.” If the situation becomes a heightened state of tensions, the president could direct the return of the launch materials by the missile crew, and be in place within approximately 24-48 hours (depending on the local weather and distance to the LCC). This action would demonstrate to allies, partners, RF and China that the U.S. is serious about leaving the Cold War posture behind by carefully considering strategic options in a timely and not “prompt” response manner. As mentioned above 350²²⁰ single nuclear warhead ICBMs would comprise the “Strategic Nuclear Forces.”

Submarines (SSBN).

During this phase, the *Ohio*-class SSBNs would still retain their nuclear launch documents and keys because they could be several days, possibly a week from their port to retrieve the documents. The realigned operational nuclear posture would be an 8-boat fleet of SSBNs armed with Trident II submarine-launched ballistic missiles (SLBM), a reduction from the current 14 deployed SSBNs; the U.S. Navy would assign five to the Pacific Ocean and 3 to the Atlantic Ocean. For planning purposes, two boats are normally in dry dock for significant or “depot-level” maintenance or upgrade. “The U.S. Navy maintain its historical at-sea rate of seventy (70) percent,”²²¹ so one additional SSBN would be off-alert for routine maintenance. This would leave three boats on patrol to the Pacific and two to the Atlantic. These on-alert SSBNs would carry a total of 288 warheads. These actions assure allies such as Japan, South Korea, and Europe of the

²²⁰ According to Hebert, “ICBMs are also stabilizing, as an enemy would have to use two or three nuclear weapons against each US silo to be reasonably sure of destroying a single American nuclear weapon. There is little incentive to target them.” Adam J. Hebert, “The Triad: Now, But Maybe Not Forever,” *Air Force Magazine*, December 2013, p. 4.

²²¹ Gen (Ret) James Cartwright, “Global Zero U.S. Nuclear Policy Commission Report,” May 2012, p. 9.

smaller, yet still credible U.S. nuclear extended arsenal. The remaining SSBNs that are not part of this new configuration could serve to extend the life span of the SSBNs through rotational duties and save precious American taxpayer dollars in funding a new replacement submarine, known as “SSBNX” and focus on the U.S.’s current and emerging threats.

Complementary elements to the transformative nuclear posture and efficiencies.

As the U.S. initiates the elimination of the nuclear triad and drastically reduces the reliance and number of nuclear warheads and the associated nuclear infrastructure, its allies and partners should continue to value the remaining U.S. extended nuclear “umbrella and the complementary elements to it. For example, allies such as Israel may be assured of U.S. conventional bomber capabilities to effectively strike deeply and hardened targets such as Iranian nuclear enrichment facilities without resorting to nuclear weapons. In early 2013, U.S. officials “showed Israeli military and civilian leaders secret Air Force video of an earlier version of the MOP hitting its target in high-altitude testing and explained what had been done to improve it.”²²² The latest version of the MOP are “adjusted fuses to maximize its burrowing power, upgraded guidance systems to improve its precision and high tech equipment intended to allow it to evade Iranian air defenses in order to reach and destroy the Fordow nuclear enrichment complex buried under a mountain near the Iranian city of Qom. The upgraded MOP designed for Fordow hasn’t been dropped from a plane yet.”²²³ The idea is to create a crater with the first bomb and then follow-up with other MOPs detonating through that same hole to burrow deeper to

²²² Adam Entous and Julian E. Barnes, “Pentagon Bulks up ‘Bunker Buster’ Bomb to Combat Iran,” *The Wall Street Journal*, May 2, 2013, <http://online.wsj.com/news/articles/SB10001424127887324582004578459170138890756#printMode> accessed on October 20, 2013.

²²³ Ibid.

the underground facility. Other allies such as Japan and South Korea may also be assured of continued U.S. capabilities with the conventional “bunker buster” bomb that could be used against North Korea’s nuclear facilities. U.S officials believe the enhanced MOP “would be even more effective against North Korea’s nuclear bunkers, which the U.S. thinks aren’t as heavily fortified as Iran’s.”²²⁴

Ballistic Missile Defenses.

