



**NAVAL
POSTGRADUATE
SCHOOL**

MONTEREY, CALIFORNIA

THESIS

**CONTINUITY AND TRANSFORMATION IN THE
UNITED STATES' NUCLEAR POSTURE**

by

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December 2019

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REPORT DOCUMENTATION PAGE			<i>Form Approved OMB No. 0704-0188</i>	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE December 2019	3. REPORT TYPE AND DATES COVERED Master's thesis	
4. TITLE AND SUBTITLE CONTINUITY AND TRANSFORMATION IN THE UNITED STATES' NUCLEAR POSTURE			5. FUNDING NUMBERS	
6. AUTHOR(S) Andrew D. Metz				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			10. SPONSORING / MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.				
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release. Distribution is unlimited.			12b. DISTRIBUTION CODE A	
13. ABSTRACT (maximum 200 words) This thesis created a matrix to compare the four post-Cold War Nuclear Posture Reviews (NPRs) published by the United States Department of Defense. Side-by-side comparison of these white papers revealed remarkable trends in U.S. nuclear policy. The matrix began by assigning themes within NPRs to paradigms common to international relations research. These paradigms are declaratory policy, procurement policy, employment policy, and deployment policy. This thesis began by analyzing the history of NPRs and reactions to them in the scholarly and international communities. Next, it created an impartial summary of the identified themes as they are tracked through the NPRs. This thesis then analyzed and critiqued the trends in nuclear policy based on the matrix, scholarly reactions to NPRs, and other research related to U.S. force structure and the worldwide threat environment such as the economic interdependence between the United States and China and how it affects the two countries' relationship. Some policy trends followed party lines; others did not. Some were erratic and others were more predictable. The value of these trends validates some concerns and disproves others with regard to the U.S. nuclear posture and the worldwide threat environment. The thesis concluded that the world is a safer place with nuclear weapons, and although a world free of nuclear weapons is a responsible goal for future policymakers, it is simply not practical for the foreseeable future.				
14. SUBJECT TERMS 2018, nuclear, posture, review, weapon, weapons, policy, United States, treaty, treaties, international relations, strategy, strategic command, NPR, politics, Cold War, Ground Based Strategic Deterrent, UH-1 Replacement Program, Minuteman III, bomber, Ohio-Class Submarine, ICBM, Intercontinental Ballistic Missile, SLBM, Submarine Launched Ballistic Missile, B-1, B-2, B-52, 1.2 Trillion, policy, threat, threats, Air Force, Navy, Global Strike Command, missile, bomb, atomic, energy, warhead			15. NUMBER OF PAGES 133	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU	

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**CONTINUITY AND TRANSFORMATION IN THE UNITED STATES'
NUCLEAR POSTURE**

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Submitted in partial fulfillment of the
requirements for the degree of

**MASTER OF ARTS IN SECURITY STUDIES
(HOMELAND SECURITY AND DEFENSE)**

from the

**NAVAL POSTGRADUATE SCHOOL
December 2019**

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ABSTRACT

This thesis created a matrix to compare the four post-Cold War Nuclear Posture Reviews (NPRs) published by the United States Department of Defense. Side-by-side comparison of these white papers revealed remarkable trends in U.S. nuclear policy. The matrix began by assigning themes within NPRs to paradigms common to international relations research. These paradigms are declaratory policy, procurement policy, employment policy, and deployment policy. This thesis began by analyzing the history of NPRs and reactions to them in the scholarly and international communities. Next, it created an impartial summary of the identified themes as they are tracked through the NPRs. This thesis then analyzed and critiqued the trends in nuclear policy based on the matrix, scholarly reactions to NPRs, and other research related to U.S. force structure and the worldwide threat environment such as the economic interdependence between the United States and China and how it affects the two countries' relationship. Some policy trends followed party lines; others did not. Some were erratic and others were more predictable. The value of these trends validates some concerns and disproves others with regard to the U.S. nuclear posture and the worldwide threat environment. The thesis concluded that the world is a safer place with nuclear weapons, and although a world free of nuclear weapons is a responsible goal for future policymakers, it is simply not practical for the foreseeable future.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABNCP	E-6B Airborne Command Post
ADW	Agent Defeat Weapon
AFGSC	Air Force Global Strike Command
ALCM	Air Launched Cruise Missile
BWC	Biological Weapons Convention
C3	Command, Control, and Communications
CBW	Chemical and Biological Weapons
CIA	Central Intelligence Agency
CRS	Congressional Research Service
CTBT	Comprehensive Test Ban Treaty
CWC	Chemical Weapons Convention
DCA	Dual-Capable Aircraft
DIA	Defense Intelligence Agency
DIA	Defense Intelligence Agency
DoD	Department of Defense
DOE	Department of Energy
DOS	Department of State
DSP	Defense Support System
FIP	Force Improvement Program
FY	Fiscal Year
GBSD	Ground Based Strategic Deterrent
IAEA	International Atomic Energy Agency
IC	Intelligence Community
ICBM	Intercontinental Ballistic Missile
ICT	Information and Communication Technologies
INF	Intermediate Range Nuclear Forces
INF	Intermediate Range Nuclear Forces Treaty
INR	Bureau of Intelligence and Research
JSF	Joint Strike Fighter
LEP	Life Extension Program

LF	Launch Facility
MAD	Mutually Assured Destruction
MAS	Mutually Assured Safety
MDR	Missile Defense Review
MIRV	Multiple Independently-Targetable Reentry Vehicles
NAOC	E-4B National Airborne Operations Center
NATO	North Atlantic Treaty Organization
NBC	Nuclear, Biological, Chemical Weapons or Environment
NC3	Nuclear Command, Control, and Communications
NCO	Non-Commissioned Officer
NNSA	National Nuclear Security Administration
NPR	Nuclear Posture Review
NPT	Nonproliferation Treaty
NPT	Nonproliferation Treaty
NSS	National Security Strategy
QDR	Quadrennial Defense Review
SBIRS	Space Based Infrared System
SLBM	Submarine Launched Ballistic Missile
SSBN	Nuclear Powered Ballistic Missile Submarine
SSP	Stockpile Stewardship Program
SSP	Stockpile Stewardship Program
START	Strategic Arms Reduction Treaty
STE	Science, Technology, and Engineering
STRATCOM	United States Strategic Command
U.S.	United States
UN	United Nations
UPF	Uranium Processing Facility
USNDS	United States Nuclear Detonation Detection System
USSR	Union of Socialist Soviet Republics
WMD	Weapon of Mass Destruction

ACKNOWLEDGMENTS

For the men and women of Air Force Security Forces who stand guard atop missile silos and in front of bombers. You brave long hours in the rain, snow, cold, and heat for days on end away from your homes and families. I am writing this thesis to understand why we must do what we do.

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I. INTRODUCTION

A. MAJOR RESEARCH QUESTION

The four post-Cold War United States Nuclear Posture Reviews (NPRs) are lenses into the nuclear policy of the current and past presidential administrations. NPRs define declaratory policy, employment policy, procurement policy, and deployment policy for U.S. nuclear capabilities. Although the first NPR under the William J. Clinton administration was a sigh of relief after the darkness of the Cold War, trends in U.S. nuclear policy in response to international threats show a world returning to great power competition. *What are the trends in the United States' nuclear policy since the end of the Cold War?* Analysis of NPRs will illustrate the trends in U.S. nuclear policy since the end of the Cold War and how these trends might be changing with the rise of great power competition.

B. SIGNIFICANCE OF THE RESEARCH QUESTION

In the immediate aftermath of the Cold War, the Clinton administration, with its so-called “Bottom-Up Review,” began a new exercise in transparency by reviewing national defense capabilities much like the modern Quadrennial Defense Review. From the Clinton administration’s report, the Nuclear Posture Review emerged as an extension focusing on nuclear capabilities and policy. Since then, the George W. Bush administration, the Barack H. Obama administration, and the Donald J. Trump administration have each published stand-alone Nuclear Posture Reviews. These reviews reflect contemporary thinking along multiple dimensions that reflect changes in United States nuclear doctrine and policies, but also act as a reflection of changes across the strategic landscape. By tracking changes along these policy and doctrinal dimensions this thesis will identify how changes in the strategic setting have shaped United States policy since the end of the Cold War. It will also identify if these longstanding trends have changed with the increase in great power competition that United States policymakers apparently recognized in the continuation of the long pre-occupation with the so-called Global War on Terror (circa 2011).

C. LITERATURE REVIEW

Since the end of the Cold War, the public has widely disregarded nuclear weapons. Nonetheless, debate continues among scholars and politicians throughout the arms control, nonproliferation, and international political communities about the contemporary role of weapons of mass destruction. The United States Nuclear Posture Review (NPR) is an occasional white paper on current and projected United States nuclear strength and structure in response to worldwide threats. This makes it an excellent primary source for the role of nuclear weapons as interpreted by presidential administrations and military leadership. Surrounding United States NPRs is a plethora of scholarly and non-scholarly reactions and analysis of the international and domestic implications of NPRs.

Given the recent publication of the 2018 NPR, there is little commentary published about it. Nevertheless, there is an abundant amount of published work about previous NPRs, and additional published works covering topics ranging from arms control and proliferation to modernization and missile defense. The United States Naval Postgraduate School (NPS) produces a significant number of scholarly works on U.S. nuclear policy and NPRs. NPS-related works generally support conclusions within NPRs, yet outside of NPS publications, there is a lack of consensus on the implications of NPRs.

There is a major gap in research on U.S. nuclear policy trends since the end of the Cold War. There have been four NPRs since the end of the Cold War, one within each of the four post-Cold War presidential administrations. President William J. Clinton initiated the first in 1994,¹ a result of the 1993 Bottom-Up Review, followed by President George W. Bush in 2001,² President Barack H. Obama in 2010,³ and President Donald J. Trump in 2018.⁴ Documentation of the NPR has evolved over time; President Clinton's was

¹ Department of Defense, *The Nuclear Posture Review*, Washington, DC: Office of Assistant Secretary of Defense, 1994.

² United States Congress, *Excerpts of Classified Nuclear Posture Review*, Washington, DC: 2002.

³ Department of Defense, *Nuclear Posture Review Report*, Washington, DC: Office of the Secretary of Defense, 2010.

⁴ Department of Defense, *Nuclear Posture Review*, Washington, DC: Office of the Secretary of Defense, 2018.

simply an assortment of unpublished PowerPoint slides coinciding with press releases from the Office of the Secretary of Defense (see Appendix B.). President Bush's NPR was kept classified; however, in 2002, a non-classified version of the report was released after the original report had been presented to the United States Congress. This report looked much more like a scholarly article than a government document. President Obama's NPR was revolutionary in terms of format; his administration's document was a publicly released fifty-page report with graphics and easy-to-read formatting. President Trump's report followed this same format but was substantially longer than President Obama's. Common inclusions in the NPRs are analyses of the current worldwide threat environment, current United States nuclear capabilities, a lens into the current administration policy toward nuclear weapons, and proposals on not only the future role of nuclear weapons, but also future projects and developments within the United States nuclear force. Notably, there are several documents worth examination which coincide with the NPRs, such as the Bottom-Up Review, Quadrennial Defense Reviews (QDR), and the Missile Defense Review (MDR).

NPS has been a significant source of scholarly response to NPRs. However, there is no NPS-related or sponsored material in response to the 2018 NPR as of yet. NPS response to NPRs was strongest for the 2001 and 2010 NPRs; there is a lack of NPS material related to the 1994 NPR. Works completed and published by NPS faculty and students overwhelmingly show positive support of the NPRs and have an optimistic outlook on current and future United States nuclear posture. Most notably, a thesis has already been conducted by an NPS student which compares the 1994, 2001, and 2010 reports.⁵ The method of this thesis sets a framework to compare and explore past NPRs in a historical framework. This thesis requires an update to include the 2018 NPR to accurately continue analysis of post-Cold War United States nuclear posture and strategy. Two other theses are of importance to this topic, one discussing nuclear norms⁶ and the

⁵ Marco J. Lyons, "U. S. Nuclear Policy, Strategy, and Force Structure: Insights and Issues from the 1994, 2001, and 2010 Nuclear Posture Reviews" (master's thesis, Naval Postgraduate School, 2014).

⁶ Michael W. Preczewski, "Normative Factors in U. S. Nuclear Policy" (master's thesis, Naval Postgraduate School, 2016).

other discussing the North Atlantic Treaty Organization (NATO).⁷ Another important NPS-related work is a book edited by Jeff Larsen and James Wirtz responding to the 2001 NPR.⁸ David Yost and James Russell also make notable contributions to United States NPR response.⁹

Non-NPS related material contains more opposition to implications set forth by NPRs, particularly the 2001 and 2018 NPRs. Non-military reactions to NPRs domestically follows party lines; positive response typically comes from conservative authors and negative response comes from liberal authors. Domestic reaction to NPRs is loud among left-wing activists who are passionate about nonproliferation and arms control. “Nuke-zero” is a recurring theme which envisions a world without nuclear weapons. Domestic reaction to President Obama’s NPR was relatively positive, but negative toward President Bush’s and President Trump’s respective NPRs. The Arms Control Association publishes a significant amount of material, both positive and negative, about many aspects of nuclear weapons and policy. Another substantial source of material is the *Journal for Peace and Nuclear Disarmament*.

Among more positive responses, Brad Roberts, Matthew Kroenig, John Harvey, and Elbridge Colby all have important insight to the United States’ nuclear policy and their work will be important to identifying themes and trends within post-Cold War NPRs. Lawrence Freedman authors a book entitled *The Evolution of Nuclear Strategy*.¹⁰ Brad Roberts, prior to the 2018 NPR, published *The Case for U.S. Nuclear Weapons in the 21st Century* in which he breaks down evolution of the United States’ nuclear policy and posture

⁷ Jeffrey R. Frost, “Assessing Possible Improvements in NATO’s Non-Strategic Nuclear Deterrence Forces” (master’s thesis, Naval Postgraduate School, 2017).

⁸ James J. Wirtz and Jeffrey A. Larsen, *Nuclear Transformation: The New U. S. Doctrine* (New York, NY: Palgrave Macmillan, 2005).

⁹ Such as David S. Yost, “Strategic Stability in Europe,” *The Nonproliferation Review* 20, no. 2 (June 27th, 2013), 236; James A. Russell and James J. Wirtz, “Nuclear Weapons, War with Iraq, and U.S. Security Strategy in the Middle East,” *Strategic Insights* 1, no. 6 (August 2002); and James A. Russell and James J. Wirtz, “Negative Security Assurances and the Nuclear Posture Review,” *Strategic Insights* 1, no. 5 (June 2002).

¹⁰ Freedman, Lawrence, *The Evolution of Nuclear Strategy* 3rd Edition, Basingstoke, Hampshire, England: Palgrave MacMillan, 2003.

post-Cold War and discusses nuclear deterrence, strategy, and problems in the modern nuclear world, to include regional and bilateral relationships.¹¹

Reactions by NATO members and other nations, such as Japan,¹² who rely on United States extended deterrence are extremely important as these countries heavily rely on United States nuclear strength due to their geographic proximity to Russia and other threats, particularly in Northeast Asia. Concern among NATO members and countries who rely on United States extended deterrence is that the United States NPRs show a lack of consideration to NATO's deterrence needs, despite a clear trend found in NPRs that continuously confirms U.S. commitment to NATO and non-strategic deterrence. Other international response both affiliated and nonaffiliated with NATO show fear that the trend seen in United States nuclear posture will provoke Russia and China into further proliferation, or at the very least modernization, therefore destabilizing the world's nuclear environment even further.

There are serious gaps in international scholarly works understanding Russian and Chinese nuclear policy. First, they fail to accurately analyze Russian nuclear posture and intent. Second, they fail to reference the strong economic interdependency between the United States and China. Although these two topics are important, they fall outside of the larger scope of United States nuclear posture and this thesis. Entire books have been and could be written on both topics, but still fail to offer concrete theories through a different lense.

Lastly, an investigation and examination of non-scholarly works was conducted to get an idea of the public opinion and general sense or feeling of United States nuclear posture. This included news articles and reports, opinion pieces, and presentations on United States nuclear posture. Unsurprisingly, all these sources are rather lacking as the general public is not talking about the United States nuclear posture. Therefore, there is not a large number of non-scholarly works. News sources lack depth or context and were

¹¹ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, Stanford, California: Stanford Security Studies, an imprint of Stanford University Press, 2016.

¹² Mike Mochizuki, "Japan Tests the Nuclear Taboo," *Nonproliferation Review*, 14:2 (July 2007), 303-328.

surprisingly unbiased, yet some carried a negative undertone. Opinion pieces from non-scholarly sources and authors represented both sides of the aisle. Unfortunately, no other secondary sources were located other than sets of briefing slides on the NPRs.

Current material surrounding NPRs lacks consensus as well as historical context, producing a need to evaluate themes and trends. NPS material mentioned previously reacts in a mostly positive way to NPRs and United States nuclear posture. Yet non-NPS publications, such as Anna Peczeli's "Back to Great Power Competition," express fear that the trend of United States nuclear posture is encouraging proliferation and a new arms race.¹³ These analyses could be accurate; however, these sorts of articles all lack a proper consideration of the worldwide nuclear trends and themes in U.S. policy since the end of the Cold War. They blame the NPRs for stimulating proliferation and making the world nuclear threat environment increasingly fragile, yet they fail to acknowledge that United States NPRs are responses to the current threat environment.

This lack of acknowledgment highlights another major weakness in response to NPRs. No authors whom I have found, whether authoring a positive or negative response, analyze the actual United States nuclear posture trends and themes since the end of the Cold War and since the publication of the 2018 NPR. They fail to examine how many warheads are currently actively deployed, current command, control, and communications systems, and current defenses and non-proliferation efforts. No works ask the question of whether or not the current system is practical or efficient to the current threat environment or why either the system or the threat environment has changed. They simply ponder the implications of force structure on future nuclear threats and security issues. Three further topics which are lacking from response to NPRs throughout the last three decades are discussions of nuclear terrorism, intelligence, and cyber or robotic threats; all three of which are talking points mentioned in multiple NPRs.

In conclusion, even though many scholarly responses to NPRs, particularly the 2018 NPR, assert that the NPRs raise more questions than answers, the reactions

¹³ Anna Peczeli, "The Trump Administration's Nuclear Posture Review: Back to Great Power Competition," *Journal for Peace and Nuclear Disarmament* 1, no. 2 (October 2018).

themselves only further this problem. Common themes among the research which was conducted are that deterrence is necessary; the nuclear triad is constantly questioned (but remains effective); that United States NPRs are adapting and evolving with the post-Cold War security climate; norms and the taboos of nuclear use; reorganizations and modernizations within the United States nuclear force are of concern; and Russia and China are increasing threats (in particular Russia's alleged illegal annexation of Crimea). Common themes which occur in NPRs which are generally left out of scholarly works are nuclear terrorism, intelligence, cyber threats, United States and China's economic interdependence, and Russia's own nuclear posture. Reactions and response to NPRs also highlight fears of proliferation and modernization, yet few provide specific evidence directly linking NPRs to proliferation and modernization. Lack of consensus, an agreeable historical context for NPRs, conversation about the to-date efficiency and practicality of the United States nuclear force, conversation about nuclear terrorism and cyber threats, and intelligence which supports NPRs as well as the speculative nature of scholarly and non-scholarly responses to NPRs paint a confusing picture of the actual current United States nuclear posture, trends, and themes since the end of the Cold War. By creating a matrix identifying the United States' nuclear policy trends, a contribution can be made to alleviate some of this confusion. This matrix can be found in the Appendix section, under the title, "NPR Trends Matrix."

D. POTENTIAL EXPLANATIONS AND HYPOTHESIS

Realists would suggest that the United States' nuclear policy is shaped by the international threat environment as perceived by specific administrations. Construction of an NPR also is a bureaucratic exercise, involving different agencies and departments balancing their own interests and objectives with the overall foreign policy vision embraced by the president and his key advisors. NPRs are not only lenses into the inner workings and intentions of the current administration but tools to appeal for support and solicit money for nuclear programs and policies.

When examined side by side, NPRs show common trends among past and present administrations' nuclear policies. For example, even though all NPRs clearly state a vision

of a world without nuclear weapons to some extent, the role of nuclear weapons as a strategic deterrent is also acknowledged. Furthermore, the need to modernize and maintain nuclear weapons, infrastructure, command and control, and delivery systems in the meantime is evident in most of the reports. Each NPR contains verbiage about a world free of nuclear weapons as well as noting the continued role played by nuclear weapons in national security; however, each presidential administration to produce an NPR has had a different stance on the priority of disarmament versus sustainment of United States nuclear forces and preservation of worldwide security.

The most important theme among all four post-Cold War NPRs is that nuclear weapons are here to stay for generations, despite hopes and dreams of a nuclear weapon-free future. The world is arguably a safer place with nuclear weapons,¹⁴ despite continued tension between states, such as India and Pakistan. Threat of nuclear weapon use, although it has led the world very close to the brink of catastrophic war, has ultimately made the world a safer place by reducing the number of wartime casualties since its first use.¹⁵ Furthermore, when nations do go to war in modern times, the scale of the conflict, determination of proper use of force, and ultimate price of the skirmish is lower due to nuclear deterrence than if the war had occurred in a world without nuclear weapons.

E. RESEARCH DESIGN

This thesis will create an issue matrix to identify trends in the United States' nuclear policy. It will analyze the 1994, 2001, 2010, and 2018 NPRs as well as related documents, motivations, format, and production process. It will focus on four categories and their subcategories aligning with tenets of nuclear policy. These are declaratory policy (what do presidential administrations say about great power competition, the nuclear triad, command, control, and communications, intelligence, critical infrastructure, nuclear terrorism and non-state actors, treaties, human capital, foreign threats, allied and NATO

¹⁴ As evidenced in Colin Schultz, "Globally, Deaths From War And Murder Are in Decline," Smithsonian, March 21st, 2014; and reference in the 2018 NPR.

¹⁵ Colin Schultz, "Globally, Deaths From War And Murder Are in Decline," Smithsonian, March 21st, 2014.

commitments, and nonproliferation and threat reduction), employment policy (how does the presidential administration plan to use deterrence, offense, defense, chemical/biological deterrence, and civilian factors), procurement policy (what is the presidential administration planning to buy or fund such as delivery systems, warheads, command, control, and communications systems, critical infrastructure, etc.), and deployment policy (where and how are nuclear systems such as ICBMs, SLBMs, bombers, and non-strategic (NATO) forces going to be used?). This will enable a general summary of nuclear policy and priority and allow trends to be identified and examined.

In addition to using NPRs as primary sources, scholarly publications about these documents are abundant (with exception to the 2018 NPR) and will be used to inform the analysis. NPRs are the assessment of the current presidential administration and the DoD. Scholarly documents provide additional perspectives and constructive criticism to NPRs.

Themes identified by the matrix will enhance our general understanding of the trends in U.S. nuclear policy since the end of the Cold War. The analysis will also identify themes and trends in U.S. nuclear policy that might have escaped notice. Identifying these themes and variables can give some indications of current trends and potential changes in the United States' nuclear policy.

F. THESIS OVERVIEW

This thesis will begin with a short description of NPRs and the reactive material related to each, and will explain what a white paper is and how it is used. Understanding the definition of a white paper is crucial to understanding the purpose and intent of NPRs as a presidential administration tool or platform for conveying nuclear policy. The subsequent two chapters will identify and then analyze trends in U.S. nuclear policy as defined by NPRs. To conclude, themes will be applied to controversy and reaction to NPRs to fill gaps and holes in responsive literature. This structure was chosen since NPRs are primary sources and are the base of the research matrix.

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II. WHAT IS A NUCLEAR POSTURE REVIEW?

The United States Nuclear Posture Review (NPR) is a white paper produced periodically by the Department of Defense (DoD) outlining U.S. nuclear capabilities, policies, and future modernization plans. Definitions of white papers are often vague. Nevertheless, white papers are usually government reports that not only provide information about specific issues or capabilities, but also explain future objectives and desired policies as well. NPRs are used to explain the nuclear philosophies and policies of specific administrations to the American military, the public, allies, and foes. The information contained within NPRs help observers understand both the current and future U.S. nuclear posture.

This thesis will examine all U.S. government white papers that address the U.S. nuclear posture. The so called “Bottom Up Review,” conducted by the William J. Clinton administration in 1994, was the first government white paper that served the function of an NPR. The second, and more controversial NPR was undertaken by the George W. Bush administration in 2001–2002. The third NPR, which reflected the ideology of the “Prague Spring,” was undertaken by the Barack H. Obama administration in 2010. The most recent NPR was conducted by the Donald J. Trump administration in 2018.

NPRs are directed as a matter of law by Congress. Although they are undertaken by the DoD, other stakeholders in nuclear strategy and force structure generally participate in undertaking the review. The other government agencies include the Department of Energy (DOE), Department of State (DOS), the Intelligence Community (IC), and the services. These other agencies bring their own perspectives and concerns to the review process. For instance, according to Amy F. Woolf of the Congressional Research Service (CRS), “DOE, and its semiautonomous National Nuclear Security Administration (NNSA), oversee the research, development, testing, and acquisition programs that produce, maintain, and sustain the nuclear warheads.”¹⁶ Woolf adds that, “DoD develops,

¹⁶ Amy F. Woolf, *The U. S. Nuclear Weapons Complex: Overview of Department of Energy Sites*, CRS Report No. R45306 (Washington, DC: Congressional Research Service, 2018).

deploys, and operates the missiles and aircraft that deliver the nuclear warheads.”¹⁷ Furthermore, the role of the IC cannot be underappreciated. According to Charles Ball, “If the U.S. intelligence community fails to stop even a small percentage of plots to use WMD against the United States, the consequences could be catastrophic. Ergo, the need for exquisite intelligence.”¹⁸ A Nuclear Posture Review can thus reflect a “whole of government” perspective on U.S. nuclear weapons policy.

NPRs are not necessarily stand-alone documents. The original post-Cold War NPR in 1994 was a supplement to the 1993 Bottom-Up Review.¹⁹ Other NPRs have coincided with the DoD’s Quadrennial Defense Review (QDR) and have been closely related to the National Security Strategy (NSS) documents. Recently, the Trump administration unveiled the 2019 Missile Defense Review (MDR) in the same format as an NPR and containing much of the same language and information.²⁰ Furthermore, the 2018 NPR was linked to the Defense Intelligence Agency’s (DIA) 2018 Global Nuclear Landscape report.²¹

A. 1994 NPR

The NPRs themselves vary significantly in size, format, and production. In the immediate aftermath of the Cold War, the Clinton administration, with its so-called “Bottom-Up Review” began a new exercise in transparency by reviewing national defense capabilities much like the modern Quadrennial Defense Review. From the Clinton administration’s report, the Nuclear Posture Review emerged as an extension focusing on nuclear capabilities and policy. The 1994 NPR was a collaborative effort of the DoD and armed services that was initiated due to changes in the security environment, DoD budget

¹⁷ Woolf, *The U. S. Nuclear Weapons Complex*.

¹⁸ Charles Ball, “Intelligence and the NPR,” in *Nuclear Transformation, The New U.S. Nuclear Doctrine*, ed. James J. Wirtz and Jeffrey A. Larsen (New York, N.Y.: Palgrave Macmillan, 2005), 128.

¹⁹ Department of Defense, *Report on the Bottom-Up Review*, Washington, DC: Office of the Secretary of Defense, 1993.

²⁰ Department of Defense, *Missile Defense Review*, Washington, DC: Office of the Secretary of Defense, 2019.

²¹ Defense Intelligence Agency, *Global Nuclear Landscape 2018*.

constraints, and to plan substantial reductions.²² Intended to be a comprehensive review of policies and forces,²³ it was a compilation of press releases including statements, speeches, and slides that at times got off topic due to the informal nature.

