

Corvinus University of Budapest

Shifting Away From Cold War Nuclear Thinking?

Nuclear Strategy under the Obama Administration

PHD THESIS

Advisor: N. Rózsa Erzsébet, Dr. Habil.

Péczeli Anna

Budapest, 2014

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Senior Lecturer (National University of Public Service)

2014

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International Relations
Multidisciplinary
Doctoral School

International and Security
Studies Subprogram

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List of Abbreviations

ABM	Anti-Ballistic Missile
ACM	Advanced Cruise Missile
AEC	Atomic Energy Commission
AFB	Air Force Base
ALCM	Air-Launched Cruise Missile
APO	Adaptive Planning Capability Option
ASC	Advanced Simulation and Computing
BAO	Basic Attack Option
BCA	Budget Control Act
BMD	Ballistic Missile Defense
BTWC	Biological and Toxin Weapons Convention
BWP	Basic War Plan
C³I	Command, Control, Communications and Intelligence
C⁴ISR	Command, Control, Computers, Communication, Intelligence, Surveillance, and Reconnaissance
CBO	Congressional Budget Office
CD	Conference on Disarmament
CG	Command Guidance
CHISOP	Chinese Integrated Strategic Operations Plan
CINC	Commander in Chief
CMRR-NF	Chemistry and Metallurgy Research Replacement Nuclear Facility
CONPLAN	Concept Plan
CONUS	Continental United States
CPD	Committee on the Present Danger
CTBT	Comprehensive Nuclear-Test-Ban Treaty
CWC	Chemical Weapons Convention
DCA	Dual-Capable Aircraft
DDPR	Deterrence and Defence Posture Review
DoD	Department of Defense
DoE	Department of Energy
DPF	Deliberate Planning Force

DPM	Draft Presidential Memoranda
DPO	Directed Planning Capability Option
EMP	Electromagnetic Pulse
EPPA	European Phased Adaptive Approach
ERO	Emergency Response Option
EWB	Emergency War Plan
FOIA	Freedom of Information Act
FSU	Former Soviet Union
GAO	Government Accountability Office
GEF	Guidance for the Employment of the Force
GICNT	Global Initiative to Combat Nuclear Terrorism
HEU	Highly Enriched Uranium
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
ICJ	International Court of Justice
INF	Intermediate-Range Nuclear Forces
IRBM	Intermediate-Range Ballistic Missile
IW	Interoperable Warhead
JCS	Joint Chiefs of Staff
JFCC-GS	Joint Functional Component Command for Global Strike
JFCC-GSI	Joint Functional Component Command-Global Strike and Integration
JSCP	Joint Strategic Capabilities Plan
JSOP	Joint Strategic Objectives Plan
JSTPS	Joint Strategic Target Planning Staff
LAO	Limited Attack Option
LEP	Life Extension Program
LLNL	Lawrence Livermore National Laboratory
LNO	Limited Nuclear Option
LOW	Launch on Warning
LRSO	Long-Range Stand-Off
LUA	Launch under Attack
MAD	Mutual Assured Destruction
MAO	Major Attack Option

MIDB	Modified Integrated Database
MIRV	Multiple Independently Targetable Reentry Vehicle
MRBM	Medium-Range Ballistic Missile
NDAA	National Defense Authorization Act
NIF	National Ignition Facility
NNPS	NATO Nuclear Planning System
NNSA	National Nuclear Security Administration
NNWS	Non-Nuclear Weapon State
NPR	Nuclear Posture Review
NPR IS	Nuclear Posture Review Implementation Study
NPT	Nuclear Non-Proliferation Treaty
NSA	Negative Security Assurance
NSAM	National Security Action Memorandum
NSC	National Security Council
NSDD	National Security Decision Directive
NSDM	National Security Decision Memorandum
NSNF	Non-Strategic Nuclear Force
NSPD	National Security Presidential Directive
NSS	Nuclear Security Summit
NTB	National Target Base
NUWEP	Nuclear Weapons Employment Policy
NW	Nuclear Weapon
NWS	Nuclear Weapon State
P5	The Five Permanent Members of the UN Security Council
PD	Presidential Directive
PDD	Presidential Decision Directive
PNI	Presidential Nuclear Initiative
PPD	Presidential Policy Directive
PSI	Proliferation Security Initiative
RAND	Research and Development
RNO	Regional Nuclear Option
OPLAN	Operations Plan
OSD	Office of the Secretary of Defense
QDR	Quadrennial Defense Review

PAL	Permissive Action Link
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SAO	Selective Attack Option
SDI	Strategic Defense Initiative
SILVER	Strategic Installation List of Vulnerability Effects and Results
SIOP	Single Integrated Operational Plan
SLBM	Submarine-Launched Ballistic Missile
SORT	Strategic Offensive Reductions Treaty
SPSG	Strategic Planning Study Group
SRAM	Short-Range Attack Missile
SSBN	Nuclear-Powered Ballistic Missile Submarine
SSMP	Stockpile Stewardship and Management Plan
SSP	Stockpile Stewardship Program
START	Strategic Arms Reduction Treaty
SWPS	Strategic War Planning System
TLAM-N	nuclear equipped Tomahawk Land Attack Missile
UPF	Uranium Processing Facility
USSTRATCOM	United States Strategic Command
WMD	Weapons of Mass Destruction
WSJ	Wall Street Journal

“Yesterday’s doctrines are no longer appropriate for today’s realities.” (Drell; Goodby [2007]: p. 1.)

Introduction

1. Overview of the Research Project

The roots of nuclear strategy go back to the 1950s and over the course of the Cold War the primary goals of U.S. nuclear planning did not change much. Military planners and targeteers were preparing for the “unthinkable” with war plans that maximize the chances of victory for and minimize vulnerability of the U.S. to nuclear attacks, by offering strike options that could guarantee these goals without such a high level of collateral damage that might risk a President to hesitate to launch an attack. In the meanwhile, Presidents and policy makers were trying to solve the fundamental challenge of how to deter a first strike by credibly threatening to use nuclear weapons but at the same time avoiding a confrontation where their actual use would be necessary. In order to ensure the credibility of these threats, every administration tried to implement innovations in U.S. nuclear doctrine but despite their best efforts, doctrinal changes usually had only limited effects on the actual war plans. As a result of the lack of a strong civilian oversight, a striking difference started to emerge between the declaratory policy and the operational level. While the political guidance went through several fundamental changes, war plans were mostly lagging behind with moderate transformations (which had a direct effect on force level requirements, as well).

With the fall of the Soviet Union, the United States lost its main adversary and it was logical to assume that both the number and the mission of nuclear weapons would be revised and dramatically reduced. In 1990 the U.S. possessed 21,400 nuclear weapons which by 2014 have been reduced to 7,700 – with 4,804 warheads in the military stockpile. (U.S. Department of State [2014a]) These dramatic reductions in the force structure came with major changes in the nuclear guidance, and several shifts and innovations in the war plans. But the level of these operational adjustments was far

behind the realities of the post-Cold War security environment, and Cold War legacies still seem to define certain levels of U.S. nuclear weapons policy.

In his 2009 Prague address, President Obama stated that it is time to end Cold War nuclear thinking and pave the way towards a world without nuclear weapons. (Obama [2009]) The notion of “Cold War nuclear thinking” is the central concept of this dissertation which is built on the basic premise that Cold War nuclear thinking has certain requirements on the different levels of nuclear strategy and maintaining these requirements is a “showstopper” for further reductions.

Since the Prague address, the term “Cold War nuclear thinking” has been widely used in academic, as well as in political circles but it has never been defined what it exactly means or what the administration meant by it. Therefore, it is not clear what specific aspects of the so called Cold War nuclear posture President Obama promised to shift away from. In the lack of a clear definition, the term has been mostly used in a negative context, or as a sarcastic description of anyone whose thinking is not progressive enough.² This, however, is only one side of the coin – it is true that many legacies of the Cold War are outdated in the current security environment but there are still some characteristics of U.S. nuclear strategy which were developed during the Cold War and remain logical today (the doctrine of flexible response for example is one of these characteristics).

In this regard, the main goal of this dissertation is to examine the evolution of Cold War nuclear strategy and to objectively identify those guiding principles which were characteristics of the bipolar system and designated U.S. nuclear strategy for decades. By identifying these principles, the author intends to develop a methodological framework which will clearly define what Cold War nuclear thinking means on three analytical levels. This framework will help to examine to what extent U.S. nuclear

² There are several examples for referring to Cold War thinking in a negative context. Rachel Staley from the BASIC Institute, for example, called Cold War thinking “*a recipe for disaster*.” (Staley [2013]) After the 2012 Chicago Summit, Lesley McNiesh, a former associate of the Center for Arms Control and Non-Proliferation, described the new NATO strategy as outdated which was still inappropriately designed to fight the “*last (Cold) War*.” (McNiesh [2012]) In a 2011 Washington Post article, Walter Pincus claimed that Cold War thinking still defined the U.S. force structure which was not adequate to “*deter China, or al-Qaeda or other non-state terrorist groups*,” and he also reminded that “*U.S. nuclear warheads have not deterred North Korea from trying to build their own, nor do they deter Iran. They may have encouraged their programs*.” (Pincus [2011]) In another example, Johan Bergenäs and Miles Pomper also advocated to end the outdated strategies of the bipolar system in a 2010 Guardian article, titled ‘*No more cold war thinking*.’ (Bergenäs; Pomper [2010])

weapons policy is still driven by Cold War legacies. The three analytical levels of this model are:

- the *declaratory policy*: it basically refers to a broad set of public statements and written documents made by the President, the Secretary of Defense and other high-ranking officials on the requirements of deterrence, the strategic doctrine and the most important guidelines for nuclear weapons policy;
- the *operational level*: this is where the “declaratory policy” should be implemented into concrete military strategies and war plans (while the principles of the declaratory policy are defined by politicians, the making of operational level strategies mostly falls under the control of the military – although civilians are having an increased role in the oversight of these strategies);
- and finally the *force structure*: it contains the necessary type and number of nuclear weapons and delivery vehicles needed to meet the requirements of the operational level and to fulfill the role and mission set by the declaratory policy.

Outlining the characteristics of Cold War nuclear thinking on these three levels will help to define the nature of the current U.S. nuclear policy and describe if and how the legacies of the Cold War affect the prospects of further reductions in the stockpile.

In summary, the main research questions of this dissertation are:

- How has the Obama administration’s visionary Prague agenda affected U.S. nuclear weapons policy?
- What practical changes did it trigger in nuclear strategy?
- Has the administration really shifted away from Cold War traditions or is there still Cold War nuclear thinking on the different levels of nuclear policy?
- If so, how does it affect the prospects of further nuclear disarmament?

The first chapter of the dissertation has three main missions. First, it provides a historical overview of U.S. nuclear weapons policy, the development of the institutional and procedural frameworks of strategic planning, as well as the concrete characteristics of nuclear strategy. Describing the evolution of Cold War nuclear planning shows the past dynamics of policy guidance and operational planning which gives an important

contextual framework. Despite the shifting priorities and the constant innovations on the policy level, the chapter also shows that there were several common beliefs and guiding principles which led the different administrations. Therefore, the historical overview also lays down the ground to identify the specific elements of Cold War nuclear thinking.

Besides the historical overview, the Cold War context also provides a solid basis to conceptualize other key terms of the dissertation, like for example nuclear strategy, counterforce and counter-value strategies, or strategic stability. Clarifying these concepts is a necessary precondition to introduce the main hypotheses of this dissertation which suggest that the operational level still preserves many conservative elements of the Cold War which have a negative effect on further nuclear reductions. In order to prove these hypotheses, the author chose to merge the main findings of the historical overview with the relevant aspects of strategic studies and set up a list of criteria on Cold War nuclear thinking which will serve as an analytical framework to test the Obama administration's nuclear policy.

For this purpose, the third mission of this chapter is to provide a literature review of three main groups of relevant sources: 1) selected pieces from the discipline of strategic studies, 2) the relevant works of policy makers, and 3) seminal works on the operational aspects of Cold War nuclear strategy.

Strategic thinking on the role of nuclear weapons started to evolve during the second half of the 1940s. The debate was centered around RAND Corporation's strategic theorists, like for example Bernard Brodie, Albert Wohlstetter, Herman Kahn, William W. Kaufmann or Thomas C. Schelling who introduced a unique interdisciplinary approach to the field of strategic studies. In the framework of the historical overview, the focus is laid on those studies and concepts which had a direct affect on the evolution of U.S. nuclear strategy and which made it to actual policy guidance. In addition to these theoretical works, the literature review also outlines the most relevant writings of policy makers who played a key role in the development of U.S. nuclear doctrine – this group includes people like Robert S. McNamara, Henry A. Kissinger, Zbigniew Brzezinski or James R. Schlesinger. The third set of sources which is presented in this chapter is a synthesis of those groundbreaking academic papers and books which focus on the operational aspects of nuclear strategy. William M. Arkin, Bruce G. Blair,

William Burr, Fred Kaplan, Janne E. Nolan, Peter Pringle, David A. Rosenberg, and Scott D. Sagan laid down the foundations of this kind of research focus and paved the way towards further works on the operational level of nuclear weapons employment policy.

The second chapter of the dissertation aims to examine President Obama's nuclear policy based on his pledge to end Cold War nuclear thinking. In order to meet the promises of the Prague agenda, the White House initiated a comprehensive review of nuclear guidance and pressed for some meaningful changes in U.S. nuclear weapons policy. The first milestone of the review was the publication of the administration's Nuclear Posture Review (NPR) report in April, 2010. (NPR [2010a]) More than three years later, the President announced in his June, 2013 Berlin address that the review had officially been finished. (Obama [2013b]) It was marked by the presidential employment guidance, a document which set out more specific policy recommendations for the military. (U.S. Department of Defense [2013]) Based on these two documents, the administration seems to lessen the emphasis on Cold War nuclear thinking in the declaratory policy but the operational level is still assumed to preserve several elements of Cold War strategic planning. After outlining the campaign strategy and the roots of President Obama's nuclear policy, this chapter takes a quick look at the different steps of the review process. It shows the procedural framework of implementation, and how the – usually more – general policy guidance gets down to the level of actual war plans. The following three sub-chapters (declaratory policy, force structure, operational level) focus on the results of the Obama administration, measured along the concept of Cold War nuclear thinking, which is described in the first chapter. (Despite the Cold War framework and the focus on the Obama administration, the two decades between the end of the Cold War and 2009 are not ignored – each sub-chapter starts with a quick overview of the Clinton and Bush administrations' nuclear policy, outlining how they shifted (if at all) away from Cold War thinking and describing their legacy in terms of nuclear strategy.)

The last two sub-chapters focus on the consequences of these dynamics with a special attention to the prospects of the nuclear disarmament process. In this regard, the author is aware that there are many factors, which influence the implementation of reductions but the dissertation does not go into the policy debates of Congress, and the negotiations

between the U.S. and Russia. Instead, it focuses on the strategic aspects of nuclear disarmament which is the most ignored (at least by the media) but probably the most influential determinant of future reductions. This sub-chapter divides the question of further reductions into three separate cases: deployed nuclear weapons, non-deployed nuclear weapons, and the strategic triad. After going through the most important operational policies which define these force requirements, the dissertation outlines a list of elements which need to be limited or abandoned by any future administration that wishes to implement significant reductions in the U.S. nuclear arsenal.

2. Explanation of Choice

As the United States and Russia still possess almost 94 percent of the world's nuclear weapons capabilities, they remain the dominant players in the field of nuclear arms control. (SIPRI [2014]) The policy of these two states has a significant effect on the global non-proliferation and disarmament trends and they also have the potential to influence the nuclear policy of others – both in a positive and in a negative way.

The main reason to choose U.S. nuclear strategy out of the two is the political commitment of the current administration towards nuclear disarmament in general. President Obama's pledge to global zero and his personal interest in nuclear issues is a good starting point to implement meaningful changes in strategic planning and to advance further nuclear reductions. After the President's Prague address, the year 2010 was a period of success stories: first the Nuclear Posture Review report was published on April 6, then two days later President Obama and President Medvedev signed the New START Treaty, limiting the deployed strategic nuclear capabilities of the U.S. and Russia to 1,550 nuclear warheads and 700 deliveries each. This was followed by the first Nuclear Security Summit (NSS) in Washington, DC on April 12-13, a process initiated by the President to better safeguard all nuclear materials, to reduce the use of weapons-grade materials in civilian applications and to advance international cooperation in all fields of nuclear security. The next milestone was the May Review Conference of the Nuclear Non-Proliferation Treaty (NPT) which was concluded by the successful adoption of a Final Document, based on the consent of all state parties to the Treaty. Although the momentum has considerably slowed down since then, arms

control still remains a central focus of the administration's foreign policy agenda and it is still a current issue on the global level as well.

Besides the potential influence of the U.S. and the relevance of the topic, a third important factor in choosing this research area is the relative availability of sources. Setting the directions of nuclear strategy, especially in its operational aspects – targeting policy and war plans – is the privilege of a few (as Janne E. Nolan called them the “*guardians of the arsenal*”), and in the majority of states (which possess nuclear weapons) the public usually do not get any access to primary information on these issues. The U.S., however, conducts a rather transparent nuclear policy with sufficient literature on the subject since the beginning of the Cold War. Documents and key speeches on the declaratory policy are mostly accessible and since the end of the Cold War many previous guidance documents have also been declassified which provide a unique insight into the world of military planners. But probably the biggest advantage for the purposes of this dissertation is the Obama administration's favorable approach to a relatively open nuclear policy which makes it a more transparent government than any other before. In 2010, the Obama administration has been the first to disclose an entire report on the Nuclear Posture Review³ and it also revealed the exact size of the Defense Department's nuclear weapons stockpile (first in 2010 and then again in 2014). Besides, it is also the first time that a substantial summary of the presidential employment guidance was made available for the public in June, 2013.⁴

All these factors make the current research design a reasonable choice and a feasible task.

3. Time Frame

As the structure suggests, the first chapter focuses on the Cold War years and provides an overview of the entire period from the Truman administration to the George H. W.

³ The entire Nuclear Posture Review document has not been disclosed but the administration prepared a detailed report on the NPR which was completely published on April 6, 2010. Previous administrations have also come to public with summaries, slides and held briefings on their nuclear postures but the Obama administration's report is by far the most substantial write-up of the NPR which has ever been published (altogether 49 pages). (NPR [2010a])

⁴ In this case, the results of the revised employment strategy were published in the form of a nine-page long Pentagon summary report which was submitted to Congress. (U.S. Department of Defense [2013])

Bush administration. But the main focus of the dissertation is the Obama administration's nuclear policy since 2009. Choosing such a current topic always puts the burden on the author to be arbitrary and set an exact "end date" to the research. If this does not cover an entire administration cycle then it certainly risks some criticism over the subjectivity of the choice. In this case, however, restricting the analysis to the first four years of the administration would be a mistake. The 2012 reelection campaign took a lot of energy and attention away from other issues and the administration could not finish the review of its employment guidance and reveal the results. Only half a year into his second term could the President announce that the targeting review had been finished and a summary of the results was published. On June 19, 2013 President Obama delivered his second major speech on nuclear issues, yet again in a European capital, this time in Berlin. He reaffirmed his commitment to paving the way towards a world without nuclear weapons and envisioned further reductions in the U.S. nuclear arsenal. (Obama [2013b]) This was the result of a several years long interagency effort to review the role of nuclear weapons aiming to find ways to limit them in number and mission as well. Therefore, this date seems to be a suitable end date for the purposes of this dissertation, which puts a huge emphasis on the strategic review anyway. (Moreover, this date also means a shift in the main "players of the game" as the signing of the presidential employment guidance – or as the White House called it, the Nuclear Weapons Employment Strategy of the United States – means that the Department of Defense (DoD), the Joint Chiefs of Staff (JCS) and the U.S. Strategic Command (STRATCOM) take over the implementation of the presidential guidance. The subsequent guidance documents of these circles, however, will not be available for the public and, therefore, cannot be subject to further analysis.)

Having an exact timeframe definitely helps to focus the dissertation but it is just as important to be flexible. Including the major foreign policy speeches from the 2007-2008 Obama campaign is essential as the campaign strategy provided the basis of the Prague agenda and the administration's entire nuclear policy. The same flexible approach is applied at the other end of the time frame, and the author tried to provide an outlook to the possible consequences of the implementation of the presidential employment guidance, as well as to the future prospects of the Berlin announcement on further nuclear reductions.

4. Methodology

This research design relies on the methodology of qualitative analysis. The main reason why quantitative methods were excluded lies in the difficulty to transform variables – like for example Cold War nuclear thinking – into objectively measurable quantities. Qualitative methods, on the other hand, provide the necessary analytical tools to examine U.S. nuclear policy since the beginning of the Cold War.