By continuing to invest and deploy technologies ready to intercept a limited ballistic missile attack, the U.S. could significantly reduce its nuclear weapons arsenal and focus on the its most immediate threats: North Korea and Iran ballistic missiles. As discussed in Chapter 2, the U.S. should continue to implement Hagel’s initiatives on missile defense (e.g., increasing GBIs at Fort Greely, AK, deploy an additional early warning tracking radar to Japan). One concern on the U.S.’s part has to do with capacity and development for ballistic missile technology. According to Richard Weitz, “The Missile Defense Agency is now struggling to meet the military’s demands for more assets, even as the agency tries to develop new technologies to stay ahead of advances being made by likely adversaries. The number of hostile missiles continues to increase, as do their capabilities.”²²⁵

Efficiencies.

Eliminating the triad, reducing the warhead numbers and changing U.S. policy are very important elements to a transformative nuclear posture. However, the associated nuclear enterprise and infrastructure should also be reduced to break out of the Cold War

²²⁴ Ibid.

²²⁵ Richard Weitz, “U.S. Missile Defense: Closing the Gap,” *World Affairs*, September 5, 2013, http://www.hudson.org/index.cfm?fuseaction=publication_details&id=9712 accessed on December 18, 2013.

paradigm. As discussed earlier in the chapter, the Department of Energy (DOE)/National Nuclear Security Administration (NNSA) are constructing the Uranium Capabilities Replacement (UCR) project at the Y-12 National Security Complex in Oak Ridge, Tennessee. Initially estimated by NNSA to cost \$1 billion and completed in 2018, the UCR is now mired in cost overruns and construction delays, and could cost American taxpayers \$6.5 to \$11.5 billion for a facility completed in 2035. Also, there has not been an independent study to verify DOE/NNSA's claim for the UCR's capacity to remanufacture 200 uranium secondaries,²²⁶ a key component of a nuclear warhead, in order to keep nuclear weapons reliable.²²⁷ The U.S. should cancel the UCR project. An alternative is an existing facility called the Pantex Plant in Amarillo, Texas which "has the capacity to take on one of the most important missions of the UCR project: the recertification of highly enriched uranium secondaries."²²⁸ Additionally, switching to the Pantex Plant would enhance safety by reducing "the transportation of nuclear weapons components across the country and fit well with the Pantex mission."²²⁹ With finite resources, the president as chief executive officer of the Federal government must direct re-programming this exorbitant funding of a Cold War paradigm to one focused on current and emerging threats.

²²⁶ Union of Concerned Scientists, "Nuclear Weapons and Global Security," http://www.ucsusa.org/nuclear_weapons_and_global_security/nuclear_weapons/technical_issues/nuclear-weapons-how-they.html An initial (primary) fission reaction generates the high temperatures needed to trigger a secondary—and much more powerful—fusion reaction (hence the term "thermonuclear").

²²⁷ Peter Stockton and Lydia Dennett, "The uranium processing fiasco," *Bulletin of the Atomic Scientists*, September 25, 2013, <http://thebulletin.org/uranium-processing-fiasco-0> accessed on November 4, 2013.

²²⁸ *Ibid.*

²²⁹ *Ibid.*

CONCLUSION

For this research thesis, the analysis examined in Chapter 1, “Relic of a Bygone Era?” the history of the U.S. nuclear triad, a theory by James Q. Wilson on bureaucracy which to interpret DoD’s approach to the reduction in the global nuclear attack threat and how it retains the nuclear triad even after the Cold War has ended; two cases show this bureaucratic stasis. In Chapter 2, “Affordable Tool to Fix 21st Century Threats?” the analysis discussed: the current threats facing the U.S., bilateral nuclear cooperative engagement activities with the Russian Federation (RF) and People’s Republic of China (PRC), the nuclear triad modernization and replacement program costs, and current and future technologies and capabilities. Finally, in Chapter 3, “Is It the Right Strategy for the 21st Century?” the analysis reviewed: Obama’s accomplishments in nuclear-related areas, his June 2013 guidance on U.S. nuclear weapons employment strategy, and critics’ op-ed article on the new guidance. The analysis presented an illustrative or notional nuclear strategy, force structure and posture that could be implemented by the U.S. immediately.