At the end of the Cold War, the public began to widely disregard nuclear weapons. Nonetheless, debate continued among scholars and politicians throughout the arms control, nonproliferation, and international political communities about the contemporary role of weapons of mass destruction. The 1994 NPR was hailed by the 1995 Annual Defense Report as being, “the first review of nuclear policy in the post-Cold War world, the first such review in 15 years, and the first review ever to include policy, doctrine, force structure, command and control, operations, supporting infrastructure, safety, security, and arms control.”²⁴ The 1994 NPR did not create much of a stir in policy circles. It seemed to reflect an expected effort to generate a “peace dividend” following the collapse of the Soviet Union. The available commentary depicts the nuclear posture review as relatively benign. Dunbar Lockwood, in an issue of *Arms Control Today* just two months after the release of the 1994 NPR, dismisses many of Clinton’s policies announced in the review when he says that, “the NPR contains no fundamental changes in doctrine on the use of nuclear weapons.”²⁵ Available media reports on the 1994 NPR, such as the small “Washington Outlook” snippet in *Aviation Week and Space Technology* printed in Figure 1, simply listed the recommendations imposed by the review. Today, 25 years after the first NPR was released, it is still not widely discussed or debated.

²² Department of Defense, *The Nuclear Posture Review*, Washington, DC: Office of Assistant Secretary of Defense, 1994.

²³ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁴ *Annual Report to the President and Congress*, Washington, DC: United States Department of Defense, 1995, 83.

²⁵ Dunbar Lockwood, “New Nuclear Posture Review Shows Little Change in Policies,” *Arms Control Today* 24, no. 9 (November 1st, 1994): 27.

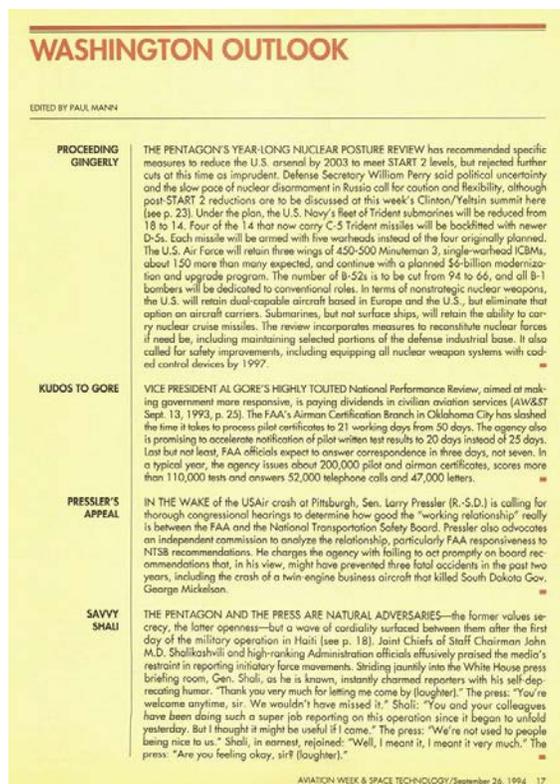


Figure 1. List of the recommendations imposed by the NPR, printed without commentary in *Aviation Week and Space Technology* September 26, 1994²⁶

An Elusive Consensus by Janne E. Nolan is one of the only sources of information on the 1994 NPR. Nolan provides an unbiased and thorough account of the review;²⁷ however, she critiques the 1994 NPR as being bureaucratic and flawed in its production design.²⁸ Nolan's book offers an invaluable glimpse into public reaction at the time, stating that media was excited about the review in general. There was an expectation that Ashton "Ash" Carter, then the Assistant Secretary of Defense for International Security Policy would "reinvent nuclear strategy."²⁹

²⁶ Source: Paul Mann, "Proceeding Gingerly," *Aviation Week and Space Technology*, September 26, 1994.

²⁷ Janne E. Nolan, *An Elusive Consensus: Nuclear Weapons and American Security After the Cold War*, Washington, DC: Brookings Institution Press, 1999, 35–62.

²⁸ Nolan, *An Elusive Consensus*, 103.

²⁹ Nolan, *An Elusive Consensus*, 41.

The Nautilus Institute for Security and Sustainability claims that there was infighting during production of the 1994 NPR, particularly surrounding Ash Carter.³⁰ Nolan sheds light on the internal clash that took place during production,³¹ provides evidence of partisan opposition to the NPR by Republicans,³² and shows that military leaders, particularly at the U. S. Strategic Command (STRATCOM), were not enthusiastic about the 1994 NPR.³³ According to Nolan, “Some senior military officers and career officials appointed to oversee the effort not only were opposed to many of the policy departures being put forward by political appointees but also, as became increasingly obvious, were not supportive of the overall review process.”³⁴ Furthermore, many senior military and government officials wanted to distance themselves from the project, whether due to bureaucracy or simply not wanting to be a part of the controversy, or they were preoccupied with other things.³⁵ These conspiracies erupted due to Secretary Carter directing the working groups to produce a wide range of options, including elimination of the ICBM force, which many were opposed to.³⁶

B. 2001 NPR

The 2001 NPR was more developed than the 1994 production. It was directed by Congress, compiled by the DoD, and associated with the End-to-End Review.³⁷ It was a classified report to the United States Congress not originally released to the public meant to, “Lay out the direction for American nuclear forces over the next five to ten years.”³⁸ The 2001 NPR was not released in a particular format, however it did contain organized

³⁰ “1994 Nuclear Posture Review,” *Nuclear Strategy*, December 31st, 2001.

³¹ Nolan, *An Elusive Consensus*, 51.

³² Nolan, *An Elusive Consensus*, 55.

³³ Nolan, *An Elusive Consensus*, 54–55.

³⁴ Nolan, *An Elusive Consensus*, 51.

³⁵ Nolan, *An Elusive Consensus*, 51.

³⁶ Nolan, *An Elusive Consensus*, 51–55; “1994 Nuclear Posture Review,” *Nuclear Strategy*, December 31st, 2001.

³⁷ United States Congress, *Excerpts of Classified Nuclear Posture Review*, Washington, DC: 2002.

³⁸ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

sections. Since the public release only consisted of excerpts from a classified report, the document was sometimes fragmented and hard to read. The scholarly community may never know how much information was held back.

The 2001 NPR was the first NPR to generate a significant amount of reaction from the academic and policy community. It began a trend of scholarly and non-scholarly works containing opposition than support to implications set forth by NPRs, particularly the 2001 and 2018 NPRs. Non-military reactions to NPRs domestically follow broader political outlooks; positive response typically comes from conservative authors and negative response comes from observers that embrace a liberal perspective.

Scott Westan placed the 2001 NPR in his so-called broad deterrence camp in his assessment of different camps of nuclear policy in anticipation of the 2010 NPR.³⁹ Westan, along with many others, believes that the reinvention of the nuclear triad was the most important part of the 2001 NPR. He describes media reports on the 2001 NPR as being alarmist, particularly the *Los Angeles Times* and the *New York Times*.⁴⁰ Westan challenges the response to the 2001 NPR when he claims that, “What most critiques fail to take into account is the degree to which the NPR is separated from academic and social debates about nuclear weapons.”⁴¹ Westan adds that supporters believe it was a, “critical step forward in achieving national security goals.”⁴² Keith Payne, an author of the 2001 NPR, even wrote an article entitled “The Nuclear Posture Review: Setting the Record Straight” to defend the report due to the significant amount of alarmist response.⁴³

The 2001 NPR met its heaviest resistance for seeking to acquire an earth penetrating nuclear warhead.⁴⁴ This created a conversation about how the United States should

³⁹ Scott Westan, “Preparing for the 2009 Nuclear Posture Review: Post-Cold War Nuclear Deterrence and the 2001 NPR Debate,” *Strategic Insights* 8, no. 1 (January 2009).

⁴⁰ Scott Westan, “Preparing for the 2009 Nuclear Posture Review.”

⁴¹ Scott Westan, “Preparing for the 2009 Nuclear Posture Review.”

⁴² Scott Westan, “Preparing for the 2009 Nuclear Posture Review.”

⁴³ Keith B. Payne, “The Nuclear Posture Review: Setting the Record Straight,” *The Washington Quarterly* 28 no. 3 (June 1st, 2005): 133-151.

⁴⁴ “The Nuclear Posture Review: What Role for Nuclear Weapons?” *Strategic Comments* 8, no. 3 (April 1st, 2002), 1–2.

respond to the proliferation of chemical and biological weapons of mass destruction (WMD), relocatable targets, and deeply buried or reinforced targets. Steve Fetter and Charles L. Glaser contradicted the 2001 NPR by claiming that, “Most underground facilities also can be defeated with conventional weapons if good intelligence is available... thus, nuclear weapons would be useful for defeating hard and deeply buried targets only under a fairly narrow range of circumstances.”⁴⁵ Furthermore, James A. Russell and James J. Wirtz claim that the Middle East was becoming the focus of U.S. nuclear strategy.⁴⁶ The 2001 NPR also surfaced dialog about negative security assurances, which according to Russell and Wirtz are “statements made by U.S. policymakers that the United States will not use nuclear weapons against non-nuclear weapons states that are also signatories of the Non-proliferation Treaty (NPT).”⁴⁷ Critics scrutinized negative security assurances claiming that the 2001 NPR identified non-nuclear states as potential targets.⁴⁸ Russell and Wirtz conclude that these concerns are absurd, because the U.S. only intended to use nuclear weapons against states with WMD.⁴⁹

Notably, the best source this research found for reactions to the 2001 NPR both positive and negative was *Nuclear Transformation: The New U.S. Nuclear Doctrine* edited by James J. Wirtz and Jeffrey A. Larsen.⁵⁰ Unfortunately, examining reactions to NPRs in-depth falls outside the scope of this thesis. However, the 2001 NPR was successful in stimulating discussions of North Atlantic Treaty Organization (NATO) and non-strategic

⁴⁵ Steve Fetter and Charles L. Glaser, “Critiquing the NPR’s New Nuclear Missions,” in *Nuclear Transformation, The New U.S. Nuclear Doctrine*, ed. James J. Wirtz and Jeffrey A. Larsen (New York, NY: Palgrave Macmillan, 2005), 25–26.

⁴⁶ James A. Russell and James J. Wirtz, “Nuclear Weapons, War with Iraq, and U.S. Security Strategy in the Middle East,” *Strategic Insights* 1, no. 6 (August 2002).

⁴⁷ James A. Russell and James J. Wirtz, “Negative Security Assurances and the Nuclear Posture Review,” *Strategic Insights* 1, no. 5 (June 2002).

⁴⁸ Russel and Wirtz, “Negative Security Assurances and the Nuclear Posture Review.”

⁴⁹ Russel and Wirtz, “Negative Security Assurances and the Nuclear Posture Review.”

⁵⁰ James J. Wirtz and Jeffrey A. Larsen, eds., *Nuclear Transformation: The New U.S. Nuclear Doctrine* (New York, N.Y.: Palgrave Macmillan, 2005).

nuclear weapons, arms control, nuclear infrastructure, and power balances between states such as India and China.⁵¹

C. 2010 NPR

The 2010 NPR was revolutionary in format. It was released in the form of an official report with sections, graphics, and a table of contents.⁵² Titled the “Nuclear Posture Review Report,” the 2010 NPR states it was legislatively mandated and created by the DoD.⁵³ According to then Secretary of Defense Robert M. Gates, the 2010 NPR “provides a roadmap for implementing President Obama’s agenda for reducing nuclear risks to the U. S., allies and partners, and the international community.”⁵⁴

Response to the 2010 NPR was more positive than the previous NPRs, but far from exclusively optimistic. After the signing of New START (Strategic Arms Reduction Treaty) by President Obama in Prague in 2010, much of the reactionary scholarly works to the 2010 NPR focused on international relations implications. As Westan predicted, the 2010 NPR focused on offering a vision for the U.S. moving toward a minimum deterrent.⁵⁵ Paul Meyer stated that

The salient issues of the review from an international perspective were the definition of the role for nuclear weapons in U.S. strategy; the nature of the security assurances the U.S. was prepared to give to non-nuclear weapons states; what action the U.S. would take on outstanding nuclear disarmament commitments; what would be done to strengthen nonproliferation and nuclear security; and how the U.S. would approach relations with other nuclear weapons processing states.⁵⁶

⁵¹ Wirtz and Larsen eds., *Nuclear Transformation*.

⁵² Department of Defense, *Nuclear Posture Review Report*, Washington, DC: Office of the Secretary of Defense, 2010.

⁵³ Department of Defense, *Nuclear Posture Review Report*, 2010, i.

⁵⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, i.

⁵⁵ Scott Westan, “Preparing for the 2009 Nuclear Posture Review.”

⁵⁶ Paul Meyer, “Policy or Posturing: The U.S. Nuclear Posture Review in an International Context,” *International Journal* 66, no. 3 (July 1st, 2011), 665.

Many of the reactions to the 2010 NPR that fell into the foreign affairs category questioned whether or not the U.S. was setting a good example for nonproliferation efforts. Scott D. Sagan and Jane Vaynman in their article entitled, “Lessons Learned from the 2010 Nuclear Posture Review” contend that they, “find convincing evidence that U.S. nuclear disarmament initiatives have had a positive influence in a number of countries, along with a mixed record in many others (where at least some indicators suggest that a government may be positively influenced in the future).”⁵⁷ However, David Yost argues that reduced numbers of nuclear weapons are a bad thing for NATO and Europe. Yost claims that analysts exaggerated the benefits of minimal nuclear deterrence; that NATO countries rely on United States nuclear weapons for more than just deterrence against a nuclear attack but also against conventional aggression.⁵⁸

Secondly to international relations issues, the 2010 NPR’s domestic policy goals set nuclear nonproliferation and disarmament as fundamental.⁵⁹ According to Marco J. Lyons, “The 2010 NPR touched off debate about the particular challenges and threats of reducing to very low nuclear arms levels (aspects of this debate reach back to the 1990s). Competing arguments over abolition—and what some authors have called ‘delegitimization’—have been revived, but they are not significantly different from those advanced in earlier generations of disarmament thinking.”⁶⁰ This includes the concept of “Global Zero,” an initiative within the 2010 NPR that had been introduced by President Obama in a 2009 speech in Prague as a world free of nuclear weapons.⁶¹

⁵⁷ Scott D. Sagan and Jane Vaynman, “Lessons Learned from the 2010 Nuclear Posture Review,” *The Nonproliferation Review* 18, no. 1 (March 1st, 2011), 238.

⁵⁸ David S. Yost, “Strategic Stability in Europe,” *The Nonproliferation Review* 20, no. 2 (June 27th, 2013), 236.

⁵⁹ Marco J. Lyons, “U.S. Nuclear Policy, Strategy, and Force Structure: Insights and Issues from the 1994, 2001, and 2010 Nuclear Posture Reviews” (Master’s Thesis, Naval Postgraduate School, 2014), 15.

⁶⁰ Lyons, “U.S. Nuclear Policy, Strategy, and Force Structure,” 15–16.

⁶¹ “Remarks by President Barack Obama,” The White House: Office of the Press Secretary (April 5th, 2009).

D. 2018 NPR

The 2018 NPR follows the same format as the 2010 NPR; however, it is almost fifty percent longer. Mandated by Congress, then Secretary of Defense James Mattis wrote that President Donald J. Trump directed the DoD on January 27, 2017, “to conduct a new [NPR] to ensure a safe, secure, and effective nuclear deterrent that protects the homeland, assures allies and above all, deters adversaries.”⁶² The 2018 NPR was much more blunt than its predecessors, it attempted to be clear and concise on its policies, plans, and figures, and most importantly describes the details of past administrations’ failings to improve the U.S. nuclear posture. Further discussion on these policies, plans and figures will be conducted in Chapter II.

The 2018 NPR under President Trump has been extremely controversial; inciting aggressive debates from both sides of the aisle. Watchdog groups such as War on the Rocks and the Arms Control Association both publish a large number of articles, typically positive and negative responses, respectively. According to Frank A. Rose and Benjamin Bahney of War on the Rocks, democrats need to respect U.S. nuclear policy and strategic stability; that China and Russia are not only rapidly modernizing their militaries but are also becoming more aggressive in their regions.”⁶³ Titles among articles published by the Arms Control Association indicate quite the opposite opinion such as “Effective Arms Control Under Threat,” “Self-Made Iran Crisis Goes from Bad to Worse,” “Bolton’s Attempt to Sabotage New START,” and “Trump Arms Control Gambit: Serious or a Poison Pill?” One article published by the Arms Control Association admits that the Trump administration is “setting out a clear marker for Iran as to what constitutes unacceptable nuclear behavior.”⁶⁴ However, the same authors believe that President Trump has simply caused a renewed nuclear crisis with Iran.⁶⁵

⁶² Department of Defense, *Nuclear Posture Review*, Washington, DC: Office of the Secretary of Defense, 2018, I.

⁶³ Frank A. Rose and Benjamin Bahney, “Reassuring Allies and Strengthening Strategic Stability: An Approach to Nuclear Modernization for Democrats,” *War on the Rocks*, April 16th, 2019.

⁶⁴ Eric Brewer and Richard Nephew, “Seeing Red in Trump’s Iran Strategy,” *Arms Control Today* 49 no. 6 (July/August 2019).

⁶⁵ Brewer and Nephew, “Seeing Red in Trump’s Iran Strategy.”

The 2018 NPR led to heated debate among scholars as well, particularly foreign scholars—allies and foes alike. According to Bahram M. Rajaee and Mark J. Miller, “Too often, U.S. national security and foreign policy debates are bereft of any real appreciation of non-U.S. perspectives—an unfortunate pattern.”⁶⁶ This theory is evidenced in the response to the 2018 NPR. Anna Peczeli claims that the 2018 NPR is inciting a return to great power competition because it abandons, “the balance between arms control, and maintaining a safe, secure, and effective nuclear arsenal.”⁶⁷ The 2018 NPR also generated a negative response among allies. Many expressed a concern that President Trump’s NPR puts the United States first and does not account for the impact the document will have on the policies of other nuclear weapon states.⁶⁸ This was surprising since the it contained strong rhetoric in support of allied and NATO commitments. According to Jacek Durkalec,

While the NPR has elements of continuity, the changes it proposes will have an impact on the U.S. contribution to NATO’s nuclear deterrence posture. The document raises several questions about NATO’s future nuclear trajectory: is NATO on the right path for adapting and strengthening its deterrence policy and posture? How should NATO allies approach a nuclear confrontation with Russia? What kinds of nuclear capabilities are sufficient for deterrence? What should be the future of NATO’s collective deterrence? What should be the balance between deterrence and disarmament? How should NATO adapt its policy on nuclear arms control? What kind of nuclear message should NATO send to the outside world? How the NATO allies approach these questions is significant. One of the key priorities of the NPR is to strengthen extended deterrence and assurance, and without Allied support these goals will not be achieved.⁶⁹

Therefore, despite strong statements in the 2018 NPR affirming the United States to its commitment to NATO, the report seems to raise more questions than answers in the

⁶⁶ Bahram M. Rajaee and Mark J. Miller, *National Security Under the Obama Administration*, 1st Edition, New York: Palgrave Macmillan US, 2012, 1.

⁶⁷ Anna Peczeli, “The Trump Administration’s Nuclear Posture Review: Back to Great Power Competition,” *Journal for Peace and Nuclear Disarmament* 1, no. 2 (October 2018).

⁶⁸ Manpreet Sethi, “US Nuclear Posture Review 2018: Unwisely Reopening ‘Settled’ Nuclear Issues,” *India Quarterly* 74, no. 3.

⁶⁹ Jacek Durkalec, “The 2018 U.S. Nuclear Posture Review, NATO’s Brussels Summit and Beyond,” Center for Global Security Research: Lawrence Livermore National Laboratory, CA (June 2018), 3.

scholarly community. Interestingly, many of the negative scholarly responses refer to the 2018 NPR as “Trump’s NPR.”

Even though there is change, there is a significant amount of continuity to previous NPRs and presidential administrations.⁷⁰ According to Michal Smetana, “The specific policy guidance reflects, above all, the long-held views and priorities of the Department of Defense (DoD), and likely would not differ substantially under any other Republican administration in the current strategic environment.”⁷¹ Perhaps one reason why the 2018 NPR is so controversial is due to the aggressive measures the Trump administration has taken. Since the publication of the 2018 NPR, the Trump administration has withdrawn from the Intermediate Range Nuclear Forces (INF) Treaty⁷² and engaged both North Korea and Iran in aggressive diplomacy about each country’s respective nuclear programs. However, according to David Williams of the *Los Angeles Times*, at the same time, “The Trump administration has quietly dismantled or cut back multiple programs that were created after the Sept. 11, 2001, attacks to help detect and prevent terrorism involving weapons of mass destruction,”⁷³ contradicting many statements within the 2018 NPR.

E. POST-COLD WAR NUCLEAR TRENDS

None of the commentary on these NPRs offers a comparative analysis of the trends and themes since the end of the Cold War since the publication of the 2018 NPR. They fail to examine how many warheads are currently actively deployed, current command, control, and communications systems, and current defenses and non-proliferation efforts. No works ask the question of whether or not the U.S. nuclear enterprise effectively addresses the current threat environment. They generally explore the implications of force structure on future nuclear threats and security issues.

⁷⁰ “The Trump Administration’s Nuclear Posture Review,” *Strategic Comments* 24, no. 2 (February 7th, 2018).

⁷¹ Michal Smetana, “A Nuclear Posture Review for the Third Nuclear Age,” *The Washington Quarterly* 41, no. 3 (July 3rd, 2018): 138.

⁷² Michael R. Pompeo, “U.S. Withdrawal from the INF Treaty on August 2, 2019,” Press Release, United States Department of State, August 2nd, 2019.

⁷³ David Williams, “Times Investigation: Trump Administration Has Guttled Programs Aimed at Detecting Weapons of Mass Destruction,” *Los Angeles Times*, July 18th, 2019.

Realists would suggest that the United States' nuclear policy is shaped by the international threat environment as perceived by specific administrations. Construction of an NPR also is a bureaucratic exercise, involving different agencies and departments balancing their own interests and objectives with the overall foreign policy vision embraced by the President and his key advisors. NPRs are not only lenses into the inner workings and intentions of the current administration but tools to generate support and funding for nuclear programs and policies. Although rhetoric may be contradictory, when examined side by side, NPRs show common trends among administrations' nuclear policies encompassing all post-Cold War presidential administrations, regardless of political affiliation.

Themes identified in post-Cold War NPRs enhance our general understanding of the trends in U.S. nuclear policy since the end of the Cold War. The analysis also identified themes and trends in U.S. nuclear policy that might have escaped notice. Identifying these themes and variables can give some indications of current trends and potential changes in the United States' nuclear policy.

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III. TREND IDENTIFICATION IN POST-COLD WAR NPRS

The U.S. NPR has become a staple of post-Cold War United States nuclear force structure and policy, yet they raise more questions than answers. This thesis has created a matrix utilizing four criteria to identify and understand trends in post-Cold War U.S. nuclear policy as represented in the NPRs. These criteria are declaratory policy (what the administration says about nuclear weapons), employment policy (how the administration plans to use nuclear weapons), procurement policy (what the administration wants to acquire with regard to nuclear weapons), and deployment policy (how nuclear weapons and systems will be operationally structured). Underlying these criteria are a plethora of issues such as nuclear warhead production and maintenance, delivery systems, critical infrastructure, command and control, and human capital.

Identification of themes was a flexible process. While analyzing the four post-Cold War NPRs, some themes such as delivery systems stood out. Others, such as human capital, were more challenging to identify. The matrix allowed side-by-side comparison of NPRs and clear patterns and trends to be identified. The analysis began by comparing the formats, related documents, and production characteristics of NPRs. All four NPRs were legislatively mandated, had a direction set by the president, and to some extent were a collaborative effort of the DoD and armed services. Other agencies were included or referenced such as DOE, DOS, and the IC, but did not tend to play a significant role. While the original 1994 NPR was simply a compilation of press releases, the NPR evolved by 2018 into a larger, more formatted report—released in the form of a white paper with sections, graphics, and index information, indicating the growing importance of nuclear posture in the modern political environment.

Overall, elements of most NPRs seem to remain classified. Motivations behind each NPR are seemingly simple, yet they are an indication of the political environment in their time. The 1994 NPR was developed out of the 1993 Bottom-Up Review due to changes in the security environment, DoD budget constraints, and planning substantial reductions.⁷⁴

⁷⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

The 2001 NPR was mandated to “Lay out the direction for American nuclear forces over the next five to ten years.”⁷⁵ The 2010 NPR was a “roadmap for implementing President Obama’s agenda for reducing nuclear risks to the U.S., allies, and partners, and the international community.”⁷⁶ Lastly, the 2018 NPR was created “to ensure a safe, secure, and effective nuclear deterrent that protects the homeland, assures allies, and above all, deters adversaries.”⁷⁷ The language of the 1994 NPR indicates a “sigh of relief” after the Cold War and the 2001 NPR does not appear to be pessimistic in any way. By contrast, the rhetoric of the 2010 and 2018 NPRs are much more alarmist, demonstrating a return to worldwide nuclear risk and a need to respond appropriately.

A. DECLARATORY POLICY

Declaratory policy is a term used often in the realm of deterrence and nuclear policy. It is made up of assertions about the role of nuclear weapons in the current worldwide political environment. The trend matrix created by this thesis identified great power competition, the nuclear triad, nuclear command, control, and communications (NC3), critical infrastructure, nuclear terrorism and non-state actors, treaties, human capital and civilian employees, foreign threats, allied and NATO commitments, and nonproliferation and threat reduction to be declaratory themes among the NPRs.

1. Great Power Competition and U.S. Nuclear Force Structure

The 1994 NPR all but considered the days of great power competition to be over. Secretary of Defense William J. Perry commented that, “Now, with the end of the Cold War, that dark nuclear cloud has drifted away, and the whole world breathes easier in the sunlight.”⁷⁸ This meant a shift from mutually assured destruction (MAD) to an environment of mutually assured safety (MAS).⁷⁹ Although there is no specific mention

⁷⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁷⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, i.

⁷⁷ Department of Defense, *Nuclear Posture Review*, 2018, I.

⁷⁸ Department of Defense, *The Nuclear Posture Review*, 1994.

⁷⁹ Department of Defense, *The Nuclear Posture Review*, 1994.

of great power competition in the publicly released version of the report, the 2001 NPR declares that it aims to dissuade adversaries from entering competition.⁸⁰ The 2010 NPR also had no specific mention of great power competition, yet outlined key objectives of maintaining a stable bilateral balance and avoiding competition.⁸¹ The return of great power competition was a major theme in the 2018 NPR. It claimed that Russian actions were at fault for the return of great power competition and that China was seeking to counter the United States⁸² Nevertheless, the 2018 NPR starkly declares that, “The United States does not wish to regard either Russia or China as an adversary and seeks stable relations with both.”⁸³ Rhetoric such as this indicates that the Trump administration does not seek a return to great power competition; however, it is taking a realist approach to international relations and seems to be preparing for a world where Russia and China become more assertive.

U.S. response to great power competition is achieved through the nuclear triad, the U.S. nuclear posture of Intercontinental Ballistic Missiles (ICBM), Submarine Launched Ballistic Missiles (SLBM), and bomber aircraft. Although support of the nuclear triad was maintained from the Cold War, the 1994 NPR said that it was “time to change the way we think about nuclear weapons.”⁸⁴ The 2001 NPR made a dramatic declaration to abolish the nuclear triad in favor of a “New Triad,” composed of nuclear and non-nuclear offensive strike systems, active and passive defenses, and a revitalized defense infrastructure.⁸⁵ The new triad and the 2001 NPR were meant to be a blueprint for transforming U.S. strategic posture and changing the approach to the role of nuclear offensive forces in deterrent strategy.⁸⁶ The 2010 NPR made no mention of the 2001 NPR’s new triad, but rather declared that the Obama administration’s perspective on the triad was that it should be safe,

⁸⁰ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁸¹ Department of Defense, *Nuclear Posture Review Report*, 2010.