In order to map Cold War nuclear thinking, the author conducted a focused archival research in the U.S. National Security Archive and the George Washington University's online Nuclear Vault, which is a thematic selection of resources from the National Security Archive's Nuclear Documentation Project. These collections provide an incredible amount of primary sources on U.S. nuclear policy during the Cold War – internal memorandums between key members of the government; notes and minutes from top secret meetings; declassified documents and records from the Pentagon and the State Department; and most importantly, partly or entirely declassified guidance documents on U.S. nuclear strategy. Some of these documents are especially unique: Jimmy Carter's PD-59 Nuclear Targeting Directive (basically his presidential employment guidance) which was entirely declassified in September, 2012 and Secretary of Defense James Schlesinger's 1974 NUWEP-74 (Nuclear Weapons Employment Policy) which guided the 1976 SIOP 5 (Single Integrated Operational Plan) war plan – until today this is the only policy directive from the Office of the Secretary of Defense (OSD) which has been entirely declassified. Based on these primary documents and the growing number of secondary sources on the operational dimensions of Cold War nuclear policy, it is possible to draw a relatively accurate picture on the operational requirements of Cold War nuclear thinking. Some groundbreaking works (for example the different volumes of the *'History of the Joint Chiefs of Staff'* as well as Bruce Blair's *'Strategic Command and Control,'* Fred Kaplan's *'The Wizards of Armageddon,'* Janne E. Nolan's *'Guardians of the Arsenal,'* David Rosenberg's *'Nuclear War Planning'* and *'The Origins of Overkill,'* or Scott Sagan's *'Moving Targets'* and *'SIOP-62: The Nuclear War Plan Briefing to President Kennedy'*) provide a good basis for this kind of research focus.

The examination of the Obama administration's nuclear policy is based on two qualitative methods: document analysis and a systematic interview process. As already

mentioned before, the Obama administration conducts a relatively transparent nuclear policy and has made two of its primary strategic documents – the report on the Nuclear Posture Review and the summary of the presidential employment guidance – available for the public. These documents together with the transcripts of the President's and the key cabinet members' major foreign policy speeches provide a good basis for primary source analysis. With this methodology, the main objectives of the administration's nuclear agenda can be clearly identified which helps to judge if the official policy still reflects Cold War nuclear thinking. Besides, by comparing the practical results of the Obama years with the elements of the announced agenda, one can also define to what extent the administration has managed to meet its own goals and implement its own policy guidelines. A third benefit of the primary source analysis is the comparative framework that can be created in order to see how the 2007-2008 campaign program made it to an actual policy agenda. According to Gary Samore, President Obama's former Coordinator for Weapons of Mass Destruction Counter-Terrorism and Arms Control, campaign strategies do not necessarily translate into policy but in the case of President Obama, *"his personal interest and commitment ensured that his campaign promises became the basis for his April 2009 Prague speech."* (Samore [2013]: p. 25.) Despite major overlaps between the campaign strategy and the Prague agenda, it is still worth identifying the differences and explore why certain priorities did not make it to official government policies. In this regard, a comparative analysis between the primary sources of the 2007-2008 period and the 2009-2010 presidential years can highlight some small but still important shifts in focus.

The last qualitative method applied by this dissertation is a systematic interview process which was conducted during a six-month visiting fellowship in Washington, DC. In the framework of this process, members of the academia, previous and current government officials from the White House, the State Department, the DoD, the National Security Council (NSC), the JCS and STRATCOM were questioned about the key concepts of this dissertation, the results of the Obama administration, the difficulties that might act against the implementation of more significant steps, and most importantly, the "secret world" of the current operational level and the possible effects of the new policy guidance on the actual war plans.

All these qualitative methods add up to a comprehensive methodology which seems to be ideal to test and prove the most important premises and statements of this dissertation.

5. Limits of the Design

Although it is not usual to draw the attention to the possible weaknesses and limits of a dissertation (especially not at the very beginning), but this research design still makes it necessary to admit that there are inherent difficulties which come with the analytical framework.

As a result of the limited availability of primary sources, writing anything about the operational level of nuclear policies is a tremendous challenge – especially in the case of a current administration. The Obama administration's commitment to relative transparency, however, makes it somewhat more feasible. The nine-page long Pentagon summary of the presidential employment guidance shows how the DoD interpreted the President's directions and what possible shifts and changes are required in operational planning.

Besides this key document, some factual data is also available on the different elements of the operational policy: alert levels, for example, can be estimated based on official reports from the Air Force on the general operational readiness of the intercontinental ballistic missiles (ICBMs), or the number of deterrent patrols by ballistic missile submarines (SSBN) is another piece of information which is available for the public. These can help make assumptions on the mission and role of the different legs of the nuclear triad, showing to what extent they have changed since the Cold War period.

These sources, combined with some – *sui generis* – more subjective interviews have provided the backbone of the operational level sub-chapter. Personal interviews were conducted on the one hand with people who have access to more information (some of them even had the chance to see current or past war plans), and on the other hand with academics who have already concluded research projects in this specific area and gained a better understanding of these issues.

Altogether, the author believes that it would have been ignorance to overlook the limits of the design and this short intervention is meant to show that she is aware of the biggest challenge of the research, namely how to address the problem of secrecy around these issues. But despite all the difficulties, creative ways have been found to overcome these challenges, and the applied methods were hopefully appropriate to prove the main hypotheses of this dissertation.

6. Contribution to the Field

The Obama administration's nuclear policy has been a central focus of the arms control community since 2009. But despite the fact that the administration set for itself the standard of shifting away from the Cold War, the historical framework is mostly neglected. Therefore, the first contribution of the current dissertation is the historical approach itself, which establishes a clear definition of what Cold War nuclear thinking exactly means and analyzes the results of the Obama administration under these tenets.

The second important dimension that is not emphasized enough in the current debate is the strategic aspect of nuclear disarmament. The question of the necessary number of nuclear weapons, the possibility of withdrawing non-strategic nuclear weapons from Europe, or phasing out one leg of the triad are all in the center of attention and the political arguments are presented extensively in academic as well as in daily journals. The strategic background of these issues, however, is rarely examined: is it guaranteed that the President's vision is implemented on the operational level, or if the administration's guidelines have any effect on the actual war plans; how does it affect force structures if the current alert levels are maintained; or what are the consequences of upholding the same number of SSBN deterrent patrols for the next decade?

In search of answers to these types of questions, this dissertation intends to show the linkages between the different levels of nuclear policy and highlight the most important obstacles in the way of further nuclear reductions. By going through the characteristics of Cold War nuclear thinking, the dissertation outlines what shifts have been implemented since 1989 and in cases where Cold War legacies remained, it tries to explain the current justification for maintaining these elements. Sometimes the same Cold War reasons are used to explain certain strategic considerations but there are cases,

when the same elements are maintained for different reasons. Therefore, this analytical framework also has the potential to highlight what interests and concerns lay behind the current cornerstones of the nuclear posture. In the conclusion, the dissertation tries to provide an explanation for the slow transformation of nuclear strategy, and it outlines the key strategic problems which need to be addressed in order to implement more dramatic reductions in the U.S. force structure.

On the whole, the real significance of this research is the effort to dig deeper than the widely known declaratory policy and the attempt to map how the policy guidelines “travel” through the bureaucratic labyrinth of the defense establishment and what changes they might trigger in the necessary number of nuclear weapons, prescribed by the actual war plans.

* * *

In the long run, the author wishes to publish this dissertation as a book in order to reach out to a wider audience. This will naturally require additional work on the design and some further developments in the text. While a future book manuscript would follow the logic of the current dissertation, the historic overview is a potential area where the text could be improved and extended. Providing more space and effort to the analysis of the operational level during the Cold War would guarantee a better understanding of the contextual framework of the current research project. Besides, the framework of a book might also allow some space to reflect on the policy requirements of further reductions, and get into the details of U.S.-Russian arms control negotiations, as well as Congressional policies in Washington.

I. Cold War Nuclear Thinking and U.S. Nuclear Weapons Policy

1. Literature Review: The Evolution of U.S. Nuclear Strategy during the Cold War – A Historical Overview

1.1 The Truman Years (1945-1953)

During the first years of the nuclear age, the U.S. was the only country to possess atomic bombs but despite its nuclear monopoly, until the early 1950s nuclear weapons did not occupy a central role in strategic war planning. President Truman saw these bombs as weapons of terror, which should only be used as a last resort and he mostly remained skeptical about their military utility. (Nolan [1989]: p. 35.) Besides the initial skepticism, their limited availability also did not allow nuclear weapons to become dominant war fighting tools in the first war plans of the Cold War.

According to historian David A. Rosenberg, between 1945-1960 U.S. nuclear strategy developed on three separate levels: the level of policy guidance; the level of strategic plans and concepts; and finally the level of target lists and operational plans. (Rosenberg [1983]: pp. 9-10.) On the first level, the President, the National Security Council (NSC), the DoD, the State Department and the chairman of the Atomic Energy Commission (AEC) provided policy guidance on the role of nuclear weapons in U.S. foreign policy and military strategy. This policy guidance was then translated by the second level – the military planners – into strategic plans and concepts. From 1948 the JCS took the leading role in producing strategic plans on nuclear weapons. These plans were the Joint Strategic Capabilities Plan (JSCP since 1952) and the Joint-Mid-Range War Plan, later replaced by the Joint Strategic Objectives Plan (JSOP). These documents outlined force requirements and criteria for damage and targeting. On the third level, the JCS guidance was transformed into actual target lists and war plans – an area which was almost entirely dominated by the Air Force's Strategic Air Command (SAC).⁵

⁵ The Strategic Air Command was established in March, 1946 as a separate Air Force administrative command under the Air Force, and as a specified command under the JCS. Its primary role was to execute the nuclear strikes, outlined in the war plans. As SAC was responsible for the implementation, it retained the right to prepare its own annual war plans which were sent to the JCS for review and approval.

Internal fights between the different branches of government as well as “turf wars” among the military services had a significant effect on nuclear strategy. But in addition to these fights, Rosenberg also identifies three main external factors which influenced the development of U.S. nuclear strategy in a substantial way: technological change, the work of strategic theorists, and most importantly, intelligence estimates. (Rosenberg [1983]: pp. 10-11.) Technological change constantly expanded the horizons and guaranteed newer and more developed weapons systems but it also created new challenges to employ or credibly deter the use of nuclear weapons. According to Rosenberg’s assessment, the work of strategic theorists⁶ was important to raise public awareness on nuclear issues and influence the policy debate (which he identified as the first level of nuclear strategy) but he also claims that their impact on the actual operational plans (the third level) remained very limited.⁷ In the meanwhile, the third external dynamic (intelligence estimates) were considered the most significant factor because they served as the basis of monitoring Soviet force developments and as a result, U.S. targeting estimates.

During the first years of the Truman administration, the President focused on the establishment of civilian control over nuclear weapons resources and production, and he proposed to put the entire question of atomic energy under international control by the United Nations. In the absence of any further interest from the administration or any specific policy guidance on the employment of nuclear weapons, the first war plans did not even envision the use of atomic bombs. (Kunsman; Lawson [2001]: p. 22.) Strategic planning was executed by the Joint War Plan Committees (later replaced by the Joint Strategic Plans Group) but “*at first, their efforts were limited to the preparation of strategic studies of particular areas or of specific military problems.*” (Condit [1996]: p. 153.) These series of studies were called PINCHER. The first war plans prepared under the assumption of the use of nuclear weapons were the 1947 short-range BROILER

⁶ In this regard, RAND Corporation played an outstanding role as the “Alma Mater” of some of the most influential strategic thinkers on U.S. nuclear policy (among them Bernard Brodie, Albert Wohlstetter, William Kaufmann, Thomas Schelling and Herman Kahn). It was established in March, 1946 as an Air Force RAND (Research and Development) Project to provide analysis on nuclear war and aerial warfare. Two years later it was separated and became an independent non-profit organization. Despite its independence, RAND has remained somewhere in between the official circles of nuclear policy planning and the “outside” world of think tanks. Building on its close connections to the Air Force and introducing a positivist revolution in social sciences made RAND Corporation the key Cold War research institute in strategic studies and nuclear policy. (Szalai [2009]: pp. 3-4.)

⁷ Janne E. Nolan (author of *The Guardians of the Arsenal* [1989]) seems to share this view while others like Fred Kaplan (*The Wizards of Armageddon* [1991]) attribute a more influential role to this group.

(revised a year later and renamed FROLIC) and the long-range CHARIOTEER plans. These plans were later followed by a series of new planning documents: HALFMOON in 1948 (later renamed FLEETWOOD), TROJAN and OFFTACKLE in 1949, and SHAKEDOWN in 1950. These first war plans were so called capabilities plans (“*use everything you have*”), and they primarily targeted major Soviet cities and some war-related facilities.⁸ (Pringle; Arkin [1983]: p. 49.) Throughout the late 1940s, nuclear weapons were seen only as an extension of conventional strategic bombings and skepticism remained about the benefits of their use. They were not considered the primary means to make the Soviet Union capitulate in a war or the primary means to destroy communism – a skeptical view, concluded by the 1949 Harmon report, which claimed that the 133 atomic bombs envisioned in the TROJAN war plan could only destroy less than half⁹ of the Soviet industrial capacities. (Nolan [1989]: pp. 43-44, 54-57.) The Harmon report ultimately led to a dramatic increase in nuclear forces, the reevaluation of the urban targeting strategy and the tasking of SAC to also include the “*retardation of Soviet advances in Western Europe*” in its war plans. (Quoted in Rosenberg [1983]: p. 16.)

In 1950, the JCS designated a three-level coding system for the potential targets of a nuclear strike, based on their type and relevance to Soviet war-making capacity. These targets were listed in the annual Emergency War Plans (EWP). The three target categories were: Bravo targets (to deny the Soviets the capability to launch a nuclear offensive – mostly airfields), Delta targets (to disrupt the vital elements of Soviet war-making capacity) and Romeo (to retard Soviet advances into Western Europe). (Pringle; Arkin [1983]: p. 56.) These categories remained in effect until the first Single Integrated Operational Plan was prepared in 1960.¹⁰ (Although these categories were renamed later, they were maintained in the National Target Base (NTB) all the way through the

⁸ BROILER ordered to drop 34 bombs on 24 cities, TROJAN called for 133 bombs on 70 cities, OFFTACKLE targeted 104 cities with 220 bombs, withholding 72 nuclear weapons for a re-attack. (Pringle; Arkin [1983]: p. 62.)

⁹ More specifically, Rosenberg talks about only 30-40 percent. (Rosenberg [1983]: p. 16.)

¹⁰ The methodology, however, was completely ignorant of some essential factors of nuclear war fighting. In 1950 Yale professor, Bernard Brodie was asked by the Air Force Chief of Staff, Hoyt Vandenberg to review the target lists. Brodie wrote two reports in which he criticized the target lists for a number of reasons: first, he questioned the utility of targeting Soviet electric power plants, the location of which the U.S. did not know completely at that time. Second, he was critical about the “*concentration of attacks*” and proposed to withhold some forces “*as a bargaining lever, as a measure of coercion, as a way of threatening the Soviets to back down.*” Third, he argued against the city bombing strategy (which he considered totally ineffective) and stressed the importance of selective targeting. And fourth, he criticized military planners for not calculating how much damage can be expected from a nuclear attack – including the aftereffects like for example the radioactive fallout. (Kaplan [1991]: pp. 45-47.)

Reagan years. In essence, Bravo-Delta-Romeo as a concept carries on until today.) (Interview with Franklin C. Miller [2014])

Despite Truman's best efforts, by the early 1950s the control of nuclear weapons slowly shifted away from the civilians to the military and by 1952 the JCS managed to get total control of the nuclear stockpile and all of its operational aspects.¹¹ Although the ultimate authority to decide over the use of nuclear weapons remained with the President, some declassified sources suggest that by the second half of the 1950s, a kind of pre-delegation of control was approved by the President and top commanders probably gained some authority to order the use of nuclear weapons under "*specific emergency conditions*." (National Security Archive EBB No. 45 [2001])

Under the Truman years, military planners only received very vague policy guidance. The 1948 NSC-30 document contained two main points for nuclear planning: first, the U.S. must be ready to use "*all appropriate means available, including atomic weapons*" and second, employment should be based on the decision of the President. The same year, NSC-20/4 added that the U.S. would refrain from initiating a war, suggesting that nuclear strikes would be launched only in response to Soviet aggression.¹² In the meanwhile, the main focus of the war plans has shifted between TROJAN and OFFTACKLE from directed attacks against Soviet war-making capacity to the desire to destroy these targets. Besides, a completely new objective was also included: the retardation of Soviet advances in Western Europe. (Kunsman; Lawson [2001]: pp. 23-29.) The last policy guidance which the Truman administration approved was the NSC-68/4 in 1950, mostly written by Paul Nitze, acting director of the Policy Planning Staff in the State Department. It presented an alarming picture on Soviet intentions to initiate wars, with little or without any warning, and argued for the maintenance of strategic superiority and a rapid build-up of nuclear weapons capabilities. (NSC-68/4 [1950])

Altogether, Truman tried to keep the U.S. nuclear arsenal under strict civilian control and limit the use of these weapons but despite his initial skepticism, the rapid

¹¹ Parallel to these developments, SAC gained a bigger control over the target lists. After a high level Air Staff target panel in January, 1951 the participants agreed that SAC concerns about isolated targets were valid hence target lists would "*concentrate on industry itself which is located in urban areas*" so that even if a bomb missed its target, "*a bonus will be derived from the use of the bomb*" by causing major destructions in the civilian population. In addition, the panel decided that future target lists would be submitted to SAC for first comment before sending it to the JCS. (Quoted in Rosenberg [1983]: p. 18.)

¹² Although prevention was excluded by the policy guidance, it did not rule out the option of preemptive nuclear strikes, which remained a preferred concept on the operational level.

deterioration of the international security environment – the 1948 Communist coup in Czechoslovakia, the first Berlin crisis, the Communist victory in China, the Korean War and probably most importantly, the first successful Soviet nuclear test in 1949 – changed his mind and led to a rapidly growing reliance on these weapons of terror. During his eight years, Truman presided over the establishment of what Janne E. Nolan called the nuclear “*guardianship*”¹³ and paved the way towards a major increase in the number and mission of nuclear weapons, realized by the Eisenhower administration.

1.2 The Eisenhower Years (1953-1961)

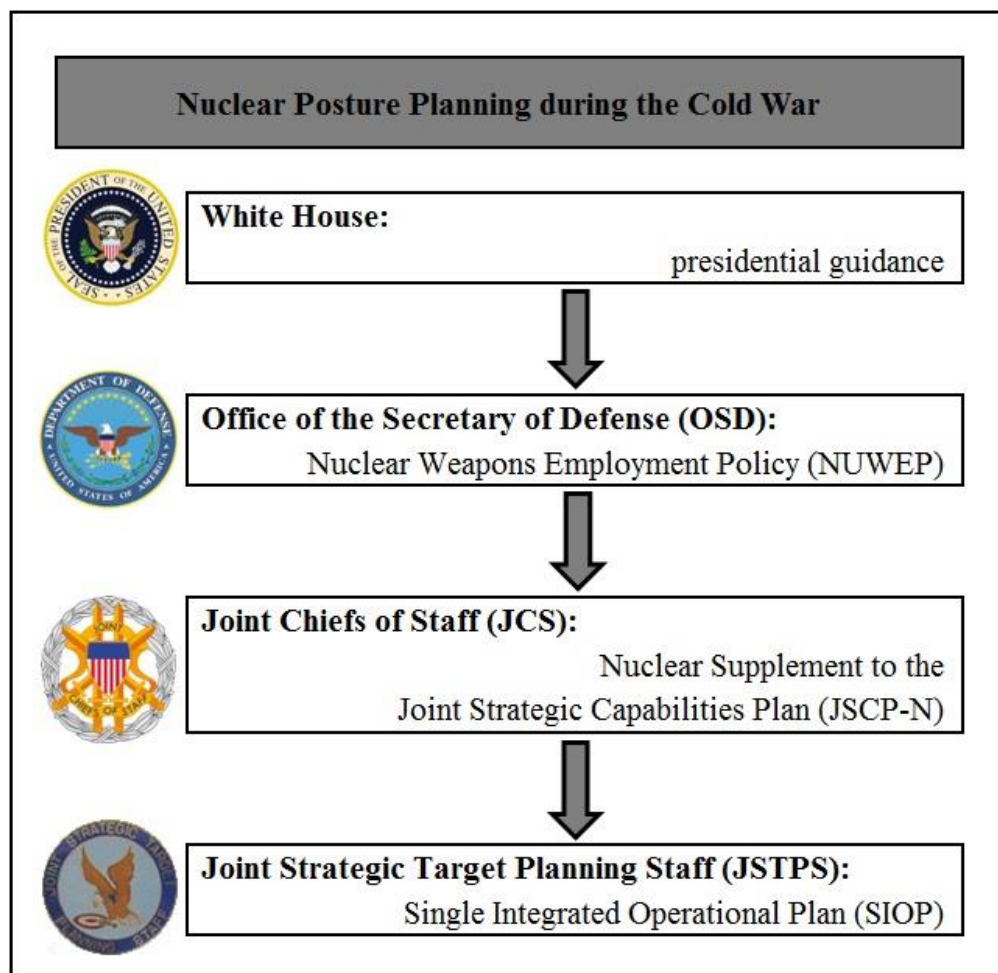
The first considerable growth in the U.S. nuclear arsenal started in response to the Harmon report and with the endorsement of the NSC-68. But this was just the beginning, Truman approved altogether three increases in nuclear production. (Rosenberg [1983]: pp. 23-27.) It was continued by the Eisenhower administration and by the end of 1961 the U.S. possessed around 22,000 nuclear weapons. The weapons, however, did not only advance in number, but in technical capabilities as well. During the 1950s, increasingly sophisticated and increasingly powerful weapons designs were introduced in the U.S. military stockpile. As a result, in 1952 the U.S. successfully tested its first thermonuclear weapon (the “H-bomb”).