In Chapter 1, the analysis reviewed what should have ended the nuclear triad on September 28, 1991, when President George H.W. Bush directed all Minuteman II ICBMs and bombers assigned to the national nuclear war plan removed from that mission as part of the START II treaty. B-52 and B-1 bombers were no longer on day-to-day alert ready to launch with nuclear weapons loaded, the first time since Cold War began about forty years earlier. Minuteman II ICBMs were removed from the strategic war plan. A couple months later, the Soviet Union collapsed on December 26, 1991; a day

earlier, Soviet General Secretary Mikhail Gorbachev had resigned. The “Cold war days are over.”²³⁰

On June 16, 1992, Bush and RF President Boris Yeltsin patted each other for the rapidity in agreement over nuclear arms cuts—21,000 to 3,000-3500 nuclear warheads between the two nations. Yeltsin encapsulated what the new relationship between the two countries had evolved to:

“Indeed, we have been able to cut, over those 5 months of negotiations, the total number of nuclear warheads to one-third, while it took 15 years under the START Treaty to make some reductions. This is an expression of the fundamental change in the political and economic relations between the United States of America and Russia. It is also an expression and proof of the personal trust and confidence that has been established between the Presidents of these countries, President Bush of the United States of America and the President of Russia.”²³¹

However, twenty years after the Cold War ended in December 1991, the U.S. still maintains the nuclear triad as its national security centerpiece. Why? Three potential arguments were analyzed: 1.) deterrence is still important; 2.) there is symbolic value to weapons; and 3.) the bureaucracy wants to keep the nuclear triad because that’s what bureaucracies do. For the literature review, the analysis examined two studies in the Department of Defense (DoD) community that reviewed a nuclear arsenal of 300.

In the first study, “Structuring Analysis to Support Future Decisions about Nuclear Forces and Postures,” termed “working paper,” by Paul K. Davis, an analyst with the RAND National Defense Research Institute, is a quantitative approach to nuclear force structure. Davis develops an analytic model of two listings which he believes are the

²³⁰ President George H.W. Bush, “Remarks with President Boris Yeltsin of Russia Announcing Strategic Arms Reductions and an Exchange with Reporters,” *George Bush Presidential Library and Museum*, June 16, 1992, http://bushlibrary.tamu.edu/research/public_papers.php?id=4434&year=1992&month=6, accessed on July 11, 2012.

²³¹ Ibid.

primary issues of nuclear strategy and policy, and a taxonomy of options assessment on nuclear forces, policy and other deterrence issues. The study is disappointing for three reasons: 1.) the author's use of pejorative terms and phrases to describe past deterrent value and previous arms control agreements; 2.) lack of incorporation of current and future technologies and capabilities; and 3.) analytic model listings perpetuate the discussion on the numbers of nuclear weapons in a Cold War mindset.

The second study was by three authors associated with the U.S. Air Force who wrote about deterrence and an appropriate size for the nuclear triad. The authors stated the real question to be asked is "What size force is needed for deterrence?" and explained a nuclear triad of 311 nuclear warheads could be an effective strategy. Although commendable to recommend a low amount of nuclear warheads, however, merely shrinking the numbers of nuclear weapons would still leave unresolved the focus and continued sustainment and procurement of replacement systems for the nuclear triad and its associated infrastructure. There needs to be a re-focused discussion on U.S. nuclear strategy, posture and the new threats facing the U.S., not just reducing the warhead numbers. Other impacts such as sustainment and deployment of all three components of the nuclear triad and the nuclear support enterprise also needs to be addressed.

The analysis has shown that DoD is unable to project the forward vision, innovation and skilled leadership to identify the necessary and critical tasks on the U.S. nuclear triad and provide the sense of mission to its personnel, as it relates to James Q. Wilson's theory on bureaucracy. DoD clings to the systems and frameworks that have successfully worked in the past and continue to use them in the present and perpetuates in the future. DoD is clinging to a relic of a bygone era and requires rethinking in light of many new

factors such as the evaporation of a bipolar world and rise of a multi-polar one, high national debt and budget deficits, ballistic missile threats, and emerging technologies and capabilities.

The analysis examined two cases which showed that DoD will continue to mire in the status quo and unlikely to lead and identify the critical tasks and provide the sense of mission as Wilson's theory suggest, for a new nuclear weapons force strategy and framework. The first case concerns the digitization of military health records, and the second one analyzed was the use of paper technical orders (TO) or user manual to operate the ICBM weapon system.