⁸² Department of Defense, *Nuclear Posture Review*, 2018, 6–7.

⁸³ Department of Defense, *Nuclear Posture Review*, 2018, 7.

⁸⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

⁸⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁸⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

secure, and effective.⁸⁷ The 2010 NPR asserted that the U.S. maintained more nuclear weapons than it needed to for deterrence.⁸⁸ It further considered elimination of one leg of the traditional nuclear triad; however, it chose to minimize the triad and make it more efficient.⁸⁹ The 2018 NPR does not make any dramatic declarations of change to the nuclear triad, it simply concurs that it is the most cost-effective and strategically sound way of producing deterrence.⁹⁰ The 2018 NPR additionally states that the triad is supplemented by NATO dual-capable aircraft and NC3, and supports diversity and flexibility.⁹¹

The importance of NC3 grows throughout the evolution of the post-Cold War NPRs. The 1994 NPR declared it would maintain the current system, and bounded C3 with intelligence.⁹² The 2001 NPR characterized its own version of NC3: command, control, planning, and intelligence.⁹³ The Bush administration NPR declared that command and control was critical to ensure effectiveness of the force structure and that it will become more complex and require augmentation, modernization, and replacement.⁹⁴ The 2001 NPR also closely links command and control to targets as a means of ensuring strike and missile defense capability.⁹⁵ The 2010 NPR declared that NC3 must provide maximum presidential decision-making time.⁹⁶ The 2018 NPR dramatically stated that NC3 had not been updated for three decades and that it needs modernization.⁹⁷ It declared that NC3 must be flexible and capable to adjust to change to enable tailored deterrence and meet diverse and changing threats.⁹⁸ Closely linking NC3 to the nuclear triad throughout the

⁸⁷ Department of Defense, *Nuclear Posture Review Report*, 2010.

⁸⁸ Department of Defense, *Nuclear Posture Review Report*, 2010.

⁸⁹ Department of Defense, *Nuclear Posture Review Report*, 2010.

⁹⁰ Department of Defense, *Nuclear Posture Review*, 2018.

⁹¹ Department of Defense, *Nuclear Posture Review*, 2018.

⁹² Department of Defense, *The Nuclear Posture Review*, 1994.

⁹³ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁹⁴ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁹⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁹⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, x.

⁹⁷ Department of Defense, *Nuclear Posture Review*, 2018, 56.

⁹⁸ Department of Defense, *Nuclear Posture Review*, 2018.

entirety of the report, the 2018 NPR specifically declares that NC3 has five crucial functions: detection, warning, and attack characterization; adaptive nuclear planning; decision-making conferencing; receiving presidential orders; and enabling the management and direction of forces.⁹⁹

NC3 can be closely linked with critical infrastructure. Apart from the 1994 NPR, each NPR purports that nuclear infrastructure is aging and in need of investment. The 1994 NPR aimed to maintain selected portions of the defense industrial base that are unique to strategic and nuclear systems.¹⁰⁰ This plan to simply maintain systems was first challenged by the 2001 NPR. It claimed that underinvestment and shortfalls plagued critical infrastructure.¹⁰¹ The 2010 NPR declared that investments must be made in critical infrastructure—in particular the Stockpile Stewardship Program (SSP).¹⁰² The 2010 NPR claimed that investments “will allow the United States to shift away from retaining large numbers of non-deployed warheads as a hedge against technical or geopolitical surprise, allowing major reductions in the nuclear stockpile.”¹⁰³ Furthermore, infrastructure must be integrated among federal authorities in order to be maintained.¹⁰⁴ The 2018 NPR shares this sentiment, saying that nuclear infrastructure has suffered through decades of neglect and underfunding yet an effective, responsive, and resilient system is necessary to flexibility.¹⁰⁵ The 2018 NPR bluntly claims that the DOE says infrastructure is atrophied, and that the Trump administration will resume underground testing if necessary.¹⁰⁶ Lastly, the 2018 NPR defines the DoD as defining the requirements for nuclear weapon

⁹⁹ Department of Defense, *Nuclear Posture Review*, 2018, 56.

¹⁰⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁰¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁰² Department of Defense, *Nuclear Posture Review Report*, 2010.

¹⁰³ Department of Defense, *Nuclear Posture Review Report*, 2010, xi.

¹⁰⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, xiv.

¹⁰⁵ Department of Defense, *Nuclear Posture Review*, 2018, 60–64.

¹⁰⁶ Department of Defense, *Nuclear Posture Review*, 2018, 60–64.

infrastructure, and tasks NNSA with overseeing research, development, testing, assessment, and production programs for meeting DoD requirements.¹⁰⁷

Part of nuclear critical infrastructure as outlined by NPRs is human capital. Much like the 1994 NPR's laissez-faire attitude toward infrastructure, The Clinton administration NPR also proposes shifting nuclear scientists into the civilian sector.¹⁰⁸ The 2001 NPR is the first to declare that personnel with critical skills must be preserved. It claims that the United States must transfer design knowledge between generations and exercise skills for adapting warheads to delivery systems.¹⁰⁹ The 2010 NPR asserts that morale is slipping due to aging facilities and lack of national consensus on the role of nuclear weapons.¹¹⁰ It adds that emphasis must be placed on enhancing personnel and that human capital must be managed, investments must be made, and that it is difficult to recruit and maintain scientists and engineers from the next generation.¹¹¹ The 2018 NPR further hails nuclear personnel for their service and dedication, despite the rigorous standards they are held to.¹¹² It claims that the U.S. will invest in personnel and various NNSA and service responsiveness programs—claiming retaining personnel requires opportunities for exercising skills.¹¹³

Although the first two post-Cold War NPRs were silent on the role of civilians in the nuclear weapon industry, the Obama and Trump administrations' NPRs both made specific mention. The 2010 NPR was the first to delineate civilian personnel as being involved in nuclear weapons infrastructure,¹¹⁴ even though it had very little say on the topic. The 2018 NPR not only continued this demarcation but also represented civilians as decision makers.¹¹⁵ Furthermore, the 2018 NPR commented on the decline in civilian and

¹⁰⁷ Department of Defense, *Nuclear Posture Review*, 2018, 60–64.

¹⁰⁸ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁰⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹¹⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, 40–41.

¹¹¹ Department of Defense, *Nuclear Posture Review Report*, 2010, 40–41.

¹¹² Department of Defense, *Nuclear Posture Review*, 2018, 42.

¹¹³ Department of Defense, *Nuclear Posture Review*, 2018, 63.

¹¹⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 21.

¹¹⁵ Department of Defense, *Nuclear Posture Review*, 2018.

military wartime deaths since the creation of nuclear weapons,¹¹⁶ as shown in Figure 2, and indicates its desire to pursue technology which would minimize civilian casualties.¹¹⁷

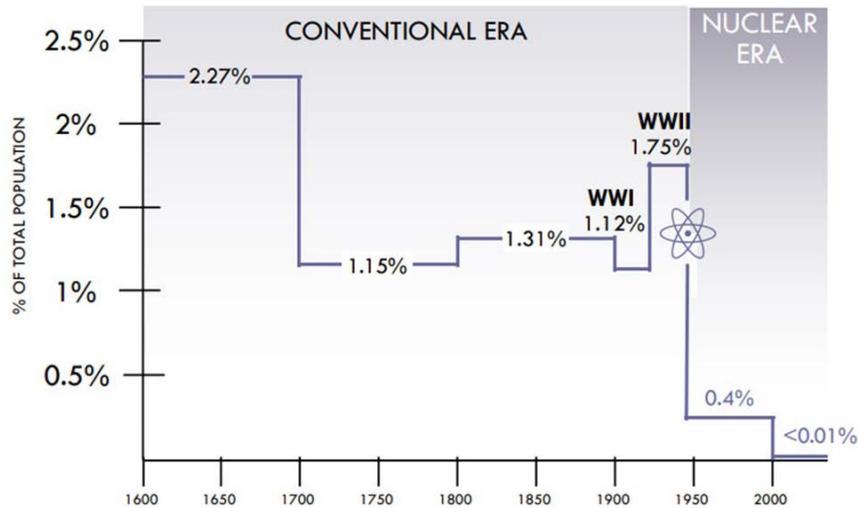


Figure 2. Chart from the 2018 NPR on wartime fatalities as a percent of the world population¹¹⁸

2. Treaties and Allied Commitments

Treaties are an important part of declaratory policy. Each of the four post-Cold War NPRs had a significant amount of discussion on the topic. The 1994 NPR emphasized the importance of treaty implementation post-Cold War, particularly START.¹¹⁹ It stated that the U.S. will continue to conform to current treaties, create force plans based on assumed implementation of START I and START II, and fully implement the Nonproliferation Treaty (NPT), Biological Weapons Convention (BWC), and Chemical Weapons Convention (CWC).¹²⁰ The 2001 NPR explained that the U.S. was complying with START I and that transparency was a good baseline for treaties, yet START II was

¹¹⁶ Department of Defense, *Nuclear Posture Review*, 2018, 17.

¹¹⁷ Department of Defense, *Nuclear Posture Review*, 2018, 23.

¹¹⁸ Source: Department of Defense, *Nuclear Posture Review*, 2018, 17.

¹¹⁹ Department of Defense, *The Nuclear Posture Review*, 1994.

¹²⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

unacceptable, probably incompatible with the new triad.¹²¹ Furthermore, the 2001 NPR wanted to retain the United States' ability to test in the future and therefore would only comply with the Comprehensive Test Ban Treaty (CTBT), making no mention of ratification.¹²² The 2010 NPR stated that it would seek ratification of the CTBT.¹²³ It also accused other countries of violating the NPT (in particular North Korea and Iran) and stated that the NPT must be renewed and strengthened.¹²⁴ It furthermore described development of New START to drastically reduce the Moscow Treaty numbers, and proposed a fissile material cutoff treaty.¹²⁵ The 2018 NPR clearly states that it will comply with all current treaties and agreements, including the NPT, and that they contribute to risk reduction through diplomacy, but only if verifiable.¹²⁶ Nevertheless, The Trump administration NPR claims Russia is violating multiple treaties, in particular the Intermediate Range Nuclear Forces (INF) Treaty.¹²⁷ Furthermore, the 2018 NPR declares it does not support the Nuclear Weapons Ban Treaty, stating that it is “fueled by wholly unrealistic expectations of the elimination of nuclear arsenals without the prerequisite transformation of the international security environment.”¹²⁸ Lastly, the 2018 NPR declared that it would not seek ratification of the CTBT yet still supports the Comprehensive Nuclear Test Ban Treaty Preparatory Committee, otherwise known as the Preparatory Commission.¹²⁹ The Commission is a UN organization whose objective is to “achieve the object and purpose of the Treaty, to ensure the implantation of its provisions, including those for international

¹²¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹²² United States Congress, Excerpts of Classified Nuclear Posture Review.

¹²³ Department of Defense, *Nuclear Posture Review Report*, 2010, 46.

¹²⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, vi, 46.

¹²⁵ Department of Defense, *Nuclear Posture Review Report*, 2010, vii.

¹²⁶ Department of Defense, *Nuclear Posture Review*, 2018, 70–74.

¹²⁷ Department of Defense, *Nuclear Posture Review*, 2018, 73.

¹²⁸ Department of Defense, *Nuclear Posture Review*, 2018, 72.

¹²⁹ Department of Defense, *Nuclear Posture Review*, 2018, xvii.

verification of compliance with the Treaty, and to provide a forum for consultation and cooperation among Member States.”¹³⁰

All four NPRs to some extent support U.S. allies and NATO partners. The importance of this element of declaratory policy is noted in domestic and international reactions to NPRs. The 1994 NPR simply maintained its commitments to U.S. allies and NATO.¹³¹ In its text, the 2001 NPR maintains its support of NATO and dual-capable aircraft; however, it proposes a review in fiscal year 2002.¹³² The 2010 NPR declared that the nuclear threat to NATO was historically low, U.S. presence was vital to cohesiveness and comfort of the states, and that any change to NATO’s posture should be thoroughly reviewed and decided upon by the alliance.¹³³ Notably, the 2010 NPR specifically mentions that no such alliance exists in the Asian theater; however, it asserts its support of current commitments in the region.¹³⁴ The 2018 NPR contained strong language in support of its allies and partners, and that reliable and credible partnerships would contribute to nonproliferation goals.¹³⁵ This is notable because a significant amount of scholarly response to the 2018 NPR accused the Trump administration of putting America first and disregarding NATO and allied commitments.

3. Nonproliferation and Worldwide Nuclear Threats

Nonproliferation and threat reduction are often achieved through treaties; however, statements made by administrations on these topics are very important to understanding the administrations’ philosophy. The 1994 NPR’s priority was to stem proliferation and coined the term “counterproliferation,” especially due to concern over “loose nukes,” or unsecured nuclear weapons within the former Union of Socialist Soviet Republics

¹³⁰ “Comprehensive Nuclear-Test-Ban Treaty (CTBT),” United Nations Office for Disarmament Affairs, accessed September 9th, 2019.

¹³¹ Department of Defense, *The Nuclear Posture Review*, 1994.

¹³² United States Congress, Excerpts of Classified Nuclear Posture Review.

¹³³ Department of Defense, *Nuclear Posture Review Report*, 2010, xii-xiii.

¹³⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, xiii.

¹³⁵ Department of Defense, *Nuclear Posture Review*, 2018.

(USSR).¹³⁶ The 1994 NPR declared its support for UN and international nonproliferation efforts, and communicated the Clinton administration's desire to hasten START I, START II, and future reduction negotiations.¹³⁷ The 2001 NPR had no specific mention of nonproliferation in the unclassified release of the report.¹³⁸ Although it did have a section entitled, "Nuclear Reductions and Implementations for Arms Control," the Bush Administration NPR did not contain any rhetoric in regard to worldwide initiatives.¹³⁹ The 2010 NPR was the first to set a framework for future policy to work toward "nuke zero," a world without nuclear weapons, and countering proliferation through a three-element approach.¹⁴⁰ The 2010 NPR declared that the U.S. would not develop new warheads or test current warheads, yet it would increase NNSA funding by twenty-five percent and focus strongly on enforcing consequences of NPT non-compliance.¹⁴¹ The 2018 NPR remarks that the United States will increase transparency and predictability to avoid miscalculation among other nuclear states.¹⁴² The 2018 NPR states that nonproliferation efforts must be verifiable and enforceable and therefore supports various international arms control organizations in hopes of an ultimate goal of one day eliminating nuclear, biological, and chemical weapons.¹⁴³

Each post-Cold War NPR outlines, to some degree, its assessment of foreign threats. The 1994 NPR was almost exclusively concerned with Russia, claiming that the former USSR was lagging on drawing down and still unstable and uncertain.¹⁴⁴ It declared that the United States must not become complacent, rather it should remain conscious of

¹³⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

¹³⁷ Department of Defense, *The Nuclear Posture Review*, 1994.

¹³⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹³⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁴⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, vi.

¹⁴¹ Department of Defense, *Nuclear Posture Review Report*, 2010.

¹⁴² Department of Defense, *Nuclear Posture Review*, 2018, 70–71.

¹⁴³ Department of Defense, *Nuclear Posture Review*, 2018, xvii, 2.

¹⁴⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

the way it conducts itself because these actions will influence Russia.¹⁴⁵ The 2001 NPR was concerned over the size and posture of Russian nuclear and conventional forces and the continuing development of Chinese forces, and identified the threat of potential contingency operations in North Korea, Iraq, Syria, Libya, and Iran.¹⁴⁶ The 2010 NPR continued this trend, stating that Russia and China were primary nuclear threats.¹⁴⁷ It declared that Russian relations at the time were good and that China and the United States were becoming more interdependent; however, there was concern over the rate at which China was expanding.¹⁴⁸ Furthermore, the 2010 NPR states that the United States must focus on reducing the nuclear ambitions of North Korea and Iran.¹⁴⁹ The 2010 NPR noted that the United States must strengthen International Atomic Energy Agency (IAEA) safeguards to impede nuclear trade and enforce consequences.¹⁵⁰ The 2018 NPR was the most blunt in terms of accusing states of posing a threat to the United States. It demonstrated that the U.S. has reduced its number and salience of nuclear weapons even though no other country is following its lead.¹⁵¹ It claimed North Korea is violating UN security council guidance and that Iran, despite its agreed-upon constraints, still has the capacity to produce a nuclear weapon in less than a year.¹⁵² The 2018 NPR is full of rhetoric about uncertainty and unanticipated threats and risks as well as concern over countries developing cyber capabilities.¹⁵³ Unlike any other NPR, the Trump administration's NPR specifically outlines tailored strategies for Russia, China, North Korea, and Iran.¹⁵⁴

¹⁴⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁴⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁴⁷ Department of Defense, *Nuclear Posture Review Report*, 2010, 4–5.

¹⁴⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 4–5.

¹⁴⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, 9.

¹⁵⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, 4.

¹⁵¹ Department of Defense, *Nuclear Posture Review*, 2018, 6.

¹⁵² Department of Defense, *Nuclear Posture Review*, 2018, 11–13.

¹⁵³ Department of Defense, *Nuclear Posture Review*, 2018.

¹⁵⁴ Department of Defense, *Nuclear Posture Review*, 2018, 30–34.

A potential worldwide nuclear threat could come from nuclear terrorism or non-state actors. The 1994 NPR was primarily concerned with nuclear materials falling into the wrong hands, especially in former USSR states.¹⁵⁵ The unclassified excerpts from the 2001 NPR do not specifically indicate concern over terrorist possession of nuclear weapons or material; however, it does state that, “Terrorist or rogue states armed with weapons of mass destruction will likely test America’s security commitments to its allies and friends.”¹⁵⁶ In this instance, WMD could also mean chemical or biological weapons. The 2010 NPR boldly claims that the WMD threat is growing and makes preventing nuclear terrorism its number one priority.¹⁵⁷ The Obama administration’s NPR, much like the 2001 NPR, specifically says that the United States’ Cold War-era arsenal is not suited to counter terrorism and proliferation of terrorism and non-state actors. According to the 2010 NPR, the U.S. should improve nuclear forensics to counter use and renew its commitment to holding anyone who supports proliferation accountable.¹⁵⁸ The 2018 NPR asserts that, “The United States will hold fully accountable any state, terrorist group, or other non-state actor that supports or enables terrorist efforts to obtain or employ nuclear devices.”¹⁵⁹ It directly challenges the Kim regime in this context.¹⁶⁰ The 2018 NPR’s proposed course of action is its so-called “defense-in-depth,” a multilayered approach encompassing such elements as securing nuclear weapons, enhancing cooperation with allies, and deterring state support for nuclear terrorism.¹⁶¹

B. PROCUREMENT POLICY

Procurement policy is like declaratory policy—it is what the presidential administrations plan to acquire with regard to nuclear weapons. Procurement policy was

¹⁵⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁵⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁵⁷ Department of Defense, *Nuclear Posture Review Report*, 2010, 9.

¹⁵⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 12.

¹⁵⁹ Department of Defense, *Nuclear Posture Review*, 2018, 67.

¹⁶⁰ Department of Defense, *Nuclear Posture Review*, 2018, 33.

¹⁶¹ Department of Defense, *Nuclear Posture Review*, 2018, 66–67.

identified in the matrix by statements in NPRs to purchase, invest, fund, develop, produce, replace, maintain, improve, modernize, research, or forecast for any component of the U.S. nuclear force structure. Common procurement themes in the four post-Cold War NPRs are delivery systems, warheads, NC3, and critical infrastructure.

1. Warheads and Delivery Systems

The centerpiece of the U.S. nuclear posture is the warheads themselves. The 1994 NPR stated that it would not produce any new-design warheads, rather it would maintain the current warheads.¹⁶² The 1994 NPR further asserted that it would accomplish this by ensuring Tritium availability, enhancing conventional capability for hard underground target defeat, and stated that it would not test or produce fissile material.¹⁶³ The 2001 NPR somewhat continued this trend by ensuring sustainment of the current stockpile.¹⁶⁴ However, the 2001 NPR controversially proposed development of an earth penetrating nuclear weapon to defeat hard and deeply-buried targets, and evaluation of a so-called Agent Defeat Weapon (ADW) to “deny access to, immobilize, neutralize, or destroy chemical or biological weapons.”¹⁶⁵ The 2010 NPR focused on extending the life of current warheads rather than building new warheads.¹⁶⁶ It asserted that life extension programs (LEPs) would be funded and preferred,¹⁶⁷ and that there would be no testing or developing of new warheads.¹⁶⁸ The 2018 NPR was dramatically different and much more specific than the other three post-Cold War NPRs in many aspects of procurement policy, particularly with regard to development of new warheads. The 2018 NPR sought to develop a low-yield SLBM, identify a replacement for the B-83-1 gravity bomb commonly carried on USAF bomber aircraft, and explore a common reentry system for all ballistic missiles,

¹⁶² Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁶³ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁶⁴ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁶⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁶⁶ Department of Defense, *Nuclear Posture Review Report*, 2010.

¹⁶⁷ Department of Defense, *Nuclear Posture Review Report*, 2010.

¹⁶⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 39.

potentially replacing the W78 Minuteman III warhead to field a new warhead on the ground-based strategic deterrent (GBSD)—the project to replace the ICBM fleet.¹⁶⁹ The 2018 NPR also notes that it will support an LEP for the B-61-12 gravity bomb, commonly carried on USAF bombers, while exploring modifications to fit it on the F-35 airframe, an LEP for the W76-1 Trident SLBM warhead, an LEP for the W80-4 ALCM warhead and synchronizing the warhead with the long range strategic option (LRSO) replacement program for air launched cruise missiles (ALCM), making alterations to the W88 Trident SLBM warhead, and sustaining the B-83-1 until a replacement can be found.¹⁷⁰

Delivery systems are just as important to the U.S. nuclear posture as the warheads themselves. The 1994 NPR quickly and clearly stated it would not produce more than twenty B-2 bomber aircraft, the U.S. would continue to produce the D-5 Trident II SLBM missile through 1995, replace the Minuteman III ICBM guidance and propulsion systems, and make upgrades to the B-52 bomber and Minuteman III coded control device.¹⁷¹ The 2001 NPR recommended beginning a next-generation ICBM by replacing the propulsion system, indicated a potential to replace the SLBM by 2029, and planned for a new bomber around 2040.¹⁷² There was considerably more discussion of air options in the 2001 NPR, including an aggressive modernization plan for bombers and potentially making the joint strike fighter (JSF, now called the F-35) dual capable, yet the it specifically stated it had no plans for a new ALCM.¹⁷³ The 2010 NPR was the first to announce a plan to create a capability for warheads to be interchangeable between delivery systems.¹⁷⁴ The report contained little discussion of actual replacement plans, but stated that studies must be conducted to replace missiles and submarines; the focus of the report was on modernization and maintenance, particularly in bombers and submarines.¹⁷⁵ The 2018 NPR described

¹⁶⁹ Department of Defense, *Nuclear Posture Review*, 2018.

¹⁷⁰ Department of Defense, *Nuclear Posture Review*, 2018.

¹⁷¹ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁷² United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁷³ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁷⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 39.

¹⁷⁵ Department of Defense, *Nuclear Posture Review Report*, 2010.

that, “DoD will explore prioritization of existing research and development funding for advanced nuclear delivery system technology and prototyping capabilities. This will support the U.S. development of hedging options and focus, as necessary, on the rapid development of nuclear delivery systems, alternative basing modes, and capabilities for defeating advanced air and missile defenses.”¹⁷⁶ This would include the Columbia Class program delivering twelve nuclear powered ballistic missile submarines (SSBN) to replace the Ohio Class SSBN, beginning studies in 2020 for SLBM replacement, complete the GBSB program for 450 launch facilities (LF) and 400 ICBMs to modernize facilities and replace the Minuteman ICBM by 2029, modernize and sustain the B-52 and B-2, develop the B-21 Raider to counter enemy advances in air defense which would supplement and eventually replace the current bomber fleet beginning in 2020s, replace the ALCM with the LRSO, and outfit the F-35 for nuclear capability.¹⁷⁷ Furthermore, the 2018 NPR would pursue a sea-launched cruise missile (SLCM)¹⁷⁸ and sought to potentially explore the option of fielding the W78 nuclear warhead on a U.S. Navy flight vehicle.¹⁷⁹ The W78 is currently used on Minuteman III ICBMs, and the 2018 NPR likely sought to modify the warhead to place on an SLBM.

2. NC3 and Critical Infrastructure

No statements of procurement intent were made for any elements of NC3 in the 1994 NPR.¹⁸⁰ The 2001 NPR sought to acquire new space, extremely high frequency, and cryptographic systems.¹⁸¹ It also planned for substantial investment in secure, wideband communications systems between decision makers, commands, and mobile commands.¹⁸² The 2010 NPR simply aimed to conduct initiatives to improve resiliency and modernize,

¹⁷⁶ Department of Defense, *Nuclear Posture Review*, 2018, 40.

¹⁷⁷ Department of Defense, *Nuclear Posture Review*, 2018.

¹⁷⁸ Department of Defense, *Nuclear Posture Review*, 2018, 54–55.

¹⁷⁹ Department of Defense, *Nuclear Posture Review*, 2018, 61.

¹⁸⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁸¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁸² United States Congress, Excerpts of Classified Nuclear Posture Review.

as well as research for stronger NC3 systems.¹⁸³ The 2018 NPR explicitly wanted to strengthen protection against space-based threats, especially training; strengthen protection against cyber threats, specifically continuing production of technology; enhance integrated tactical warning and attack assessment by modernizing satellites and missile defense sectors, transitioning the Defense Support System (DSP) to the Space Based Infrared System (SBIRS), enhancing ground based radars, and sustaining and upgrading the U.S. Nuclear Detonation Detection System (USNDS); improve command posts and communications links to airborne, ground, and mobile command centers, communication terminals, transmitters, the National Airborne Operations Center (NAOC), and the Airborne Command Post (ABNCP); and advance decision support technology, reform governance, and integrate planning and operations.¹⁸⁴

Critical infrastructure is the final theme of procurement policy identified by the matrix. The 1994 NPR intended to fund sustainment of the Minuteman III industrial base.¹⁸⁵ The 2001 NPR demonstrated a need to revitalize the nuclear weapons complex to design, develop, test, manufacture, and certify new warheads if required.¹⁸⁶ It also illustrated a need to restore capacity and capability of production infrastructure.¹⁸⁷ The 2010 NPR was focused on modernizing physical infrastructure including national laboratories and supporting facilities; this meant fully funding NNSA, strengthening the science, technology, and engineering (STE) base, modernizing Los Alamos National Laboratory, and creating a new Uranium processing facility at Y-12.¹⁸⁸ The 2018 NPR linked critical infrastructure with warhead sustainment programs. It sought to have the capacity to produce at least eighty Plutonium pits per year by 2030, fund Tritium programs,

¹⁸³ Department of Defense, *Nuclear Posture Review Report*, 2010, 26.

¹⁸⁴ Department of Defense, *Nuclear Posture Review*, 2018.

¹⁸⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁸⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁸⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁸⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 42.

explore options for rapid prototyping, fully fund Uranium processing facilities (UPF), reconstitute Lithium capabilities, and ensure reactor capacity.¹⁸⁹

There were several other notable, yet uncategorizable statements of procurement intention by the first three post-Cold War NPRs identified by the matrix. The 1994 NPR advocated for financial support of the Nunn-Lugar Program and optimizing the number of accident and incident response teams.¹⁹⁰ The 2001 NPR sought a new “system of systems” for nuclear intelligence.¹⁹¹ It also considered lease or purchase of 767 tankers while waiting for the KC-X program to replace the KC-135 tanker fleet.¹⁹² The 2001 NPR identified that the KC-X replacement platform should be able to operate in a nuclear, biological, or chemical (NBC) environment.¹⁹³ Lastly, the 2010 NPR desired investment in the congressionally mandated SSP.¹⁹⁴

C. EMPLOYMENT POLICY

The matrix considers nuclear employment policy as statements about how nuclear weapons and their related systems are to be used to achieve a certain objective. The most important theme identified by the matrix across the four post-Cold War NPRs was deterrence. Other themes identified from statements contained within NPRs were offensive use of nuclear weapons, defensive use of nuclear weapons, use of nuclear weapons to combat chemical and biological weapons, and the role of civilians in the U.S. nuclear posture.