With the rapidly growing number of nuclear weapons, the number of potential targets also dramatically increased. By the mid-1950s the U.S. intelligence identified 5,000-6,000 potential targets, of which SAC provided concrete plans to hit 1,700. As the number of targets had become too high to hit all at once, SAC planned an “optimum plan” starting with a massive first strike of dropping 700 atomic bombs on the Soviet Union. (Pringle; Arkin [1983]: p. 44.) These plans did not really consider withholding forces for a second wave after the first nuclear exchange, they put all emphasis on a destructive first strike (or the so called “Sunday punch” as Bernard Brodie referred to the military jargon about these plans). Parallel to the dramatic increase in the number of nuclear weapons and potential targets, the targeting assignments also proliferated. While SAC was responsible to prepare the strategic bombing list, Navy commanders in the

¹³ In reference to a small group of military specialists who decide over the most specific details of nuclear war plans, hence possess the biggest influence over the employment of nuclear weapons.

Atlantic and the Pacific as well as the commander of U.S. forces in Europe also prepared their own target lists, which resulted in duplications, sometimes triplications in targeting. All these lists were supposed to be submitted to the JCS but their resources were too limited to process this incredible amount of data. Therefore, a Joint Strategic Target Planning Staff (JSTPS) was created in 1960, through which SAC gained control over all nuclear targeting and operational planning (including targeting for the Navy and the regional commands). Its primary task was to create the first integrated operational plan, approved in the end of the Eisenhower administration. (Nolan [1989]: pp. 58-60.)

Figure 1. Nuclear Posture Planning during the Cold War



The Eisenhower period was a clear continuation of the late Truman years in the sense that nuclear weapons were generally seen as a “cheap” solution to counterbalance Soviet conventional advantages (especially in Europe). Being the first NATO Allied

Supreme Commander between 1950 and 1952, Eisenhower was familiar with the JCS targeting mechanisms and encouraged planning for the tactical use of nuclear weapons in Europe. But unlike Truman, Eisenhower believed that nuclear weapons were essential for national defense and they should be weapons of first resort. In this spirit, he made sure that nuclear weapons would be available for use – he transferred complete atomic bombs to the military for deployment and increased readiness, which led to a significant decrease in the civilian control of nuclear weapons.¹⁴ (Rosenberg [1983]: pp. 27-28.)

With regard to the policy guidance on nuclear planning, President Eisenhower approved NSC-162/2 as its Basic National Security Policy at the end of his first year. It contained three main objectives in terms of nuclear warfare:

- (1) “A strong military posture, with emphasis on the capability of inflicting massive retaliatory damage by offensive striking power;*
- (2) U.S. and allied forces in readiness to move rapidly initially to counter aggression by Soviet bloc forces and to hold vital areas and lines of communication; and*
- (3) A mobilization base, and its protection against crippling damage, adequate to insure victory in the event of general war.”* (NSC-162/2 [1953]: pp. 5-6)

A more clear articulation of this strategy was presented by Eisenhower’s Secretary of State, John Foster Dulles. In his famous January, 1954 speech, Dulles declared that the U.S. would “*retaliate ‘massively’ against Soviet aggression*” even if the aggression was solely conventional. (Quoted in Kunsman; Lawson [2001]: p. 34.) Under the Eisenhower-Dulles policy, everything was subordinated to victory (although their strategy also reaffirmed Truman’s denial of preventive attacks and made a commitment to refrain from provoking a war, and to retaliate only in response to Soviet aggression).

Regarding the Eisenhower administration’s nuclear doctrine, two important “external dynamics” made a significant effect on its formulation. First, the improvement of Soviet technical capabilities (especially the first Soviet thermonuclear test in 1953 and the 1957 Sputnik shock); and second, the technical developments in the United States

¹⁴ However, this was only a temporary drop in the civilian control of these weapons – in National Security Action Memorandum-160, President Kennedy ordered to install Permissive Action Links (PALs) on nuclear weapons to prevent unauthorized use by enemy countries, terrorist groups, rogue U.S. troops, or the allies of the U.S. (this latter was the original motivation to install PALs). (Bellovin [2005])

which created the possibility to deploy ballistic missiles on submarines, hence build an invulnerable leg in the nuclear delivery systems.

The most important effect of the Soviet technical advancements was the reevaluation of potential war fighting scenarios and the newly arisen questions about the ability of the U.S. to launch a disarming first strike on the Soviet Union. The strategists of the RAND Corporation and their unique methodology which combined mathematics, science, international affairs and national security played a key role in this debate. According to Bernard Brodie's *'The Absolute Weapon,'* if the United States intends to effectively deter aggression, it is essential to retain an ability *"to retaliate in kind"* and *"to explore all conceivable situations when the aggressor's fear of retaliation will be at a minimum and to seek to eliminate them."* (Brodie [1946]: p. 77.) Exactly this ability *"to retaliate in kind"* was questioned during the 1950s, when strategists raised serious concerns about the vulnerability of the U.S. bomber force. In the 1950s, SAC operational plans were based on U.S. strategic bombers flying to overseas military bases and initiating a nuclear attack against Soviet targets from there. But another RAND analyst, Albert Wohlstetter pointed out that these forward military bases (especially the ones in Europe) were highly vulnerable to potential Soviet strikes and this vulnerability might have tempted Moscow to launch a surprise attack and eliminate them in order to advance its military objectives on the ground. Based on these concerns, a 1954 Ad Hoc Committee of the Air Force proposed five areas where the Air Force had to implement changes in order to reduce its vulnerability: 1) recognize the existence of the vulnerability; 2) specific vulnerability factors should be developed on a zonal basis; 3) harden the bases to survive an atomic attack; 4) establish new advanced bases and improve refueling capacities; 5) material resources overseas should be reduced to a minimum level.¹⁵ (Kaplan [1991]: p. 89-106.)

The second "external dynamic," namely the new developments in the U.S. delivery capabilities triggered a similarly significant debate – this time – between the Air Force and the Navy. The possibility to deploy ballistic missiles on submarines raised the potential to possess an invulnerable leg in the delivery systems, and the hope that a

¹⁵ The 1955 Killian Report, ordered by the Science Advisory Committee, mostly contained the same conclusions and called for the hardening of SAC bases; the acceleration of research and development on the field of IRBMs and ICBMs; and increased intelligence gathering on the Soviet Union. However, it also remarked that these new developments will very soon provide both sides with the capability to destroy the other and the U.S. might lose its nuclear superiority. (Kunsman; Lawson [2001]: pp. 36-37.)

nuclear war might rather be prevented and not fought. Deterring the Soviet Union with the threat of a devastating retaliatory strike started to be seen as a more realistic and more favorable option in contrast to damage limitation and preemption. While the Navy was promoting the former (a “finite deterrence”), the Air Force insisted on retaining a massive capability to act preemptively – in case deterrence would fail – and to destroy as much as possible of the Soviet nuclear capabilities. (Nolan [1989]: p. 59.) Although, the policy guidance of the Eisenhower administration clearly reflected this shift towards retaliation, the operational level still suggested a continued planning for preemption.

During the Eisenhower years, the U.S. list of potential Soviet targets increased from 3,000 to 20,000 and nuclear war plans included massive strikes against the Soviet Union, China and their satellite states. The administration tried to cut with the Truman legacy of mostly focusing on Soviet cities and put a greater emphasis on the so called “counterforce” targets.¹⁶ (Pringle; Arkin [1983]: pp. 107.) From 1954, SAC’s Basic War Plan (BWP) was to send 735 bombers to hit the Soviet early warning systems, simultaneously from all directions. The main objectives of this massive strike were to minimize the time U.S. bombers had to spend in hostile airspace, maximize destruction and limit the need for re-attacks. This basically meant a single massive blow against the “optimum mix” of military and urban-industrial targets, rather designed for prevention than retaliation. (Rosenberg [1983]: p. 35.)

As a result of Soviet technical advances, President Eisenhower tasked the Science Advisory Committee with the set up of a special panel to investigate civil defense measures. The so called Gaither Report (also mostly written by Paul Nitze)¹⁷ was presented one month after the first Soviet Sputnik was launch in November, 1957. Its main recommendation was to strengthen the strategic capabilities by establishing early warning systems to detect the approach of Soviet bombers and ballistic missiles. From an operational perspective, it also triggered a higher readiness in the bomber force – frequent airborne alert exercises started in 1958 and by 1961 a continuous airborne alert status was introduced for 60-70 bombers. (Kunsman; Lawson [2001]: p. 38.)

¹⁶ In 1954 President Eisenhower specifically expressed his preference to focus on military targets and asked the JCS: “*If we batter Soviet cities to pieces by bombing what solution do we have to take control of the situation and handle it so as to achieve the objectives for which we went to war?*” (Quoted in Rosenberg [1983]: p. 35.)

¹⁷ Just like the Truman administration’s NSC-68/4 policy guidance document.

1.3 The Kennedy-Johnson Years (1961-1969)

When President Kennedy came into the White House in 1961, he inherited a robust nuclear arsenal of about 22,000 nuclear weapons and the first integrated operational plan (called SIOP 62), created by the JSTPS and approved by the JCS in December, 1960. Although war plans in general are among the most highly classified documents, the briefing on the new war plan which was given by General Lyman L. Lemnitzer (Chairman of the JCS) to President Kennedy has been declassified, and Professor Scott Sagan offers a thorough analysis on it. (Sagan [1987])

The preparation of SIOP 62 was based on detailed policy guidance from the Eisenhower administration and it clearly reflected the administration's massive retaliation doctrine (and the retained option of a preemptive strike, as well). SIOP 62 called for launching 1,685 nuclear weapons on 1,004 delivery systems in a massive strike against targets in the Sino-Soviet bloc. During the briefing, General Lemnitzer did not suggest at any point that the U.S. was considering a surprise first strike against the Soviet Union, instead he focused on preemption (in case of a warning that Moscow was preparing for a first strike) and retaliation (in response to Soviet aggression). According to the guidance from the Eisenhower administration, strikes were supposed to be delivered on a minimum 75 percent probability with extremely high damage expectancy levels.¹⁸ The presented target list was an "optimum mix" of military and urban-industrial targets, including critical nuclear counterforce targets (10-25 Soviet ICBMs, 140 bomber bases and up to 30 submarine bases).¹⁹ Although the JCS claimed that this strategy allowed the U.S. to prevail in a general nuclear war, they were also cautious to warn the President that even under the most successful (preemptive) execution of the war plan, they cannot exclude the possibility that some long range Soviet forces would survive and retaliate against the U.S.²⁰ Despite the unquestionable nuclear superiority of the U.S. and the significant imbalances in the alert readiness,²¹ SIOP 62 was still a totally

¹⁸ "Seven priority targets were to be destroyed with 97 percent assurance, 213 targets with 95 percent assurance, and 592 with at least 90 percent assurance." (Sagan [1987]: p. 32.)

¹⁹ Although civilian population was still held at risk, this was the first war plan that principally aimed at military targets – the genesis of the so called "counterforce" strategies.

²⁰ Professor Sagan explains the cautious behavior of the JCS by three factors: operational difficulties (e.g. the risk of generating strategic warning for Moscow while putting forces on higher readiness level in preparation for the SIOP); uncertainty about the warning, authorization and timing of the attacks and finally, uncertainty about the precise location and readiness of the entire Russian force.

²¹ The U.S. kept half of its bomber force on 15-minute ground-runway alert, with some B52s on constant airborne alert, and two Polaris submarines as well as one-third of the ICBM force were also kept on alert.

inflexible, “*overwhelming nuclear offensive*,” without any plans to withhold U.S. forces or exclude satellite states which might not be directly involved in the given conflict. It was based on overkill and massive destruction regardless of whether used for preemption or retaliation. Although it contained 14 options, all envisioned the use of everything the U.S. could mobilize and there was nothing limited or flexible about it.

While the inherited war plan clearly reflected the Eisenhower administration’s nuclear doctrine, the Kennedy-Johnson years brought a major reevaluation of the benefits and dangers of massive retaliation. The Kennedy administration had a fundamentally different perspective on nuclear war fighting. With the growing Soviet nuclear arsenal and their conventional superiority, they had the military means to survive and retaliate after a destructive preemptive strike and – according to Pentagon estimates – kill a few million Americans. This loss was totally unacceptable for the new President. In the framework of massive retaliation, even the smallest incidents risked escalation into a general nuclear war. Massive retaliation did not only deter adversaries but with the inflexible option of using almost 2,000 nuclear weapons in a single overwhelming strike, it certainly had a self-deterrent effect, as well – which questioned the entire credibility of the U.S. nuclear doctrine. (Nolan [1989]: p. 68.) President Kennedy’s short term in office was marked with a chain of crises: the Bay of Pigs incident, the second Berlin crisis, the Cuban missile crisis and the Vietnam War. The doctrine of massive retaliation was completely inadequate (and according to Kennedy, also inhuman) to address these challenges. In search of more credible solutions, the Kennedy administration kept asking for more flexible options in the war plans in order to provide more appropriate responses to the emerging crisis situations.

One of the first explicit articulations of the new “flexible response” doctrine was the 1961 National Security Memorandum No. 109 which laid out three escalation steps²² in

The Soviet Union, on the other hand, did not keep any of its ICBMs on high alert (warheads were kept separately), there were no bombers on constant runway or airborne alert, and the submarine fleet was mostly kept in port during peacetime. (Sagan [1987]: p. 29.)

²² The importance of gradual escalation was something that RAND analysts have already been advocating. Herman Kahn was one of the early pioneers in the field of escalation theory. Although his escalation concept was not directly transferred into policy guidance (it was too complex) but his seminal works laid down a solid basis for the doctrine of flexible response and the counterforce strategy of the early 1960s. (Kunsman; Lawson [2001]: p. 47.)

Kahn argued that U.S. nuclear war plans should not rely on a single massive attack, instead a variety of options were needed to be able to “*control*” a nuclear war and exercise “*intra-war deterrence*.” Control in his understanding meant that the adversary could be deterred from further aggression and a nuclear war could ultimately be “*won*.” (Kahn [2007]: p. 175.) During the first years of the 1960s, he worked on the

a potential nuclear confrontation with the Soviet Union: starting with selective nuclear attacks (with the primary purpose of demonstration), then limited tactical employment of nuclear weapons (to achieve significant tactical advantage and to extend pressure), and finally general nuclear war. (NSAM-109 [1961])

The primary architect of this doctrinal revision was Secretary of Defense Robert McNamara. Although McNamara believed that the U.S. should maintain its nuclear superiority, he differed from his predecessors in terms of its practical application. He thought that nuclear retaliation should be secondary to conventional options, thus technological advancements in conventional capabilities became a central focus of his defense policy. In his understanding, *“flexible response was the consideration of all non-nuclear options in the event of war, and it aimed to foster an institutional avoidance of nuclear options for retaliation.”* (Kessler [2010]: p. 40.) He argued that a deterrence strategy based on the threat of a massive (nuclear) retaliatory strike against the smallest conventional aggression increased crisis instability and it might force an adversary to take irrational and desperate steps in order to preempt a massive destruction of its forces. (McNamara [1986]: pp. 46-47.)

In order to refine U.S. nuclear strategy, and pave the way towards the implementation of flexible response, McNamara used two methods (both of them quite unpopular in military circles): first, the system of (what he called) Planning-Programming-Budgeting²³ and second, the involvement of young system analysts in military planning.

question of escalation theory and he came up with the concept of the *“escalation ladder to war”* – a list of forty-four escalation *“rungs”* starting from *“ostensible crisis”* all the way up to *“spasm or insensate war.”* (Kahn [1965])

In order to control a war and avoid Soviet nuclear blackmail, Kahn argued that three *“types of deterrence”* were necessary: the first type was pure deterrence (deterrence of a *“direct attack”* on the United States), the second not-incredible-first-strike capability (*“strategic threats to deter an enemy from engaging in very provocative acts, other than a direct attack on the United States itself”*) and the third a tit-for-tat capability (*“graduated and controlled deterrence”* to deter all other hostile acts). According to Kahn, the second and the third types were the most essential elements. While the second type deterrence required the capabilities to execute a massive nuclear first strike, the third type deterrence required smaller, more limited options to respond to lower level Soviet aggressions. (Kahn [2007]: p. 126.)

²³ McNamara believed that he could rationalize the U.S. military infrastructure by keeping the budget and planning processes under strict civilian control. Therefore he established the system of Draft Presidential Memoranda (DPM) in order to *“impose detailed justification for each element of the defense budget, policy and doctrine.”* (Nolan [1989]: p. 62.)

Regarding the planning processes, McNamara’s chief achievement was putting force requirements and intelligence assessments under civilian control. Prior to the McNamara years, the military services enjoyed a greater freedom in setting their own force requirements and strategic postures. According to a 1961 NSC memo, the U.S. services had three separate doctrines at the time: counterforce at the Air Force, finite deterrent at the Navy and credible deterrent at the Army. They also used separate intelligence estimates which served as a basis of their force requirements. (Nolan [1989]: p. 71.)

During the 1960 presidential campaign, many RAND analysts were already secretly involved in the planning of the Kennedy campaign strategy. The presidential candidate (and McNamara, as well) were very receptive to the ideas of limited war and counterforce. Kennedy opposed massive retaliation, and acknowledged the dangers of the vulnerability of the U.S. bomber force (revealed by RAND analysts in the 1950s) and the perception of a “missile gap” between the Soviet Union and the United States. Under McNamara’s Pentagon years, these defense intellectuals (the so called “whiz kids”)²⁴ were tasked with providing studies and recommendations on how to shape U.S. nuclear strategy in accordance with the realities of the nuclear age. (Kaplan [1991]: pp. 248-253.) These years were marked as some of the very rare occasions when civilians got such a direct access to U.S. strategic planning.

One major (although short-lived) innovation of the whiz kids was the introduction of the “no cities” doctrine (also usually called “city avoidance” or “war fighting” or “counterforce” strategy).²⁵ Daniel Ellsberg, Assistant Secretary of State for International Affairs argued that major cities should be totally avoided in U.S. nuclear strikes as current plans imposing maximum civilian casualties on the Soviet bloc *“would fail to inhibit punitive retaliation by surviving enemy units, but would instead eliminate the possibility that enemy responses could be controlled or terminated to U.S. advantage.”* (Quoted in Kaplan [1991]: p. 278.) Although the revisions of the SIOP 62 were already underway, McNamara signed Ellsberg’s conclusions into official policy guidance to lead the JCS in their preparations for the Kennedy administration’s first war plan, the SIOP 63.

One of the main recommendations of the Ellsberg memo was the re-categorization of targets. What was previously called “optimum mix” was divided into three “tasks” – nuclear targets (ALPHA), other military targets (BRAVO), and urban-industrial targets (CHARLIE). Five primary attack options were designated: 1) strategic forces, 2) air-defense sites away from cities, 3) air-defense sites closer to cities, 4) command-control centers, and 5) all-out strike against Soviet cities. These options provided the President with greater flexibility to respond under various conditions and with the capability to withhold nuclear strikes against certain target categories, or certain states, or certain

²⁴ Among others, Harold Brown, Alain Enthoven, Patrick Gross, William Kaufmann, Henry Rowen and Ivan Selin.

²⁵ The reemergence of an idea which was already promoted by Bernard Brodie in the early 1950s.

categories in certain states. Despite the greater flexibility, the new SIOP was still far from offering real limited attacks, it still envisioned the use of hundreds of nuclear weapons and preserved the option of a massive single strike with thousands, based on the execution of the SIOP in all categories simultaneously. (Sagan [1987]: pp. 38-39.) According to Ellsberg's guidance, in the initial phase of a nuclear war, only the "*least destructive, most purely counterforce option would be exercised*" and if the war escalated, it could be combined with the second, third, and fourth categories, withholding the last option of bombing cities as a last resort, in case the war is totally out of control.²⁶ In William Kaufmann's summary, the main principles of the new war plan were: control, flexibility, discrimination. (Kaplan [1991]: p. 279.)

McNamara officially announced the new counterforce strategy in his 1962 Ann Arbor speech. For McNamara, counterforce meant "*approaching nuclear exchanges in terms of bargaining*." He borrowed several concepts from RAND theorist, Thomas Schelling about limiting and controlling nuclear exchanges and terminating the war by involving bargaining in the process (most of these concepts gained even more emphasis under the Nixon years). But McNamara differed from Schelling in matching conventional warfare with nuclear warfare, risking that traditional conventional contingencies would rush into nuclear exchanges. (Freedman [2003]: p. 223.)