The bureaucratic stagnation explanation of the persistence of the nuclear triad is consistent with the way that the defense-related bureaucracies approach new technologies and innovation. The first case, digitization of health records demonstrated how defense-related bureaucracies are all too willing to fight the last—rather than the next—war. Digitization has been a clarion call by presidents to steer the nation in investing and utilizing current technologies to continue advancing this new age of information technology (IT). Presidents Clinton, Bush, and Obama have called for (even issuing an executive order) in essence digital medical records for service members and veterans. The analysis reviewed GAO reports that found little progress in a seamless electronic health record system between DoD and the Department of Veterans Affairs (VA). There were barriers in key IT management areas of strategic planning, enterprise architecture and investment management—DoD and VA leadership do not understand this mission. So, uniformed Armed Services personnel when they retire or are medically discharged from service will have to carry their paper medical and dental records around.

In Case 2, the analysis examined that ICBM missile officer crews (missileers) are still issued and use *paper* TOs or user manuals to operate and troubleshoot procedures dealing with the missile (about 400 pages) and the multiple communication systems (about 400 pages) under their charge. Other Air Force oversight agencies possess these same paper TOs. However, the Air Force does not allow the sole use of the electronic or *digitized* TO procedures that are resident in launch control center (LCC) computer because missile crews have always used their paper TOs. Also, the Air Force does not have confidence in the currency of the digitized TO checklists: a new procedure or immediate change may not be immediately resident into the LCC.

In Chapter 2, the analysis examined the current significant threats to the U.S.: cyber attacks, skyrocketing national debt and budget deficits, RF and PRC nuclear modernization programs and ballistic missile threats. Additionally, the analysis reviewed nuclear-related cooperative threat reduction programs with the RF and PRC and U.S. nuclear modernization and replacement programs. Finally, the analysis highlighted current, emerging and future technologies the U.S. should fund and continue to pursue.

The newest form of attack is cyber attack which a nation or its proxy wages on other nations or adversaries, and encompasses cyber war, terrorism, espionage, protest, vandalism and crime. What's new about this threat is that anyone with a computer can hack a high-value target like a government network or bank financial database and remain essentially anonymous and hard to track down. The analysis examined that unlike the national strategy on nuclear weapons, the U.S. still has no overarching national strategy on cyber attacks which addresses the nature of threats, programs, roles and responsibilities and types of responses. The U.S. needs to understand this threat and have

the financial and technical means to thwart this capability or the cyber attacks could potential wreak catastrophic damages. If the U.S. is unable to determine and exercise a national strategy on cyber, according to then-Secretary of Defense Leon Panetta in October 2012, these attacks “could be a cyber Pearl Harbor; an attack that would cause physical destruction and the loss of life. In fact, it would paralyze and shock the nation and create a new, profound sense of vulnerability.”

Another threat to the U.S. is its skyrocketing national debt and budget deficits. At \$17.1 trillion, U.S. public debt has grown \$5 trillion in the last five years and the ability to reduce it faces deep partisan politics due to the political party’s view on the role of government. So paralysis in solving the ever-climbing national debt is the result. The U.S. must to rise above the politics to lead and get its fiscal house in order to preserve its financial solvency. If a foreign country such as China or Japan, the two largest holders of treasury debt perceive the U.S. is no longer the safe haven for investment, then capital inflows to the U.S. may eventually slow or dry up, raising interests nationally and globally. This event could undermine U.S. economic and diplomatic hegemony as well as the ability to fund research and develop emerging and future weapon systems that could project American power.

The analysis reviewed the RF’s and PRC’s nuclear modernization programs. Both are investing in upgraded current weapon systems. Both countries have sizeable nuclear arsenals and the RF is the nuclear peer to the U.S. The U.S. and RF have signed and ratified the New START Treaty limiting deployed nuclear warheads. The PRC’s stated nuclear policy has been one of countering foreign military coercion and not first use.

An important consideration in bilateral relations between the U.S. and RF and PRC is the significant funding and effort the U.S. dedicates to both those countries in cooperative engagements. Since the Cold War ended, the U.S. and RF signed an agreement to facilitate the safe and secure transportation and storage of nuclear, chemical, and other weapons in the RF and the destruction of those weapons to comply with START II requirements. Regarding the PRC, the U.S. has conducted multiple rounds of the Strategic and Economic Dialogue. The U.S. and PRC have signed an agreement to establish a joint Center of Excellence in Nuclear Security which will promote cooperation and strengthen nuclear non-proliferation, nuclear security best practices and combat nuclear terrorism.