1. Active Role of Nuclear Weapons in National Defense

Each post-Cold War NPR emphasized the importance of deterrence; however, each NPR had identifiable differences with regard to how deterrence would be maintained. The

¹⁸⁹ Department of Defense, *Nuclear Posture Review*, 2018, 62–64.

¹⁹⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁹¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁹² United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁹³ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁹⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 2.

1994 NPR explained a balance between safety and security.¹⁹⁵ This meant carrying out key missions to maintain deterrence: early warning, threat assessment, connectivity to national leadership, message dissemination, and force management.¹⁹⁶ The 2001 NPR purported to shift away from relying on offensive forces for deterrence.¹⁹⁷ It stated that, “Based on current projections, an operationally deployed force of 1700–2200 strategic nuclear warheads by 2012... will support U.S. deterrence policy to hold at risk what opponents value, including their instruments of political control and military power, and to deny opponents their war aims.”¹⁹⁸ Notably, this number of deployed nuclear weapons could have been influenced by the START agreements, and not necessarily what the Bush administration desired. The 2001 NPR further claims that a modern threat requires a flexibility of forces for modern deterrence.¹⁹⁹ According to the 2010 NPR deterrence must be credible.²⁰⁰ The Obama administration’s NPR seemingly counters this when it claimed that it should scale back the U.S. nuclear force to move away from its Cold War era posture in favor of a U.S. nuclear posture that could counter nuclear terrorism and proliferation.²⁰¹ The 2018 NPR made strong statements as to its position on deterrence, ensuring enemies do not miscalculate consequences of nuclear use.²⁰² It identified the realizations U.S. enemies must appreciate: “1) the United States is able to identify them and hold them accountable for acts of aggression, including new forms of aggression; 2) we will defeat non-nuclear strategic attacks; and, 3) any nuclear escalation will fail to achieve their objectives, and will instead result in unacceptable consequences for them.”²⁰³ The 2018 NPR claims that there is no “one size fits all” in regard to deterrence, and that capabilities

¹⁹⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁹⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

¹⁹⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁹⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

¹⁹⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁰⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, 7.

²⁰¹ Department of Defense, *Nuclear Posture Review Report*, 2010.

²⁰² Department of Defense, *Nuclear Posture Review*, 2018.

²⁰³ Department of Defense, *Nuclear Posture Review*, 2018, 21.

must be flexible to tailor deterrence.²⁰⁴ It has several sections outlining what the United States will do if deterrence fails, including strengthening the role of non-strategic nuclear weapons.²⁰⁵ Lastly, the 2018 NPR claims that, “Effective deterrence is the foundation for effective assurance.”²⁰⁶

Nuclear weapons as an offensive tool is debated by many in the public, scholarly, political, and military communities. The 1994 NPR, released in the immediate aftermath of the Cold War, recommended no nuclear weapons custody by U.S. ground forces and for strategic bombers and naval non-strategic nuclear forces to be taken off alert,²⁰⁷ an incredible stand-down to the United States’ Cold War nuclear posture. The 2001 NPR paired ICBMs, SLBMs, and bombers with non-nuclear capabilities, creating the first leg of the “New Triad” of nuclear and non-nuclear systems.²⁰⁸ The 2010 NPR alleged a growth of “unrivaled” U.S. conventional military forces,²⁰⁹ reaffirmed the United States’ commitment to “open-ocean targeting,”²¹⁰ and reiterated its commitment to maximizing presidential decision making time.²¹¹ The 2018 NPR, much like previous NPRs, linked missile defense with offensive operations if deterrence fails.²¹² It also notes that the U.S. has never adopted a “no first-use” policy, and argues that such a policy is inappropriate given the current threat environment.²¹³

Many aspects of offensive nuclear employment policy are also closely linked to defensive nuclear employment policy. The 1994 NPR asserts that the U.S. must not become

²⁰⁴ Department of Defense, *Nuclear Posture Review*, 2018, 26.

²⁰⁵ Department of Defense, *Nuclear Posture Review*, 2018, 25–40.

²⁰⁶ Department of Defense, *Nuclear Posture Review*, 2018, 35.

²⁰⁷ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁰⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁰⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, 6.

²¹⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, 26.

²¹¹ Department of Defense, *Nuclear Posture Review Report*, 2010.

²¹² Department of Defense, *Nuclear Posture Review*, 2018.

²¹³ Department of Defense, *Nuclear Posture Review*, 2018, 22.

complacent and should maintain deterrence.²¹⁴ It illustrated a need to develop theater defenses against ballistic missiles and personnel.²¹⁵ The 2001 NPR considered the second leg of the New Triad to be defensive.²¹⁶ It alleged that missile defenses were emerging in the air, land, and sea.²¹⁷ It argued that passive and active defenses would dissuade adversaries.²¹⁸ The 2010 NPR produced almost a decade later echoed the need to continue improving missile defenses—that Russian and Chinese capabilities were a cause for concern.²¹⁹ Notably, the report also claims that Russia and China are modernizing their forces due to the United States’ “destabilizing” missile defense systems.²²⁰ The 2018 NPR only further stresses the importance of missile defense.²²¹

2. Non-traditional Role of Nuclear Weapons

Employment of nuclear weapons to counter chemical and biological threats is the last common employment policy theme identified by the matrix across all four post-Cold War NPRs. The 1994 NPR simply stated its intention to improve real time detection of agents.²²² The 2001 NPR, as previously mentioned, considered development of ADWs to assure allies.²²³ The 2010 NPR claimed that the nuclear weapon role in deterring chemical and biological weapons (CBW) attacks was declining, and that a focus for deterring CBW attacks should utilize conventional forces.²²⁴ Lastly, the 2018 NPR simply stated that the U.S. must hedge against CBW threats, but no specifics were mentioned.²²⁵

²¹⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

²¹⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

²¹⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

²¹⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

²¹⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

²¹⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, x.

²²⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, x.

²²¹ Department of Defense, *Nuclear Posture Review*, 2018.

²²² Department of Defense, *The Nuclear Posture Review*, 1994.

²²³ United States Congress, Excerpts of Classified Nuclear Posture Review.

²²⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, viii.

²²⁵ Department of Defense, *Nuclear Posture Review*, 2018.

D. DEPLOYMENT POLICY

How nuclear weapons will be deployed by U.S. and allied forces is the last paradigm of nuclear policy explored by the matrix. Themes uncovered in the post-Cold War NPRs are deployment of ICBMs, SLBMs, and bombers, as well as deployment of non-strategic nuclear weapons by NATO. Deployment policy is culmination of all other paradigms; it is the actions and not just the words.

1. Nuclear Triad Delivery Systems

The 1994 NPR announced the retirement of the W68 warhead from the Minuteman III.²²⁶ It clearly stated that there would be “Three wings of Minuteman III missiles carrying single warheads (500-450).”²²⁷ However, upon publishing of the 2001 NPR, the Peacekeeper missile was still actively deployed. The 2001 NPR sought to retire the Peacekeeper.²²⁸ At the time of the 2010 NPR’s release, there were 450 ICBMs on alert, all of which the Obama administration planned to “de-MIRV” (multiple independently targetable reentry vehicles).²²⁹ By the time the 2018 NPR was published, there were 400 single warhead Minuteman III ICBMs spread between 450 LFs.²³⁰ The 2018 NPR claimed ICBMs are the most responsive leg, and that they are the most survivable due to the scale of an attack required to destroy U.S. ICBM capability would be astronomical.²³¹ The 2018 NPR aimed to maintain ICBM ability to be a high yield, accurate, prompt, and flexible leg of the triad.²³² Lastly, the 2018 NPR claimed it would continue open-ocean targeting, but that ICBMs are critical for holding Eurasia at risk.²³³

²²⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

²²⁷ Department of Defense, *The Nuclear Posture Review*, 1994.

²²⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

²²⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, 23.

²³⁰ Department of Defense, *Nuclear Posture Review*, 2018, 45.

²³¹ Department of Defense, *Nuclear Posture Review*, 2018, 45–46.

²³² Department of Defense, *Nuclear Posture Review*, 2018, 45–46.

²³³ Department of Defense, *Nuclear Posture Review*, 2018.

The SLBM leg of the nuclear triad is much more secretive than its land or air-based counterparts. The 1994 NPR recommended retiring four Ohio Class SSBNs leaving fourteen SSBNs carrying an undisclosed number of D-5 Trident II SLBMs.²³⁴ The 2001 NPR opted to continue this deployment, and proposed reconstituting the four retired SSBNs to transport special operations forces as part of the New Triad.²³⁵ The 2010 NPR contended to retain fourteen SSBNs, but consider reducing that number to twelve in the future.²³⁶ The 2018 NPR did not offer any specific numbers with regard to Ohio- Class SSBNs or Trident II SLBMs.²³⁷ It did, however, state that the SSBN fleet faced no credible threats, holds targets at risk throughout Eurasia, and could possess hypersonic SLBM capability.²³⁸

Bombers are arguably the most erratic leg of the triad in regard to deployment. The 1994 NPR claimed that it had originally planned for ninety-four B-52s, but reduced the number to sixty-six along with reorientation of the B-1 to fill a conventional role.²³⁹ The 2001 NPR did not provide numbers, however it notes a necessity to keep the B-2 and B-52 fleets operational for thirty-five to forty years.²⁴⁰ The 2010 NPR claimed the U.S. nuclear bomber fleet would be maintained and consisted of seventy-six B-52s and eighteen B-2s; however, the report also considered transitioning some B-52s to be dual capable.²⁴¹ The 2018 NPR describes the bomber fleet as being the most flexible and visible—to be used as a show of force.²⁴² Capable of multiple warhead options, the 2018 NPR reported forty-six B-52Hs and twenty B-2As supported by refueling aircraft.²⁴³

²³⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

²³⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

²³⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, 22.

²³⁷ Department of Defense, *Nuclear Posture Review*, 2018.

²³⁸ Department of Defense, *Nuclear Posture Review*, 2018, 44–45.

²³⁹ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁴⁰ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁴¹ Department of Defense, *Nuclear Posture Review Report*, 2010, 24.

²⁴² Department of Defense, *Nuclear Posture Review*, 2018, 50–51.

²⁴³ Department of Defense, *Nuclear Posture Review*, 2018, 50–51.

2. Non-Triad Delivery Systems

Much like employment policy, the matrix also identified idiosyncratic aspects of deployment policy. These elements come from support functions and nuclear force structures that predate the modern nuclear triad. The 1994 NPR sought to eliminate the role of carrier based dual-capable aircraft (DCA), retain continental based dual capable aircraft, and eliminate the option to carry nuclear missiles on surface navy ships,²⁴⁴ another significant change to the decades-old United States Cold War nuclear posture. The Bush administration NPR, in support of its New Triad, discusses development and deployment of so-called new nuclear and non-nuclear systems, particularly air, sea, and land based missile defenses, and maintaining an operational fleet of tankers for thirty five to forty years.²⁴⁵ The 2010 NPR, whose deployment policy was heavily driven by New START, retired SLCMs.²⁴⁶ The 2018 NPR explains that the objective of strategy in its deployment policy is deterrence of non-nuclear and nuclear attack, assurance of partners and allies, achieve objectives should deterrence fail, and to hedge against an uncertain future.²⁴⁷

Another theme each post-Cold War NPR had in common for deployment policy was NATO and non-strategic nuclear weapon deployment. The 1994 NPR retained its commitment to NATO through DCA and deployment of nuclear weapons in Europe at ten percent of Cold War levels.²⁴⁸ In regard to DCA and nuclear weapons in support of NATO, the 2001 NPR said, “DoD will not seek any change to the current posture in FY [fiscal year] 02 but will review both issues to assess whether any modifications to the current posture are appropriate to adapt to the changing threat environment.”²⁴⁹ The 2010 NPR stated that it would retain capabilities for non-strategic nuclear weapons, and that no changes would be made without consultation with NATO partners,²⁵⁰ an unprecedented

²⁴⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁴⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁴⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, 28.

²⁴⁷ Department of Defense, *Nuclear Posture Review*, 2018, vii-xi.

²⁴⁸ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁴⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁵⁰ Department of Defense, *Nuclear Posture Review Report*, 2010.

concession by a U.S. president. Lastly, the 2018 NPR points out that forward presence is a requirement, and that it is currently made up of B-61 gravity bombs on F-16 DCA.²⁵¹

²⁵¹ Department of Defense, *Nuclear Posture Review*, 2018.

IV. CONTINUITY AND CHANGE IN POST-COLD WAR U.S. NUCLEAR POLICY

The periodic nature of NPRs has provided specific reference points for identifying post-Cold War nuclear postures and how U.S. nuclear policies have evolved over time. Their timely productions in 1994, 2001, 2010, and 2018 have corresponded with the four post-Cold War presidential administrations, and along with related documents such as the 1993 Bottom-Up Review, periodic QDRs, NSSs, and MDRs, they explain United States nuclear posture to friends, allies, and foes. NPRs have been met with mixed reactions; some have caused controversy and others have incited backlash among United States allies and foes alike. The matrix incorporated into this thesis has fashioned a format for comparing NPRs side by side, and this chapter will analyze the results to not only put to rest misconceptions surrounding the four post-Cold War NPRs, but also to identify pieces of United States nuclear posture that have not been clearly reported by the respective presidential administrations.

The evolution of the NPRs themselves as white papers is the first notable evolution in this history. Beginning in 1994 as a compilation of press releases²⁵² and most recently being released in 2018 as a seventy-four-page, well-formatted report,²⁵³ the NPR demonstrates the developing public affairs capabilities of the U.S. Government. According to Leonidas G. Anthopoulos and Christopher G. Reddick, “Various [strategies] have been developed since the late 1990s in an attempt to describe the governmental vision for administrative and for societal change, the objectives and priorities with regard to the development of the Information and Communication Technologies (ICT) at national and supranational levels.”²⁵⁴ The evolution of technology has led to governments becoming more skilled at the ability to market to their audiences and effectively communicate

²⁵² Department of Defense, *The Nuclear Posture Review*, 1994.

²⁵³ Department of Defense, *Nuclear Posture Review*, 2018.

²⁵⁴ Leonidas G. Anthopoulos and Christopher G. Reddick, *Government e-Strategic Planning and Management Practices, Patterns, and Roadmaps*, 1st ed., New York, New York: Springer New York, 2014, v.

transformations of policies and services.²⁵⁵ One of these skills is catering to the developmental needs of the program and considering all perspectives of stakeholders—in particular, demand.²⁵⁶ The evolution of the NPR is a prime example of this; the 1994 press releases got off topic and became a fragmented release of unclassified material in 2001 that eventually became a structured report for the 2010 and 2018 versions of the NPR. NPRs also generally provided more details and justifications than each of their respective predecessors.²⁵⁷ Post-Cold War NPRs gradually became more detailed and formatted as ICT improved, the public relations skills of the U.S. government matured, and the importance of nuclear posture reemerged.

Although the report has remained legislatively mandated, improvements in the NPRs' production shows the relative importance of the document over time—evidenced by the production of the NPR becoming more formal and specific. The 1994 NPR was a simple collaboration of the DoD and armed services, associated with the Bottom-Up Review.²⁵⁸ Over the next twenty-five years, NPRs became closely connected to the QDR, End-to-End Review, NSS, and the MDR.²⁵⁹ The motivation behind each report has also changed significantly, from planning substantial reductions in 1994,²⁶⁰ to being “roadmaps” in the 2001 and 2010 NPRs,²⁶¹ and finally taking shape as a creed to “ensure a safe, secure, and effective nuclear deterrent that protects the homeland, assures allies, and

²⁵⁵ Anthopoulos and Reddick, *Government e-Strategic Planning and Management Practices, Patterns, and Roadmaps*, viii.

²⁵⁶ Anthopoulos and Reddick, *Government e-Strategic Planning and Management Practices, Patterns, and Roadmaps*, viii-x.

²⁵⁷ Department of Defense, *The Nuclear Posture Review, 1994*; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report, 2010*; Department of Defense, *Nuclear Posture Review, 2018*.

²⁵⁸ Department of Defense, *The Nuclear Posture Review, 1994*.

²⁵⁹ United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report, 2010*; Department of Defense, *Nuclear Posture Review, 2018*.

²⁶⁰ Department of Defense, *The Nuclear Posture Review, 1994*.

²⁶¹ United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report, 2010*.

above all, deters adversaries” in the 2018 NPR.²⁶² The 2018 NPR is even translated on the DoD’s webpage into Russian, French, Chinese, and Korean.

A. DECLARATORY POLICY

Declaratory policy was the largest section of the matrix. It not only encompassed the most topics, it also contained the majority of doctrine-related rhetoric, and provided the direct insights into the presidential administrations and the inner workings of the DoD and related agencies. General analysis of declaratory policy contained in the matrix revealed elements of “retrospective bias,” a term coined by Micah Zenko. According to Zenko, “Humans have a tendency to actively forget negative events from long ago, and thus we disproportionately judge the past in a more positive light... With benefit of hindsight, the past seems relatively predictable and sensible, while the present is always uncertain.”²⁶³ Retrospective bias is progressively evident as the NPRs move further away from the end of the Cold War.

1. Great Power Competition and U.S. Nuclear Force Structure

Retrospective bias is most easily captured by the theme of great power competition. The end of the Cold War was still fresh at the time of production of the 1994 NPR, and the general attitude of the press releases and speeches was that of “breathing easy.”²⁶⁴ Then Secretary of Defense William J. Perry commented that it was “time to change the way we think about nuclear weapons,” that mutually assured destruction was over, and the Clinton administration sought to move into a word of mutually assured safety.²⁶⁵ With this shift in mind, the 1994 NPR chose only to maintain NC3, intelligence, and critical infrastructure systems, and proposed shifting nuclear scientists to the civilian sector.²⁶⁶

²⁶² Department of Defense, *Nuclear Posture Review*, 2018, I.

²⁶³ Micah Zenko, “Nostalgia is a National Security Threat,” *Foreign Policy*, April 10th, 2019.

²⁶⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁶⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁶⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

Nevertheless, by 2001, the Bush administration had already returned to concerns over the global threat environment. The 2001 and 2010 NPRs were similar in that neither specifically mentioned great power competition; however, each in their own ways sought to dissuade the rise of competitors while maintaining a worldwide nuclear balance.²⁶⁷ Each of the two reports hailed NC3 as being critical, supported funding for critical infrastructure improvements, and recognized the dire need to recruit and transfer knowledge of nuclear weapons, supporting, and delivery systems to younger generations.²⁶⁸ Notably, the Obama administration NPR had also discussed declining morale within the nuclear complex and discussed possible surveillance of nuclear personnel.²⁶⁹ Furthermore, the Obama administration was the only presidential administration to contain rhetoric on surveillance of nuclear personnel. This fact is interesting because, according to the Reporters' Committee for Freedom of the Press, "In 2009, President Obama promised to create a more transparent, whistleblower-friendly environment."²⁷⁰ Unfortunately, the Obama administration did not follow through on this commitment.²⁷¹ According to the American Civil Liberties Union, the Obama administration secured more than twenty times the prison time for national security leaker-related crimes than all other presidential administrations combined.²⁷² On the topic of slipping morale, the 2010 NPR admitted that declining morale was due to a "lack of broad, national consensus on the approach to sustaining warheads and nuclear technical capabilities."²⁷³ This is hypocritical since the 2010 NPR was the first to strenuously push for a world free of nuclear weapons. Furthermore, according to Stuart J. Kaufman, the Obama administration was plagued by a more

²⁶⁷ United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, Nuclear Posture Review Report, 2010.

²⁶⁸ United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, Nuclear Posture Review Report, 2010.

²⁶⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, 40–42.

²⁷⁰ "Obama Administration Plugs Up Leaks," Reporters' Committee for Freedom of the Press.

²⁷¹ "Obama Administration Plugs Up Leaks," Reporters' Committee for Freedom of the Press.

²⁷² Gabe Rottman, "On Leak Prosecutions, Obama Takes it to 11 (Or Should We Say 526?)," American Civil Liberties Union, October 14th, 2014.

²⁷³ Department of Defense, *Nuclear Posture Review Report*, 2010, 40–41.

challenging economic situation than the Bush administration, which led to further uncertainties in U.S. national security strategy.²⁷⁴

The 2018 NPR swayed the furthest from the 1994 NPR's hindsight of the Cold War, when it starkly claimed that Russian and Chinese actions were causing a return to great power competition.²⁷⁵ The 2018 NPR was also the most dramatic when making its declarations; it echoed the importance of NC3 and critical infrastructure.²⁷⁶ On the topic of human capital, the 2018 NPR was the first NPR to praise members of the nuclear mission for their service and dedication.²⁷⁷ It was also the first to make a public declaration that nuclear weapons in fact save lives, and further pushed for technology that would limit civilian casualties.²⁷⁸ It went in depth describing a need for investments in personnel and allowing exercising of skills.²⁷⁹ The appreciation for nuclear force personnel first described in the 2018 NPR actually began under the Obama administration in an initiative known as the Force Improvement Program (FIP). According to the Arms Control Association,

In the wake of revelations of professional and ethical lapses and poor morale in the U.S. nuclear force, Defense Secretary Chuck Hagel announced in November 2014 steps the department is taking to address the numerous setbacks. These include changing the conduct of inspections to reduce the burden on airmen and sailors, eliminating micromanagement of nuclear personnel seen as overtaxed by excessive bureaucratic and administrative requirements, and elevating the head of Air Force Global Strike Command, which verses the Air Force's nuclear forces, from a three- to a four-star rank.²⁸⁰

²⁷⁴ Stuart J. Kaufman, "U.S. National Security Strategy from Bush to Obama: Continuity and Change," in Bahram M. Rajaee and Mark J. Miller, *National Security Under the Obama Administration*, 1st Edition, New York: Palgrave Macmillan US, 2012, 13.

²⁷⁵ Department of Defense, *Nuclear Posture Review*, 2018, 6–7.

²⁷⁶ Department of Defense, *Nuclear Posture Review*, 2018.

²⁷⁷ Department of Defense, *Nuclear Posture Review*, 2018, 42–44.

²⁷⁸ Department of Defense, *Nuclear Posture Review*, 2018, 16–18.

²⁷⁹ Department of Defense, *Nuclear Posture Review*, 2018, 42–44.

²⁸⁰ "U.S. Nuclear Modernization Programs," Arms Control Association, 2018.

General Stephen W. Wilson, then a Lieutenant General and commander of Air Force Global Strike Command (AFGSC) claimed that the FIP was based on recommendations from officers and non-commissioned officers (NCOs) in the nuclear field and was creating a new culture of empowerment and would lead to restored faith in AFGSC.²⁸¹ Unfortunately, no recent data or research has been uncovered as to the success of the FIP.

The foundation of United States nuclear posture is widely accepted as the nuclear triad. The matrix revealed the triad is the strongest paradigm of nuclear policy, it has been considered for replacement or reduction by every presidential administration since the end of the Cold War. Most administrations considered simply removing one leg of the triad, but each NPR apart from the 2001 NPR opted to retain the traditional nuclear triad.²⁸² The 2001 NPR dramatically attempted to replace the nuclear triad with the so-called “new triad,” which merged nuclear and conventional forces;²⁸³ however, it failed to fully develop the concept. The 1994, 2010, and 2018 NPRs all supported the triad in their own ways, generally concurring that it should be efficient, and stipulating that it is the most cost effective and strategically sound method of producing deterrence.²⁸⁴ The 2018 NPR goes one step further to also note that the nuclear triad is supported by NATO DCA and NC3;²⁸⁵ however, there is no reason to suspect that the 1994 or 2010 NPRs disagree with this statement. The earlier NPRs simply failed to highlight these elements of the U.S. and NATO nuclear postures.

²⁸¹ Staff Sergeant Carlin Leslie, “Force Improvement Program Changing Future of Global Strike,” *Air Force Public Affairs Agency*, June 26th, 2014.

²⁸² Department of Defense, *The Nuclear Posture Review*, 1994; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

²⁸³ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁸⁴ Department of Defense, *The Nuclear Posture Review*, 1994; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

²⁸⁵ Department of Defense, *Nuclear Posture Review*, 2018, 44–48.

2. Treaties and Allied Commitments

On the same level as the nuclear triad, declaratory rhetoric in regard to treaties accounted for large portions of all four post-Cold War NPRs. In the nearly three decades since the end of the Cold War, treaties have come and passed. NPRs are a fascinating lens into the treaty world, particularly the START agreements. START I and START II were in the early stages of being conceived at the time of the 1994 NPR.²⁸⁶ Both treaties were in full effect at the time of the 2001 NPR's publishing, and although the Bush administration disagreed with the requirements, it still complied.²⁸⁷ The 2010 NPR introduced New START to reduce drastically the Moscow Treaty numbers,²⁸⁸ and New START was in full force during the 2018 NPR. The Trump administration's NPR affirmed its compliance with New START, and discussed extending or renegotiating the treaty to continue after its 2021 expiration.²⁸⁹

All of the post-Cold War NPRs suggest that arms control treaties, when supporting the deterrence needs of the United States, are a positive thing. The 1994, 2001, 2010, and 2018 NPRs all claim to be complying with treaty requirements.²⁹⁰ Nevertheless, as is the case with the CTBT, the last four presidential administrations disagree on what is reasonable. The 2001, 2010, and 2018 NPRs all supported the CTBT; however, this support was in varying degrees,²⁹¹ mostly along party lines. The 1994 NPR did not mention the treaty because it had not been conceived yet;²⁹² however, it would be appropriate to stipulate that since the treaty was born during the Clinton administration and given the support for other nonproliferation programs such as the Nunn-Lugar Program in the 1994

²⁸⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁸⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁸⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 19–21.

²⁸⁹ Department of Defense, *Nuclear Posture Review*, 2018, 73–74.

²⁹⁰ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

²⁹¹ United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

²⁹² Department of Defense, *The Nuclear Posture Review*, 1994.

NPR,²⁹³ the Clinton-era report was written with the CTBT in mind. The 2010 NPR under the Obama administration clearly purported its desire to ratify the CTBT,²⁹⁴ whereas the 2001 and 2018 NPRs under Republican administrations both desired to simply comply and support the organization of the treaty in order to retain the United States' ability to test nuclear weapons if needed.²⁹⁵

The latter two NPRs were platforms for accusing other countries of violating treaties. No such issues appear in the 1994 and 2001 NPRs.²⁹⁶ The 2010 NPR accused Iran and North Korea of violating the NPT,²⁹⁷ and the 2018 NPR accused Russia of violating multiple treaties, particularly the INF.²⁹⁸ The Trump administration was so confident of Russia's failure to comply with the INF that it withdrew from the treaty on August 2nd, 2019.²⁹⁹

Despite accusations, withdrawals, and refusals to ratify treaties, all four NPRs consistently portray treaties in a positive light. The 1994 NPR hailed the implementation of treaties to be of high importance after the Cold War,³⁰⁰ the 2001 NPR claimed that transparency was a beneficial aspect of treaties,³⁰¹ the 2010 NPR proposed an all-new treaty, the Fissile Material Cutoff Treaty,³⁰² and the 2018 NPR asserted that treaties and arms control efforts contribute to risk reduction through diplomacy, but only if they are verifiable and enforceable.³⁰³

²⁹³ Department of Defense, *The Nuclear Posture Review*, 1994.