This pure counterforce strategy, however, sent an alarming message to many. Primarily focusing on military targets – erroneously – suggested that the U.S. was preparing for a first strike against Soviet strategic forces, otherwise it wouldn't make sense to point U.S. missiles and bombers on targets which would probably be emptied if the Soviets attacked first.²⁷ As a Soviet strategist phrased it, "*a strategy which contemplates attaining victory through the destruction of the armed forces cannot stem from the idea of a "retaliatory" blow; it stems from preventive action and the achievement of surprise*." (Quoted in Freedman [2003]: p. 226.) A second problem was that the Soviets were catching up in nuclear capabilities²⁸ – this provided more counterforce targets for

²⁶ Interestingly, as a result of the new "no cities" guidance, even Moscow was excluded from the list of primary targets. (Pringle; Arkin [1983]: p. 121.)

²⁷ Professor Sagan argued that those who equated counterforce strategy with the preparation for a damage limiting first strike were wrong. Although he also admitted that this "misperception" was understandable: U.S. war plans contained preemptive strike options and damage limiting was the aim in case a nuclear war broke out but it did not mean that the U.S. was planning to initiate it. (Sagan [1989]: p. 73.)

²⁸ Besides the increased number of their forces, the Soviets also started to harden their launchers. According to photoreconnaissance satellites, many ICBMs were placed in concrete underground silos.

U.S. military planners and significantly increased the Soviets' chances to survive a preemptive strike. Besides, physical problems and strategic uncertainties also worked against this strategy: first, even the most precisely executed counterforce mission risked killing millions of civilians and second, there were absolutely no guarantees that after a purely counterforce U.S. strike the Soviets would follow the same strategy²⁹ and restrain themselves from attacking U.S. population centers in a retaliatory strike.³⁰ (Panofsky [1973]) As a result of all these concerns, during the mid-1960s U.S. nuclear strategy was transformed into a "second strike counterforce" or a so called "damage limiting strategy." (Pringle; Arkin [1983]: pp. 122-123.)

The JCS in general were on board with the idea of no cities counterforce as until they were able to locate new military targets, it provided them with a solid justification to ask for an increase in U.S. nuclear forces – the more primary targets they found, the more nuclear weapons were necessary to hold them at risk. This unlimited growth in the force levels, however, was not preferred by McNamara who saw these requests as Air Force attempts to acquire a disarming first strike capability. In order to go against these trends, he presented President Johnson a new Draft Presidential Memoranda in December, 1963 which put a greater emphasis on deterrence, instead of war fighting. McNamara claimed that in light of the expanding Soviet military capabilities, counterforce³¹ may not provide the benefits the administration was hoping for, and the extra resources needed to maintain this strategy were simply not warranted. Therefore, he proposed a shift to the doctrine of – what he called – "assured destruction" and put a greater emphasis on the survivability of the U.S. nuclear arsenal, which would guarantee a reliable second strike capability. Based on concrete calculations about the Soviet military capabilities, he laid out the principles of this new strategy: "*An essential test of the adequacy of our posture is our ability to destroy, after a well planned and executed Soviet surprise attack on our Strategic Nuclear Forces, the Soviet government and military controls,*

²⁹ Although there were no solid guarantees from either side but McNamara tried to communicate his new strategy to Moscow as an offer to set a rule to avoid major cities in future nuclear exchanges. He tried to convince his Soviet counterparts that U.S. forces were designed to be able to ride out a Soviet attack and retaliate, therefore there was no need for the U.S. to preempt. (Freedman [2003]: pp. 225-226.)

³⁰ An additional problem with the first strike option was President Kennedy's opposition to the mere idea of executing Eisenhower's massive strike option as preemption. Only a few weeks into his office, Kennedy made a public pledge that the U.S. would not execute preemptive nuclear strikes. This was the first and also the last time that a U.S. president officially renounced the first use of nuclear weapons. (Nolan [1989]: p. 64.)

³¹ At least not in the form it was originally imagined by the administration – focusing on the primary military targets and holding at risk all strategic forces of the Soviet Block have become more difficult and less feasible.

plus a large percentage of their population and economy (e.g. 30% of their population, 50% of their industrial capacity, and 150 of their cities). The purpose of such a capability is to give us a high degree of confidence that, under all foreseeable conditions, we can deter a calculated deliberate Soviet nuclear attack.’’³² (DPM-151 [1963])

The new doctrine of assured destruction³³ meant that McNamara could deny the constant demands of the JCS for more weapons. New priorities were guiding the trends of the U.S. force structure: survivability and accuracy. Nuclear weapons had to be able to survive a Soviet attack and then retaliate accurately against the fully hardened targets of the enemy. In this spirit, McNamara approved the development of the new Minuteman II ICBM and a research program was started for the creation of the first Multiple Independently Targetable Reentry Vehicles (MIRV) – a cheap solution to provide counterforce without dramatically increasing the number of launchers.

The McNamara years altogether presented a great civilian innovation in the declaratory policy but the “no cities” doctrine was very soon reversed and shifted to “assured destruction” which was blamed by many to be the primary reason for the loss of U.S. superiority and the Soviet catch-up in nuclear capabilities (by 1965 the U.S. and Soviet nuclear forces were in an approximate balance). (Nolan [1989]: pp. 86-87.) The least successful venture, however, was still the operational level which was seriously lagging behind the fundamental doctrinal changes from massive retaliation to flexible response. Although the revised versions of SIOP 62 rearranged and reprioritized the target categories and provided some options to withhold forces but they were still unable to offer real limited strike options which could be adequately used under the gradual escalation scenarios, advertised by the administration.

³² The calculations used in McNamara’s memorandum were prepared by a computer program design by another RAND associate, Alain Enthoven. His methodology was based on calculating the damage caused by dropping one-megaton nuclear weapons on Soviet cities. At several different levels, he calculated how much additional damage could be caused by dropping another bomb. He used his results to prepare a graph with two curves: one showing how many people would be killed and the other showing the industrial damage. He found that beyond 400 megatons (which would destroy all major cities) the curves started to considerably flatten and the “benefits” of dropping an additional bomb became smaller and smaller. The numbers used by McNamara were calculated under this 400 megaton margin. This whole concept relied on what economists call “diminishing marginal returns.” (Kaplan [1991]: pp. 317-318.)

³³ Hudson Institute associate, Donald Brennan attached the term “mutual” to assured destruction as a sarcastic reflection on the McNamara doctrine – hence the acronym: MAD.

1.4 The Nixon-Ford Years (1969-1977)

Flexible response remained an official nuclear doctrine for the rest of the Cold War, but under this umbrella each administration tried to introduce its own innovations – both in terms of technological developments and in policy guidance. The inherited doctrine of assured destruction was not entirely popular among members of the incoming Nixon administration. According to Henry Kissinger, President Nixon’s National Security Advisor, the biggest problem with the doctrine of assured destruction was that the United States “*deterred Soviet attack by maintaining offensive forces capable of achieving a particular level of civilian deaths and industrial damage. The strategy did not aim at destroying the other side’s missile or bomber forces...*” (Kissinger [1979]: p. 215.)

In general, Kissinger was puzzled by the concept of credible military policy. During the 1950s and 1960s he tried to examine the criteria for credible war fighting under the circumstances of the nuclear age. In his 1957 book on ‘*Nuclear Weapons and Foreign Policy*’ he argued that Eisenhower’s doctrine of massive retaliation was flawed because it did not transform military power into policy. Kissinger claimed that as both sides were restrained by the potential devastation of an all-out nuclear war, the Soviet Union could gain many tactical victories without the fear of punishment. Deterring an all-out nuclear war was still considered imperative but Kissinger thought that nuclear weapons should have a second objective as well. If necessary, the U.S. should be able to fight limited nuclear wars, therefore, it was necessary to transform U.S. nuclear forces for battlefield employment and include low-yield, mobile nuclear weapons for tactical use. (Kissinger [1969])

Shortly after his inauguration, in late January, 1969 President Nixon and Kissinger received their first briefing on the SIOP. After the meeting both were shocked, mostly because they found the attack options offered under the existing war plans totally inadequate to handle a crisis in Europe, the Middle East or Asia. Despite the efforts of previous administrations to include a wider range of more discriminative options, the attacks were still too massive. As a result, Kissinger started to pressure the national security bureaucracy to provide him with ideas and ways to use nuclear weapons more selectively. (Burr [2005]) As Kissinger noted later, “*to have the only option that of*

killing 80 million people is the height of immorality.” (NSC Minutes of the Verification Panel Meeting [1973]: p. 8.)

The desire of the new administration to put the emphasis on limited nuclear options (LNO) created a new opportunity for RAND theorists to influence U.S. nuclear policy in a direct and significant manner. One of the earliest advocates of the concept of limited war was William Kaufmann. During the second half of the 1950s, Kaufmann argued that it was not in the interest of the U.S. or the Soviet Union to follow a policy which led to suicide and self-annihilation, therefore, both sides should restrain themselves and keep any emerging war limited. However, he believed that such a limited war should be fought with conventional weapons and the U.S. should increase its capabilities in this area. He claimed that any employment of nuclear weapons would no longer be a limited war (mostly because of the huge and indiscriminate destructive power of these weapons), and it would also not “*be a method of obtaining overwhelmingly favorable resolutions of outstanding issues.*” (Kaufmann [1972]: p. 127.) Although he excluded the use of nuclear weapons from his limited war concept, his arguments for “*rationality, mutual restraints, controlled responses and circumscribed limits on the intensity and boundaries of the conflict*” laid down a good basis to extend limited war to the employment of nuclear weapons as well. (Kaplan [1991]: p. 327.)

Another influential RAND theorist of this concept was Thomas Schelling who approached this question from a different angle and based his arguments on game theory. According to Schelling, under the circumstances of a nuclear balance, massive retaliation was suicide and lacked credibility as the Soviets also gained the necessary capabilities to retaliate massively. (Schelling [1980]: p. 253.) But he was also critical of a pure counterforce strategy, claiming that it had a destabilizing effect and raised the incentives to launch a preemptive strike. In Schelling’s argument, if the United States and the Soviet Union at any point decided to engage in a nuclear war it would be because of their “*reciprocal fear of surprise attack.*” In order to avoid this scenario, the two superpowers ought to start arms control negotiations to limit the deployment of weapons which were vulnerable to attacks and made the adversary’s forces vulnerable

to a first strike.³⁴ According to this logic, nuclear weapons with a great “*counterforce power*” upset stability and might tempt the other side to launch a preemptive strike. The only way to preserve stability is to eliminate (or at least minimize) any incentives to strike first (this argument is the basis of the so called “first strike stability” concept). The use of nuclear weapons, however, was still considered useful in Schelling’s argument: these weapons can “*still be capable of carrying out ‘retaliation’ in a punitive sense.*” (Schelling [1980]: p. 252.) Employing “*limited or graduated reprisals*” could send signals to Moscow, improve the chances of intrawar bargaining and this coercive strategy could ultimately convince the Soviets to retreat.

The RAND ideas of escalation control, limited war and intrawar bargaining by Kahn, Kaufmann and Schelling have become the central concepts of the Nixon-Ford administrations’ nuclear policy. Between 1972 and 1974 the national security establishment was working on plans and ideas to implement selective nuclear targeting and provide the President with limited options. In 1974, the DoD was taken over by James R. Schlesinger who shared Nixon’s and Kissinger’s view that “*the destruction of enemy cities ‘should not be the only option and possibly not the primary option’ of the United States in the event of war.*” He called the doctrine of assured destruction “*a wrong declaratory policy*” which had “*moral defects,*” “*lacked convincingness*” and was “*logically inconsistent.*” (Quoted in Kunsman; Lawson [2001]: p. 54.)

³⁴ Arms control negotiations during the Nixon and Ford administrations approached the question of strategic stability from two different angles. On the offensive side, they aimed to preserve parity and eliminate the incentives for a first strike by putting an upper limit to the growth of the strategic nuclear arsenals. This materialized in the 1972 SALT I Treaty which consisted of two basic documents. The first document of the SALT I Treaty was an Interim Agreement on certain measures limiting strategic offensive arms, while the second document, the ABM Treaty focused on the limitation of strategic defensive systems. This second approach, the defensive angle meant to ease some of the Soviet paranoia about U.S. developments in the area of missile defense. During the Cold War, the Soviets have gradually realized that missile defense hurts strategic stability and it has to be limited. The concept of a U.S. anti-ballistic missile (ABM) defense system was not new in the late 1960s, early 1970s. The first proposal to establish such a system dates back to 1946 when a board of scientists recommended building one. The first ballistic missile defense (BMD) program of the U.S. was the ‘Nike-X’ program, followed by the ‘Sentinel’ in 1967. During the McNamara years, these programs were aimed at nationwide defenses to protect crucial civilian and industrial targets (a capability strongly supported by Nelson Rockefeller). In the early 1970s, the Nixon administration changed this focus and BMD systems shifted to the protection of ICBM capabilities – as a reflection of this shift, the entire program was renamed to ‘Safeguard.’ The Nixon administration argued that protecting the entire civilian population of the U.S. was impossible on the one hand and it also triggered an arms race between the two superpowers, threatening that Moscow would consider launching a first strike against the retaliatory capabilities of SAC which was not protected by a BMD system. This new focus was a more rational approach, as defending Minuteman sites seemed to be more feasible and also less demanding (in case of failure, the U.S. would “only” lose an ICBM, not an entire city). (Kaplan [1991]: pp. 343-355.) For Nixon and Kissinger, “*the American ABM was to be at once a bargaining chip and a pedagogic tool in the service of MAD.*” (Quoted in Nolan [1989]: p. 99.)

In January, 1974 the two-year long review process reached to an end and Nixon signed his official presidential guidance on the employment of nuclear weapons (the National Security Decision Memorandum-242 (NSDM) document). As Schlesinger made some informal remarks on the content of the new guidance, the press suddenly started to call this new approach the “Schlesinger doctrine.” (Burr [2005]) NSDM-242 starts with the acknowledgement that the new approach is not “*a major new departure in U.S. nuclear strategy*” rather “*an elaboration of existing policy.*” (NSDM-242 [1974]: p. 1.) The fundamental mission of nuclear weapons is threefold: to deter a nuclear attack against the United States; to deter conventional and nuclear attacks against its allied forces; and to inhibit coercion. Although the U.S. will primarily rely on conventional capabilities to deter conventional aggression but the new guidance does not entirely rule out the use of nuclear weapons in response to conventional aggression. The guidance addressed two main scenarios: limited nuclear wars and general wars. Under the first scenario, the main objectives of limited nuclear employment are early war termination and escalation control. In this spirit, attack options should be limited in level, scope and duration to send a clear signal to Moscow on the nature of the attacks. These options should also withhold some vital enemy targets as “*hostage to subsequent destruction*” and “*permit control over the timing and pace of attack execution.*” (NSDM-242 [1974]: p. 2.) Under the second scenario of general war, escalation cannot be controlled and the main objective is to “*obtain the best possible outcome.*” (NSDM-242 [1974]: p. 2.) Regarding the attack options, three main planning instructions were provided: first, maintain survivable strategic forces in reserve to protect and employ coercion; second, destroy the enemy’s political, economic and military resources which are critical for early recovery; and third, limit damage to the national political, economic and military resources. In addition to all these, a major emphasis was laid on the survivability of national command and control systems.

Based on this policy guidance, three months later Schlesinger’s Office issued its more specific instructions for the military planners of the JCS. This document was the NUWEP-74 which guided the preparations of the next war plan, the 1976 SIOP 5. The OSD guidance identified three strategic concepts to guarantee escalation control: escalation boundaries (the “*ability to conduct nuclear war at various levels of intensity within clearly defined boundaries*”), trans-attack stability (withhold forces “*for the purpose of deterring further enemy escalation*”), and avoidance of the enemy’s national

command and control (withhold attacks on “*the enemy’s highest command structure*” as well as on “*sensors and communications systems needed by the enemy leaders to discern the nature of U.S. attacks*”). (NUWEP-74 [1974]: p. 2.)

Four attack options were designated:

- 1) *major attack options* and 2) *selected attack options* (both to destroy selected economic and military resources, post-war recover capabilities, leadership targets, nuclear offensive capabilities and conventional forces), (NUWEP-74 [1974]: pp. 4-5.)
- 3) *limited nuclear options* and 4) *regional nuclear options* (both to indicate that local conflicts are part of the vital interest of the U.S., to establish or increase superiority, and to respond to limited nuclear attacks). (NUWEP-74 [1974]: p. 6.)

On targeting and damage expectancy requirements, the guidance instructed that the overall damage expectancy should not normally exceed 90 percent, and “*no less than one warhead should be applied to each ICBM site, each IRBM and MRBM site, each base for heavy, medium, and light bombers and each base for missile-launching submarines.*” (NUWEP-74 [1974]: A-7)

Although the document stated that “*it is not the intent of this guidance to target civilian population per se,*” it still required nuclear attacks on war-supporting economic bases, industrial facilities, major centers of governments and other targets critical to post-attack recovery.

Altogether, NSDM-242 and NUWEP-74 reintroduced the concepts of counterforce and war fighting from the early McNamara years by offering a series of limited nuclear options (in case deterrence fails). Both documents emphasized the exclusively retaliatory function of U.S. nuclear forces, selectivity in strike options (avoiding attacks on cities) and the desire for early war termination by intrawar bargaining. As Nixon called it, U.S. nuclear policy was based on the principle of “*strategic sufficiency.*” (Nolan [1989]: p. 100.)

On the operational level, the new guidance rearranged target categories, introduced – as a new element – the targeting of Soviet military forces anywhere in the world, and

matched high-quality weapons with high priority targets. As a result, SIOP 5 provided some smaller options than before, but it was still far from the expectations of the policy level – even the smallest strike options included several hundred warheads. Moreover, with the inclusion of economic recovery targets, the number of potential targets has increased to 25,000 which created a gap between the targets and the available weapons. (Nolan [1989]: pp. 109-117.)

During the Nixon-Ford era, just like in the case of the previous administrations, the pace of policy innovations significantly exceeded that of the transformations of the operational level and war plans were still dominated by “selective” massive strikes. With some technical developments, however, flexible response has become more realistic than during the Kennedy-Johnson years.

1.5 The Carter Years (1977-1981)

Despite being a nuclear officer at the Navy, President Carter was a dedicated advocate of nuclear arms control. He had a fundamental hatred to nuclear weapons – in his 1977 Inaugural Address he took a pledge to move “*toward our ultimate goal – the elimination of all nuclear weapons from this Earth.*” (Carter [1977]) He wanted to cut deep in the U.S.-Soviet nuclear arsenals, conclude a treaty which would restrict nuclear capabilities to a “*small number of single-warhead missiles, with the missiles all uniform in size, and deploy them in totally invulnerable place*” and he also advocated a comprehensive nuclear test ban treaty. (Quoted in Nolan [1989]: p. 129.) Since the advent of the nuclear age, Carter had been the only President who had experience in nuclear planning and who took the effort to examine war plans. He presided over the most comprehensive review since the McNamara years. Based on numerous studies on how to fight and prevail in a nuclear war, his administration made a significant contribution to strategic thinking about a protracted nuclear war. (Nolan [1989] pp. 33; 129)

Entering into office, President Carter immediately ordered an overall review of U.S. defense policy which was followed by a comprehensive review of nuclear targeting policy. The new administration was not too enthusiastic about the Nixon-Ford strategy of limited nuclear options. In March, 1977 National Security Advisor Zbigniew

Brzezinski sent a memorandum to the President explaining the controversies of the inherited nuclear doctrine: first, the policy guidance for the application of LNOs was missing; second, it was uncertain how and from where the President would conduct such a limited nuclear war; third, the coordination of intelligence and operations was unclear; and fourth, the vulnerability of the National Command Authority was not addressed adequately.³⁵ (Brzezinski [1977])

The first presidential guidance from the Carter White House was the Presidential Directive (PD)/NSC-18 in August, 1977. It characterized U.S.-Soviet relations as both competition and cooperation and designated five main goals for U.S. national strategy: 1) counterbalancing the Soviets with a combination of military forces and political efforts; 2) compete politically to pursue human rights and national independence; 3) seek cooperation in regional conflicts and reduce potential tensions; 4) advance American security interests through verifiable arms control and disarmament agreements; and 5) involve the Soviet Union constructively in global activities. (PD-18 [1977]: p. 2.)

PD-18 also mandated two additional reviews: a comprehensive review of U.S. targeting policy and a study to examine a “*secure reserve force*” which would guarantee “*national entity survival*” after a massive Soviet strike. The targeting review provided a 150 pages long document which identified smaller targets for a potential LNO (a guidance which Brzezinski missed from the previous documents). The review also concluded two main observations on Soviet nuclear policy: first, the hardening of key military targets which made them more survivable and resistant to a U.S. nuclear attack; and second, a civil defense program to ensure the survival of Soviet leaders.³⁶ These two developments suggested that “*the Soviets seriously plan to face the problems of fighting and surviving a nuclear war should it occur, and of winning, in the sense of*

³⁵ According to Brzezinski, the command, control, communications and intelligence systems were “*among the weaker links*.” In fact, nuclear security expert, Bruce Blair argues that until the 1980s “*Deficiencies in U.S. C³I systems have been so severe for so long that developments in size and technical composition of the superpower’s arsenals have been practically irrelevant to the nuclear confrontation*.” Blair claims that “*once deterrence fails, it fails completely*” – a targeted Soviet strike against the C³I systems could possibly block U.S. retaliation and completely eliminate the chances of a gradual escalation with withhold options and intrawar bargaining. (Blair [1985]: pp. 4-5.)