With the election of George W. Bush, the U.S. became very concerned with the growing threat of ballistic missiles especially from North Korea, Iran, and Iraq. This concern was so great, the U.S. left the ABM Treaty in 2002 so that it could develop and deploy ballistic defense systems to counter a potential limited ballistic missile attack. Bush emplaced ballistic missile defense system to protect the homeland, its military forces, allies and partners. The U.S. also emplaced interceptor missiles at Fort Greely, Alaska and Vandenberg Air Force Base, CA to defend against intermediate and intercontinental ballistic missile threats. There was also a defense systems against shorter range ballistic missile threats, the PAC-3 interceptor and the Aegis ship Standard Missile (SM)-3.

Obama directed the first-ever Congressionally-mandated review of U.S. ballistic missile defense policies, strategies, plans, and programs. The Undersecretary of Defense for Policy, one of the co-leads of the study, stated on the 2010 release of the report that

the U.S. is “currently protected against a limited ballistic missile attack, and will continue to be so for the foreseeable future.” She also stated ballistic missile defenses are directed against regional actors such as North Korea and Iran, and not intended to affect the strategic balance with Russia or China. According to the BMD report, the U.S. will continue to assess realistic ballistic missile systems that are deployable and fiscally sustainable over the long-term. These new BMD capabilities must be flexible enough to adapt as threats change as demonstrated by Secretary Hagel’s March 2013 announcement on a series of steps to stay ahead of the North Korea and Iran’s development of longer-range ballistic missile threat.

The analysis also examined that like the RF and PRC, the U.S. is modernizing its nuclear triad and funding research and development program to implement replacement programs for the components of the nuclear triad: ICBMs, bombers, and SLBMs. The analysis highlighted the president’s FY13 budget on nuclear-related items: \$4.6 billion for strategic systems such as a new nuclear-capable bomber force and a submarine replacement fleet to the current *Ohio*-class that will cost the American taxpayers over \$100 billion over its life-span into the 22nd century. The U.S. should re-align its nuclear strategy, policies and funding to resolve these threats, and pursue current, emerging and future technologies the analysis reviewed such as the Orbital Test Vehicle, X-37B, a reusable unmanned spacecraft that could ensure U.S. access to space and the Boeing Phantom Eye, an unmanned next generation aircraft system that can conduct intelligence, surveillance, and reconnaissance at high-altitude and long durations.

In Chapter 3, the analysis examined Obama’s significant accomplishments in the nuclear-related areas. With his April 2009 speech in Prague, Czech Republic in which he

declared “The existence of thousands of nuclear weapons is the most dangerous legacy of the Cold War,” and envisioned “a world without nuclear weapons,” Obama set forth the path to take concrete steps to implement his goal. First, he signed a new nuclear arms reduction treaty, New START Treaty with RF in 2010; it reduced by 150 nuclear warheads from the previous levels in the 2002 Strategic Offensive Reduction Treaty signed by Bush and Putin. Second, in 2010 his administration conducted the first NPR since 2002 declaring two significant changes from previous NPRs: the U.S. would reduce the role of nuclear weapons in its national security strategy and not use or threaten to use nuclear weapons against a non-nuclear weapon state party to the NPT and in non-compliance with their nuclear non-proliferation obligations. Third, Obama’s new initiative to host global leaders at a biennial forum called the Nuclear Security Summit (NSS) became a successful platform to discuss nuclear weapons and materials security—a shared concern with the more than 40 nations and organization who attended the 2010 and 2012 NSS. The NSS became a springboard for Obama to engage with the global community to include RF President Medvedev and PRC President Hu Jintao cooperative engagement activities to secure vulnerable nuclear materials in an abandoned test site in Kazakhstan or establishing a nuclear security center of excellence in Beijing, China.