²⁹⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 13.

²⁹⁵ United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, *Nuclear Posture Review*, 2018.

²⁹⁶ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, Excerpts of Classified Nuclear Posture Review.

²⁹⁷ Department of Defense, *Nuclear Posture Review Report*, 2010, vi-vii.

²⁹⁸ Department of Defense, *Nuclear Posture Review*, 2018, XII.

²⁹⁹ Michael R. Pompeo, "U.S. Withdrawal from the INF Treaty on August 2nd, 2019," Press Release, United States Department of State, August 2nd, 2019.

³⁰⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁰¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁰² Department of Defense, *Nuclear Posture Review Report*, 2010, 13.

³⁰³ Department of Defense, *Nuclear Posture Review*, 2018, XVII.

Closely related to treaties, declarations of foreign commitments of the United States to allies and NATO partners were also identified by the matrix. The result was overwhelmingly consistent between all four post-Cold War NPRs; every single one maintained the United States' commitments without opposition.³⁰⁴ According to Brad Roberts, the immediate aftermath of the Cold War caused the interest in NATO strategic deterrence to quickly deplete.³⁰⁵ As the Cold War receded further into history, however, the matrix revealed an increased concern over NATO. The 2001 NPR proposed a review of United States commitment to NATO in FY 2002,³⁰⁶ and the 2010 NPR claims that the nuclear threat to NATO is historically low, and leaves an open door to a change in posture when it states that, "The role of nuclear weapons in defending [NATO] members will be discussed this year in connection with NATO's revision of its Strategic Concept. Any changes in NATO's nuclear posture should only be taken after a thorough review within—and a decision by—[NATO]."³⁰⁷ Notably, the 2010 NPR also spotlights the fact that there is no alliance in Asia, but maintains its commitments in the region.³⁰⁸ Lastly, the entire 2018 NPR contains strong rhetoric in support of the United States' allies and partners.³⁰⁹ It claimed that the partnerships and support should be credible and liable, and linked allied and NATO commitments to helping to achieve nonproliferation goals.³¹⁰ Notably, despite these statements some of the strongest resistance to the Trump administration NPR claimed

³⁰⁴ Department of Defense, *The Nuclear Posture Review, 1994*; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report, 2010*; Department of Defense, *Nuclear Posture Review, 2018*.

³⁰⁵ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, Stanford University Press: Stanford, CA (2016), 176.

³⁰⁶ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

³⁰⁷ Department of Defense, *Nuclear Posture Review Report, 2010*, xii-xiii.

³⁰⁸ Department of Defense, *Nuclear Posture Review Report, 2010*, xiii.

³⁰⁹ Department of Defense, *Nuclear Posture Review, 2018*.

³¹⁰ Department of Defense, *Nuclear Posture Review, 2018*.

that the 2018 NPR put America first and would contribute to a return to great power competition.³¹¹

3. Nonproliferation and Worldwide Nuclear Threats

The evolution of United States nuclear posture is driven by the current worldwide threat environment. Consistencies across the four post-Cold War NPRs included concerns about Russian nuclear posture and nuclear terrorism, the latter of which grew exponentially as the NPRs progressed, particularly in the 2010 and 2018 NPRs. Furthermore, concerns over theater threats in Middle East and Asia did not appear until the turn of the century, and continued through the most recent NPR. Lastly, the 1994, 2001, 2010, and 2018 NPRs all supported nuclear reductions and arms control to varying degrees through a variety of programs, treaties, and statements.³¹²

During the production of the 1994 NPR, in the immediate aftermath of the Cold War, the focus was still on Russian and eastern European threats. According to the 1994 NPR, Russia was still unstable and uncertain, and there were high concerns over so-called “loose nukes,” or nuclear weapons unsecured in former USSR states.³¹³ The Clinton administration NPR declared that the United States must remain conscious of the way it conducted itself because it would influence Russia’s actions, and be wary of the former USSR “loose nukes” falling into the wrong hands.³¹⁴ This sentiment proved to be valid, as the present posture of the Russian military is largely a reflection of United States posture. According to Olga Oliker of the RAND Corporation, “Russia maintains, as it has in the past, that it will use military force only defensively, when other options have failed.”³¹⁵

³¹¹ Such as in Anna Peczei, “The Trump Administration’s Nuclear Posture Review: Back to Great Power Competition,” *Journal for Peace and Nuclear Disarmament* 1, no. 2 (October 2018) and Manpreet Sethi, “US Nuclear Posture Review 2018: Unwisely Reopening ‘Settled’ Nuclear Issues,” *India Quarterly* 74, no. 3.

³¹² Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

³¹³ Department of Defense, *The Nuclear Posture Review*, 1994.

³¹⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

³¹⁵ Olga Oliker, “Russia’s New Military Doctrine: Same as the Old Doctrine, Mostly,” RAND Corporation, January 15th, 2015.

She further states that Russia is seeing the world more perilous than it did before, specifically referencing American weapons systems that threaten Russia.³¹⁶

The 2001 NPR, released just months after the September 11, 2001 attacks, was the first to identify threats of contingency operations, particularly in North Korea, Libya, Iraq, Iran, and Syria.³¹⁷ This new threat is likely what led to the proposed “new triad” in the 2001 NPR. The Bush administration NPR also maintained the theme of concerns over the size and posture of Russian nuclear and conventional forces, and introduced a concern over the development of Chinese forces.³¹⁸ The 2001 NPR surprisingly, given the proximity to the 2001 terrorist attacks, did not specifically link terrorists and WMD; however, it did state that “Terrorists or rogue states armed with weapons of mass destruction will likely test America’s security commitments to its allies and friends.”³¹⁹ The confusion surrounding the indirect connection between WMD and terrorists could also be due to the introduction of the new triad.

The 2010 NPR further declared that Russia and China were the primary nuclear threats to the United States, but it was the first to offer more explanation.³²⁰ It claimed that United States and Russian relations were good, that the United States must reduce the nuclear ambitions of North Korea and Iran, strengthen International Atomic Energy Agency safeguards, and impede and enforce consequences for nuclear trade.³²¹ The 2010 NPR created a rift in theme analysis when it became the first NPR to declare countering nuclear terrorism as the first policy priority, and offered a detailed approach to preventing the growing threat.³²² Most notably, the 2010 NPR commented that the United States and China were becoming increasingly interdependent,³²³ which is contrary to United States’

³¹⁶ Olikier, “Russia’s New Military Defense Doctrine.”

³¹⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

³¹⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

³¹⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

³²⁰ Department of Defense, *Nuclear Posture Review Report*, 2010.

³²¹ Department of Defense, *Nuclear Posture Review Report*, 2010.

³²² Department of Defense, *Nuclear Posture Review Report*, 2010, 9–14.

³²³ Department of Defense, *Nuclear Posture Review Report*, 2010, 5.

recent claims that China is a threat. According to Eswar Prasad and Grace Gu, “China would like to tear itself away from the U.S. Treasury market but faces the prospect of a big capital loss on its large accumulated stock of holdings if U.S. Treasury bond prices were to rise or if the renminbi eventually appreciated in value against the U.S. dollar.”³²⁴

Many scholars agree that a war with China is unlikely due to these economic entanglements; however, there is still concern over nuclear escalation if the United States were ever to engage in a conventional war with China. According to Caitlin Talmadge, conflicting viewpoints make an assessment of the threat of Chinese escalation difficult.³²⁵ Talmadge remarks that,

This impasse has two main sources. One is the lack of systematic, open-source military-technical analysis of the extent to which plausible U.S. conventional military operations are likely to threaten China’s nuclear retaliatory capability. The other is a failure to incorporate perceptual variables that are likely to shape both how China will view threats to its nuclear arsenal after conventional deterrence fails and the purposes that China might believe nuclear escalation could serve under such conditions.³²⁶

Therefore, China, despite its economic interdependencies with the United States, should be considered a threat when assessing nuclear posture.

The 2018 NPR echoed the 2010 NPR’s concerns over China’s allegedly expanding nuclear capability, and took one step further to declare Russia was doing the same.³²⁷ It continued the theme of twenty-first century NPRs by voicing concerns about North Korea and Iran, and was the first to offer tailored strategies for countering particular threats.³²⁸ Furthermore, it was the first to share concerns over cyber threats and voice concern over

³²⁴ Eswar Prasad and Grace Gu, “An Awkward Dance: China and the United States,” *Brookings*, November 11th, 2009.

³²⁵ Caitlin Talmadge, “Would China Go Nuclear: Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States,” *International Security* Volume 41, Number 4 (Spring 2017), 50.

³²⁶ Talmadge, “Would China Go Nuclear,” 50.

³²⁷ Department of Defense, *Nuclear Posture Review*, 2018, 2.

³²⁸ Department of Defense, *Nuclear Posture Review*, 2018.

uncertainty and potential unanticipated threats;³²⁹ these alarmist statements are interesting because the 2018 NPR contained more procurement policy statements than any other NPR. The 2018 NPR upheld the 2010 NPR's newly created theme of countering nuclear terrorism; however, the majority of the NPR was focused on foreign, state-based threats.³³⁰ The 2018 NPR linked the two, much like the 2001 and 2010 NPRs by indicating that, "The United States will hold fully accountable any state, terrorist group, or other non-state actor that supports or enables terrorist efforts to obtain or employ nuclear devices."³³¹

Each one of the four post-Cold War NPRs included rhetoric that indicated a theme of nuclear reductions and arms control.³³² The extent and method of these efforts varied, particularly in the first two NPRs. NPRs released under Democratic administrations were more passionate about nonproliferation than NPRs released during Republican administrations, which took a more realist stance. The 1994 NPR was primarily concerned with the aforementioned USSR "loose nukes," and advocated for the Nunn-Lugar Program, hastening START I, START II, and future treaty negotiations, and supporting UN and international nonproliferation efforts.³³³ The 2001 NPR stood out from the rest; it only mentioned the reduction actions the United States was taking with its own nuclear arsenal.³³⁴ The lapse could be explained, however, by the fact that only the unclassified portions of the 2001 NPR were released. However, according to Brad Roberts, the Bush administration was inconsistent when producing nonproliferation policy in its first few years.³³⁵ The 2010 NPR is the most aggressive nonproliferation NPR yet; it introduced the

³²⁹ Department of Defense, *Nuclear Posture Review*, 2018.

³³⁰ Department of Defense, *Nuclear Posture Review*, 2018.

³³¹ Department of Defense, *Nuclear Posture Review*, 2018, 67.

³³² Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

³³³ Department of Defense, *The Nuclear Posture Review*, 1994.

³³⁴ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

³³⁵ Brad Roberts, "Nonproliferation Challenges Old and New," *Counterproliferation Papers: Future Warfare Series 24*, Air University: Maxwell Air Force Base, Alabama, August 2004.

term “nuke-zero,” or a world free of nuclear weapons.³³⁶ It declared that the United States would not test or develop new warheads, increase funding for the NNSA, and enforce consequences for NPT non-compliance.³³⁷ The 2018 NPR further supported the NPT and CTBT, and echoed support for a world free of not only nuclear, but chemical and biological weapons as well.³³⁸ The 2018 NPR was not as dramatic as the 2010 NPR; it declared that the United States must be realistic to worldwide threats.³³⁹ The Trump administration NPR did state, however, that it would increase transparency and predictability to avoid miscalculations by other nuclear states, and that it supports treaties that are verifiable and enforceable.³⁴⁰

B. PROCUREMENT POLICY

Procurement policy and declaratory policy go hand-in-hand. Procurement policy is made up of statements in NPRs about what the presidential administration plans to acquire with regard to nuclear weapons and their associated systems. These acquisitions are determined based on an assessment of the current worldwide threat environment against the current capabilities of the United States nuclear arsenal. The 1994 NPR set a downward trend at the end of the Cold War by shifting priority away from investing in nuclear weapons systems and technologies. This shift led to the United States’ nuclear arsenal falling behind the rest of the world, and a theme among the 2001, 2010, and 2018 NPRs to focus on the defense industrial base and reinvesting in the U.S. nuclear posture.

Nearly three decades after the end of the Cold War, there is a dire need to invest in the defense of the United States. According to Christian Brose,

If ever there was a time to get serious about the coming revolution in military affairs, it is now. There is an emerging consensus that the United States’ top defense-planning priority should be contending with great powers with advanced militaries, primarily China, and that new

³³⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, 41–42.

³³⁷ Department of Defense, *Nuclear Posture Review Report*, 2010.

³³⁸ Department of Defense, *Nuclear Posture Review*, 2018.

³³⁹ Department of Defense, *Nuclear Posture Review*, 2018.

³⁴⁰ Department of Defense, *Nuclear Posture Review*, 2018.

technologies, once intriguing but speculative, are now both real and essential to future military advantage. Senior military leaders and defense experts are also starting to agree, albeit belatedly, that when it comes to these threats, the United States is falling dangerously behind.³⁴¹

The United States nuclear arsenal is a cost-effective means of keeping up to par with the rest of the world. Furthermore, the majority of the U.S. nuclear arsenal is within the United States, recycling money spent on nuclear defense back into the U.S. economy. For example, Malmstrom Air Force base, a USAF ICBM base in Great Falls, Montana contributes greatly to the local economy. According to the City of Great Falls Planning and Community Development Department, “the military’s importance to the local Great Falls economy is significant and far reaching.”³⁴² The City of Great Falls Planning and Community Development Department stated,

According to the Fiscal Year 2009 Economic Impact Report, Malmstrom Air Force Base created an estimated 1,490 indirect jobs and had at total economic impact to the region of \$434 million. This included a total annual payroll of \$222 million, total annual expenditures of \$162 million, and an estimated annual job value of \$50 million. In 2012, total military and civilian wages in Great Falls was \$206 million. Expenditures for construction, services, materials, equipment and supplies in 2012 were approximately \$69 million. In 2012, the contribution of indirect jobs was estimated to be approximately \$62 million. Collectively the total estimated impact of Malmstrom Air Force Base to the City was \$337 million in 2012. These numbers indicate some yearly adjustments but nonetheless underscore the impressive contribution of the military to the City’s economy. In fact, it has been estimated by the University of Montana’s Bureau of Business and Economic Research Department that the local impact of the military in Great Falls represents 46% of the City’s economy.³⁴³

³⁴¹ Christian Brose, “The New Revolution in Military Affairs: War’s Sci-Fi Future,” *Foreign Affairs* Volume 98, Number 3 (May/June 2019), 123.

³⁴² City of Great Falls Planning and Community Development Department, *2013 Growth Policy Update* (Great Falls, MT: Planning and Community Development Department, 2013), https://greatfallsmt.net/sites/default/files/fileattachments/planning_and_community_development/page/27411/growth_policy_update_-_august_6_2013.pdf.

³⁴³ City of Great Falls Planning and Community Development Department, *2013 Growth Policy Update*.

This number is simply the direct impact of Malmstrom Air Force Base; therefore, if it were not for the nuclear mission of the USAF, Great Falls, Montana would most likely shrink to less than half its current size, creating a significant problem for the city's economy.

The spending for fiscal year 2018 on United States nuclear weapons is estimated by the Center for Strategic and Budgetary Assessments to be just under \$20 billion.³⁴⁴ The current spending reported by the Congressional Budget Office for fiscal year 2018 for the entire U.S. Government is \$4.1 trillion.³⁴⁵ This means nuclear deterrence today costs the U.S. Government less than half of a percent of the total federal budget. Although the DoD handles the deployment of nuclear weapons and the stewardship of nuclear deployed facilities, it is the DOE that owns nuclear weapons; they not only own, but also repair and maintain the current nuclear weapon stockpile, and is the sole developer for new nuclear warheads. The current budget for the DOE is roughly \$10 billion.³⁴⁶ All of this money simultaneously supports the American economy and provides a baseline deterrent for not only the United States, but her allies as well.

1. Warheads and Delivery Systems

Identifiable trends in warhead and delivery system procurement did not emerge until the 2001 NPR. The two primary trends that emerged were development of new delivery vehicles, and aggressive sustainment programs for the current fleet of warheads and delivery vehicles while waiting for the new systems to be developed. Development of new warheads was also an identifiable trend; however, the 2010 NPR prioritized placing sustainment over development and the 1994 NPR specifically stated it would not develop new warheads at all.³⁴⁷ The level of investment in developing and acquiring new delivery vehicles seemed to follow party lines; the 1994 and 2010 NPRs under Democratic

³⁴⁴ Center for Strategic and Budgetary Assessments, *The Cost of U.S. Nuclear Forces: From BCA to Bow Wave and Beyond*, (Washington, DC: CSBA, 2015), <https://libguides.nps.edu/citation/chicagonb#report-gov>.

³⁴⁵ "Budget," Congressional Budget Office, accessed October 25th, 2018, <https://www.cbo.gov/topics/budget>.

³⁴⁶ Woolf, *The U. S. Nuclear Weapons Complex: Overview of Department of Energy Sites*.

³⁴⁷ Department of Defense, *The Nuclear Posture Review*, 1994; Department of Defense, *Nuclear Posture Review Report*, 2010.

presidential administrations were not as aggressive as the 2001 and 2018 NPRs under Republican presidential administrations.³⁴⁸

The 1994 NPR and the Clinton administration no longer saw a need to invest significantly in development of nuclear weapons and their associated systems. The report limited the number of delivery system acquisitions and upgrades, and stated that it would not produce any new-design warheads—it would only maintain the current fleet.³⁴⁹ These limits are understandable, considering the size of the United States’ Cold War surplus. By the announcement of the 2001 NPR, however, the need for new bombers, ICBMs, and SLBMs was becoming apparent. The 2001 NPR sought to begin exploring replacement options for ICBMs immediately, replace the current SLBM by 2029, and bombers by 2040, sustaining the current bomber fleet with an aggressive modernization program,³⁵⁰ setting a schedule that was shadowed by the following two NPRs. Due to the changing threat environment, the 2001 NPR also was seeking a ground-penetrating nuclear weapon and an agent-defeat weapon³⁵¹—both proposals unique to the Bush administration NPR. The 2010 NPR only continued research into delivery vehicles, and de-prioritized any plans for developing new warheads.³⁵² The 2018 NPR, trending with the 2001 NPR, placed rapid development of delivery systems as a top priority.³⁵³ It proposed aggressive plans to expand the nuclear triad, making it more flexible and responsive.³⁵⁴ It further sought to develop new and sustain in-service warheads, including development of a low-yield SLBM, a common warhead for ballistic missiles, and supported gravity bomb alterations to fit the warhead on multiple airframes.³⁵⁵

³⁴⁸ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

³⁴⁹ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁵⁰ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

³⁵¹ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

³⁵² Department of Defense, *Nuclear Posture Review Report*, 2010.

³⁵³ Department of Defense, *Nuclear Posture Review*, 2018, 51.

³⁵⁴ Department of Defense, *Nuclear Posture Review*, 2018.

³⁵⁵ Department of Defense, *Nuclear Posture Review*, 2018.

According to the Arms Control Association, six months after the publication of the 2018 NPR, the current DoD modernization programs were to modernize and replace the Minuteman III ICBM with the GBSD, which includes associated launch control and command and control facilities, modernize the B-2 and B-52H, research and develop the B-21 LRSO, replace the ALCM with a long-range standoff cruise missile on board the LRSO, replace the Ohio-Class SSBN with the Columbia Class SSBN, and modernize and extend the life of the Trident II D-5 SLBM.³⁵⁶ According to William J. Broad and David E. Sanger, “The price tag of President Trump’s vision of remaking the American nuclear arsenal has soared... as a new government estimate put the cost of a 30-year makeover at \$1.2 trillion, more than 20 percent higher than earlier figures.”³⁵⁷ This figure could be considered biased because many of these plans had been in the works before President Trump took office. The price tag also does not account for inflation over the next thirty years, which may be in excess of \$1.6 trillion.³⁵⁸ Figure 3 breaks down the cost of all the current programs to modernize the United States nuclear fleet.

³⁵⁶ “U.S. Nuclear Modernization Programs,” Arms Control Association, 2018.

³⁵⁷ William J. Broad and David E. Sanger, “Trump Plans for Nuclear Arsenal Require \$1.2 Trillion, Congressional Review States,” *New York Times*, October 31st, 2017.

³⁵⁸ Broad and Sanger, “Trump Plans for nuclear Arsenal Require \$1.2 Trillion, Congressional Review States.”

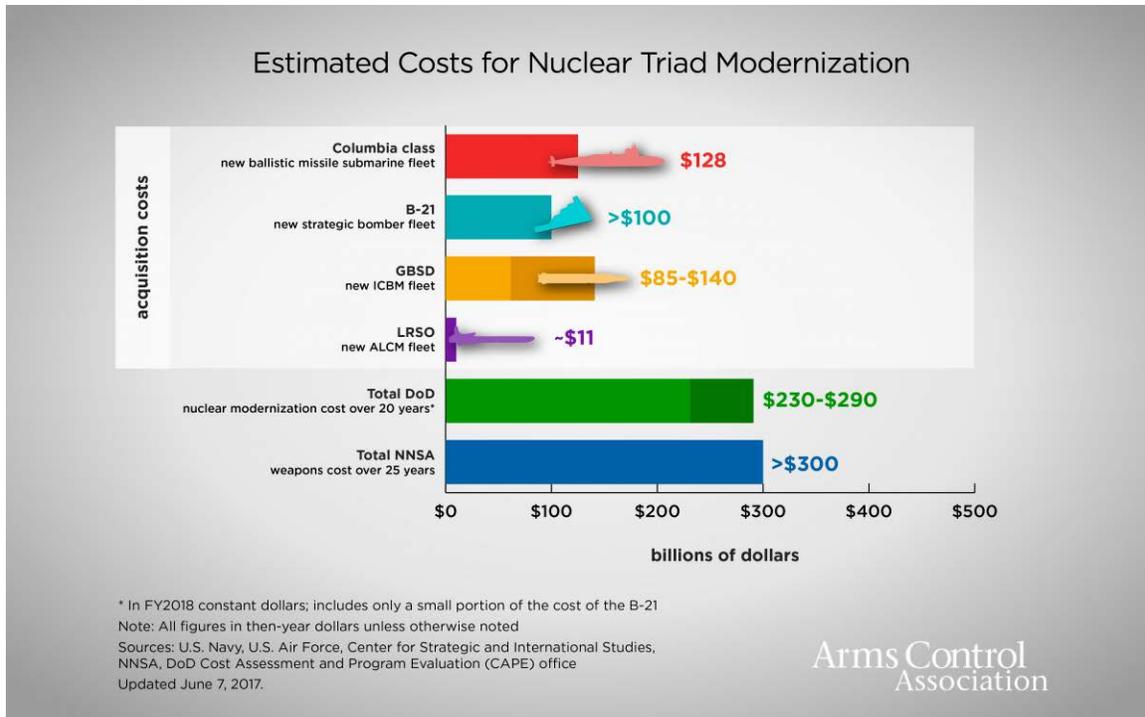


Figure 3. Estimated costs for nuclear triad modernization.³⁵⁹

2. NC3 and Critical Infrastructure

Trends identified in the four post-Cold War NPRs that regarded NC3 and nuclear critical infrastructure were similar to those of weapons and delivery systems. The first post-Cold War NPR in 1994 largely disregarded NC3 and critical infrastructure by largely omitting it from the report, yet this policy emerged as having dire consequences reflected in the 2001, 2010, and 2018 NPRs. The initial lapse in funding immediately following the Cold War set NC3 and nuclear critical infrastructure back behind the rest of the world, and the twenty-first century NPRs all concurred that funding and attention must be returned.

The 1994 NPR mentioned no procurement intent for any new NC3 systems, and simply planned to sustain elements of the defense industrial base.³⁶⁰ By the turn of the century, this error had become evident. The 2001 NPR sought substantial investment in

³⁵⁹ Source: “U.S. Nuclear Modernization Programs,” Arms Control Association, 2018.

³⁶⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

communications systems and development of new, particularly space-based, NC3 systems.³⁶¹ It further defended the need to pursue revitalization and restoration for the nuclear weapons production and infrastructure complexes to develop and produce new warheads should the need arise.³⁶² The 2010 NPR further pursued initiatives to improve NC3 and modernize nuclear critical infrastructure;³⁶³ however, the Obama administration NPR was less dramatic than its predecessor, maintaining the theme of Democratic presidential administrations being less aggressive with their procurement policies. The 2018 NPR also maintained itself as the most assertive NPR yet with regard to procurement policy; it solicited for several programs to strengthen, enhance, sustain, upgrade, improve, advance, reform, explore, fund, ensure, reconstitute, and integrate both NC3 and nuclear critical infrastructure.³⁶⁴

The first three post-Cold War NPRs also had notable solicitations that did not fit into any theme or trend. The 1994 NPR lobbied for the Nunn-Lugar Program and funding for nuclear accident and incident teams,³⁶⁵ complicit with the Clinton administration's NPR focusing on Cold War draw-down rather than future threat posture. The 2001 NPR defined a need for a new nuclear intelligence system and air tanker program³⁶⁶—programs that would supplement NC3 and critical infrastructure, and the bomber delivery systems, respectively. Lastly, the 2010 NPR recommended focusing on the Stockpile Stewardship Program to further sustain all aspects of U.S. nuclear posture for years to come.³⁶⁷

³⁶¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁶² United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁶³ Department of Defense, *Nuclear Posture Review Report*, 2010.

³⁶⁴ Department of Defense, *Nuclear Posture Review*, 2018.

³⁶⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁶⁶ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁶⁷ Department of Defense, *Nuclear Posture Review Report*, 2010, xi, xiv-xv, 2, 30, 37, 40, 42.

C. EMPLOYMENT POLICY

General Nathan F. Twining once said, “If our Air Forces are never used, they have achieved their finest goal.”³⁶⁸ The matrix identified deterrence as the most important employment policy of nuclear weapons. All the other paradigms of nuclear employment policy—the way presidential administrations use nuclear weapons to achieve a certain objective—all support some form of nuclear deterrence. According to the Smithsonian Institute, deaths from war have been in decline since the end of World War II.³⁶⁹ Further, the world is becoming a safer place,³⁷⁰ possibly connected to the decline in significant conflict since WWII. High-intensity conflicts (such as the Korean War or Vietnam War) are down by more than half since the end of the Cold War.³⁷¹ The absence of war has caused terrorism, genocide, and even seemingly unrelated homicide numbers to fall throughout the world.³⁷² These declines have been theorized to be a result of the past development, continued deployment, and continued potential use of nuclear weapons which has led to a less violent world.

Employment policy trends identified by the matrix across the four post-Cold War NPRs were generally consistent. The 1994, 2001, 2010, and 2018 NPRs all agreed to varying degrees the importance of the nuclear triad, deterrence, avoiding complacency, and improving and developing capabilities to stay on-par with threats, even when pursuing a world free of nuclear weapons.

³⁶⁸ Air Force Reserve Officer Training Corps Detachment 105, *Knowledge Book*, Spring 2017, http://www.colorado.edu/afrotc/sites/default/files/attached-files/knowledgebookspring2017_0.docx.

³⁶⁹ Colin Schultz, “Globally, Deaths From War And Murder Are in Decline,” *Smithsonian*, March 21st, 2014.

³⁷⁰ Schultz, “Globally, Deaths From War And Murder Are in Decline.”

³⁷¹ Schultz, “Globally, Deaths From War And Murder Are in Decline.”

³⁷² Schultz, “Globally, Deaths From War And Murder Are in Decline.”

1. Active Role of Nuclear Weapons in National Defense

All four post-Cold War NPRs agreed that deterrence was a foundation of defense and, in their own ways, that it must be balanced, credible, and flexible.³⁷³ Furthermore, each agreed that the Cold War posture was obsolete.³⁷⁴ Offensive and defensive employment policy themes and trends identified by the matrix varied in terms of the “how” element, but the “why” remained the same. Safety and security of the United States was the top priority, but each NPR had its own methods and suggested its own changes to the U.S. nuclear posture to accomplish these priorities. The most prominent theme that did emerge, however, was that of missile defense. NATO Notably, first-use policies were largely ignored, with the exception of the 2018 NPR.