³⁶ According to DoD reports, by 1982 the Soviets were planning to place 110,000 government officials in hardened targets during a conflict. By 1987, this number has grown to 175,000 party and government personnel. (Sagan [1989]: p. 83.)

*having military forces capable of dominating the post-war world.”*³⁷ (Nuclear Targeting Policy Review [1978]: p. i.)

The main concepts of this targeting review were escalation control (a key concept of the Nixon-Ford years, as well) and damage limitation. In terms of general war targeting, four target categories were designated: 1) impede recovery of the Soviet Union both in the short term and in the long term; 2) destroy Soviet national political and military leadership and command and control; 3) destroy Soviet nuclear forces, and 4) destroy Soviet non-nuclear forces. (Nuclear Targeting Policy Review [1978]: p. iii.) Besides the Soviet Union, thousands of additional targets were designated in the Warsaw Pact satellites as well as in China, Cuba and Vietnam.

SIOP 5 went through four revisions, but the above listed target categories were allocated to the same four general attack options (first envisioned by NUWEP-74): Major Attack Options (MAO), Selected Attack Options (SAO), Limited Attack Options (LAO) and Regional Nuclear Options (RNO). The war plans placed these four options under two special attack categories: 1) preemptive attacks; 2) or Launch on Warning (LOW) and Launch under Attack (LUA) options. (Pringle; Arkin [1983]: pp. 187-188.)

Based on the findings and recommendations of the targeting review, Brzezinski believed that the Soviets were planning to win a nuclear war if it broke out and the U.S. had to adjust its own nuclear posture in view of that. Both sides agreed that under strategic parity a disarming first strike was not possible but Moscow seemed to challenge the doctrine of mutual assured destruction and go for a “*winning capability*” in a prolonged nuclear exchange. Brzezinski argued that the Soviet commitment to such a capability was not contradictory to their belief in nuclear deterrence – preparing for war fighting was seen as a “*different approach*” to planning against the eventual failure of deterrence. (Brzezinski [1991]) Accordingly, the U.S. also had to put the emphasis on a war fighting capability which is enough to “*minimize Soviet hopes of military success*” and “*include targeting options against Soviet military forces, command and control, and military support that would maximize the threats to the objective targets while minimizing collateral damage.*” (Nuclear Targeting Policy Review [1978]: p. ii.)

³⁷ Besides securing key personnel of the Soviet leadership, evacuation plans were also worked out to save those Soviet workers whose work was considered essential in a postwar environment. According to Janne E. Nolan, all this indicated a Soviet planning to “*survive as a society after a nuclear war.*”

The next presidential guidance, the 1980 PD-59 was based on these findings and outlined the principles of a new nuclear doctrine, the so called countervailing strategy.³⁸ The guidance stated that in order to deter an attack on the U.S. and its allies, Washington needed to make its adversaries recognize that “*no plausible outcome would represent a victory*” in a nuclear exchange. To meet this purpose, modernizations were necessary both in the nuclear forces and in the supporting command, control, communications and intelligence (C³I) systems. The survivability of the C³I systems was considered the primary guarantor of a U.S. ability to conduct sequential attacks on military targets and their industrial support facilities, while it was also essential to the use of withheld nuclear weapons for a belated attack on urban and industrial targets. The guidance put the major emphasis on military and control targets which were essential for the Soviets to win a nuclear war. In this regard, the four primary target categories of the Nuclear Targeting Policy Review remained in force: strategic and theater nuclear forces; military C³I systems; all other military forces; and industrial facilities which provide immediate support to military activities. (PD-59 [1980])

Walter Slocombe, Deputy Under Secretary of Defense for Policy Planning summarized the basis of this new strategy with three requirements: first, U.S. nuclear forces must survive a Soviet first strike; second, an overall balance is needed between the U.S. and the Soviet Union (it can be realized by adjusting U.S. force planning to Soviet nuclear developments and by concluding bilateral arms control treaties); and third, the U.S. nuclear doctrine must make it clear to Moscow that the Soviets would not prevail in a nuclear exchange. In addition, the countervailing strategy meant to strengthen U.S. security guarantees towards its allies (especially towards the NATO allies) by denying any Soviet aggression the belief that it could be advantageous to launch an attack at the first place. LNOs were considered central tools to exercise escalation control and bargain an early war termination. But it is also important to emphasize what the new countervailing strategy was not meant to be. It did not claim that the United States could win a limited nuclear war, it only focused on denying this possibility from the Soviets and convincing them about it. It also did not claim that a nuclear exchange could be controlled and kept limited – there were no guarantees that a limited attack on any NATO or Warsaw Pact ally would not be followed by a massive level of destructive strikes on the two superpowers. (Slocombe [1981])

³⁸ It was a strategy which was urged by William Kaufmann and Secretary of Defense, Harold Brown.

Altogether, the countervailing strategy was not a major departure from the nuclear postures of the previous administrations. The strategists of the Carter administration identified this new guidance as an evolutionary development and not as a radical shift in U.S. nuclear planning. It was a deterrence strategy which aimed to guarantee that the Soviet Union would not want to “test” its new military capabilities and would not see benefits in any aggression against the U.S. or its allies.

When Carter overtook the White House, SIOP contained many limited options – although Brzezinski argued that the policy guidance for their implementation was not adequate. During the Carter years, the number and categories of SIOP options were further increased and as a result of Brzezinski’s innovations, a massive list of 40,000 potential Soviet targets was designated. (Pringle; Arkin [1983]: pp. 172-174.)

Under the countervailing strategy, nuclear force acquisition was primarily led by the desire for a credible war fighting capability. As a result, Carter presided over a strategic build-up with the approval of 200 hard-target-kill MX missiles (each carrying 10 warheads). His administration renewed the emphasis on military targets and war-supporting industry (more than half of the 40,000 targets) as opposed to economic recovery targets (about 15,000 targets of the 40,000); while command, control and communications targets were also upgraded (about 2,000 targets). In the war plans, high quality weapons were reassigned to high value military targets, more flexible employment was introduced in the strike options and a larger secure reserve force was designated. (Nolan [1989]: pp. 126-139 and Pringle; Arkin [1983]: pp. 191-197)

Carter left behind a somewhat controversial legacy: despite his opposition to nuclear weapons, he approved a major build-up in U.S. nuclear forces, raised nuclear war fighting into the center of attention, left the ratification of SALT II sail away and paved the way in front of the Reagan administration’s rather aggressive policy towards Moscow.

1.6 The Reagan Years (1981-1989)

Over the history of U.S. nuclear strategy, there were three major “windows of vulnerability” which had a significant impact on the evolution of political guidance and

nuclear war plans. The first window was the “bomber gap” in the 1950s, revealed by Wohlstetter’s vulnerability study. The next one was the “missile gap” starting in 1957. Although it turned out later that the perception of a “missile gap” was flawed from the very beginning and intelligence estimates on the Soviet missile capabilities were mistakenly exaggerated, it still had an important effect on the Eisenhower-Kennedy years’ nuclear policy. The third major “window of vulnerability” was the “Minuteman vulnerability” which was already an issue during the late Carter years (in fact, the decision to build MX missiles was exactly because of the perceived vulnerability of the Minuteman force) and it remained on the agenda under Reagan as well.

Starting in 1976, Paul Nitze revived the so called Committee on the Present Danger (CPD)³⁹ to reveal U.S. weaknesses and put the SALT II Treaty into a grave. By the late 1970s, the CPD has grown to an incredibly powerful lobby group and Nitze managed to launch a grand public debate on the vulnerability of the U.S. ICBM force against a Soviet first strike.⁴⁰ They used calculations based on the accuracy of Soviet missiles coupled with the Soviets’ “*evil intentions*” and argued that during the Carter years the U.S. was in “*imminent danger*” of a Soviet attack. (Nolan [1989]: p. 136.)

Already before taking over the White House, Reagan had long been speaking about the dangers of the Soviet Union and he had been known as a committed supporter of a higher defense budget. When Reagan entered into office in 1981, he appointed 31 members of the CPD (he was the 32nd) into senior government positions. Among them was Nitze, who headed the U.S. delegation in the negotiations with the Soviet Union about nuclear reductions in Europe. (Kaplan [1991]: p. 386.)

The first presidential guidance which the Reagan administration issued on its nuclear strategy was the 1981 National Security Decision Directive-13 (NSDD). It maintained

³⁹ The CPD was originally founded in 1950 to promote the ideas of NSC-68, mostly written by Paul Nitze (one of the founders of the committee). They wanted to educate the U.S. public about the dangers of the spread of communism. A second influential period of the committee started in 1976, when the group aimed to drive the attention on the weaknesses of U.S. strategic capabilities and to promote a massive military build-up. The third grand period of the CPD started in 2004 and it mostly focused on the “war on terror.”

⁴⁰ The basic idea was that Moscow could destroy the U.S. ICBM force with only a few hundred nuclear weapons and it would leave Washington without appropriate hard-target-kill capabilities for a counterforce retaliation. Therefore, the U.S. would be forced to use its remaining bomber and SLBM arsenal to attack Soviet cities, risking that the Soviets would also target major U.S. population centers. Although the entire theory was highly debated in the early 1980s, it still triggered a heavy modernization program.

that the primary role of nuclear weapons is deterrence against a direct – especially nuclear – attack on the U.S. and its allies. But it also stated that if such an attack happened, the U.S. must prevail and prepare for responses which would make “*Soviet assessments of war outcomes, under any contingency, so uncertain and dangerous as to remove any incentive for initiating attack.*” In other words, the U.S. “*must be prepared to wage war successfully.*” (NSDD-13 [1981]) In terms of rhetoric, this was a significant departure from the Carter administration’s doctrine, as it used a much tougher language in order to make sure that Moscow will not see any possible gains in attacking the U.S. But it still did not mean that the U.S. believed that it could win a nuclear war, it was still based on the desire to deny this option from Moscow, which was a continuity with the previous countervailing strategy (a 1982 Congressional testimony of Secretary of Defense Caspar Weinberger clearly indicates that U.S. nuclear strategy did not depart from the mainstream in this regard). (Weinberger [1982]) A key element of Reagan’s prevailing strategy was “*holding at risk the full range of enemy military capabilities that threaten the United States and its Allies.*” These imperatives were set to guide U.S. force structure trends and war plans, leading to a massive military build-up in the nuclear forces and a substantial development in the C³I systems. (NSDD-13 [1981])

NSDD-13 was signed in October, 1981 and only a couple of months later Secretary of Defense Caspar Weinberger also issued his own defense guidance, based on the presidential directive. It reinforced U.S. intentions to fight and win a protracted nuclear war, placing the old “coercive strategy” back to the center of U.S. nuclear planning. The guidance was written by Richard Perle and two RAND veterans, Andrew Marshall and Fred Iklé – which meant the big come-back of the RAND analysts’ counterforce concept. (Kaplan [1991]: p. 387.)

Based on these guidelines, the Reagan administration modernized all three legs of the nuclear triad (the MX ICBMs, the D5 SLBMs, and the B-1 bombers) and introduced new nuclear weapons in the European continent. The crown jewel of these modernization programs was the President’s 1983 Strategic Defense Initiative (SDI) speech which announced a program to shoot down enemy missiles in outer space⁴¹ (one of the strongest advocates of the initiative was Edward Teller, father of the hydrogen

⁴¹ This is where the name, “Star Wars” comes from.

bomb). This policy was a rejection of mutual vulnerability and shifted U.S.-Soviet competition to a new field. While, the two superpowers' rivalry seemed to reach a point of technical exhaustion in the traditional areas, competing in the outer space promised (at least in theory) that U.S. technology could challenge the Soviet military power.

Another important factor in the reincarnation of missile defense systems was the new “window of vulnerability.” The White House believed that with the massive ICBM modernizations and the development of the MX missiles (armed with ten warheads each), accepting ICBM vulnerability was not in Washington's best interest. First, these missiles were now too valuable to put them in vulnerable silos (fearing that they would invite immediate hits in a Soviet first strike) and second, if the U.S. did not want to lose them, it had to apply a launch on warning (LOW) policy (launch all of these missiles upon the first sign of a Soviet aggression, risking to destabilize the situation and escalate the conflict).⁴² (Nolan [1989]: pp. 150-151.) Based on these concerns, improving missile defense systems provided an alternative way to close the “window of vulnerability” and improve the survivability of the ICBM forces. In January, 1984 the program finally received an official endorsement from the President in the NSDD-119 and the first budget request was submitted to Congress.

In the early 1980s, both the U.S. and the Soviet Union were reluctant to negotiate arms control agreements and it took several different factors to get them back to the negotiating table by the mid-1980s. On the Soviet side, a fundamental political change was implemented under the Gorbachev years; while the U.S. was under the pressure of allies and the “freeze movement.” As a result of this new turn of events, the second term of the Reagan administration as well as the four years of the Bush administration were a mix of nuclear modernizations and arms control negotiations. Two major arms control agreements were initiated at the 1986 U.S.-Soviet Reykjavik Summit:⁴³ the 1987 Intermediate-Range Nuclear Forces Treaty (INF)⁴⁴ which completely eliminated the intermediate-range (500-5,500 km) nuclear and conventional ground-launched ballistic

⁴² As Nolan argued, ICBMs had the “*worst of all worlds*” – inherent vulnerability and maximum lethality which made it necessary to keep them on high alert and launch first for the highest efficiency.

⁴³ Although the summit paved the way in front of two major arms control agreements, it was still considered as a failure by some. The meeting originally had an agenda to abolish all offensive nuclear weapons in three phases over the timeframe of ten years. But disagreements over the continued testing of the SDI system finally undermined these plans and separate agreements were concluded in the different ranges of the offensive nuclear capabilities. (Savranskaya; Blanton [2006])

⁴⁴ Signed by Ronald Reagan and Mikhail Gorbachev on December 8, 1987.

and cruise missiles; and the 1991 First START Treaty⁴⁵ which reduced the number of strategic nuclear weapons by 30-40 percent.

The most interesting aspect of the SDI system was that it had almost zero effect on the actual war plans. In fact, it was a major obstacle in the way of further reductions and it essentially supported a status quo in U.S. nuclear planning.

With the modernized capabilities to hit hardened Soviet targets, targeting policy had to be adjusted, calling for additional flexibility. This meant preparing for “maximum options” in response to strategic attacks from the Soviet Union and for the case of a protracted nuclear war. As a result of the increasing mobility of the Soviet forces (e.g. mobile ICBMs), re-locatable targets were designated, providing greater significance to manned bombers and intelligence gathering. Although these developments served to increase the credibility of deterrence, the promptness of the new weapons systems suggested an increased capability for preemption (which of course was denied by government officials). Reagan, in addition, continued Carter’s efforts to strengthen the C³I systems of the U.S. and put a great emphasis on the survivability of the National Command Authority. (Nolan [1989]: pp. 237-247.)

These developments were coupled with a “quiet revolution” to implement flexible response in the war plans. According to PD-59, this required solving two fundamental challenges: develop concrete targeting plans for real limited nuclear options,⁴⁶ and establish procedures for civilian oversight to guarantee that the war plans would properly reflect the policy guidance of the given administration. This struggle was led by Franklin C. Miller, head of the Strategic Forces Policy at the OSD between 1981 and 1989. Miller’s task was not easy: despite decades of attempts to fundamentally alter war plans and implement real flexibility, the military resisted major civilian interference in its procedures and the JCS retained their control over the weapons employment policy. Since the 1974 NSDM-242, the OSD has provided the JCS with a nuclear weapons employment guidance (NUWEP) and based on this document, the JCS prepared the Joint Strategic Capabilities Plan (JSCP) which was the key document for the preparation

⁴⁵ Signed by George H.W. Bush and Mikhail Gorbachev on July 31, 1991.

⁴⁶ Nuclear options at the beginning of the 1980s were still too large therefore the administration wanted small options which could be easily read by Soviet warning systems (although it did not guarantee that Moscow would respond accordingly but the aim was to make a clear distinction between a limited strike and an all-out nuclear attack). (Interview with Franklin C. Miller [2014])

of the SIOP. During the Cold War, however, NUWEP was mostly seen by the military as an advice, not as a directive. Therefore, significant gaps evolved between the policy guidance and the actual war plans, and many of the options introduced by the policy guidance documents only remained “paper options” in practice. (Nolan [1989]: pp. 248-251.)

After Miller concluded a list of areas where the policy guidance was not followed in the actual targeting, he was given authority to look over the SIOP. Between 1985 and 1987 Miller solved a substantial number of these problems, and Secretary Weinberger approved them one by one. With revisions of the Reagan years’ last NUWEP underway in 1987, an opportunity opened to “institutionalize” his quiet revolution and NUWEP-87 was written as a compendium of the changes of the last two years. (Interview with Miller [2014]) Miller was authorized to establish routine procedures for civilian oversight in the implementation of policy guidance – during his investigations, he found that as a result of negligence and the lack of interactions, there was a serious breakdown in civilian control, damage expectancies were exaggerated, weapons allocations still ignored the secondary effects of a nuclear strike, and most importantly, war plans were still missing real limited options. While the President might have thought of authorizing a limited nuclear attack, in the 1980s it still meant launching 300 nuclear weapons on Poland for example. As a result of Miller’s efforts, by the end of the Reagan administration, NUWEP-87 guaranteed that civilians had a stronger oversight in nuclear targeting; and the necessary time to construct war plans was reduced in order to make SIOP less rigid and more responsive to the changing environment. Thus, the 1988 SIOP 6-E reemphasized flexible targeting and finally contained new and very limited strike options. (Nolan [1989]: pp. 253-261.)

1.7 The Bush Years (1989-1993)

Regarding President George H.W. Bush’s nuclear doctrine, both continuity with the Reagan administration’s policy and a strategic redirection apply. NSDD-13 remained the official presidential guidance until November, 1997 when President Clinton issued a new directive (PDD-16). This meant that the prevailing strategy remained the guiding principle of U.S. nuclear policy. Just like the Reagan era, the Bush years were also a

mix of nuclear modernizations and arms control negotiations – however, it reflected a shifting view compared to the Reagan years that arms control became more imperative than nuclear modernizations (several modernization programs were unilaterally cancelled by the administration).

The Bush years concluded the most dramatic nuclear reductions in U.S. history. In two rounds, President Bush announced a series of unilateral pledges to limit and reduce U.S. nuclear forces. (Both rounds were followed by reciprocal unilateral measures by the Kremlin.) These measures were called Presidential Nuclear Initiatives (PNI). The first round was announced in September, 1991 and it pledged to 1) take all strategic bombers off alert; 2) stand down from alert and accelerate the reduction of all ICBMs which were to be deactivated under the 1991 First START Treaty; 3) terminate the development of the mobile ICBMs (Peacekeeper) and the mobile portion of the small ICBM program (the small single-warhead ICBM remained the only ICBM modernization program); 4) cancel the current program to build a replacement for the short-range attack missiles (SRAM) for the strategic bombers; and 5) streamline the command and control procedures, allowing the U.S. to more effectively manage strategic nuclear forces.⁴⁷ In addition, Bush also proposed to establish the U.S. Strategic Command to replace SAC.⁴⁸ (Bush [1991]) The second round of the PNIs was announced in the January, 1992 State of the Union Address. In the framework of this round, Bush declared that 1) the B-2 procurement was terminated; 2) the production of

⁴⁷ In response to the first round of the U.S. PNIs, Mikhail Gorbachev announced similar measures in October, 1991. Regarding the ground-launched tactical nuclear weapons, Gorbachev pledged to eliminate all nuclear artillery munitions and nuclear warheads for tactical rockets; withdraw nuclear warheads for air defense missiles from the troops and concentrate them in central bases (a portion of them to be eliminated); and eliminate all nuclear mines. In the sea-launched tactical forces, he announced to remove tactical nuclear weapons from surface ships and multiple-purpose submarines; put them in central storage as well as the nuclear weapons on land-based naval aircrafts; and eliminate a portion of these forces. He also proposed that the U.S. “*eliminate fully, on the basis of reciprocity, all tactical nuclear weapons of naval forces*” and “*on the basis of reciprocity, it would be possible to withdraw from all combat units on battlefield aviation all nuclear charges and place them in centralized storage sites.*” In the ICBM force, Gorbachev ordered to remove from alert 503 ICBMs, including 134 MIRVed; end development of small mobile ICBMs and do not increase or modernize rail mobile ICBMs (keep them in permanent basing areas). Regarding the strategic bombers, he promised to end development of nuclear short-range missiles for bombers and end bomber alert. And finally, in the SLBMs, three SSBNs were removed from active duty with 48 launchers. In more general terms, Gorbachev also proposed to reduce warheads below the START limits, to 5,000 (instead of the 6,000) by the end of the same implementation deadline; besides he suggested negotiations of “*further radical cuts*” after the START entry into force and finally, a creation of a single operational command over all strategic nuclear weapons, including defensive. (Gorbachev [1991])

⁴⁸ In 1991, SAC was finally abolished, and in 1992 STRATCOM was established to replace it as a single unified command. The idea of a unified command partly came from General Butler, the last commander of SAC, and it was also advocated from the Office of the Secretary of Defense by Franklin C. Miller. (Interview with Franklin C. Miller [2014])

the Peacekeeper missiles was stopped; 3) the U.S. would not purchase any more advanced cruise missiles (ACM); 4) the small ICBM program (previously suspended) was cancelled; and 5) the production of new warheads (W88) for the sea-based ballistic missiles was stopped.⁴⁹ (Bush [1992])

As a result of these presidential initiatives, U.S. nuclear forces were reduced from 22,200 to 11,500 warheads between 1989 and 1993. (Kristensen; Norris [2013a]) These steps clearly indicated that the Cold War was over, and the arms race made a reverse turn, shrinking to lower and lower numbers. Furthermore, the PNIs also showed that arms reductions do not necessarily have to happen in a treaty framework but unilateral steps can also prove beneficial. It also signaled a new era, where the threat of nuclear war was no longer the primary national security concern – it was replaced by the fear of “loose nukes,” the dissemination of nuclear technology and expertise as well as the necessity of safeguarding all nuclear materials inherited by the Soviet successor states.