Next, the analysis reviewed Obama’s June 2013 eight and one-half page nuclear employment strategy report. This document, a follow-up to the 2010 NPR, was unremarkable, bureaucratic and not transformative in its approach on nuclear policy and nuclear force structure. The guidance repeated a few phrases many times throughout the report such as “to maintain strategic stability with Russia and China.” Besides maintaining strategic stability, the nuclear guidance stated (six times) “hedging” as an

additional reason to retain the nuclear triad. Hedging is the continued sustainment of weapons life extension programs and new or upgrade nuclear facilities construction. Even though the U.S. faces shrinking government budgets, then Secretary of Defense Gates wrote in the 2010 NPR that DoD would transfer \$5 billion to the Department of Energy to maintain the nuclear triad, its modernization programs and infrastructure. Precious American taxpayer dollars should be carefully planned and invested towards capabilities against current and future threats, not continue to fight the Cold War.

Finally, the analysis presented an illustrative or notional nuclear force structure and posture. In this illustration, through executive order the president would direct the nuclear triad would no longer exist—bombers removed from day-to-day nuclear alert in 1991 would permanently stay conventional instead of the current bouncing back and forth from nuclear training exercises and conventional missions. The new nuclear structure, “Strategic Nuclear Forces” would consist of 350 single nuclear warhead ICBMs and 288 nuclear warheads deployed on SLBMs of an 8-boat fleet, for a total of 638—hundreds of nuclear warheads less than Obama’s new nuclear strategic guidance. This significant decline in nuclear warheads and assigning bombers to conventional-only missions would reduce the role of nuclear weapons in the U.S.’s national security strategy.

Regarding the illustrative nuclear posture, the president with his accomplishments and progress in the nuclear-related areas has the credibility to announce in an Oval Office speech that the new U.S. policy is no-first use of nuclear weapons, and that he’s directed that the country’s most responsive element of the nuclear force structure, ICBMs, would no longer have missile crew officers possessing the launch documents and equipment within the LCC on a day-to-day basis. Equally important, the president would declare

that nuclear weapons are *solely* to deter nuclear attacks, not just fundamentally. These actions would still protect the U.S.'s national security as well its allies' and emplace the meaningful steps towards "a world without nuclear weapons." Also, these actions would enhance the U.S.'s global reputation for bold and transformative steps towards nuclear nonproliferation, including the president's Oval Office announcement of an invitation to other presidents of the nuclear weapons states and other selected leaders. These leaders and Obama would remain after the next NSS and discuss the next steps towards multilateral nuclear arms reductions and other common areas of strategic interest such as cyber attacks.

Over the last 68 years, history has shown that the president is the most influential person on the role of U.S. nuclear weapons. The president must have the vision and courage to lead these transformative actions in order to re-align the U.S. national security away from nuclear weapons and perpetuation of funding the Cold War weapon systems. As the Chief Executive Officer of the federal government, the president's leadership is required to eliminate the funding prioritization of the costly nuclear programs and infrastructure like the Uranium Capabilities Replacement facility--\$11 billion. His vision should be to focus on the 21st century threats, prioritize funding to research and develop emerging and future technologies and capabilities, procure the equipment and train high quality people to successfully counter those national security threats.

With the U.S. relationship with the RF and PRC transformed, the nuclear triad that was developed and meant for the bipolar world which has disappeared, also needs to change. As the analysis has shown, DoD is unable to lead and innovate the changes because as a bureaucracy it clings to systems that have been successful and cannot break

out of the paradigm. Even at the height of the Cold War, a president envisioned innovation, efficiency and break from the government bureaucracy:

But hard decisions must be made. Unneeded facilities or projects must be phased out. The defense establishment must be lean and fit, efficient and effective, always adjusting to new opportunities and advances, and planning for the future. The national interest must be weighed against special or local interests; and it is the national interest that calls upon us to cut our losses and cut back those programs in which a very dim promise no longer justifies a very large cost...²³²

²³² President John F. Kennedy, "Special Message to Congress on Defense Policies and Principles, Washington, DC, March 28, 1961," Theodore C. Sorensen, Eric K. Sorensen, Stephen E. Sorensen, Philip J. Sorensen, *Let The Word Go Forth: The Speeches, Statements, and Writings of John F. Kennedy 1947 to 1963*, (Dell Publishing), New York, NY, p. 241.

~~SECRET~~
October 26, 1962

686
H/S
Confidential

Dear Mr. President:

While I know the tremendous pressure under which you are working, I believe you would like to be informed that today the Air Force has achieved, on schedule as planned nearly three years ago, the initial operational capability with the Minuteman missile. The first three missiles, sited near Malmstrom Air Force Base, Montana, have had warheads installed and have been assigned targets in the USSR.