The 1994 NPR introduced a balance of safety and security.³⁷⁵ It began a trend of merging offensive capabilities with defensive ones, particularly early warning, threat assessments, dissemination to decision-makers, and effective force management.³⁷⁶ Since the 1994 NPR immediately followed the darkness of the Cold War, this meant substantial reductions that set the stage for the next three decades of United States nuclear posture. The 1994 NPR took away nuclear weapons custody from ground forces, took strategic bombers off alert and retired nuclear weapons from the naval surface fleet.³⁷⁷ It also set a foundation for developing theater defenses for ballistic missile defense, and warned future Americans to not become complacent.³⁷⁸

³⁷³ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

³⁷⁴ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

³⁷⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁷⁶ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁷⁷ Department of Defense, *The Nuclear Posture Review*, 1994.

³⁷⁸ Department of Defense, *The Nuclear Posture Review*, 1994.

The 2001 NPR continues the trend of effective force management set by the 1994 NPR. Even though the “new triad” was revolutionary and ultimately failed, it simply was an attempt to shape the U.S. nuclear posture to the current threats at the turn of the century. The Bush administration NPR shifted away from offensive forces as the sole means of deterrence by incorporating defensive forces into deterrence alongside offensive capabilities. The first leg of its “new triad” paired ICBMs, SLBMs, and bombers with nuclear and non-nuclear capabilities.³⁷⁹ Defensively, the second leg of the “new triad” consisted of active and passive defenses.³⁸⁰ The 2001 NPR was the first emergence of land-, air-, and sea-based missile defenses in an NPR,³⁸¹ a trend that would be continued in 2010 and 2018. The 2001 NPR confidently proclaimed that defense would dissuade,³⁸² a statement echoed particularly in the 2018 NPR. Missile defense is also an emerging priority of NATO, according to Jacek Durkalec, it was elevated in 2010 to become a core element in NATO’s collective defense.³⁸³

The 2010 NPR was the first to highlight that credibility characterized deterrence.³⁸⁴ The 2010 NPR, in line with its declaration that countering nuclear proliferation by terrorists was the number one priority, favored a nuclear posture much different from the Cold War posture.³⁸⁵ Even though the other three NPRs agree that the Cold War posture is outdated, the Obama administration NPR was much more dramatic with these statements. The 2010 NPR also focused on safety and maximizing presidential decision-making time, and, like the 2001 NPR, referenced the growth of the United States’ “unrivaled” conventional

³⁷⁹ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁸⁰ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁸¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁸² United States Congress, Excerpts of Classified Nuclear Posture Review.

³⁸³ Jacek Durkalec, “NATO Missile Defence: In Search of a Broader Role,” *The Polish Quarterly of International Affairs* 21, no. 1 (January 1st, 2012): 62-86.

³⁸⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, vi-vii, xv, 7, 23, 28, 31–33, 49.

³⁸⁵ Department of Defense, *Nuclear Posture Review Report*, 2010.

forces.³⁸⁶ The 2010 NPR also concurred with the 2001 NPR by improving missile defenses, stating that they are a cause for concern to China and Russia.³⁸⁷

The 2018 NPR, coinciding with its claims of a worldwide return to great power competition, focused on ensuring enemies did not miscalculate the consequences of nuclear use in addition to placing even more emphasis on defense than its predecessors. The Trump administration NPR claims that, “Potential adversaries must understand that: 1) the United States is able to identify them and hold them accountable for acts of aggression, including new forms of aggression; 2) we will defeat non-nuclear strategic attacks; and, 3) any nuclear escalation will fail to achieve their objectives, and will instead result in unacceptable consequences for them.”³⁸⁸ It further held that capabilities must be flexible in order to achieve tailored deterrence, and was the first NPR to offer strategies for deterrence specific to certain threats.³⁸⁹ The 2018 NPR was the first to definitively state that a first-use policy was inappropriate given the current world threat environment,³⁹⁰ a topic none of the other three NPRs covered. The 2018 NPR did, however, continue hailing missile defenses as the best option if deterrence failed.³⁹¹

Realists would argue that the sentiment of increased missile defenses could have potentially caused China and Russia to further their capabilities. According to the 2019 Missile Defense Review (MDR), “For the past 17 years, the United States has devoted significant effort to developing and deploying a layered missile defense system... With further planned investments, these improvements will continue well into the future.”³⁹² The 2019 MDR also states that the current threat environment is higher than in years past and calls for a new approach.³⁹³ Realist international relations theory is based on the

³⁸⁶ Department of Defense, *Nuclear Posture Review Report*, 2010.

³⁸⁷ Department of Defense, *Nuclear Posture Review Report*, 2010.

³⁸⁸ Department of Defense, *Nuclear Posture Review*, 2018, 21.

³⁸⁹ Department of Defense, *Nuclear Posture Review*, 2018.

³⁹⁰ Department of Defense, *Nuclear Posture Review*, 2018, 22.

³⁹¹ Department of Defense, *Nuclear Posture Review*, 2018.

³⁹² Department of Defense, *Missile Defense Review*, 2019, XVIII.

³⁹³ Department of Defense, *Missile Defense Review*, 2019, I.

concept of power as opposed to vulnerability. For example, the end of the Cold War is a challenge for realists to explain. According to Richard Lebow, the end of the Cold War creates a serious problem in the realist community.³⁹⁴ Lebow observes that, “Some realists contend ex post facto that Soviet foreign policy after 1985 was not inconsistent with realist theories and is a logical and long overdue response to the Soviet Union’s economic decline.”³⁹⁵ He continues that this concept is disagreeable, and argues that, “Soviet foreign policy had been living beyond its means for a long time.”³⁹⁶ Perhaps Mikhail Gorbachev’s actions in response to the economic situation in the USSR were a function of self-preservation, which would be consistent with realism. Current events, which include Russia strengthening and modernizing its arsenal, could suggest that the Soviet move for globalization in the late 1980s was just an effort to buy time. Lebow insists that, “Realists maintain that the [end of the Cold War] is illusory. In the absence of a hierarchical structure, humankind is doomed to repeat endlessly the cycle of expansion and decline and war and renewal.”³⁹⁷ Now, nearly three decades after the end of the Cold War, the Russians have had their time to build themselves back up to counter, and continue to counter, any advances in United States nuclear posture, conventional capability, or missile defense.

2. Nontraditional Role of Nuclear Weapons

The four post-Cold War NPRs also contained an unexpected theme for employment of nuclear weapons. The matrix uncovered a category of rhetoric encompassing countering chemical and biological weapons. The 1994 NPR stood out from the other three by only stating that the United States must improve its real time detection capabilities for agents.³⁹⁸ However, the 2001, 2010, and 2018 NPRs all discussed the actual employment of nuclear

³⁹⁴ Richard Ned Lebow, “The Long Peace, the End of the Cold War, and the Failure of Realism,” *International Organization* 48, no. 2 (Spring, 1994): 250.

³⁹⁵ Lebow, “The Long Peace, the End of the Cold War, and the Failure of Realism,” 263.

³⁹⁶ Lebow, “The Long Peace, the End of the Cold War, and the Failure of Realism,” 264.

³⁹⁷ Lebow, “The Long Peace, the End of the Cold War, and the Failure of Realism,” 276.

³⁹⁸ Department of Defense, *The Nuclear Posture Review*, 1994.

weapons themselves to counter CBW threats;³⁹⁹ however, the extent of the rhetoric followed party lines. The 2001 NPR, under a Republican administration, sought to produce an Agent-Defeat Weapon (ADW) to help deter CBW threats and assure U.S. allies.⁴⁰⁰ The 2010 NPR, under a Democratic administration, claimed that the role of nuclear weapons in deterring CBW attacks was declining, and desired to focus on conventional deterrence.⁴⁰¹ The 2018 NPR, produced during the Republican administration of President Trump, did not directly correlate countering CBWs as a mission of nuclear weapons, however the report repeated that CBWs were a significant threat.⁴⁰² The report did state that, “We will, for example, hedge against the potential rapid growth or emergence of nuclear and non-nuclear strategic threats, including chemical, biological, cyber, and large-scale conventional aggression.”⁴⁰³

D. DEPLOYMENT POLICY

Deployment policy as defined by the matrix is the quantity and placement of nuclear weapons and their associated systems to achieve the desired employment policy objectives. The trends uncovered correlated closely to not only employment policy, but declaratory policy as well. The actual number of nuclear warheads and delivery systems deployed is a direct reflection of treaties and agreements, particularly START I, START II, and the most recent New START, as seen in Figure 4. Procurement policy can also be related to deployment policy; however, since treaties are what limit the actual number of deployed resources, any procurement intent would not affect the number of deployed nuclear weapons or systems, it would only affect the advanced technical or type of delivery system or warhead. Common sense would indicate that careful consideration of threat and capability also contributes to deployment policy, however all four post-Cold War NPRs

³⁹⁹ United States Congress, Excerpts of Classified Nuclear Posture Review; Department of Defense, Nuclear Posture Review Report, 2010; Department of Defense, Nuclear Posture Review, 2018.

⁴⁰⁰ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁴⁰¹ Department of Defense, *Nuclear Posture Review Report*, 2010, 15.

⁴⁰² Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁰³ Department of Defense, *Nuclear Posture Review*, 2018, 38.

lack specific details on why certain systems are actively deployed rather than others,⁴⁰⁴ since the START treaties in particular do not necessary limit type of delivery vehicle, only the total number of delivery vehicles. The 2018 NPR broke this mold to some extent, but still refrained from providing detailed information.⁴⁰⁵ This information most likely resides at the classified level and will not be released to the public.

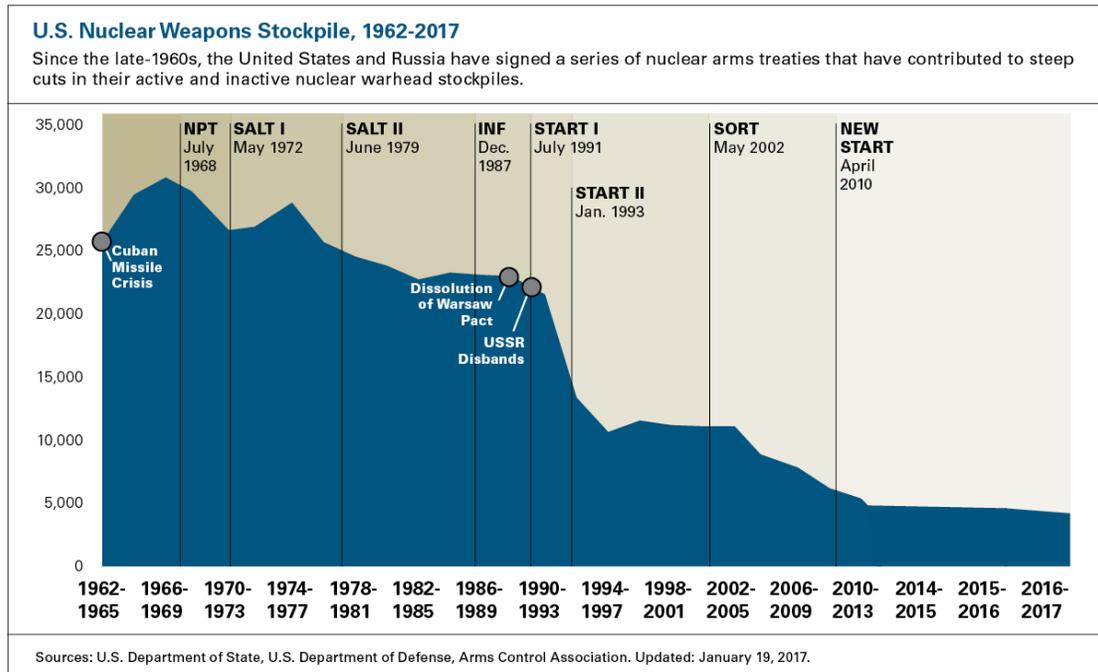


Figure 4. Correlation between treaties and stockpile numbers⁴⁰⁶

1. Nuclear Triad Delivery Systems

The nuclear triad consists of ICBMs, SLBMs, and nuclear bombers. Throughout the nearly three decades since the end of the Cold War, presidential administrations have

⁴⁰⁴ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁰⁵ Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁰⁶ Source: Kelsey Davenport, “Nuclear Weapons: Who Has What at a Glance,” Arms Control Association, July 2019.

often suggested either removing one leg of the triad or reorganizing it altogether. These trends were not necessarily indicated in the NPRs themselves. The 2001 NPR, as previously mentioned, attempted to dramatically reform the triad into the Bush administration's so-called "new triad."⁴⁰⁷ The 2010 NPR stated it had considered removing one leg of the triad, but decided against this plan.⁴⁰⁸ According to William J. Broad and David E. Sanger, President Obama, in the beginning of his term as president of the United States, had been focused on reducing the role of the nuclear arsenal in American offensive and defensive strategy.⁴⁰⁹ Yet, toward the end of President Obama's term, he not only decided against removing one leg of the nuclear triad, but also opted to keep active American nuclear weapon deployment at about 1,000 warheads despite the contradictory advice of his top nuclear political strategists.⁴¹⁰ The 2018 NPR said that it would replace the nuclear triad;⁴¹¹ however, the context of the report as aggressive in its procurement policy for new ICBM, SLBM, and bomber warheads, delivery systems, and support systems⁴¹² indicates that the report's desire to replace the triad meant it would simply be modernizing the technology that makes up the triad, rather than accomplishing a ground-up restructure like what was proposed in the 2001 NPR. Furthermore, Broad and Sanger allege that Secretary of Defense Jim Mattis changed his stance on ICBMs from being a skeptic of land-based nuclear missiles at the beginning of his tenure to saying he believes they are necessary to preserve at the time of the 2018 NPR's production.⁴¹³

⁴⁰⁷ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁴⁰⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 20.

⁴⁰⁹ Broad and Sanger, "Trump Plans for nuclear Arsenal Require \$1.2 Trillion, Congressional Review States."

⁴¹⁰ Broad and Sanger, "Trump Plans for nuclear Arsenal Require \$1.2 Trillion, Congressional Review States."

⁴¹¹ Department of Defense, *Nuclear Posture Review*, 2018.

⁴¹² Department of Defense, *Nuclear Posture Review*, 2018.

⁴¹³ Broad and Sanger, "Trump Plans for nuclear Arsenal Require \$1.2 Trillion, Congressional Review States."

All four post-Cold War NPRs had a downward trend for ICBMs.⁴¹⁴ The 1994 NPR said that there would be 450–500 Minuteman III ICBMs carrying single warheads, even though there were many more ICBMs than this on alert at the time of publishing.⁴¹⁵ By the 2001 NPR, the projected number of Minuteman III ICBMs was still 500, yet the Peacekeeper ICBM had not yet been retired, something the Bush administration report claimed to change by 2012.⁴¹⁶ According to the Arms Control Association, it achieved this on September 19th, 2005 to comply with START II.⁴¹⁷ At the time of production of the 2010 NPR, Minuteman III ICBMs had still not been de-MIRVed, but there were only 450 ICBMs on alert.⁴¹⁸ The 2018 NPR hailed the Minuteman III ICBM as the most responsive and survivable deployed leg, claimed it would continue open-ocean targeting, and claimed that there were 400 single warhead ICBMs spread between 450 silos.⁴¹⁹ It broke the trend of secrecy, stating that ICBMs hold Eurasia at risk by being prompt, accurate, and flexible.⁴²⁰

In terms of SSBNs, each post-Cold War NPR considered changes to the fleet size.⁴²¹ These changes trended to follow party lines. The Democratic 1994 NPR reduced the fleet from eighteen to fourteen,⁴²² the Republican 2001 NPR maintained the fleet size and considered reconstituting the four retired submarines to transport special operations forces,⁴²³ and the Democratic 2010 NPR further considered reducing the SSBN fleet to

⁴¹⁴ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

⁴¹⁵ Department of Defense, *The Nuclear Posture Review*, 1994.

⁴¹⁶ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

⁴¹⁷ Wade Boese, “United States Retires MX Missile,” *Arms Control Today*.

⁴¹⁸ Department of Defense, *Nuclear Posture Review Report*, 2010, 23.

⁴¹⁹ Department of Defense, *Nuclear Posture Review*, 2018, X, 45.

⁴²⁰ Department of Defense, *Nuclear Posture Review*, 2018, 45–46.

⁴²¹ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

⁴²² Department of Defense, *The Nuclear Posture Review*, 1994.

⁴²³ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

twelve but retained fourteen for the time being.⁴²⁴ The Republican 2018 NPR did not provide a specific number of active SSBNs, but also made no indication that it would change the size of the Ohio-Class fleet, but did indicate that the Columbia-Class SSBN would replace the Ohio-Class fleet upon completion.⁴²⁵ It hailed SSBNs, much like ICBMs, as having no known credible threats and being able to hold Eurasian targets at risk.⁴²⁶

Deployment of nuclear bombers as indicated by the four post-Cold War NPRs was erratic but trended downward. The 1994 NPR reoriented the role of the B-1 to conventional and planned to reduce the B-52 fleet to a total of sixty-six.⁴²⁷ The 2001 NPR did not provide a specific number of deployed bombers, it only stated that it planned for seventy-six B-52s and twenty-one B-2s to be active in 2012.⁴²⁸ At the time of production of the 2010 NPR, the number of B-52s was at the target of the Bush administration; however, the Obama administration planned to consider transitioning some of these to a conventional mission.⁴²⁹ The 2010 NPR also identified eighteen B-1s in current service.⁴³⁰ The 2018 NPR, much like with ICBMs and SSBNs, stood out from the pack by confirming bombers as flexible and visible, stating they had multiple warhead options and could be used as a show of force.⁴³¹ It stated that there were forty-six B-52s and twenty B-2s supported by refueling aircraft; and noted that they are not maintained on a day-to-day alert.⁴³²

Figure 5 shows the combined United States nuclear forces after the end of the Cold War. In accordance with the START agreements, warhead numbers are not specific to a delivery vehicle, and launchers are considered ICBMs, SLBMs, and bombers.

⁴²⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 22.

⁴²⁵ Department of Defense, *Nuclear Posture Review*, 2018, 45.

⁴²⁶ Department of Defense, *Nuclear Posture Review*, 2018, 45.

⁴²⁷ Department of Defense, *The Nuclear Posture Review*, 1994.

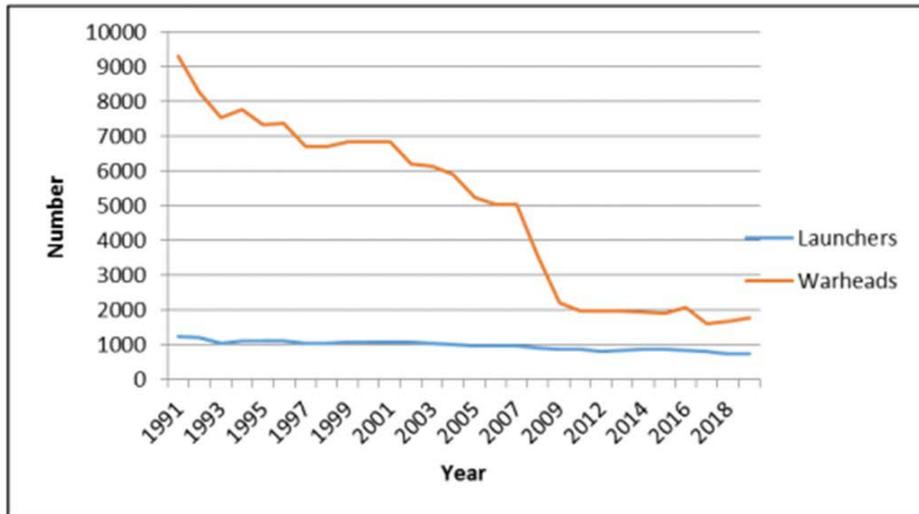
⁴²⁸ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁴²⁹ Department of Defense, *Nuclear Posture Review Report*, 2010, 24.

⁴³⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, 24.

⁴³¹ Department of Defense, *Nuclear Posture Review*, 2018, 46–47.

⁴³² Department of Defense, *Nuclear Posture Review*, 2018, 46–47.



Source: Natural Resources Defense Council, Archive of Nuclear Data, Bulletin of the Atomic Scientists, Nuclear Notebook.

Figure 5. United States nuclear forces post-Cold War.⁴³³

2. Non-Triad Delivery Systems

The matrix suggested that nuclear deployment policy that did not fall under the nuclear triad was tactical rather than strategic. This included NATO DCA and other Naval and ground-force nuclear options, as well as supporting functions.

The most dramatic changes to non-strategic nuclear weapons forces were outlined in the 1994 NPR in the immediate aftermath of the Cold War. It vowed to eliminate carrier-based DCA, removed nuclear weapons custody from ground forces, and eliminated the option to carry nuclear weapons on naval surface ships.⁴³⁴ The 2001 NPR made no mention of a naval surface nuclear capability,⁴³⁵ but the 2010 NPR declared it would remove this capability,⁴³⁶ indicating it had may or may not have been accomplished by that time, the 2010 NPR was not specific and could have been referring to Tomahawk

⁴³³ Adapted from Amy F. Woolf, *The U. S. Nuclear Weapons Complex: Overview of Department of Energy Sites*, CRS Report No. R45306 (Washington, DC: Congressional Research Service, 2019).

⁴³⁴ Department of Defense, *The Nuclear Posture Review*, 1994.

⁴³⁵ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁴³⁶ Department of Defense, *Nuclear Posture Review Report*, 2010, 28.

Missiles. The 2018 NPR made no mention of surface naval nuclear capability;⁴³⁷ however, in the immediate timeframe of the Trump administration NPR's release, the USSTRATCOM commander made comments indicating his desire to arm surface ships with a nuclear cruise missile, most notably the Zumwalt-class destroyer.⁴³⁸

Support for NATO DCA was maintained throughout the four post-Cold War NPRs.⁴³⁹ The 2010 NPR claimed consideration of changes would have to be approved by NATO partners,⁴⁴⁰ indicating the Obama administration was considering a shift, even though the 2010 report did not criticize NATO DCA. The 1994 NPR reflected reductions in NATO DCA and deployment of nuclear weapons in Europe to ten percent of Cold War numbers,⁴⁴¹ understandable in the immediate aftermath of the decades-long conflict and the continuing arms control agreements. The 2001 NPR simply maintained its commitment,⁴⁴² while the 2018 NPR held that forward presence was a requirement.⁴⁴³

The 2001 NPR stood apart from the pack in terms of illustrations about nuclear mission support functions. Although mentioned sparsely in the 1994, 2010, and 2018 NPRs, the topic was largely ignored.⁴⁴⁴ The 2001 NPR's proposal of the "new-triad," which included those conventional and non-conventional forces, is what delineated it from the rest. In particular, the 2001 NPR included deployment of airborne tankers and development of new nuclear and non-nuclear systems, particularly for missile defense, as part of its "new triad."⁴⁴⁵

⁴³⁷ Department of Defense, *Nuclear Posture Review*, 2018.

⁴³⁸ Joseph Trevithick, "US Eyes Adding Nuclear Cruise Missiles to Zumwalt Stealth Destroyers As Well As Submarines," *The War Zone*, February 26th, 2018.

⁴³⁹ Department of Defense, *The Nuclear Posture Review*, 1994; United States Congress, *Excerpts of Classified Nuclear Posture Review*; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁴⁰ Department of Defense, *Nuclear Posture Review Report*, 2010, xii-xiii.

⁴⁴¹ Department of Defense, *The Nuclear Posture Review*, 1994.

⁴⁴² United States Congress, *Excerpts of Classified Nuclear Posture Review*.

⁴⁴³ Department of Defense, *Nuclear Posture Review*, 2018, 48.

⁴⁴⁴ Department of Defense, *The Nuclear Posture Review*, 1994; Department of Defense, *Nuclear Posture Review Report*, 2010; Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁴⁵ United States Congress, *Excerpts of Classified Nuclear Posture Review*.

V. CONCLUSION

The development and employment of the nuclear weapons has permanently changed the atmosphere of international politics. Since the inception of nuclear weapons at the end of World War II, statesmen, primarily from the United States and the United Socialist Soviet Republics, now known as the Russian Federation, have been challenged to understand the role these weapons play in international relations between superpowers. History shows an unpredictable Cold War was filled with theories and strategies surrounding the development, employment, stockpiling, use, and stewardship of nuclear weapons. Although misinterpreted throughout the latter half of the twentieth century, the role of nuclear strategy eventually was understood by the great powers and has led to a drastic reduction in worldwide conflict and wartime death. All this considered, nuclear weapons had a positive role in the outcome of the Cold War, which has led to positive changes to modern conflict, making it less likely to occur.

The United States NPR has become a staple of modern post-Cold War nuclear policy. It has provided a crucial insight to not only American policymakers, but to assuring our allies and deterring our foes. It has evolved in accordance with increased understanding of public relations and technological advancements enabling wider dispersal of white papers. Most importantly, the four post-Cold War NPRs have become lenses to identify trends in U.S. nuclear posture.

The role of nuclear weapons, despite being a catalyst in the beginning of the Cold War, has proven to be overall positive. In their beginnings, the implications of the atomic bomb were understood by neither the Americans nor the Soviets. Much like slavery was not the cause of the American Civil War, rather the intention was to keep the country together, the nuclear weapon was not the cause of the Cold War. It was a substance which fueled the differences between the United States and the USSR in the post-WWII struggle for world control between the Great Powers. Stalin underappreciated the atomic bomb as

a weapon, and Roosevelt and Truman underestimated its use as a tool of negotiation.⁴⁴⁶ Neither the United States nor the USSR appropriately negotiated their desires after WWII had ended, and eventually leaned on the newly developed nuclear weapon as their means of holding onto or claiming power.

Nuclear deterrence has had many different meanings since its inception. Originally implying mutually assured destruction and favoring quantity of nuclear attack over quality, nuclear strategy quickly shifted from massive destruction to specifically targeted economic, military, and socially strategic targets. Presently, nuclear deterrence is characterized by mutually assured safety, and still makes up a small but important part of the U.S. DoD and is likely to never disappear. The deterrent factor of the threat of nuclear weapon use in the great power struggle of the Cold War directly contributed to the peaceful resolution, as well as the ever-declining amount of conflict and subsequent casualties in the present day worldwide.

A. IDENTIFIED TRENDS

A literature review of scholarly reactions to NPRs revealed a failure of the scholarly community to examine NPRs side by side to discover trends. The matrix this thesis incorporated has identified a significant number of notable trends in U.S. nuclear policy. The evolution of the NPR itself to become more formal and specific is a notable and important trend. It indicates that nuclear weapons are still an important part of American politics, and the U.S. Government values transparency and is taking public relations seriously.⁴⁴⁷ Declaratory policy was the longest and most inclusive theme identified by the matrix, consistent with the role of the NPR as a white paper. Priorities typically followed Republican and Democratic party lines; however, a world free of nuclear weapons was generally stipulated as a goal in each NPR, despite the party affiliation of the administration. Aggressiveness of procurement policy had the most identifiable bias

⁴⁴⁶ Craig Campbell and Sergey S. Radchenko, *The Atomic Bomb and the Origins of the Cold War* (New Haven, Connecticut: Yale University Press, 2008).

⁴⁴⁷ In accordance with the ICT theory of Anthopoulos and Reddick, *Government e-Strategic Planning and Management Practices, Patterns, and Roadmaps*.

between liberal and conservative administrations; NPRs released by Republican administrations were much more aggressive in this paradigm than NPRs released by Democratic administrations. The 2001 NPR sought a ground-penetrating nuclear weapon and the 2018 NPR campaigned for aggressive development programs for warheads and delivery systems to compete with the times, when the 2010 NPR released under a Democratic administration had only focused its energy on pandering for life-improvement programs for current capabilities.