On the operational level of U.S. strategic nuclear planning, the dissolution of the Soviet Union brought two significant results: first, many targets (especially in the previous satellite states) became irrelevant and a comprehensive targeting review seemed essential; and second, as the number of deployed forces was shrinking dramatically, the role of non-deployed forces started to grow, providing a security reserve for an eventual deterioration of U.S.-Russian relations.

Between 1988 and 1989, Vice Chairman of the JCS, General Robert Herres was tasked to conduct an 18-month internal Joint Staff targeting study, which was followed by a Strategic Target Review. In November, 1989 after the Berlin Wall was torn down and the Eastern European countries regained their independence, Secretary of Defense Richard Cheney and Chairman of the JCS, General Colin Powell immediately ordered a review which became the most comprehensive review of strategic targeting ever

⁴⁹ In response to the second round of the PNIs, Boris Yeltsin announced (also in January, 1992) that Moscow would end the production of land-based tactical missiles, nuclear artillery as well as nuclear mines; and eliminate one-half of the air defense missile nuclear warheads. In the air-launched tactical forces, Russia would cut in half stocks of air-launched tactical nuclear munitions. Regarding the strategic bomber forces, Yeltsin pledged to end production of Backfire and Blackjack; and the current air-launched cruise missiles (ALCM); besides he was ready to renounce the creation of new ALCM types (on a reciprocal basis); and to end exercises with more than 30 bombers. In the SSBN fleet, a further reduction of the SSBN combat patrols was announced and Moscow also proposed to end combat patrols on a reciprocal basis. In more general measures, Yeltsin added that Russia was ready to meet the 1991 START deployed warhead level in 3 years, and he also proposed further strategic reductions, hoping that other nuclear powers would join, as well. (Yeltsin [1992])

conducted in U.S. history. This review was led by Franklin C. Miller and it included *“the full spectrum of policy, intelligence support, targeting guidance, and war plan production.”* (Kunsman; Lawson [2001]: p. 64.) The review revealed that the SIOP was completely out of date and there were many duplications in targeting (sometimes against obsolete targets such as post-Soviet facilities which were closed many-many years ago; or previous Eastern European targets like Kiev which was still targeted with 40 nuclear weapons). Damage expectancies still did not calculate with the secondary effects of a nuclear blast, and other quantitative criteria were also significantly flawed in the system.

Under the Bush years, many of these problems were addressed and officials eliminated thousands of targets from the war plans: after Bush gave the permission to only target Russian forces, post-Soviet satellite states were entirely removed,⁵⁰ leadership targets of very low value were discarded, many tactical nuclear installations and transportation targets outside of Russia were also erased, along with significant portions of the industrial and war-supporting infrastructure. As a result of the review, the number of targets was reduced from 10,000 to 3,500. (Interview with Franklin C. Miller [2014])

Under the newly established unified command (STRATCOM), planning procedures were updated, and adaptive targeting was introduced to guarantee rapid and flexible retargeting on the global level. (Nolan [1999]: pp. 28-31.) As STRATCOM commander, General Butler explained that they were *“developing a flexible, adaptive operational planning capability that will be much more responsive to the potential for spontaneous threats that defy precise preplanning. This will provide senior decision makers with an array of options to apply in acute crises requiring a prompt exacting response.”* (Quoted in Kristensen [2003]: p. 7.) The first SIOP based on these post-Cold War innovations was enacted in July, 1993. This was described as a “living SIOP” as the time to update this plan was significantly reduced. SIOP revisions traditionally required 14-18 months, while the new SIOP was *“based on continuous analysis of guidance, forces and target changes, rather than a fixed plan, all intended to reduce the time required for complete overhaul of the SIOP to only six months.”* (Kristensen [2003]: p. 8.) Providing an attack plan for a new enemy became possible in a few months and STRATCOM was tasked to provide additional small, flexible and adaptive strike

⁵⁰ With the German reunification in October, 1990, Eastern European targeting ended entirely.

options for the dynamic post-Cold War environment and the new challenges the U.S. had to face.

1.8 The Legacies of the Cold War

During the forty-five years of the Cold War, nuclear weapons have gradually occupied a central position in U.S. national security. Architects of the first war plans were skeptical about their military utility and only considered their use as an extension of massive conventional bombings. But as the number of atomic bombs started to grow, an entire planning apparatus emerged and complex procedures were developed to prepare concrete strategies for the application of these weapons. From the mid-1950s nuclear forces provided the backbone of national security strategies and war plans placed their use in the center of focus.

This meant the beginning of a still ongoing intellectual challenge to implement doctrines which are able to deter a nuclear war; a technological contest to develop new warheads and deliveries which make the threats credible; and a bureaucratic struggle between the political level and the different military services to control and influence the formulation of the weapons employment policies.

Table 1. The Evolution of U.S. Nuclear Planning during the Cold War⁵¹

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⁵¹ The table was prepared by the author, based on the following sources:

Primary sources: NSAM-109, NSC-20/4, NSC-68, NSC-162/2, NSDD-13, NSDM-242, NUWEP-74, PD-18, PD-59, SIOP-62 Briefing.

Secondary sources: Condit, Kenneth W. [1996]: *History of the Joint Chiefs of Staff*; Kaplan, Fred [1991]: *The Wizards of Armageddon*; Kessler, Samuel Joseph [2010]: *From 'Massive Retaliation' to 'Flexible Response': Robert McNamara at the Pentagon*; Kunsman, David M.; Lawson, Douglas B.: [2001]: *A Primer on U.S. Strategic Nuclear Policy*; Nolan, Janne E. [1989]: *Guardians of the Arsenal*; Poole, Walter S. [2011; 2012]: *History of the Joint Chiefs of Staff*; Pringle, Peter; Arkin, William [1983]: *S.I.O.P. – The Secret U.S. Plan for Nuclear Attack*; Rosenberg, David A. [1983]: *The Origins of Overkill: Nuclear Weapons and American Strategy*; Sagan, Scott D. [1987]: *SIOP-62: The Nuclear War Plan Briefing to President Kennedy*; Watson, Robert J [1998]: *History of the Joint Chiefs of Staff*.

Administration		Declaratory Policy		Warheads*		DOI: 10.14267/phd.2015009	Operational Level	
President	Year	Nuclear Doctrine	Date	First Year	Last Year	Policy guidance	War Plan	
							Name and Date	Main Strategic and Targeting Characteristics
Harry S. Truman	1945-1953	War-ending and war-fighting	-----	2	1,100	- At first, decentralization, ad hoc decision making - 1948: <u>NSC-30</u> : the U.S. must be ready to use nuclear weapons, employment should be based on the decision of the President - 1948: <u>NSC-20/4</u> : main goal: eliminate Bolshevik control inside and outside the Soviet Union; the U.S. should not initiate a war, NWs should be used only in response to Soviet aggression - 1950: <u>NSC-68</u> : rejection of a no first use policy as the international environment is alarming - possible Soviet aggression without any warning -> greater emphasis on NWs, rapid build-up of capabilities	TOTALITY (1945) PINCHER (1946) BROLIER (1947) CHARIOTEER (1947) FROLIC (1948) HALFMOON (1948) TROJAN (1949) OFFTACKLE (1949) SHAKEDOWN (1950) EWP 1- (1950) EWP 1-51 (1951)	- Earliest war plans: the use of nuclear weapons was only an extension of conventional strategic bombings - the main targets: war-related facilities and major cities (e.g.: BROLIER: 34 bombs on 24 Soviet cities, TROJAN: industrial facilities in 70 Soviet cities) - BUT: skepticism about the benefits of atomic bombings: they are not enough for Soviet capitulation or destroying Communism - OFFTACKLE: first war plan based on a political guidance (NSC-20/4) - destroying Soviet war-making capacities + preventing Soviet advances in Western Europe - 1950: JCS designated 3 target categories: highest priority: Soviet capabilities to deliver atomic bombs; second priority: retardation targets; third: energy industries (these categories remained until the first SIOP)
Dwight D. Eisenhower	1953-1961	Massive retaliation	1954	1,100	22,200	- 1954: ruling out preventive nuclear war (BUT the option of preemptive strikes remained) - Mid-1950s: shifting focus from preemption to retaliation -> 1953: <u>NSC-162/2</u> : emphasis on massive retaliation - Threatening with massive nuclear retaliation even if the aggression was only conventional - Main but not sole reliance on NWs	EWP 1-53 (1953) 50-54 (1954) BWP 1-55 (1955) BWP 1-58 (1957) BWP 1-60 (1960)	- Nuclear weapons: cheap solution for conventional deficits -> huge increase in capabilities - Despite policy guidance: the arsenal was rather designed for preventive war, than retaliation; by 1957: more than 3,000 military and industrial targets (end of the decade: SAC designated more than 20,000 potential targets) - Separate targeting plans by the Air Force and the Navy BUT with the development of the Polaris system they started to interfere -> 1960: establishing JSTPS to create the first SIOP - Continuous alert of bombers started in 1961
John F. Kennedy	1961-1963	Flexible response, no cities counterforce, assured destruction	1961	22,200	28,100	- Revision of massive retaliation -> 1961: asking for a shift to a "no-cities" approach: short-lived strategy, very soon revised - 1964: new focus: the requirement of an effective, invulnerable and reliable nuclear retaliatory force; deterrence over warfighting -> assured destruction - the necessary number of NWs can be quantified (400 megatons) - Flexible/limited counterforce -> shift to survivability and second strike capability - the new guiding principles of U.S. deterrence posture	SIOP-62 (1961) SIOP-63 (1962) SIOP-64 (1964) SIOP 4 (1966) SIOP 4A (1967) SIOP 4C (1968)	- SIOP-62: first integrated operational plan, a combination of preemption and retaliation, overwhelmingly counterforce targets: envisioned a first massive strike against thousands of targets then waves of re-attacks to increase damage (in the next 24 hours) -> rigid, all-purpose plan; no practical distinction between targets -> genesis of counterforce strategies - SIOP-63: 5 primary attack options from preemption to retaliation, options to withhold attacks and keep reserve forces for urban destruction - "second strike counterforce strategy" - Despite political guidance: even the most limited strike options included hundreds of NWs against Soviet targets
Lyndon B. Johnson	1963-1969		1962 1964	28,100 (peak: 1967: 31,255)	27,500			
Richard M. Nixon	1969-1974	Flexible response, counterforce with limited options	1974	27,500	28,500	- Revisiting MAD: critic: anti-defense strategy; guarantees the total vulnerability of the population - 1974: <u>NSDM-242</u> : reintroduction of counterforce and nuclear war fighting by a series of limited nuclear options (LNO) - Main principles: selectivity in the strike options, early war termination (intrawar bargaining) and avoiding attacks on cities + emphasizing the exclusively retaliatory function of US strategic forces - National Nuclear Strategic Targeting document to guide targeteers	SIOP 4E/F (1969) SIOP 4G/H (1970) SIOP 4I/J (1971) SIOP 4K/L (1972) SIOP 4M/N (1973) SIOP 4O (1974) SIOP 4P(1975) SIOP 5/5A (1976)	- Rearranging targets: match high-quality weapons with high priority targets, major attack options against valuable military targets with high degree of confidence in their destruction - Target categories: national command authority; overall military-industrial complex + new element: economic recovery capabilities + 4 major innovations in targeting: 1) escalation control, 2) concept of withholds, 3) industrial recovery capabilities, 4) Soviet military forces anywhere in the world -> some high quality weapons were allocated to countervalue targets - BUT innovations had only a limited effect on war fighting: SIOP 5: inclusion of smaller options but still no real limited options (smallest ones still included several hundred warheads), target list has grown to over 25,000 targets (inclusion of economic recovery) -> gap between targets and available weapons -> pressure for more NWs
Gerald R. Ford	1974-1977			28,500	25,500			
James E. Carter	1977-1981	Flexible response, countervailing with multiple attack options	1980	25,500	23,200	- Selective employment of nuclear forces, graduated responses based on the new reality of nuclear parity - Developments in Soviet forces: hardening key targets + major civil defense strategy -> planning to survive as a society - 1980: <u>PD-59</u> : more emphasis on military targets + less on urban/industrial targets + priority to Soviet leadership (highly centralized system -> vulnerable to chaos) - countervailing strategy: denying the other side the possibility to win - Asking for more LNO; larger secure reserve force; improving the survivability of communication lines and command and control structures	SIOP 5B (1977) SIOP 5C (1978) SIOP 5D (1979) SIOP 5E (1980)	- Nuclear Targeting Policy Review: four categories: 1) impede recovery of the S.U.; 2) destroy Soviet national political and military leadership and command and control; 3) destroy Soviet nuclear forces, and 4) destroy Soviet non-nuclear forces + four major attack options against the SU and thousands of targets in satellites, China, Cuba and Vietnam - With the new innovations: over 40,000 designated targets - Shifts in targeting: less emphasis on economic recovery -> targets focused instead on war-supporting industry + command, control and communications targets -> it released NWs for pure counterforce missions - high quality weapons reassigned to high priority missions - It did not cut the number of NWs - same number but reallocation and higher damage-expectancy levels + several modernization programs
Ronald R. Reagan	1981-1989	Flexible response, prevailing strategy	1981	23,200	22,200	- 1981: <u>NSDD-13</u> : new focus: prevailing strategy: instead of denying victory to the Russian, it aimed a decisive victory for the U.S. -> massive modernizations to destroy the Soviet military - NWs are still the cornerstone of U.S. security policy BUT a new "window of vulnerability": vulnerable ICBMs against a Soviet first strike (vulnerability + maximum lethality -> pressure to keep them on high alert and launch first) - U.S.-Soviet rivalry reached a point of technical exhaustion -> shifting the competition to a new area: space (SDI) - Continued calls for having selected targeting options - More focus on the survivability of national command authority	SIOP 5F (1981) SIOP 5G (1982) SIOP 6 (1983) SIOP 6A (1984) SIOP 6B (1985) SIOP 6C (1986) SIOP 6D (1987) SIOP 6E (1988)	- Two challenges in targeting: provide real limited options + establishment of clear procedures for civilian oversight -> the "quiet revolution" of Frank Miller: the establishment of procedures for a stronger civilian oversight - Problems of targeting: all targets were treated equally, duplications, more weapons allocations than necessary (without considering secondary effects of NWs or the ability of regional CINCs to carry out nuclear missions) - Basic target categories: similar to those of the 1950s - 1988: SIOP 6E: renewed emphasis on flexible targeting - more responsive to policy guidance - inclusion of new strike options, very small options
George H. W. Bush	1989-1993	Prevailing strategy, strategic redirection	1991	22,200	11,500	- PNIs: 1991-1992: most significant unilateral reductions - Increased role for reserve forces to deal with the uncertainties of the international environment - Reductions + the dissolution of the SU -> many targets became irrelevant in the SIOP (e.g. 40 NWs on Kiev) -> 1990: strategic targeting review - most comprehensive review ever	SIOP 6F (1989) SIOP 6G (1990) SIOP 6H (1991) SIOP 93 (1992)	- Still many duplications, multiple warheads on the same target + only accounted immediate effects of a nuclear strike -> solution: elimination of thousands of targets from the SIOP (former Soviet republics were eliminated entirely; reductions in leadership targets, transportation lines + war-supporting industry) - Adaptive targeting for the global level, flexible retargeting, reduced alert levels - 1991: SAC was abolished and STRATCOM was established

* Kristensen, Hans M.; Norris, Robert S. [2013]: Global nuclear weapons inventories, 1945-2013. *The Bulletin of the Atomic Scientists* . Vol. 69. No. 5. September/October 2013. pp. 75-81.

2. Conceptualizing the Main Terms of the Dissertation

2.1 Cold War Nuclear Thinking

From a strategic point of view, probably the most important sentence of President Obama's 2009 Prague address is the declaration that the United States would "*put an end to Cold War thinking, we will reduce the role of nuclear weapons in our national security strategy, and urge others to do the same.*" (Obama [2009])

The biggest problem with this statement is the lack of a clear definition of what "Cold War (nuclear) thinking" exactly means, therefore, it is difficult to judge the Obama administration's accomplishments and objectively decide if the White House has fulfilled its promises. Neither President Obama, nor the 2010 NPR report specified what the administration meant by Cold War thinking and which particular aspects of it they aimed to eliminate in their nuclear strategy. Since 1989, the U.S. force structure has been significantly reduced, the PNIs of the George W. H. Bush administration cancelled several modernization programs and took bombers off alert status. Thus, many changes have happened, but based on President Obama's Prague address, the administration still saw continuities with Cold War nuclear planning which they wanted to eliminate.

This dissertation aims to outline a working definition of what the author considers Cold War nuclear thinking in order to examine what has changed since the Cold War and what elements have remained. Cold War nuclear thinking will be identified on three levels: the declaratory policy, the force structure and the operational level. Although these three levels are closely interlinked, and they mostly reflected the same principles during the Cold War, today it is no longer necessary to have the same guidance on all three levels.⁵² An administration can shift away from Cold War thinking on one level but retain its characteristics on the other two. As Amy Woolf from the Congressional Research Service outlined, "*Cold War thinking in the rhetoric, versus Cold War thinking in the planning, are two very different things.*" (Woolf In: Halperin; Kimball; Kristensen; Woolf [2012]) The George W. Bush administration for example put a huge emphasis on abandoning Cold War thinking in the declaratory policy (in essence, its

⁵² It would be ideal to end Cold War nuclear thinking on all levels simultaneously but unfortunately this is not what we see in practice. Significant changes in the official rhetoric do not necessarily trigger meaningful changes on the operational level.

rhetoric was more post-Cold War than the 2010 NPR) but several aspects of the force structure and the operational level were still stuck in Cold War legacies.⁵³

Looking at the history of Cold War nuclear strategy, it was more an evolution of thought than steady thinking. As President after President repeated, there were “*no major departures*” in nuclear doctrine, each administration built on the legacies of its predecessors. However, it did not mean that there were no changes in the nuclear strategy. As a result of technological developments in U.S. and Soviet capabilities, several new ideas and shifts in focus were implemented by the different administrations. The first big shift was the transformation of the Eisenhower administration’s *massive retaliation* doctrine to McNamara’s *flexible response*. Although McNamara’s concept remained an official strategy until the end of the Cold War, several additional adjustments came under the umbrella of flexible response. Each administration tried to introduce its own innovation: first, the *no cities doctrine* and *assured destruction* under Kennedy and Johnson; then *counterforce with limited options* under Nixon and Ford; followed by Carter’s *countervailing strategy*; modified to *prevailing* under Reagan.