Because these three missiles constitute an element of a unitized launch complex of twenty, unusual safety precautions have been taken which necessitate approximately eight hours of preparation before these missiles can be launched. However, in the event of an imminent national emergency, the precautions can be waived and the preparatory actions taken, after which these missiles can be maintained on semi-alert and can be launched within thirty minutes.

We are making urgent efforts to increase this capability, without sacrificing the established safety standards. Every two days an additional three missiles will be added, each such increment having the same launch capability as the first, until mid-November when the entire complex of twenty will be operationally ready. At that time the complex will be placed in its normal alert status, and all twenty missiles will be able to be launched in thirty seconds.

This is, I believe, a most significant occasion, marking the commencement of a three-year steady build-up toward our present goal of 800 Minuteman missiles.

Respectfully,

Eugene M. Zuckert

~~SECRET~~
The President
The White House 01-0.250500 AT
cc: Secretary of Defense

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Appendix A
Secretary of the Air Force Eugene M. Zuckert letter to
President John F. Kennedy
on October 26, 1962



SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

April 6, 2010

This Nuclear Posture Review provides a roadmap for implementing President Obama's agenda for reducing nuclear risks to the United States, our allies and partners, and the international community. As the President said in Prague last year, a world without nuclear weapons will not be achieved quickly, but we must begin to take concrete steps today.

This NPR places the prevention of nuclear terrorism and proliferation at the top of the U.S. policy agenda, and describes how the United States will reduce the role and numbers of nuclear weapons. Efforts like the New Strategic Arms Reduction Treaty with Russia, the Nuclear Security Summit, our work to strengthen the nuclear nonproliferation regime, and a broader approach to deterrence are central elements of this strategy.

At the same time, as long as nuclear weapons exist, the United States must sustain a safe, secure, and effective nuclear arsenal – to maintain strategic stability with other major nuclear powers, deter potential adversaries, and reassure our allies and partners of our security commitments to them.

The NPR calls for making much-needed investments to rebuild America's aging nuclear infrastructure. To this end, I asked for nearly \$5 billion to be transferred from the Department of Defense to the Department of Energy over the next several years. These investments, and the NPR's strategy for warhead life extension, represent a credible modernization plan necessary to sustain the nuclear infrastructure and support our nation's deterrent. They will also enable further arms reductions by allowing us to hedge against future threats without the need for a large non-deployed stockpile.

From beginning to end, this review was an interagency effort, and as such reflects the strength of what can be accomplished when our government's departments work in concert. The steps outlined in this report will take years, and, in some cases, decades to complete. Implementing them will be the work of multiple administrations and Congresses, and will require sustained bipartisan consensus.

In closing, I would like to thank those men and women at the Departments of Defense and Energy, including the national labs, who are critical to sustaining our nuclear arsenal. Their important work underwrites the security of the United States as well as our partners and allies.

A handwritten signature in black ink, which appears to read "Robert M. Gates", is positioned below the text.

i
Nuclear Posture Review Report

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Curriculum Vitae

Donald M. Hale, Jr. is a Master of Arts in Global Security Studies candidate at Johns Hopkins University. He was born in San Jose, CA on March 6, 1960. After receiving a Bachelor of Arts in History from Santa Clara University in 1982, Mr. Hale enlisted in the U.S. Air Force. In 1985, he was accepted into the Air Force Reserve Officer Training Corps at San Francisco State University and Master of Business Administration (MBA) program at Golden Gate University. In 1987, Mr. Hale was commissioned as a second lieutenant in the U.S. Air Force and earned his MBA.

Mr. Hale was a career Air Force officer serving in the nuclear intercontinental ballistic missile career field. On September 28, 1991, as an Air Force first lieutenant missile crew commander on alert at the Alternate Command Post Launch Control Center, Mr. Hale received, validated, authenticated and successfully executed President George H. W. Bush's directive to "stand down" the Minuteman II ICBM force from the national war plan. Mr. Hale directed actions and supervised 30 personnel in 15 launch control centers to remove all launch capability to 150 ICBMs. Later in his career, Mr. Hale commanded the Air Force's Recruiting Squadron for Northern and Central California, and retired on August 31, 2009 with an Honorable discharge at the rank of lieutenant colonel.

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