A theme generally agreed upon by all four of the post-Cold War NPRs was that the Cold War was in the past, with the exception of the 2018 NPR that declared the world is experiencing a return to great power competition.⁴⁴⁸ The reason for the discrepancy in the 2018 NPR is that Chinese and Russian behavior had become more aggressive in the meantime. According to Brad Roberts,

Since the end of the Cold War, leaders of each U.S. presidential administration have sought to remake the political relationship with Russia in a way that reduces and ultimately eliminates as one of its defining elements of the Cold War – vintage nuclear balance of terror. The Clinton administration talked about moving away from mutual assured destruction (MAD) as the basis toward mutual assured security. The George W. Bush administration talked about moving nuclear weapons out of the foreground and into the background of the political relationship. The Obama administration attempted to “reset” the political relationship in part by shifting the focus away from mutual deterrence and onto shared interests in strategic stability and a stronger nonproliferation regime. It also sought to stimulate broader discussion of the requirements of mutual assured stability.⁴⁴⁹

Unfortunately, Russia did not follow suit.⁴⁵⁰ All the administrations agreed that deterrence was the most important mission of U.S. nuclear forces, and generally agreed that it must be credible, balanced, and flexible. The NPRs agreed that a strategic nuclear triad was the greatest way to achieve this level of deterrence; however, the triad was highly

⁴⁴⁸ Department of Defense, *Nuclear Posture Review*, 2018, 6–7.

⁴⁴⁹ Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, Stanford University Press: Stanford, CA (2016), 106.

⁴⁵⁰ Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century*, 106.

scrutinized. The 2001 NPR under the Bush administration attempted to radically change the triad to incorporate conventional forces and defenses.⁴⁵¹ Although the other three NPRs did not alter the triad, behind-the-scenes activities constantly questioned the necessity of each of the legs. Ultimately, ICBMs, SLBMs, and nuclear bombers are all maintained as the most cost-effective and strategically-sound methods of producing deterrence.

Nuclear critical infrastructure, NC3 systems, and personnel were themes that exponentially tended to increase in importance as the NPRs were published. The 1994 NPR under the Clinton administration dramatically reduced funding and procurement plans for critical infrastructure and NC3, and unveiled plans to retire nuclear personnel into the civilian sector.⁴⁵² This mistake was realized by the 2001 NPR, the first to indicate that ignoring critical infrastructure and NC3 systems had caused those systems to fall behind the times, and that people with critical nuclear skills must be given the opportunities to exercise these skills.⁴⁵³ The call for increased attention to nuclear critical infrastructure, NC3 systems, and personnel gradually became more dramatic through the 2001, 2010, and 2018 NPRs.

The nuclear posture of the United States was consistently based on the perceived threat worldwide and treaty agreements. Russia tended to be a primary concern across all four post-Cold War NPRs, but nuclear terrorism and threats from Middle Eastern and Asian states, particularly Iran, North Korea, and China, were consistent trends throughout the three NPRs after the turn of the century. Despite rhetoric that indicated connections to political affiliation of presidential administrations, the 1994, 2001, 2010, and 2018 NPRs all favored diplomacy over conflict, and support for treaties as a means of arms control was consistent. They agreed that treaties and agreements are effective when enforceable, but this is where the NPRs diverged. Democratic NPRs tended to reflect a more idealistic view of the world, for example the Obama administration supported ratification of the CTBT

⁴⁵¹ United States Congress, Excerpts of Classified Nuclear Posture Review.

⁴⁵² Department of Defense, *The Nuclear Posture Review*, 1994.

⁴⁵³ United States Congress, Excerpts of Classified Nuclear Posture Review.

and failed to properly enforce the INF Treaty.⁴⁵⁴ NPRs published by Republican administrations were more realist, such as the Trump administration claiming it would not ratify the CTBT⁴⁵⁵ and eventually withdrawing from the INF treaty.⁴⁵⁶

Employment and deployment policy themes also tended to be based on the perceived worldwide threat and treaty agreements. For example, missile defense emerged rapidly after the turn of the century, eventually breaking off to form its own comprehensive reviews modeled much like the NPRs.⁴⁵⁷ Actual deployment of nuclear triad delivery systems was directly connected to treaties and agreements, in particular the START accords. The last of the identifiable trends is that support for NATO was maintained by all four post-Cold War NPRs; however, as NPRs became more recent, the role the United States plays in the alliance came into question.

Other themes relating to declaratory, procurement, employment, and deployment policy were explored. However, these themes did not produce many significant or identifiable themes, such as the non-traditional roles of nuclear weapons in the paradigm of employment policy. NPRs all had differentiating perspectives on the role of nuclear weapons to counter chemical and biological weapons. Furthermore, several topics were generally left out of the four post-Cold War NPRs, most notably cyber threats, hypersonic capabilities, and the emergence of space as a battleground. These technologies were still in infancy at the end of the Cold War but have emerged to become major political talking points in present day.

B. RECOMMENDATIONS

As the importance of public relations continues to emerge, NPRs should continue to be published periodically in accordance with major changes in the world and transitions

⁴⁵⁴ Department of Defense, *Nuclear Posture Review Report*, 2010.

⁴⁵⁵ Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁵⁶ Michael R. Pompeo, "U.S. Withdrawal from the INF Treaty on August 2, 2019," Press Release, United States Department of State, August 2nd, 2019.

⁴⁵⁷ Department of Defense, *Ballistic Missile Defense Review Report*, 2010; Department of Defense, *Missile Defense Review*, 2019.

of presidential administrations. They provide important insight to the American public, politicians, military leadership, and scholars, assure our allies, and, as mentioned in the 2018 NPR, prevent miscalculation by our foes.⁴⁵⁸ Presidential administrations wishing to publish NPRs must consider how the media and foreign states will respond. Since the beginning of its development in 1993, evolution of the NPR has revealed an emergent intent to appeal to the general public. A thorough understanding of the influential relationships between the NPR, the media, and public opinion will lead the DoD and future presidential administrations to produce an NPR that accurately embodies the United States' nuclear requirements while simultaneously addressing the concerns of the general public. Furthermore, Major General Mark Hertling, co-author of "The Military-Media Relationship: A Dysfunctional Marriage?" explains that, "what [journalists] might be reporting to the American people will soon end up on foreign websites, and will influence our adversaries."⁴⁵⁹ Literature reviewed by this thesis uncovered gaps in the DoD and Presidential administrations' considerations the implications of U.S. NPRs on other states; therefore, future NPRs, in addition to being mindful of how U.S. media will frame the report, must also place considerations of how foreign outlets will frame the report as a high priority.

Future DoD leadership and presidential administrations regardless of party must consider the ramifications of lack of procurement programs for nuclear warheads and delivery systems, and underfunding nuclear critical infrastructure, NC3, and human capital. As NPRs progressed in the three decades since the end of the Cold War the United States fell behind the rest of the world in terms of weapon and system technology and capability, creating a serious vulnerability. Furthermore, the effect of underfunding critical infrastructure and NC3 as a result of the 1994 NPR was evident in all the subsequent NPRs. Accordingly, nuclear personnel, both civilian and military, must be given opportunities to exercise their skills to prevent the United States from further falling behind the rest of the

⁴⁵⁸ Department of Defense, *Nuclear Posture Review*, 2018.

⁴⁵⁹ Thomas Shanker and Mark Hertling, "The Military-Media Relationship. A Dysfunctional Marriage?" *Military Review*, September/October 2009.

world. Lastly, recognition and praise must be given to these personnel to combat declining morale and prevent future crises that require response such as the costly FIP.

Most importantly, consideration should be given to the effect of the U.S. nuclear posture on the rest of the world. As characterized by the 1994 NPR, the United States must be conscious of the fact that the way it conducts itself influences Russia.⁴⁶⁰ Some scholars argue that the U.S. and NATO would defeat Russia in a conventional conflict, and that Russian military strategy and nuclear policy is simply a realistic response to threats. Debating this theory is outside the scope of this thesis; however, there is strong evidence in Russia's military strategy that it is reactionary. According to a RAND Corporation report,

The new [military doctrine of Russia] is more specific about the Western weapons systems that endanger or threaten Russia. Global strike, long a concern, is for the first time specifically called out in doctrine. Russia promises to oppose the efforts of others to "attain military superiority" by deploying missile defenses, space weapons, or strategic conventional precision weapons. It calls for an agreement, under UN auspices, to regulate the use of space.⁴⁶¹

The report continues to state that, "Russia maintains, as it has in the past, that it will use military force only defensively, when other options have failed," and admits that Russia is a state that, "sees a lot to defend against."⁴⁶² The Kremlin is becoming increasingly skittish, and the Pentagon must be mindful of this when crafting nuclear posture policy or missile defense. China should also be monitored closely despite its economic ties with the United States. Although the bilateral trade between the United States and China could prevent war, it could also allow China's nuclear program to grow unchecked and uncontrollably.⁴⁶³ The situations in Europe and Asia are distinctly different from each other, and must be treated as such.

⁴⁶⁰ Department of Defense, *The Nuclear Posture Review*, 1994.

⁴⁶¹ Olga Oliker, "Russia's New Military Doctrine: Same as the Old Doctrine, Mostly," RAND Corporation, January 15th, 2015.

⁴⁶² Oliker, "Russia's New Military Doctrine."

⁴⁶³ Eswar Prasad and Grace Gu, "An Awkward Dance: China and the United States," *Brookings*, November 11th, 2009.

C. TOWARD A WORLD FREE OF NUCLEAR WEAPONS

Each post-Cold War NPR generally acknowledged an ultimate goal of “nuke-zero” or a world free of nuclear weapons. To realists, the concept is a fairy tale, a Utopia that would never exist. President Obama acknowledged that this goal was ambitious and would not be reached quickly in both his speech in Prague and in the 2010 NPR.⁴⁶⁴ However, this is not a reason to give up on it. In the meantime, nuclear weapons have made the world a safer place, and despite alarmist reactions to regional crises they will continue to do so. As technology advances and the world evolves, nuclear weapons, their associated systems, and the men and women who build, maintain, operate, and guard them must be funded, supported, and appreciated to maintain peace and continue working toward a peaceful planet.

⁴⁶⁴ Department of Defense, *Nuclear Posture Review Report*, 2010, 1; “Remarks by President Barack Obama,” The White House: Office of the Press Secretary (April 5th, 2009).

APPENDIX A. NPR TRENDS MATRIX

	1994 NPR	2001 NPR	2010 NPR	2018 NPR
Format	Compilation of press releases including statements, speeches, and slides. Invented to be a comprehensive review of policies and forces.	Classified report not publicly released, released report has sections but was not in any particular format.	Revolutionary new format, released in the form of a report with sections, graphics, and index information. Titled, "Nuclear Posture Review Report."	Similar to 2010, formatting consistent with government report including sections, graphics, and index information.
Related Documents	Report on the Bottom-Up Review (1994)	Quadrennial Defense Review, End-to-End Review	Quadrennial Defense Review, 2010 Ballistic Missile Defense Review	Quadrennial Defense Review, 2019 Missile Defense Review, National Security Strategy
Production	Collaborative effort of DoD and Armed Services.	Directed by Congress. Compiled by DoD	Directed by President Obama; According to DoD website it was legislatively mandated. Created by DoD.	Directed by Trump on January 27th, 2017. Conducted by Department of Defense.
Rationale	Changes in security environment, DoD budget constraints, planning of substantial reductions.	Lay out the direction for American nuclear forces over the next five to ten years.	Roadmap for implementing President Obama's agenda for reducing nuclear risks to the US, allies and partners, and international community.	To ensure a safe, secure, and effective nuclear deterrent that protects the homeland, assures allies and above all, deters adversaries.
Declaratory Policy				
Great Power Competition	End of the Cold War, "Breathing Easy," Clouds have passed and sun is shining through. The days of mutually assured destruction are over, shift to mutually assured safety.	Dissuade adversaries from entering competition. No specific mention of GPC.	Key objectives of maintaining a stable bilateral balance and avoiding competition. No specific mention of GPC	Russian actions are causing a return to GPC. Claims China seeks to counter the US. States U.S. does not wish to return to GPC.

<p>Nuclear Triad</p>	<p>“Time to change the way we think about nuclear weapons.” But maintains support of triad.</p>	<p>Establishes a “New Triad” as a blueprint for transforming U.S. strategic posture and changing approach to role of nuclear offensive forces in deterrent strategy.</p>	<p>Safe/Secure/Effective. U.S. maintains more nuclear weapons than is needed for deterrence. Returns to traditional triad. Considered eliminating one leg, but decided against it. Must minimize and make more efficient.</p>	<p>Concurs with previous NPRs that triad (with NATO dual capable aircraft and NC3) is most cost effective and strategically sound way of producing deterrence. Supports diversity and flexibility.</p>
<p>Command, Control, and Communications</p>	<p>Maintain current system. Binds C3 in with Intelligence.</p>	<p>Referred to as “Command, Control, Planning, and Intelligence.” C2 (Command and Control) is critical to ensure effectiveness of force structure. It will become more complex and will require augmentation, modernization, and replacement. Closely connected to targeting as a means of ensuring first strike and missile defense capability.</p>	<p>Referred to as NC3. Must provide maximum presidential decision making time.</p>	<p>Must be flexible and capable: adjust to change, enable tailored deterrence to meet diverse and changing threats. Updated 3 decades ago/needs modernization. NC3 has 5 crucial functions: detection, warning, and attack characterization; adaptive nuclear planning; decision-making conferencing; receiving presidential orders; and enabling the management and direction of forces.</p>

<p>Critical Infrastructure</p>	<p>Maintain selected portions of defense industrial base that are unique to strategic and nuclear systems.</p>	<p>Claims underinvestment and shortfalls in infrastructure. Infrastructure is critical to supporting a smaller force.</p>	<p>Must invest in aging infrastructure. Investment in Stockpile Stewardship Program and infrastructure will allow major reductions in stockpile. Infrastructure must be integrated between federal authorities in order to be sustained. Must conduct continuous surveillance.</p>	<p>Effective, responsive and resilient is necessary to flexibility. Decades of age and underfunding. Defines DoD as making the requirement, and NNSA overseeing research, development, test, assessment, and production programs for DoD requirements. DOE says is atrophied. Resume underground testing if necessary.</p>
<p>Nuclear Terrorism and Non-State Actors</p>	<p>Concerns about nuclear materials falling into the wrong hands.</p>	<p>Does not specifically link terrorists to WMDs, but says it could test our relationships with allies.</p>	<p>Improve nuclear forensics to counter use by non-state actors or terrorists. Renews commitment to holding anyone who supports proliferation accountable. Deterrence must work on non-state actors as well. Preventing nuclear terrorism is the #1 priority. Claims threat is growing. Cold War era arsenal is not suited to counter terrorism and proliferation of states and non-state actors. Three element approach.</p>	<p>US will hold accountable any state, terrorist group, or non-state who supports or enables terrorist efforts to employ nuclear devices. Outlines the Kim regime. Strategy is "defense in depth." Has its own section and is found under nonproliferation and arms control.</p>

<p>Treaties</p>	<p>Importance of implementation following Cold War, in particular START. Will continue to conform to current treaties. Creating force plans based on assumed implementation of START I and II. Fully implement NPT, BWC, and CWC.</p>	<p>US was complying with START I and transparency is a good baseline. START II provision is unacceptable (incompatible?) with "New Triad." CTBT: continued compliance however wants to retain ability to test in the future.</p>	<p>Will seek ratification of CTBT. Accuses other countries of violating NPT (N Korea and Iran). Must renew and strengthen NPT. Development of New START, which will drastically reduce Moscow Treaty numbers. Proposal of a Fissile Material Cutoff Treaty.</p>	<p>Plans to comply with all treaties and agreements. Claims Russia is violating multiple treaties-particularly the INF. Claims treaties contribute to risk reduction through diplomacy, but only if verifiable and enforceable. Will not seek ratification of CTBT.</p>
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<p>Human Capital/Civilians</p>	<p>Proposes shifting nuclear scientists to civilian sector. No civilian mention.</p>	<p>Transfer of warhead design knowledge between generations and exercise skills for adapting warheads to delivery systems. No Civilian Mention</p>	<p>Morale is slipping due to aging facilities and lack of national consensus on the role of nuclear weapons. Personnel must be focused on. Discusses surveillance of nuclear personnel. Difficult to recruit and maintain scientists and engineers from the next generation. Investment must be made. First delineation of civilian personnel being involved in infrastructure.</p>	<p>Armed forces and civilian personnel around nukes are held to rigorous standards and are highly vital. Hails nuclear personnel for their service and dedication. Will invest in personnel and service responsiveness programs. Defines personnel as a part of infrastructure. Claims retaining personnel requires opportunities for exercising skills. Continues delineation of civilians as part of the nuclear force. Shows decline in civilian and military wartime deaths since creation of nuclear weapons.</p>
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Foreign Threats

Russia is still unstable, uncertain. Cannot be complacent. Russia is lagging on drawing down. U.S. must remain conscious that the way they conduct themselves will influence Russia.

Concern about size and posture of Russian nuclear and conventional forces. Concern about continuing development of Chinese forces. Identifies threat of potential contingency operations, particularly in North Korea, Iraq, Syria, Libya, and Iran.

Russia and China are primary nuclear power threats, yet China and U.S. are increasingly interdependent. Russian relations are good, but there is concern over the rate at which China is expanding. Must reduce nuclear ambitions of N Korea and Iran. Strengthen IAEA safeguards. Impede nuclear trade and enforce consequences.

US is reducing number and salience of nukes while others such as Russia and China are doing the opposite. Claims N Korea is violating UN Sec Council guidance. Iran has agreed to constraints yet still has the capacity to develop in less than a year. Much dialogue about uncertainty and unanticipated threats/risks. Obama's was centered on nuclear terrorism. 2018 is centered on foreign threats. Specific sections on Russia, China, Iran, and N Korea as well as offering specific tailored strategies. Countries are developing offensive cyber capabilities.

<p>Allied/NATO Commitments</p>	<p>Maintains</p>	<p>Maintains, but proposes a review in FY 2002.</p>	<p>Nuclear threat to NATO is historically low, yet U.S. presence is vital to cohesiveness and comfort. Any change will be reviewed and approved by the alliance. Mentions that there is no alliance in Asia, but the U.S. will maintain its commitments.</p>	<p>Strong language in support of allies and partners. U.S. needs to be credible and reliable- which will contribute to nonproliferation goals.</p>
<p>Nonproliferation and Threat Reduction</p>	<p>Nunn-Lugar Program support. Priority is to stem proliferation. Concern over FSU "loose nukes." Called counterproliferation. Hasten START I, II, and future reduction negotiations. Support UN and international nonproliferation efforts.</p>	<p>No specific mention.</p>	<p>First NPR to set framework for future policy to work toward "nuke-zero." U.S. will not develop new or test warheads. Increase NNSA funding by 25%. Focus strongly on enforcing consequences of NPT non-compliance.</p>	<p>Supports NPT. U.S. will increase transparency and predictability to avoid miscalculation among other nuke states. Will support CTBT committee and other international control organizations. Must be verifiable and enforceable. Ultimately supports global elimination of nuclear, biological, and chemical weapons.</p>

Employment Policy

Deterrence	Balancing safety and security. Key missions must be carried out to maintain deterrence: early warning, threat assessment, connectivity to national leadership, message dissemination, force management.	Shift away from relying on offensive forces for deterrence. Modern threat requires a flexibility of forces for modern deterrence. Defines the word "Deter." P4 also has good quote.	Must be "credible." Force will get scaled back to move away from Cold-War era posture into a more appropriate posture to counter proliferation and nuclear terrorism.	Ensuring enemies do not miscalculate consequences of nuke use. There are no benefits to use. Identifies 3 things enemies must realize. No "one size fits all" of deterrence. Capabilities must be flexible to tailor deterrence. This will be done by sustaining and replacing capabilities. Sections on what to do if deterrence fails. Strengthens role of non-strat nukes in deterrence. Deterrence is foundation for assurance.
Offense	No nuclear weapons custody of U.S. ground forces. Strategic bombers taken off alert along with Naval NSNF.	1st leg of "New Triad": comprised of offensive nuclear and non-nuclear systems. Pairs ICBMs, SLBMs, and bombers with non nuclear capabilities.	Maintain maximum presidential division making time. Open-ocean targeting. Growth of "unrivaled" conventional forces.	Missile defense and offensive options are best action if deterrence fails. First use policy is inappropriate due to threat.
Defense	Must not get complacent, maintain deterrence. Develop theater defenses against ballistic missiles and personnel.	2nd leg of "New Triad:" active and passive defenses. Missile Defenses are emerging: airborne, land-based, and sea. Defense will dissuade.	Improve missile defenses- they are a cause for concern in Russia and China.	Stresses the importance of missile defense.

Chemical and Biological	Improve real time detection of agents.	Development of Agent Defeat Weapons (ADW) to assure allies.	Nuclear weapon role in deterring CBW attacks is declining, focus on conventional deterrence.	Nuclear weapon role in deterring CBW attacks is declining, focus on conventional deterrence.
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Deployment Policy

ICBMs	Three wings of Minuteman III missiles carrying single warheads (450-500). Retire W-62 Warhead.	Retire the peacekeeper missile.	ICBMs will be de-MIRV'ed (Multiple Re-entry Vehicle). 450 missiles on alert at time of publication.	400 single warhead Minuteman III missiles spread between 450 silos. Most responsive leg. Continue open-ocean targeting. Survivable: the scale of attack required to defeat would be astronomical. High-yield, accurate, prompt, flexible. Holds Eurasia at risk.
SLBMs	14 Submarines carrying Trident II (D-5) missiles. This retires 4 submarines.	Maintain 14 nuclear submarines and re-constitute the four retired submarines to transport SOF	Retain 14 submarines, and consider reducing number to 12.	No specific number: Ohio-Class subs with D-5 Trident II missiles. Has no known credible threats. Hypersonic capability. "Hold targets at risk throughout Eurasia."

Bombers	66 B-52 bombers, reduced from 94 planned. Reorientation of B-1 to conventional role.	Keep B-2 and B-52 fleet operational for 35–40 years.	Bomber fleet of 76 B-52s and 18 B-2s will be maintained, however transition of some B-52s to conventional role will be considered.	Most flexible and visible. 46 B-52H and 20 B-2A supported by refueling aircraft. Not maintained day to day alert. To be used as a show of force. Multiple warhead options.
NATO and Non-Strategic	Retain commitment to NATO through dual capable aircraft and deployment of nuclear weapons in Europe at 10% of Cold War levels.	No specific information provided, but claims “no change” to current posture and dual-capable aircraft.	Retain capabilities for non-strategic nuclear weapons. No changes will be made without close consultation with partners.	B61 gravity bombs on F-16 DCA. Forward presence is a requirement.
Other	Eliminate role of carrier based dual capable aircraft, retain continental based dual capable aircraft. Eliminate option to carry nuclear missiles on surface ships. Removed from ground forces.	Fleet of operational tankers for 35–40 years. Development and deployment of new nuclear and non-nuclear systems, particularly missile defense (airborne, land, and sea-based), in support of “New Triad.”	Retire sea-launched cruise missile. Deployment heavily driven by New START.	Objective of strategy is deterrence of nuclear and non-nuclear attack, assurance of allies and partners, achieve U.S. objective should deterrence fail, and hedge against an uncertain future.

Procurement Policy

Delivery Systems

No more than 20 B-2s. Produce D-5 missile through 1995. Replace Minuteman guidance and propulsion. B-52 and Minuteman III coded control device upgrades.

Begin requirements process for next-generation ICBM. Replace propulsion. Potential to replace SLBM in 2029. No plan for common missile. Plans for new bomber around 2040. Aggressive modernization plan for bombers. No plans for new air launched cruise missile. Potentially make Joint Strike Fighter (JSF) dual capable.

Will create capability for warheads to be interchangeable between delivery systems. No discussion of actual replacement plans, however studies are in works for missile and submarine replacement. Focus is on maintaining and modernizing, especially bombers and submarines.

Prioritization and “rapid development.” Columbia Class submarine program delivering 12 SSBNs to replace Ohio Class. Begin studies in 2020 for SLBM replacement. GBSD to modernize facilities and replace Minuteman by 2029. 450 LFs/400 ICBMs. Modernize and sustain B-52/2. Develop B-21 Raider to counter enemy advances in air defense. Will supplement then replace starting in 2020s. LRSO to replace ALCM. Outfit F-35 for nuclear capability. Pursue a Sea Launched Cruise Missile (SLCM). Potentially put nukes on Navy aircraft?

Warheads

Maintain without testing or fissile material production. Ensure Tritium availability. No new-design production. Enhance conventional capability for hard underground target defeat.

Ensure sustainment of current stockpile. Develop an earth penetrator to defeat hard and deeply buried targets. Exploring development of an ADW.

Focused on extending life of current warheads vs. building new. Will not test or develop. LEP programs will be funded and preferred.

Develop a low-yield SLBM warhead. B-61-12 Gravity Bomb LEP and modifications to fit on F-35. LEPs for W76-1, W80-4 (sync w/LRSO). W88 alterations. Replace W78 to field on GBSD. Sustain B-83-1 and identify a replacement. Explore a common reentry system for ballistic missiles.

<p>NC3</p>	<p>None</p>	<p>Substantial investment in secure, wideband communications systems between decision makers, commands, and mobile commands. Development of new space, extremely high frequency, and cryptographic systems.</p>	<p>Initiatives to improve resiliency, modernize, and research stronger systems.</p>	<p>Strengthen protection against space-based threats (training), strengthen protection against cyber threats (continue production), Enhance integrated tactical warning and attack assessment (modernized satellites and missile defense sensors, transition DSP to SBIRS and enhance ground based radars. Sustain and upgrade USNDS), improve command posts and communications links (NAOC, ABNCP, airborne, ground, and mobile command centers, communication terminals and transmitter upgrade), Advance decision support technology, integrate planning and operations, reform governance.</p>
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Critical Infrastructure	Fund sustainment of Minuteman III industrial base. Continue D-5 production.	Revitalize nuclear weapons complex to design, develop, test, manufacture, and certify new warheads if required. Restore the capacity and capability of production infrastructure.	Modernize physical infrastructure, including national laboratories and supporting facilities. Fully fund NNSA, strengthen STE base, modernize Los Alamos, create a new Uranium processing facility at Y-12.	Warhead sustainment programs. Produce at least 80 Plutonium pits by 2030. Fund Tritium programs. Explore options for rapid prototyping. Fully fund UPFs. Reconstitute Lithium capability. Ensure reactor capacity. Pursue stockpile responsiveness program. Develop NNSA "roadmap."
	Advocated for Nunn-Lugar Program. Optimize number of accident/incident teams.	A new "system of systems" for nuclear intelligence. KC-X Tanker program, considering 767s in meantime.	Focus on sustaining the Stockpile Stewardship Program.	None
Other	Miscellaneous			
	Discussions in press releases get a little off topic, discussing other military situations of the time such as Haiti.	Somewhat hard to read and interpret due to missing sections from the classified report.	Very repetitive. Lots of talk but lacks specific plans.	Much more up front than other NPRs and not afraid to call a spade a spade. Clear and concise on policy, accusations, figures, and plans.

APPENDIX B. 1994 NPR

The 1994 NPR information cited in this research is from an unofficial compilation of unattributed contemporaneous press releases, speeches, and PowerPoint slides that have become widely accepted as representative of the first post-Cold War United States Nuclear Posture Reviews (NPRs) initiated in 1994 by President William J. Clinton. Readers interested in reviewing the collected documents pertaining to this 1994 NPR should contact the Naval Postgraduate School Dudley Knox Library.