Despite the above mentioned differences, there were several common beliefs which led U.S. Presidents and military planners in the making of their own nuclear doctrines. According to Morton Halperin (who was involved in the formulation of U.S. nuclear strategy under Presidents Johnson and Nixon), during the 45 years of the Cold War, there were two basic premises which guided the development of U.S. nuclear strategy: first, “*the notion that there is a serious possibility of a surprise Russian attack and that we need to design our force to deter the Russians from deliberately deciding to launch an attack on the United States,*” and second, “*the notion that we had a conventional deficit, and therefore we needed to use, or threaten to use nuclear weapons first in various scenarios involving conventional attacks and biological and chemical weapons.*”⁵⁴ (Halperin In: Halperin; Kimball; Kristensen; Woolf [2012]) In addition to these two beliefs, Daryl Kimball from the Arms Control Association adds another element, “*a kind of cultural concept of what Cold War thinking is. And part of it is the*

⁵³ While the 2001 NPR of the Bush administration claimed that Russia was no longer an enemy and the “Russia threat” would not define U.S. force levels anymore, its arsenal of 1,700-2,200 deployed strategic nuclear weapons still suggested a Moscow-centric thinking – even after the events of 9/11 it was difficult to imagine the use of this amount of weapons against anybody else but Russia. (NPR [2001])

⁵⁴ According to Ambassador Linton Brooks, former administrator of the Department of Energy’s (DoE) National Nuclear Security Administration (NNSA), both of these premises were believed to be true, none of them is true today, and the first one was actually never true. (Interview with Linton F. Brooks [2014])

concept that we might be willing to engage in an actual nuclear war, and wage a nuclear war. Deterring a nuclear attack is one thing, waging a nuclear war is another thing.” (Kimball In: Halperin; Kimball; Kristensen; Woolf [2012])

In terms of nuclear strategy, the Cold War can be divided into three main periods: 1) the initial years of the Truman-Eisenhower administrations; 2) the “classical” Cold War years from Kennedy to Reagan; and 3) the transition to a new era under the Bush years. In the first period (1945-1961), Truman and Eisenhower laid down the structure of nuclear planning, and the most important operational procedures were enacted which led to the first SIOP by 1961. Compared to the early Truman years, nuclear weapons gained an increasingly significant role in the national security strategies, their number dramatically grew from zero to about 22,000 and as a result of this increase, the early city-targeting strategy of the late 1940s was abandoned and the focus shifted towards the so called counterforce targets.

During the “classical” period (1961-1989) of Cold War nuclear strategies, the Kennedy administration and especially Robert McNamara played a crucial role. Their flexible response doctrine had become a guiding principle for the entire period. Although McNamara’s 1964 assured destruction policy was suspended by the Nixon administration, in a way MAD remained “alive” on the operational level and in the force structure – throughout the entire period, the size of the U.S. nuclear arsenal reflected a massive overkill capacity, and regardless of the policy level’s main focus, war plans contained several massive attack options, which were enough to destroy most of the Soviet Union and its satellite states.

Focusing on the three analytical levels of the dissertation, Cold War nuclear thinking in the declaratory policy had a specific *worldview* on the role and mission of the U.S. and the Soviet Union. This worldview had four different layers: first, the *enemy image* was defined in the framework of the bipolar system – Washington knew exactly who the enemy was, and what kind of challenges it represented. The Soviet block was identified as the peer opponent⁵⁵ and it was seriously believed that Moscow was constantly preparing for a surprise attack on the U.S. and its allies. The second and third layers

⁵⁵ In this regard, the role of China has changed over time – until the Nixon administration’s appeasement with China, Beijing was handled in the same group as the Soviet Union and its satellite states. But by the early 1980s, it was taken out of the war plans until the Taiwan Strait crisis in 1996. (Interview with Bruce G. Blair [2014])

identified the role of the U.S. as the *global leader* of the free world, the ultimate goal of which was to ensure the *victory of the good cause*. And finally, the relationship between the U.S. and NATO: the U.S. had to demonstrate its willingness to use nuclear weapons if its allies are attacked. Therefore, the U.S. provided a *positive security assurance* in the framework of NATO which served as the basis of tactical nuclear weapons⁵⁶ deployments in Europe from 1954. In addition, starting with the Eisenhower administration, U.S. Presidents specifically encouraged their military planners to prepare for the tactical use of nuclear weapons in the European theater.

Cold War nuclear thinking also meant the doctrine of *flexible response* which was a unifying policy of these three decades (1961-1989). In essence, it meant that in a crisis situation the U.S. had multiple options to address a threat appropriately, starting from the use of conventional weapons, through selective nuclear attacks to a general nuclear war. Besides this doctrine, Cold War nuclear thinking included the *denial of a preventive war*. Preventive war thinking was a preferred concept by the Air Force during the early years of the Cold War but it had become a marginal discourse by the mid-1950s.⁵⁷ (Burr [2007]) According to Nolan, from the mid-1950s, “*preventive war was ruled out as a matter of policy*” by the U.S. government. (Nolan [1989]: p. 58.) Although preventive action in the sense of a decapitating first strike was ruled out, none of the official guidance documents specifically excluded the *option of preemptive strikes* – in fact it remained on the level of operational planning. During the 1961 SIOP 62 briefing, General Lemnitzer for example talked about two main options: retaliation and preemption. Another example is President Carter’s war plan where preemption was one of the two special attack categories in the different versions of SIOP 5.⁵⁸

⁵⁶ The term “tactical nuclear weapon” is used as a synonym for non-strategic or sub-strategic nuclear weapon.

⁵⁷ The preventive war concept had a short reemergence in the discourse during the early 1960s when China got close to conduct its first nuclear weapon test. President Kennedy and then Johnson discussed the option of a preventive strike against the Chinese nuclear installations but they concluded that it was not worth attacking as “*even ‘successful’ action may not necessarily prevent the ChiComs from detonating a nuclear device in the next few years*” and the risks of an immediate Chinese attack against Taiwan or an escalating conflict to include the Soviet Union were too high. (Policy Planning Council [1964]: Paragraph 7/a)

⁵⁸ The reliance on preemptive options has probably changed by the end of Reagan’s first term. In a 1985 Congressional hearing, the commander of SAC testified that “*there are no preemption options*” in the SIOP, suggesting that the U.S. was no longer planning for a preemptive strike against the Soviet Union. (Quoted in Sagan [1989]: p. 75.) Although professor Sagan noted that it did not mean that SAC abandoned the option of LOW, it only meant that “*SIOP options are no longer, as they were in the late 1960s, specifically designed to maximize preemptive effectiveness.*” (Sagan [1989]: p. 75.) In fact, if one

Closely related to the option of preemption was the *rejection of a no-first-use* declaration. With the exception of a very short period under the Kennedy administration, none of the Presidents declared that the U.S. would refrain from the first use of nuclear weapons. The main reason to rule out a no-first-use declaration was tied to the territorial defense of the NATO allies. In order to credibly reassure its allies (and also to deter Moscow), the U.S. needed the option of the first use of nuclear weapons in case a Soviet aggression in Europe couldn't be stopped by conventional means. Cold War nuclear thinking also *excluded* the option of a universal *negative security assurance* (NSA) to non-nuclear weapon states (NNWS). As satellite states, especially in the European theater were considered essential to break the Soviet power and exercise pressure on Moscow, target lists contained thousands of potential targets in NNWSs, outside the territory of the Soviet Union. The U.S. has first articulated a negative security assurance⁵⁹ during the Carter administration in June, 1978 but it contained a so called "Warsaw Pact exclusion clause" which (under specific conditions) retained the option of attacking NNWSs allied or associated with nuclear weapon states – thus, it did not change much in the actual targeting policy of the U.S.

And finally, a more general characteristic of the declaratory policy was the *prominent day-to-day role of nuclear weapons* in the military strategies. By the early 1950s, nuclear weapons occupied a central role in strategic war planning. Starting from the Kennedy administration and the development of the first SSBNs (which came to represent an invulnerable leg in the nuclear triad), the primary role of nuclear weapons has shifted away from fighting an all-out nuclear war to credibly deterring any aggression against the U.S. and its allies by multiple options. This deterrence posture, however, was never restricted to nuclear contingencies. As Reagan's 1981 NSDD-13 guidance stated, the fundamental role of nuclear weapons was to deter a primarily (but not exclusively) nuclear attack on the U.S. and its allies – thus, nuclear weapons had a role in deterring conventional as well as chemical and biological attacks; and nuclear retaliation remained an option against any of these contingencies.

maintains the option of LOW or LUA (which carries on until today in U.S. nuclear strategy), then it also has the capabilities for a preventive or preemptive strike.

⁵⁹ "The United States will not use nuclear weapons against any non-nuclear weapons States Party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices, except in the case of an attack on the United States, its territories or armed forces, or its allies, by such a State allied to a nuclear-weapon State or associated with a nuclear-weapon State in carrying out or sustaining the attack." (Quoted in Bunn [1997]: p. 6.)

Cold War nuclear thinking in the force structure meant a massive overkill capacity: extremely *high number of nuclear weapons and deliveries* with all three legs of the *nuclear triad*. Interestingly, at the end of 1961, U.S. nuclear forces were at the level of 22,200 warheads and by the time President Reagan left office in 1989, force levels shrank to about the same amount. Under these three decades, nuclear weapons reached a historic peak of 31,200 nuclear weapons in 1967, and the rapid growth of the late 1950s and early 1960s was followed by a much slower decrease in the 1970s and 1980s. (Kristensen; Norris [2013a]) In addition to the high numbers in the nuclear weapons capabilities, delivery systems often carried *multiple warheads* – i.e. ballistic missiles equipped with multiple independently targetable reentry vehicles (MIRVs). Regarding the triad, there were many shifts in the significance of the different legs but all three gained their special role during the Cold War: with the development of C³I systems submarines gained their role as the invulnerable leg of the triad (they provide survivability);⁶⁰ ICBMs provide prompt response and bombers provide flexibility (as they can be recalled after launch and they can be quickly dispersed from their forward deployed bases). (Mies [1999])

A *great diversity of nuclear weapons* was also considered necessary. Parallel to the rapid growth of the strategic nuclear arsenals, several arguments were raised during the early 1950s for the development of low-yield, short-range weapons. Proponents of this arsenal claimed that tactical nuclear weapons were necessary to support ground combats, or as Oppenheimer said, bring the “*battle back to the battlefield*.” The Air Force was very soon divided into strategic and tactical wings – strategic to attack “*vital targets in the enemy’s heartland*” and tactical for the support of theater missions (in this regard, tactical nuclear weapons played a key role in the reassurance of allies). (Freedman [1986]: p. 746.) During the Nixon-Ford years, these low-yield weapons gained an additional justification: providing credibility to the concepts of intrawar bargaining and escalation control in the framework of limited attack options. In the meanwhile, the maintenance of a massive arsenal with high yield weapons was also necessary as hardened Soviet targets with a high military value still required a huge destructive power. New nuclear weapon types were extensively *tested* (from 1945 to

⁶⁰ Without reliable communication lines, war plans could not rely on submarines as the risk of losing connection with the National Command Authority meant that submarines might not be able to execute their mission, or alternatively they had to come to surface which would seriously hurt their invulnerability.

1992 the U.S. conducted altogether 1,032 nuclear tests) and there was *no systematic hedging* policy. During the Cold War, the U.S. tried to deploy the majority of its nuclear weapons inventories. Reserve nuclear forces were small as a result of an active infrastructure and the continuous development and production of new nuclear weapons, which guaranteed the rapid exchange of the entire stockpile in every few years. The United States only started to create a permanent reserve or hedge force in the early 1990s, when nuclear testing was abandoned.

Stationing nuclear weapons in the territory of allied states was also characteristic of this era. *Forward deployment* of nuclear weapons served four main purposes: deterring enemies, reassuring allies, signaling, and burden sharing. (Seay [2011]) Analysts of the Natural Resources Defense Council claim that “*during the Cold War, 18 sovereign nations and nine former or current American territories or possessions hosted U.S. nuclear weapons.*” Declassified Pentagon history documents revealed that altogether 38 types of nuclear weapons systems were stationed abroad and the first overseas deployment of complete nuclear bombs started in 1954. During the peak years in the early 1970s, more than 7,000 U.S. nuclear weapons were deployed in Europe and another 2,000 on land in the Pacific. (Norris; Arkin; Burr [1999])

The “classical” period of Cold War nuclear strategies had ten main characteristics on the operational level. Because of the fear of a Soviet first strike which was a basic premise of Cold War thinking, U.S. forces had to be ready for a prompt launch. This meant that a portion of the nuclear forces was kept on *high alert level* all the time, ready to be launched shortly after the President made a decision. Continuous airborne alert of bombers started in 1961 and it was soon complemented with ICBMs and SSBNs on alert, as well. In connection with the prompt launch capability, the second characteristic was the reliance on the options of *preemption*, *launch on warning* (LOW) and *launch under attack* (LUA). A very simplistic differentiation between these three policies is based on the timing of the attack: preemption means that nuclear weapons would be launched as soon as hostile actions are taken by the enemy;⁶¹ LOW means that nuclear weapons would be launched on tactical warning that an enemy attack is underway; and LUA means that nuclear weapons would be launched after the first enemy weapons hit

⁶¹ A preventive nuclear strike, in contrast, would mean that the U.S. launched an attack to avoid a potential threat, which was not imminent and not justified by concrete actions on the enemy’s side.

their targets.⁶² (Sauer [2005]: p. 12.) All three attack options were operational policies during the Cold War. Just to mention one example: the Carter administration's SIOP 5 war plan contained preemption as a special attack option, and the other alternative was LOW or LUA. This has somewhat changed by the mid-1980s, as President Carter's 1980 PD-59 stated that *"while it will remain our policy not to rely on launching nuclear weapons on warning that an attack has begun, appropriate pre-planning, especially for ICBMs that are vulnerable to a preemptive attack, will be undertaken to provide the President the option of so launching."* (PD-59 [1980]: p. 3.) This meant that LOW was no longer endorsed but the capability was nevertheless maintained in the form of "pre-planned options" against a potential attack on the vulnerable ICBMs.

The third element of operational level Cold War nuclear thinking is the so called ***pre-delegation of control*** of nuclear weapons. The first presidential guidance document on the use of nuclear weapons was issued by the Truman administration in 1948. The NSC-30 guidance contained two major obligations, one of which stated that the President had the ultimate authority to make the decision on the use of nuclear weapons. This principle was reinforced by each following administration, however, some "loopholes" were also implemented in the system. In 1957, the Eisenhower administration was the first to introduce a kind of pre-delegation of control in its national security strategy. As a result of weak C³I systems, it was feared that a well prepared attack against the National Command Authority might incapacitate the President and/or cut communication between the civilian authorities and the military forces. Therefore, top commanders were given a *"pre-positioned national command authority [...] to authorize a SIOP retaliatory strike and to select the SIOP option to execute."* (Blair [1993]: p. 50.) Declassified sources suggest that this authorization was only applicable under specific emergency conditions of major attack scenarios: *"1) when attacks by sea or by air on U.S. territory and possessions provided no time for consultation with the President on defensive measures, or 2) when "enemy attacks" prevented a Presidential decision and it was necessary to protect U.S. forces abroad, including those in international waters, or to launch SAC to retaliate to nuclear attack on the continental United States."* (National Security Archive [1998]) Under these scenarios, the pre-delegation was primarily applicable for air defense and missile defense weapons and it

⁶² Another closely related term is the option of ride-out, which would require waiting until the first wave of enemy attacks arrive and then launch a retaliation.

was mostly significant during the 1950s and 1960s. (Interview with Franklin C. Miller) According to Bruce Blair, the practice of pre-delegation was strictly limited to top level commanders, “*well above the bottom level*” of SSBN, ICBM or bomber commanders, and much closer to the level of unified and specified commanders (CINCs). Blair also claims that this practice probably remained until the Reagan administration, however, it was not always based on a formal (i.e. written) approval from the President – under certain administrations it was only based on an “*unwritten understanding*.” (Blair [1993]: pp. 46-50.) The 1980s definitely meant the end of this practice as those air defense weapons which were pre-delegated during the 1950s were deliberately retired. (Interview with Franklin C. Miller [2014])

The fourth characteristic of Cold War operational planning was ***counterforce targeting***. In the late 1940s, war plans were mostly targeting Soviet cities. But this policy has very quickly shifted towards an increased focus on military targets. By the 1960s, SIOP contained overwhelmingly counterforce targets, although counter-value elements (like economic recovery infrastructure) were never entirely excluded and under most attack options, serious civilian losses were expected. In terms of targeting policy, another characteristic is the ***very conservative targeting criteria***: redundancy in the system, and extremely high levels of damage expectancy.

The fifth element was related to strike options. Regardless of the focus of the acting administration (whether it wanted flexible options, limited options or multiple attack options), ***massive attack options*** remained predominant throughout the entire Cold War and only a ***very few real limited options*** were included. The sixth area was the SIOP itself. Cold War ***target plans*** (which meant a lot of plans and sub-plans) were ***preplanned*** and ***not flexible*** at all. These plans were unable to guarantee for example the Nixon administration’s preferred concept of limited nuclear attacks applicable in unforeseen regional conflicts. Targeting was layered and stacked, and it took a long time to adjust these rigid plans to new contingencies. Besides, ***nuclear war*** was seen in part as a ***protracted, global*** conflict. Despite the inclusion of limited and regional attack options, each administration had plans for a prolonged nuclear exchange, based on massive attack options against the entire range of enemy countries and their allies. Although planning for a protracted global nuclear war was true for the entire Cold War period, the rationale behind it changed during the Carter administration. By the second

half of the 1970s, the U.S. no longer believed that it could win a nuclear war⁶³ but the Soviets were thought to believe that they could win a protracted global war. Therefore, the U.S. had to make clear that it would deny the Soviets any possible chance of victory. (Interviews with Linton F. Brooks [2014] and Franklin C. Miller [2014]) This is why the 1981 NSDD-13 used a tougher language – “*should nuclear attack nonetheless occur, the United States and its Allies must prevail*” (NSDD-13 [1981]: p. 1.) – than Carter’s countervailing strategy but it did not mean that the U.S. believed that there would be winners of such a war. It only meant, as Secretary of Defense Caspar Weinberger said in 1982, that “*we must be able – and must be seen to be able – to retaliate against any potential aggressor in such a manner that the costs we will exact will substantially exceed any gains he might hope to achieve through aggression.*” (Weinberger [1982])

The eighth element of operational level Cold War nuclear thinking was the ***lack of*** clear procedures for ***civilian oversight***. A pioneer in this field was Franklin C. Miller but he only started his “quiet revolution” in 1985, and his recommendations were enacted gradually in the coming years. Before 1985, civilians had very limited influence on the actual war plans.

The ninth characteristic of the operational level was the ***lack of calculations on the secondary effects*** of a nuclear blast in operational plans (especially fire damage which is thought to be more destructive than the blast itself). Throughout the entire Cold War, the U.S. seriously underestimated the potential damages caused by the use of nuclear weapons and built considerably more nuclear weapons with considerably bigger destructive power than it was deemed necessary by the war plans.⁶⁴ According to Professor Lynn Eden, despite the fact that the nuclear bombings of Hiroshima and Nagasaki caused serious fire damage, Cold War war plans completely ignored the

⁶³ After leaving the Pentagon in 1981, President Carter’s Secretary of Defense, Harold Brown wrote that “*The destruction of more than 100 million people in each of the United States, the Soviet Union, and the European nations could take place during the first half-hour of a nuclear war [...] such a war would be a catastrophe not only indescribable but unimaginable [...] it would be unlike anything that has taken place on this planet since human life began.*” (Quoted in Halloran [2008]) As he later phrased it, “*No, we did not think we could win a nuclear war.*” (Brown [2012]) In addition, President Reagan declared himself in April, 1982 that “*A nuclear war cannot be won and must never be fought.*” (Quoted in Halloran [2008])

⁶⁴ Although war plans did not calculate with the secondary effects of a nuclear blast, there were efforts to develop models which could include these effects in strategic planning. In 1986, the U.S. and the United Kingdom initiated a bilateral dialogue – British experts developed a model which could include the secondary effects but it was strongly dependent on weather conditions which made it difficult to quantify without a significant level of uncertainty. In the end, as a result of the difficulties in quantification, this model was not incorporated in U.S. war plans. (Interview with Franklin C. Miller [2014])

damages from atomic firestorms. Until the 1990s, there were absolutely no attempts to incorporate fire damage in war planning which led to an unnecessary overkill capacity in the number and destructive power of U.S. nuclear forces. Concepts like limited nuclear options and escalation control were based on significantly misleading and flawed calculations and “*if nuclear weapons had been used, the physical, social, and political effects would have been far more devastating than anticipated.*” (Eden [2004]: p. 2.)

The last element is partly related to the issue of the secondary effects of a nuclear blast. The *humanitarian aspects* of using nuclear weapons, in general, had only a very *low profile* in operational planning. Starting from the Kennedy administration, the focus of the White House has shifted from the threat of an all-out nuclear war to smaller and more credible strike options which were more appropriate to deter a Soviet aggression against the U.S. and its allies. Instead of the Eisenhower administration’s massive retaliation doctrine, Presidents were asking for capabilities and options for limited nuclear strikes (which were more appropriate to reduce civilian losses as well). But despite the intentions of the policy level, doctrinal changes were inadequate to avoid the targeting of major cities in the war plans and to avoid the targeting of civilians per se. In fact, after the early 1950s some SAC officials talked about mass civilian casualties as a bonus effect to hitting major urban-industrial targets.

Under the Bush years (1989-1993) or the third period of Cold War nuclear strategies, many legacies of the Cold War persisted but significant transformations were also implemented. In the 1991-1992 PNIs, President Bush announced huge reductions in the number of nuclear warheads and deliveries, in addition, alert levels and target lists were also considerably cut and a structural change established STRATCOM to replace SAC.