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LIST OF REFERENCES

- “1994 Nuclear Posture Review.” *Nuclear Strategy* December 31st, 2001.
<https://nautilus.org/projects/nuclear-strategy/1994-nuclear-posture-review/>.
- Air Force Civil Engineer Center. *2015 Third Five Year Review: Former Griffiss Air Force Base*. Report No. 350524. San Antonio, TX: Environmental Protection Agency, 2015. <https://semspub.epa.gov/work/02/350524.pdf>.
- Air Force Reserve Officer Training Corps Detachment 105. *Knowledge Book*. Spring, 2017. http://www.colorado.edu/afrotc/sites/default/files/attached-files/knowledgebookspring2017_0.docx.
- American Federation of Scientists. “SSBN-726 Ohio Class FBM Submarines.” February 9, 2000. <https://fas.org/nuke/guide/usa/slbm/ssbn-726.htm>.
- Annual Report to the President and the Congress*. Washington, DC: United States Department of Defense, 1995.
https://history.defense.gov/Portals/70/Documents/annual_reports/1995_DoD_AR.pdf?ver=2014-06-24-152712-813.
- Anthopoulos, Leonidas G., and Christopher G. Reddick. *Government e-Strategic Planning and Management Practices, Patterns, and Roadmaps*. 1st Edition. New York, New York: Springer New York, 2014.
<https://link.springer.com/book/10.1007%2F978-1-4614-8462-2>.
- Arkin, William M., and Richard W. Fieldhouse. *Nuclear Battlefields: Global Links in the Arms Race*. 1st ed. Cambridge, MA: Ballinger Publishing Company, 1985.
- Arms Control Association. “Nuclear Weapons: Who Has What at a Glance,” 2018.
<https://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat>.
- . “U.S. Nuclear Modernization Programs.” 2018.
<https://www.armscontrol.org/factsheets/USNuclearModernization#ICBM>.
- Ball, Charles. “Intelligence and the NPR.” In *Nuclear Transformation: The New U.S. Nuclear Doctrine*, edited by James J. Wirtz and Jeffrey A. Larsen, 119–130. New York, NY: Palgrave Macmillan, 2005.
- Bluth, Christoph, Matthew Kroenig, Rensselaer Lee, William C. Sailor, and Matthew Fuhrmann. “Civilian Nuclear Cooperation and the Proliferation of Nuclear Weapons.” *International Security* 35, no. 1 (July 2010): 184–200.
https://www.mitpressjournals.org/doi/abs/10.1162/ISEC_c_00007?journalCode=isec.

- Boese, Wade. "United States Retires MX Missile." *Arms Control Today*.
<https://www.armscontrol.org/act/2005-10/united-states-retires-mx-missile>.
- Brewer, Eric and Richard Nephew. "Seeing Red in Trump's Iran Strategy." *Arms Control Today* 49 no. 6 (July/August 2019). <https://www.armscontrol.org/act/2019-07/features/seeing-red-trumps-iran-strategy>.
- Broad, William J., and David E. Sanger. "Trump Plans for Nuclear Arsenal Require \$1.2 Trillion, Congressional Review States." *New York Times*. October 31st, 2017.
<https://www.nytimes.com/2017/10/31/us/politics/trump-nuclear-weapons-arsenal-congressional-budget.html>.
- Brose, Christian. "The New Revolution in Military Affairs: War's Sci-Fi Future." *Foreign Affairs* 98, no. 3 (May/June 2019), 122–134.
- Brown, Seyom. "The Trump Administration's Nuclear Posture Review (NPR): In Historical Perspective." *Journal for Peace and Nuclear Disarmament* 1, no. 2, August 2018.
<https://www.tandfonline.com/doi/full/10.1080/25751654.2018.1494092>.
- Bulletin of the Atomic Scientists* 74, no. 2, March 2018.
<https://www.tandfonline.com/doi/abs/10.1080/00963402.2018.1438219>.
- Bureau of Labor Statistics. "Average Hourly and Weekly Earnings of All Employees on Private Nonfarm Payrolls by Industry Sector, Seasonally Adjusted." United States Department of Labor, November 2, 2018.
<https://www.bls.gov/news.release/empsit.t19.htm>.
- . "Local Area Unemployment Statistics." United States Department of Labor, accessed November 5, 2018. <https://data.bls.gov/pdq/SurveyOutputServlet>.
- Business Dictionary*, s. v. "White Paper." Accessed April 30th, 2019.
<http://www.businessdictionary.com/definition/white-paper.html>.
- Campbell, Craig, and Sergey S. Radchenko. *The Atomic Bomb and the Origins of the Cold War*. New Haven, CT: Yale University Press, 2008.
- Center for Strategic and Budgetary Assessments. *The Cost of U.S. Nuclear Forces: From BCA to Bow Wave and Beyond*. Washington, DC: CSBA, 2015.
<https://libguides.nps.edu/citation/chicagonb#report-gov>.
- City of Great Falls Planning and Community Development Department. *2013 Growth Policy Update*. Great Falls, Montana: Planning and Community Development Department, 2013.
https://greatfallsmt.net/sites/default/files/fileattachments/planning_and_community_development/page/27411/growth_policy_update_-_august_6_2013.pdf.

- Colby, Elbridge. "If You Want Peace, Prepare for Nuclear War." *Foreign Affairs* 97, no. 6 (November 1, 2018): 25–32.
<https://www.foreignaffairs.com/articles/china/2018-10-15/if-you-want-peace-prepare-nuclear-war>.
- . "Nuclear Abolition: A Dangerous Illusion." *Orbis* 52, no. 3 (2008): 424–433.
<https://www.fpri.org/article/2008/07/nuclear-abolition-dangerous-illusion/>.
- Congressional Budget Office. "Budget." Accessed October 25, 2018.
<https://www.cbo.gov/topics/budget>.
- Defense Intelligence Agency. *Global Nuclear Landscape 2018*.
https://dod.defense.gov/portals/1/features/2018/0218_NPR/img/Global_Nuclear_Landscape_2018_Final.pdf.
- Department of Defense. *Ballistic Missile Defense Review Report*. Washington, DC: Office of the Secretary of Defense, 2010.
https://archive.defense.gov/bmdr/docs/BMDR%20as%20of%206JAN10%200630_for%20web.pdf.
- . *Missile Defense Review*. Washington, DC: Office of the Secretary of Defense, 2019. https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf.
- . "Nuclear Deterrence in the 21st Century," 2018.
<https://media.defense.gov/2018/Feb/02/2001872879/-1/-1/1/NUCLEAR-DETERRENCE.PDF>.
- . *The Nuclear Posture Review*. Washington, DC: Office of Assistant Secretary of Defense, 1994.
- . *Nuclear Posture Review Report*. Washington, DC: Office of the Secretary of Defense, 2010.
https://dod.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf.
- . *Nuclear Posture Review*. Washington, DC: Office of the Secretary of Defense, 2018. <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.
- . *Quadrennial Defense Review Report*. Washington, DC: Office of the Secretary of Defense, 2001.
<https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2001.pdf?ver=2014-06-25-110946-823>.

- . *Quadrennial Defense Review Report*. Washington, DC: Office of the Secretary of Defense, 2006.
https://history.defense.gov/Portals/70/Documents/annual_reports/1973_DoD_AR.pdf?ver=2014-06-24-150625-420.
- . *Quadrennial Defense Review Report*. Washington, DC: Office of the Secretary of Defense, 2010.
<https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2010.pdf?ver=2014-08-24-144223-573>.
- . *Quadrennial Defense Review Report*. Washington, DC: Office of the Secretary of Defense, 2014.
<https://history.defense.gov/Portals/70/Documents/quadrennial/QDR2014.pdf?ver=2014-08-24-144246-293>.
- . *Report on the Bottom-Up Review*. Washington, DC: Office of the Secretary of Defense, 1993. <https://www.hsdl.org/?view&did=448259>.
- . *Report on the Quadrennial Defense Review*. Washington, DC: Office of the Secretary of Defense, 1997.
<https://history.defense.gov/Portals/70/Documents/quadrennial/QDR1997.pdf?ver=2014-06-25-110930-527>.
- . “The U.S. Nuclear Triad,” 2015.
<https://media.defense.gov/2018/Feb/02/2001872882/-1/-1/1/U.S.-NUCLEAR-TRIAD.PDF>.
- Department of the Air Force. “341st Missile Wing,” 2012.
<https://www.malmstrom.af.mil/About-Us/Fact-Sheets/Display/Article/346869/341st-missile-wing/>.
- . “341st Operations Group,” 2010.
https://digital.library.unt.edu/ark:/67531/metadc847627/m2/1/high_res_d/RL33640_2016Mar10.pdf.
- . “509th Bomb Wing,” 2018. <https://www.whiteman.af.mil/About-Us/FactSheets/Display/Article/323963/509th-bomb-wing/>.
- Drewien, Celeste A., and Doug Lawson. “The Nuclear Posture Review (NPR).” Sandia National Laboratories, April 2010. <https://www.osti.gov/servlets/purl/1325698>.
- Durkalec, Jacek. “The 2018 U.S. Nuclear Posture Review, NATO’s Brussels Summit and Beyond.” Center for Global Security Research: Lawrence Livermore National Laboratory, CA.

- . “NATO Missile Defence: In Search of a Broader Role.” *The Polish Quarterly of International Affairs* 21, no. 1 (January 1st, 2012): 62–86.
<http://search.proquest.com/docview/1240345096/>.
- Ferguson, Charles D. “Nuclear Posture Review.” *Nuclear Threat Initiative*, August 2002.
<https://www.nti.org/analysis/articles/nuclear-posture-review/>.
- Fetter, Steve, and Charles L. Glaser. “Critiquing the NPR’s New Nuclear Missions.” In *Nuclear Transformation: The New U.S. Nuclear Doctrine*, edited by James J. Wirtz and Jeffrey A. Larsen, 23–40. New York, NY: Palgrave Macmillan, 2005.
- Freedman, Lawrence. *The Evolution of Nuclear Strategy* 3rd ed. Basingstoke, Hampshire, England: Palgrave Macmillan, 2003.
- Freedman, Samuel G. “Nuclear Deterrence as a Neighbor.” *New York Times*, December 27th, 1982. <https://www.nytimes.com/1982/12/27/nyregion/nuclear-deterrence-as-a-neighbor.html>.
- Frost, Jeffrey R. “Assessing Possible Improvements in NATO’s Non-Strategic Nuclear Forces.” Master’s thesis, Naval Postgraduate School, 2017.
<https://calhoun.nps.edu/handle/10945/56921>.
- Gaddy, Clifford G. *The Price of The Past: Russia’s Struggle With The Legacy of a Militarized Economy*. Washington, DC: Brookings Institution Press, 1996.
- Gompert, David C., Kenneth Watman, and Dean Wilkening. *U.S. Nuclear Declaratory Policy: The Question of Nuclear First Use*. Santa Monica, CA: RAND, 1995.
https://www.rand.org/pubs/monograph_reports/MR596.html.
- Graham, Gordon. “What Exactly is a White Paper?” *The White Paper FAQ*. Accessed April 30, 2019. <https://thatwhitepaperguy.com/white-paper-faq-frequently-asked-questions/#top>.
- Griffiss Business and Technology Park. “Park Tenants.” 2018.
http://www.griffissbusinesspark.com/park_map.asp?type=T.
- Hargraves, Drew P. “Reducing the Threat of Nuclear Terrorism: A Report Card on the Obama Administration’s Efforts.” Master’s thesis, Naval Postgraduate School, 2016. <http://hdl.handle.net/10945/51714>.
- Jervis, Robert. *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon*. Ithaca: Cornell University Press, 1989.
- Kaufman, Stuart J. “U.S. National Security Strategy from Bush to Obama: Continuity and Change.” In Rajae, Bahram M. and Miller, Mark J. *National Security Under the Obama Administration*. 1st Edition. New York: Palgrave Macmillan US, 2012.
<https://doi.org/10.1057/9781137010476>.

- Kimball, Daryl G. "Bolton's Attempt to Sabotage New START." *Arms Control Today* 49 no. 6 (July/August 2019). <https://www.armscontrol.org/act/2019-07/focus/boltons-attempt-sabotage-new-start?source=focus>.
- . "Effective Arms Control Under Threat." *Inside the Arms Control Association* (May 2019). <https://us10.campaign-archive.com/?u=94d82a9d1fc1a60f0138613f1&id=0b6d196d6c>.
- . "Self-Made Iran Crisis Goes from Bad to Worse." *Inside the Arms Control Association* (June 2019). <https://us10.campaign-archive.com/?u=94d82a9d1fc1a60f0138613f1&id=300c86d37e>.
- . "Trump Arms Control Gambit: Serious or a Poison Pill?" *Arms Control Today* 49 no. 4 (May 2019). <https://www.armscontrol.org/act/2019-05/focus/trump-arms-control-gambit-serious-poison-pill>.
- Kristensen, Hans S., and Robert S. Norris, "United States Nuclear Forces, 2018." <https://www.tandfonline.com/doi/full/10.1080/00963402.2018.1438219>.
- Kroenig, Matthew. *Exporting the Bomb Technology Transfer and the Spread of Nuclear Weapons* Ithaca: Cornell University Press, 2010. <https://www.jstor.org/stable/10.7591/j.ctt7v7z8>.
- . "US Nuclear Weapons and Non-Proliferation: Is There a Link?" *Journal of Peace Research* 53, no. 2 (March 2016): 166–179. <https://journals.sagepub.com/doi/10.1177/0022343315626770>.
- Lebow, Richard Ned. "The Long Peace, the End of the Cold War, and the Failure of Realism," *International Organization* 48, no. 2 (Spring, 1994): 249–277.
- Leslie, Carlin. "Force Improvement Program Changing Future of Global Strike." *Air Force Public Affairs Agency*, June 26th, 2014. <https://www.af.mil/News/Article-Display/Article/485811/force-improvement-program-changing-future-of-global-strike/>.
- Levinson, Robert, Sopen Shah, and Paige K. Connor. "Impact of Defense Spending: A State-By-State Analysis." Bloomberg Government. November 17, 2011. http://www.ct.gov/eecd/lib/eecd/futures/6_bloomberg_defense_spending.pdf.
- Lindley, Dan, and Kevin Clemency. "Low Cost Nuclear Arms Races." *Bulletin of the Atomic Scientists* (March/April 2009): 45. <https://doi.org/10.2968/065002006>.
- Lockwood, Dunbar. "New Nuclear Posture Review Shows Little Change in Policies." *Arms Control Today* 24, no. 9 (November 1, 1994): 27. <https://search.proquest.com/docview/211210863/abstract/FDEEF6BB5D314368P/Q1?accountid=12702>.

- Lyons, Marco J. "U. S. Nuclear Policy, Strategy, and Force Structure: Insights and Issues from the 1994, 2001, and 2010 Nuclear Posture Reviews." Master's thesis, Naval Postgraduate School, 2014. <https://calhoun.nps.edu/handle/10945/43951>.
- Mann, Paul (ed.). "Proceeding Gingerly." *Aviation Week and Space Technology*, September 26, 1994. <https://archive.aviationweek.com/search?QueryTerm=Proceeding+Gingerly>.
- Metz, William C. "Potential Negative Impacts of Nuclear Activities on Local Economies: Rethinking the Issue." *Risk Analysis* 14, no. 5 (October 1, 1994): 763–70. <https://doi.org/10.1111/j.1539-6924.1994.tb00286.x>.
- Meyer, Paul. "Policy or Posturing: The U.S. Nuclear Posture Review in an International Context." *International Journal* 66, no. 3 (July 1st, 2011): 663–676. https://www.jstor.org/stable/23104374?Search=yes&resultItemClick=true&searchText=%22Policy+or+posturing%3A+The+US+nuclear+posture+review+in+an+international+context%22&searchUri=%2Faction%2FdoBasicSearch%3Fsid%3Dprimo%26amp%3BQuery%3D%2522Policy%2Bor%2Bposturing%253A%2BThe%2BUS%2Bnuclear%2Bposture%2Breview%2Bin%2Ban%2Binternational%2Bcontext%2522&ab_segments=0%2F12b_100k_with_tbsub%2Ftest&refreqid=search%3A21bb842138ad775c6de86a0a16ecfe3d&seq=1#metadata_info_tab_contents.
- Mochizuki, Mike. "Japan Tests the Nuclear Taboo." *Nonproliferation Review*, 14:2 (July 2007), 303–328. <https://www.tandfonline.com/doi/full/10.1080/10736700701379393>.
- New York State Office of the Governor. "Governor Cuomo Announces \$500,000 Economic Impact Study To Grow And Retain New York State Military Bases And Keep New York National Guard Strong." March 7th, 2012. <https://www.governor.ny.gov/news/governor-cuomo-announces-500000-economic-impact-study-grow-and-retain-new-york-state-military>.
- Nolan, Janne E. *An Elusive Consensus: Nuclear Weapons and American Security After the Cold War*. Washington, DC: Brookings Institution Press, 1999.
- "The Nuclear Posture Review: What Role for Nuclear Weapons?" *Strategic Comments* 8, no. 3 (April 1st, 2002), 1–2. <https://www.tandfonline.com/doi/full/10.1080/1356788020834>.
- "Obama Administration Plugs Up Leaks." Reporters' Committee for Freedom of the Press. <https://www.rcfp.org/journals/obama-administration-plugs/>.
- Oliker, Olga. "Russia's New Military Doctrine: Same as the Old Doctrine, Mostly." RAND Corporation, January 15th, 2015. <https://www.rand.org/blog/2015/01/russias-new-military-doctrine-same-as-the-old-doctrine.html>.

- Payne, Keith B. "The Nuclear Posture Review: Setting the Record Straight." *The Washington Quarterly* 28, no. 3 (June 1st, 2005): 133–151.
<https://doi.org/10.1162/0163660054026461>.
- Peczeli, Anna. "The Trump Administration's Nuclear Posture Review: Back to Great Power Competition." *Journal for Peace and Nuclear Disarmament* 1, no. 2, October 2018.
<https://www.tandfonline.com/doi/full/10.1080/25751654.2018.1530741?scroll=top&needAccess=true>.
- Pompeo, Michael R. "U.S. Withdrawal from the INF Treaty on August 2nd, 2019." Press Release, United States Department of State, August 2nd, 2019.
<https://www.state.gov/u-s-withdrawal-from-the-inf-treaty-on-august-2-2019/>.
- "Posture Review." *Strategic Insights* 1, no. 5, July 2002.
<http://hdl.handle.net/10945/11345>.
- Prasad, Eswar, and Grace Gu. "An Awkward Dance: China and the United States." *Brookings*, November 11th, 2009.
- Preczewski, Michael W. "Normative Factors in U. S. Nuclear Policy." Master's Thesis, Naval Postgraduate School, 2016. <https://calhoun.nps.edu/handle/10945/50469>.
- Rajaei, Bahram M., and Mark J. Miller. *National Security Under the Obama Administration*. 1st Edition. New York: Palgrave Macmillan US, 2012.
<https://doi.org/10.1057/9781137010476>.
- "Remarks by President Barack Obama," The White House: Office of the Press Secretary (April 5th, 2009). <https://obamawhitehouse.archives.gov/the-press-office/remarks-president-barack-obama-prague-delivered>.
- Roberts, Brad. Email Message to Author, April 30th, 2019.
- . *The Case for U.S. Nuclear Weapons in the 21st Century*. Stanford, California: Stanford Security Studies, an imprint of Stanford University Press, 2016.
- . "Nonproliferation Challenges Old and New." *Counterproliferation Papers: Future Warfare Series* 24, Air University: Maxwell Air Force Base, Alabama, August 2004.
- . *Order and Disorder after the Cold War*. Cambridge, Mass: MIT Press, 1995.
- . *U.S. Foreign Policy after the Cold War*. Cambridge, Mass: MIT Press, 1992.

- Rose, Frank A., and Benjamin Bahney. "Reassuring Allies and Strengthening Strategic Stability: An Approach to Nuclear Modernization for Democrats." *War on the Rocks*, April 2019. <https://warontherocks.com/2019/04/reassuring-allies-and-strengthening-strategic-stability-an-approach-to-nuclear-modernization-for-democrats/>.
- Rottman, Gabe. "On Leak Prosecutions, Obama Takes it to 11 (Or Should We Say 526?)." American Civil Liberties Union, October 14th, 2014. <https://www.aclu.org/blog/free-speech/employee-speech-and-whistleblowers/leak-prosecutions-obama-takes-it-11-or-should-we>.
- Russell, James A., and James J. Wirtz. "Negative Security Assurances and the Nuclear Posture Review." *Strategic Insights* 1, no. 5 (June 2002). <https://calhoun.nps.edu/handle/10945/11345>.
- . "Nuclear Weapons, War with Iraq, and U.S. Security Strategy in the Middle East." *Strategic Insights* 1, no. 6 (August 2002). <https://calhoun.nps.edu/handle/10945/25429>.
- Sagan, Scott D., and Jane Vaynman. "Lessons Learned from the 2010 Nuclear Posture Review." *The Nonproliferation Review* 18, no. 1 (March 1st, 2011), 237–262. <https://www-tandfonline-com.libproxy.nps.edu/doi/full/10.1080/10736700.2011.549183?scroll=top&needAccess=true>.
- Schwartz, Stephen I., ed. *Atomic Audit: The Costs and Consequences of U. S. Nuclear Weapons Since 1940*. Washington, D. C.: Brookings Institution Press, 1998.
- Sethi, Manpreet. "US Nuclear Posture Review 2018: Unwisely Reopening 'Settled' Nuclear Issues." *India Quarterly* 74, no. 3, 2018. <http://journals.sagepub.com/home/iqq>.
- Shanker, Thom, and Mark Hertling. "The Military-Media Relationship. A Dysfunctional Marriage?" *Military Review*, September/October 2009.
- Shultz, Colin. "Globally, Deaths From War And Murder Are in Decline." *Smithsonian*. March 21st, 2014. <https://www.smithsonianmag.com/smart-news/globally-deaths-war-and-murder-are-decline-180950237/>.
- Smetana, Michal. "A Nuclear Posture Review for the Third Nuclear Age." *The Washington Quarterly* 41, no. 3 (July 3rd, 2018): 137–157. <https://doi.org/10.1080/0163660X.2018.1520554>.
- Sokov, Nikoli. "The INF Treaty Crisis: Filling the Void With European Leadership." *Arms Control Today*, March 2019. <https://www.armscontrol.org/act/2019-03/features/inf-treaty-crisis-filling-void-european-leadership>.

Talmadge, Caitlin. “Would China Go Nuclear: Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States.” *International Security* Volume 41, Number 4 (Spring 2017), 50–92.

Tobin, Dave. “Can Rome Labs Innovate a Defense Against Threats of a Federal Budget Cut?” *The Post-Standard*, June 3rd, 2012.
https://www.syracuse.com/news/index.ssf/2012/06/can_rome_lab_innovate_an_a_nsw.html.

“The Trump Administration’s Nuclear Posture Review.” *Strategic Comments* 24, no.2 (February 7th, 2018): vii-ix. <https://doi.org/10.1080/13567888.2018.1444859>.

Trevithick, Joseph. “US Eyes Adding Nuclear Cruise Missiles to Zumwalt Stealth Destroyers As Well As Submarines.” *The War Zone*, February 26th, 2018.
<https://www.thedrive.com/the-war-zone/18804/us-eyes-adding-nuclear-cruise-missiles-to-zumwalt-stealth-destroyers-as-well-as-submarines>.

Turner, Donald. “Technical Tutorial: The Definition of ‘White’ Paper.” Th, *Printweek*, July 6th, 2006, 46.
<http://libproxy.nps.edu/login?url=https://search.proquest.com/docview/230439913?accountid=12702>.

United Nations Office for Disarmament Affairs. “Comprehensive Nuclear-Test-Ban Treaty (CTBT).” Accessed September 9th, 2019.
<https://www.un.org/disarmament/wmd/nuclear/ctbt/>.

United States Census Bureau. *1980 Census of Population General Population Characteristics: New York*. PC80-1-B34. Washington, D. C.: United States Department of Commerce, 1980.
ftp://ftp.census.gov/library/publications/decennial/1980/volume-1/new-york/1980censusofpopu80134unse_bw.pdf.

———. *1990 Census of Population General Population Characteristics: New York*. CP-1-34. Washington, D. C.: United States Department of Commerce, 1990.
<https://www2.census.gov/library/publications/decennial/1990/cp-1/cp-1-34-1.pdf>.

———. “Population, Housing Units, Area, and Density: 2000.” United States Department of Commerce, accessed November 5th, 2018.
<https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>.

———. “My Congressional District 115th Congress: Missouri Congressional District 4.” United States Department of Commerce, accessed November 5th, 2018.
<https://www.census.gov/mycd/?st=29&cd=04>.

- United States Congress. *Excerpts of Classified Nuclear Posture Review*. Washington, DC: 2002. <https://fas.org/wp-content/uploads/media/Excerpts-of-Classified-Nuclear-Posture-Review.pdf>.
- United States Department of State. “New START Treaty Aggregate Numbers of Strategic Offensive Arms,” 2017. <https://www.state.gov/t/avc/newstart/274550.htm>.
- . “New START Treaty Aggregate Numbers of Strategic Offensive Arms,” 2018. <https://www.state.gov/t/avc/newstart/278775.htm>.
- Westan, Scott. “Preparing for the 2009 Nuclear Posture Review: Post-Cold War Nuclear Deterrence and the 2001 NPR Debate.” *Strategic Insights* 8, no. 1 (January 2009). <https://calhoun.nps.edu/handle/10945/11456>.
- Whiteman Air Force Base. *Fiscal Year 2017 Economic Impact Report*. Johnson County, MO: Whiteman Air Force Base, 2017. https://www.whiteman.af.mil/Portals/53/documents/FY17%20Economic%20Impact%20Report_SIGNED.pdf?ver=2018-04-10-155119-660.
- Williams, David. “Times Investigation: Trump Administration Has Guttled Programs Aimed At Detecting Weapons of Mass Destruction.” *Los Angeles Times*, July 18th, 2019. <https://www.latimes.com/politics/story/2019-07-17/times-investigation-homeland-security-guttled-programs-aimed-at-stopping-wmd-terrorism>.
- Wirtz, James J., and Jeffrey A. Larsen. *Nuclear Transformation: The New U. S. Nuclear Doctrine*. New York, NY: Palgrave Macmillan, 2005.
- Woolf, Amy F. *The U. S. Nuclear Weapons Complex: Overview of Department of Energy Sites*. CRS Report No. R45306. Washington, D. C.: Congressional Research Service, 2018. <https://crsreports.congress.gov/product/pdf/R/R45306>.
- . *U. S. Strategic Nuclear Forces: Background, Developments, and Issues*. CRS Report No. RL33640. Washington, D. C.: Congressional Research Service, 2016. https://digital.library.unt.edu/ark:/67531/metadc847627/m2/1/high_res_d/RL33640_2016Mar10.pdf.
- Yost, David S. *Adapting NATO’s Deterrence Posture: The Alliance’s New Strategic Concept and Implications for Nuclear Policy, Non-Proliferation, Arms Control, and Disarmament*. Rome, Italy: NATO Defense College, 2011. <http://hdl.handle.net/10945/30759>.
- . “Strategic Stability in Europe.” *The Nonproliferation Review* 20, no. 2, June 2013. <http://dx.doi.org/10.1080/10736700.2013.804317>.

Yusuf, Moeed W. "The Pulwama Crisis: Flirting With War in a Nuclear Environment." *Arms Control Today* 49 no. 4 (May 2019). <https://www.armscontrol.org/act/2019-05/features/pulwama-crisis-flirting-war-nuclear-environment>.

Zenko, Micah. "Nostalgia is a National Security Threat." *Foreign Policy*, April 10th, 2019. <https://foreignpolicy.com/2019/04/10/nostalgia-is-a-national-security-threat/>.

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