Altogether, when this dissertation makes a reference to Cold War nuclear thinking, it primarily refers to what the author called the “classical” period of Cold War nuclear strategy from Kennedy to Reagan. The 1961-1989 period has many overlaps with the Eisenhower and the Bush administrations but some of its characteristics were not yet present under Eisenhower and some were already limited or abandoned by Bush, therefore, they do not entirely fit the model. Besides, it is also important to stress that Cold War nuclear thinking is not a bad thing by all means. Some elements of it are inherent results of the logic of deterrence and do not necessarily need to be abandoned

in the current security environment. In the framework of the chapter on the Obama administration's nuclear policy, the dissertation will go through all these elements to outline what is still there from the Cold War legacies, and also to explain why they are still there. Although it might be fair to say that the above listed elements equal Cold War thinking but the rationale behind the specific characteristics might have changed and it might not be the same as it was a few decades ago. Just to mention one example: the primary role of tactical nuclear weapons in Europe used to be deterring the Soviet Union from any aggression in Europe (and if necessary, fight a war against the Warsaw Pact countries); while today it is more about reassuring NATO allies. This will add an additional layer to the analysis and draw a more sophisticated picture on the relationship between Cold War thinking and the Obama administration's nuclear policy.

Table 2. Cold War Nuclear Thinking (1961-1989)

Cold War Nuclear Thinking	
Declaratory Policy	<ul style="list-style-type: none"> • worldview: <ol style="list-style-type: none"> 1) enemy image: bipolar system, the Soviet block is the enemy which constantly prepares for a surprise attack on the U.S. 2) the role of the U.S. as the global leader of the free world 3) the ultimate goal is to ensure the victory of the good cause 4) NATO: providing positive security assurances for the allies • main doctrine: flexible response • denial of a preventive war – but maintaining the option of preemptive strikes • rejection of no-first-use declarations • rejection of a universal negative security assurance to NNWSs (from Carter: introduction of very limited NSAs) • prominent day-to-day role of nuclear weapons against a great variety of contingencies
Force Structure	<ul style="list-style-type: none"> • high number of nuclear weapons and deliveries + multiple warheads on the delivery systems (MIRVs) • nuclear triad • great diversity of nuclear weapons • nuclear weapons testing • no systematic hedging policy • forward deployment of nuclear weapons

<p style="text-align: center;">Operational Level</p>	<ul style="list-style-type: none"> • high alert levels • preemption, LOW and LUA • pre-delegation of control • (mostly) counterforce targeting + very conservative targeting criteria • massive attack options + a very few real limited attack option • target plans are preplanned and not flexible • duration of war: protracted, global war • lack of clear procedures for civilian oversight • lack of calculations on the secondary effects of a nuclear blast in operational plans, serious underestimation of the potential damages caused by the use of nuclear weapons • low profile of humanitarian aspects in operational planning
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2.2 Nuclear Strategy

According to Lawrence Freedman, “*the origins of nuclear strategy go back to well before the formal arrival of the nuclear age on August 6, 1945.*” (Freedman [1986]: p. 736.) Freedman claims that during the 1920s and 1930s, theorists of strategic bombardments have already laid down precepts which did not entirely lose relevance in the aftermath of the nuclear bombings of Hiroshima and Nagasaki. Despite the arguments of “*air power enthusiasts*,” massive bombardments were not enough to bring victories in such large-scale confrontations as the two world wars. But the development of nuclear weapons significantly changed this situation. Their incredible destructive power guaranteed that one aircraft could deliver the same results as hundreds before, which provided tremendous potential and an unquestionable primacy for SAC in the first years of the Cold War.

Regarding the early history of nuclear strategies, other theorists rather emphasize the revolutionary effects of the development of nuclear weapons. Especially because of its potential for mass destruction, the invention of nuclear weapons rewrote everything that had been accepted as conventional wisdom and it meant a major departure from the traditions of the so called Clausewitzian strategy. Having no precedents for a nuclear exchange also brought a sense of uncertainty in the making of strategy and from several perspectives, it created a *tabula rasa* in strategic thinking. (Szalai [2009]: p. 11.)

As a result of the nuclear revolution, strategic theorists had to ask again the most fundamental questions: what does it mean to win a nuclear war (if it was possible at all); how to use these weapons of terror in the service of political goals; how to survive a nuclear attack; or how to credibly deter one... As Liddell Hart phrased it, “*old concepts and old definitions of strategy have become not only obsolete but nonsensical with the development of nuclear weapons. To aim at winning a war, to take victory as your object, is no more than a state of lunacy.*” (Quoted in Baylis; Garnett [1991]: p. 1.) Or as Herman Kahn put it, “*Our [long-standing] intuitions are no longer as reliable a guide as they used to be. Many currently useful ideas seemed bizarre or ridiculous when they were first considered.*” (Quoted in Ghamar-Tabrizi [2000]: p. 170.)

Although today we can apply the term “strategy” with respect to almost every human activities, its traditional understanding used to refer primarily to military affairs. Nuclear strategy in general is a specified military strategy which “*involves the development of doctrines and strategies for the production and use or non-use of nuclear weapons.*”⁶⁵ (Vicente; Cabaço [2011]) In more simplistic terms, just like any other strategy, this is the art of matching means to certain ends – in this case: nuclear weapons to policy goals. Although it applies the same logic, nuclear strategy is still fundamentally different from other military strategies. Most of these differences derive from the huge destructive power of nuclear weapons. As a result of this immense destructive power, the main goal of nuclear strategies has quickly shifted away from the use of these weapons to deterring their employment by the enemy. In other words, Hans Morgenthau argues that a fundamental difference between the nuclear and the pre-nuclear periods is the use of force. In the pre-nuclear age, traditional forces were considered “*an instrument for breaking the will of the opponent either through successful defense or attack; its primary function lies in the effectiveness of its physical application.*” In the meanwhile, nuclear weapons have “*a psychological function pure and simple. The prospective opponents are kept constantly aware of the inevitability of*

⁶⁵ While strategy connects military power with political goals, doctrines define the possible application of military tools. They lay down the potential response options in advance, summarize the principles of responses and signal to the adversaries what might be the consequence of their actions under different contingencies. Walter Slocombe suggests two additional roles for a nuclear doctrine: it “*guides our procurement strategy for the acquisition of strategic nuclear forces and the corresponding command, control, communications and intelligence systems which support our ability to employ them. [And it] shapes our operational planning for the use of our forces in war, if necessary.*” (Slocombe [1981]: pp. 18-19.)

*their own destruction should they resort to nuclear force, and this awareness prevents them from resorting to it.”*⁶⁶ (Morgenthau [1964]: p. 24.)

The shift in strategies from war fighting to deterrence was not so immediate and not so clear in the late 1940s and early 1950s. The first nuclear strategies emphasized the tactical values of nuclear weapons in supporting military missions. Planning their application was based on the traditions of strategic bombardments which Lawrence Freedman identified as an important inheritance from the pre-nuclear age.

As the U.S. lost its nuclear monopoly and the number of nuclear weapons started to grow dramatically, the policy goals have changed and nuclear weapons have become the means to a new “end” – deterring war between the two military blocks of the Cold War. Despite several confrontations and crises between Washington and Moscow, nuclear deterrence proved to be resilient and as Wohlstetter called it, the “*delicate balance of terror*” prevented the use of nuclear weapons. (Wohlstetter [1958])

Besides the different perspectives on the use of force, another fundamental difference between nuclear and conventional military strategies is the role of civilians in the making of strategies. While military strategies traditionally fell under the authority of the armed forces, nuclear strategies were paradoxically an exception to this rule. As the invention of nuclear weapons questioned many orthodox beliefs in military strategies, a kind of “intellectual vacuum” emerged, providing strategic theorists with an unusual opportunity to challenge the military and to draw up their own innovations for the formulation of nuclear strategies. (Szalai [2009]: p. 10-12.) Although the military tried to resist any civilian interference in its conduct of nuclear strategy, some administrations (especially the Kennedy and the Nixon administrations) proved to be more open to the ideas of the so called defense intellectuals and several civilian

⁶⁶ Despite the fundamental differences between conventional and nuclear military strategies, throughout the entire Cold War, there has been a constant attempt to “conventionalize” nuclear politics and use pre-nuclear concepts to rationalize the potential use of nuclear weapons. McNamara’s no cities counterforce strategy or Schlesinger’s countervailing doctrine are good examples for this attempt. The problem with these attempts is their ignorance of the changed circumstances of war fighting. (Jervis [1984]: pp. 56-59.) Even if the U.S. only attacked Soviet military targets, there were no guarantees that Moscow would follow the same logic. Or how could the U.S. guarantee that a limited nuclear attack would not be misinterpreted and escalation would not lead to an all-out nuclear war. As Jervis argued, “*traditionally, gaining an advantage over the other side’s forces made it impossible for the adversary to attack one’s civilian assets.*” (Jervis [1984]: p. 58.) This again, has changed under the nuclear revolution – even one surviving Soviet ICBM could cause devastating civilian losses, if directed against a densely populated U.S. metropolitan.

proposals made it to official nuclear strategies. Nuclear weapons, in addition, are inherently “presidential weapons,” more than any other type of weapons – the use of these weapons is an exclusively presidential authority (with the exception of a very few cases in the Cold War, when the practice of pre-delegation was introduced).

Altogether, when this dissertation uses the term “nuclear strategy,” it applies a holistic approach to the concept. First, it includes all aspects of developing official nuclear doctrines on the policy level, the implementation of these doctrines by the military, and the actual designation of the nuclear war plans. And second, it also includes every doctrine or concept which has been designed to guide the use or non-use of nuclear weapons, regardless of the origin of the idea (be it from the military, policy makers or the academia) and regardless of the extent to which it could actually influence the official guidance of nuclear policy.

2.3 Counterforce vs. Counter-value Strategies

According to the Encyclopedia of the U.S. Military, counterforce means “*The employment of strategic air and missile forces in an effort to destroy, or render impotent, selected military capabilities of an enemy force under any of the circumstances by which hostilities may be initiated.*” (The definition was quoted from the JCS in Arkin; Handler; Morrissey; Walsh [1990]: p. 184.) “*Typical counter-force targets include: bomber bases, ballistic missile submarine bases, intercontinental ballistic missile (ICBM) silos, antiballistic and air defense installations, command and control centers, and weapons of mass destruction storage facilities.*” (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: p. 240.)

In contrast, counter-value means “*Strategies or attacks against an opponent’s civilian population and general economic centers that constitute the social fabric of the nation.*” (Arkin; Handler; Morrissey; Walsh [1990]: p. 185.) Opponents of counter-value strategies generally claim that counter-value equals “city busting” and targeting main population centers, which is only half of the truth. Applying a counter-value strategy does not necessarily mean the deliberate targeting of civilian populations, it can just as

well mean the targeting of softer economic centers which play a role as war-supporting industry or render meaningful in the after war recovery.⁶⁷

An important consequence of this differentiation relates to the force levels. As cities and general economic centers are mostly considered soft targets which are large and fixed, they do not require very sophisticated weapon systems and smaller arsenals are enough to hold them at risk. (Glaser [1992]: p. 74.) In contrast, these smaller arsenals are not enough to meet the criteria of counterforce missions which require high-confidence attacks against hardened military targets. War plans usually designate extremely high damage expectancy levels to these attacks therefore many targets have to be covered with multiple warheads. Counterforce strategies, thus, absorb considerably more nuclear forces than counter-value strategies which can be maintained with as few as a couple of hundreds of nuclear warheads.

Although in theory the differentiation between counterforce and counter-value seems to be clear, the practice so far has suggested otherwise. Throughout the history of the Cold War, U.S. targeting policy applied a mix of counterforce and counter-value strategies, with a shifting focus between the different target categories.

In the late 1940s, the focus of U.S. targeting policy was mostly on softer targets, which are closer to the definition of counter-value. As a result of the limited availability of nuclear weapons (and the lack of Soviet nuclear forces until 1949), the first nuclear war plans primarily targeted Soviet cities (BROILER (1947): 34 bombs on 24 cities; TROJAN (1949): 133 bombs on 70 cities; OFFTACKLE (1949): 220 bombs on 104 cities). (Pringle; Arkin [1983]: p. 62.) In 1950, the JCS finally designated a three-level target system, which remained in force until the first SIOP. This system meant the first shift to a more counterforce-centered strategy – the three categories were aimed at Soviet capabilities to launch a nuclear offensive; Soviet war-making capacities and targets to retard Soviet advances in Western Europe. The so called Emergency War Plans of the late Truman years and the Basic War Plans of the Eisenhower administration contained an “optimum mix” of the above mentioned categories. These

⁶⁷ This latter approach is reflected in the counter-value definition of the 2011 Nuclear Matters Handbook. Accordingly, “*counter-value targeting directs the destruction or neutralization of selected enemy military and military-related targets such as industries, resources, and or/institutions that contribute to the ability of the enemy to wage war.*” (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: p. 240.)

plans, however, were mostly built on one massive strike, the so called “Sunday punch” – hitting everything simultaneously and withholding nothing. The first SIOP reflected a very similar logic, dropping 1,685 weapons on the military-urban targets of the Sino-Soviet bloc in a massive retaliatory or preemptive strike. (Sagan [1987]: p. 29.)

After receiving their first SIOP briefing, Kennedy and McNamara decided to cut with the policy of massive retaliation and introduced the doctrine of flexible response. Under the tenure of flexible response, the defense intellectuals of RAND Corporation managed to promote the introduction of the counterforce – or the so called “no cities” – strategy as the new official U.S. doctrine. This was the first real attempt to avoid major civilian casualties in U.S. nuclear strategy but despite the best intentions of the administration, even this strategy left a small window open for counter-value targeting. The 1962 SIOP 63 designated five primary attack options: 1) strategic forces; 2) air-defense sites away from cities; 3) defense sites closer to cities; 4) command-control centers and 5) an all-out strike against Soviet cities. (Sagan [1987]: pp. 38-39.) In theory, the first four options would all meet the military’s official counterforce definition, but in practice options three and four would probably damage civilian populations, as well. Option three (defense sites closer to cities) is a counterforce target in purpose but as a result of its proximity to cities, it would most likely cause severe civilian losses as collateral damage. The fourth primary attack option (command-control centers) is an interesting example for the blurred lines between counterforce and counter-value targeting. Planning to hit leadership and command and control targets perfectly fits in the framework of counterforce targeting, as it meets the criteria to “*render impotent selected military capabilities.*” However, most of the leadership targets in the Sino-Soviet bloc were located in the heart of densely populated cities, therefore, hitting these targets would inevitably result in a mass destruction in the civilian population which is a more likely consequence of the counter-value strategies. Altogether, only the first two categories were real counterforce attack options and the remaining three categories risked killing masses of Sino-Soviet civilian populations, either on purpose (option five) or as collateral damage (options three and four).

In the end, McNamara’s official counterforce doctrine was very short-lived and it was soon replaced by the strategy of assured destruction which put a bigger emphasis on deterrence, instead of war fighting. The targeting policy of the new doctrine continued

to focus primarily on counterforce objectives but counter-value elements were never excluded either. McNamara's "400 megaton" strategy was based on a retaliatory strike that would destroy specified percentages of the Soviet civilian population as well.

Under Presidents Nixon and Ford, the doctrine of limited nuclear options aimed to provide real credibility to war fighting, thus it meant a big revival for the RAND Corporation's counterforce strategy. Based on the presidential guidance, the 1974 NUWEP-74 designated four attack options: 1) major attack options; 2) selected attack options; 3) limited nuclear options; and 4) regional nuclear options. The first two aimed to destroy selected economic and military resources, post-war recovery capabilities, leadership targets and nuclear as well as conventional capabilities – basically the classical target categories with a major focus on counterforce. The second two options were meant to tailor nuclear strikes to more limited, regional conflicts where vital U.S. interests were involved. Despite the dominance of the counterforce strategy, a major innovation of the Schlesinger doctrine was the inclusion of economic recovery targets, which was much closer to the group of counter-value elements. Adding this new category meant that many softer targets were matched with nuclear weapons of a huge destructive power, and a gap emerged between the increased number of potential targets and the number of available weapons.

The Carter years slightly deviated from these traditions and reorganized the mix of counterforce and counter-value elements. Carter's targeting policy put a huge emphasis on holding at risk the Soviets' ability to prevail in a nuclear war. Therefore, command and control targets gained primary importance and general war-supporting industrial facilities were prioritized against economic recovery targets. As a result of this shift, counterforce targeting became more dominant than before. Many nuclear weapons, previously tied down to hit economic recovery facilities were now reassigned to "pure counterforce" missions. As regards targeting principles, the Reagan administration was a clear continuation of the Carter years. Reagan's prevailing strategy meant that the U.S. held at risk "*the full range of enemy military capabilities that threaten the U.S. and its Allies*" – an explicit reinforcement of the primacy of counterforce targeting. (NSDD-13 [1981])

Despite the strategic redirection under the Bush administration, NSDD-13 remained in force, which meant that the same guidance was applicable for the making of nuclear war

plans. The system, however, was rationalized according to the new circumstances and the PNIs implemented several major changes in U.S. nuclear forces. However, as the significant reductions in the force levels were followed by major cuts in the target lists, the remaining nuclear arsenal was still able to cover mostly the same target categories in a considerably smaller geographical scope, which shrank from the former Soviet Union to the Russian Federation.

Despite the fact that the number of nuclear weapons has been cut down to half since the end of the George H. W. Bush administration, the primacy of counterforce targeting has remained the guiding principle for U.S. operational policies and it is still characteristic of the most recent war plans of the Obama administration.

Scott Sagan argues that in general there were three main reasons why the U.S. decided to follow a counterforce strategy during the Cold War. In the 1960s, it “*was designed to limit damage to the United States in the event of a nuclear war, and U.S. war plans included specific preemptive options.*” (Sagan [1989]: p. 73.) The second reason was to enhance the credibility of extended deterrence towards the NATO allies. And finally, the strongest and newest reason was the Carter and Reagan administrations’ strategy to deny Soviet war aims. While many critics of counterforce claimed that this strategy reflected the adoption of a major first strike option, official declarations from the Reagan administration suggested that the military’s favored preemptive strike options from the 1960s had been abandoned by the second half of the 1980s and U.S. strategy had become purely defensive. Another critic of counterforce strategies claimed that counterforce raised crisis instability as its main emphasis on nuclear forces and leadership targets increased incentives for Moscow to act preemptively. In addition, both Thomas Schelling and James Schlesinger argued that counterforce matched such a robust destructive power to military targets that in a crisis situation it would have been impossible to differentiate between a limited retaliatory strike and an all-out nuclear war, thus escalation could not be controlled. (Kaplan [1991]: p. 365.) But in response to these fears, Sagan argued that creating a second-strike posture (with a force structure that enables differentiation between first-strike and second-strike capabilities), complemented with operational arms control measures would actually allow the U.S. to maintain both a robust deterrence posture and crisis stability. (Sagan [1989]: pp. 59-90.) The importance of arms control measures was also shared by Schelling, who argued that

counterforce strategy created mutual fears from a preemptive first strike but arms control negotiations provided a way out of this dilemma. (Schelling [1980]: pp. 251-254.)

Although Sagan saw a solution for the potential dangers of counterforce, others seem to be more pessimistic in this regard. Professor John D. Steinbruner for example argues that this strategy “*has the most doubtful legitimacy, the most questionable effectiveness, the fewest domestic advocates, and the greatest Soviet resistance.*” He goes further and claims that counterforce works against deterrence as a result of its focus on retaliation. (Steinbruner [1988]: pp. 4-5.)

Altogether, since the early 1950s, U.S. targeting policy has been primarily counterforce. In practice, however, it never existed in a pure sense – despite the fact that in U.S. war plans counterforce targets absorbed the majority of forces, counter-value elements have always been present. On the operational level, it is very difficult to differentiate counterforce targeting from counter-value, as the lines between these two strategies are frequently blurred. Therefore, the traditional characterization of U.S. nuclear policy as counterforce is mostly correct but in a way it is also simplistic and overlooks the fact that counter-value elements have always been parts of U.S. nuclear war plans. In essence, the ultimate logic of U.S. targeting policy has always been to hold those targets at risk, which the enemy values the most.

2.4 Strategic Stability

Unlike the terms “counterforce” and “counter-value” which were elaborated and clearly defined by the military, the concept of “strategic stability” is a theoretical abstraction and there is no universal definition for what it exactly means. This is the main reason why there are so many different understandings and different definitions of strategic stability, used widely in the academic discussions as well as in the official rhetoric of nuclear weapon states.

The roots of strategic stability go back to the early years of the Cold War and, based on a historical approach, Michael S. Gerson argues that strategic stability emphasized “*how changes in military technology and strategy encouraged a new way of thinking about*

the causes of war and the requirements of peace and security.” (Gerson [2013]: p. 2.) During the 1950s and 1960s the concept of strategic stability was gradually developed in the course of a lively debate between the government, the different branches of the military, the defense intellectuals and the rest of the academia. Although the word “stability” only appeared in the official debate during the late 1960s, its foundations were already laid down in the strategic concepts of the 1950s.

The two earliest pioneers of strategic studies were Bernard Brodie with his 1946 book, *‘The Absolute Weapon’* and William Borden with his *‘There Will Be No Time.’* While Brodie argued that a war in the nuclear age can be avoided by having an ability to “*retaliate in kind*” (thus deter the opponents from launching a first strike), Borden claimed that nuclear weapons would spread very quickly and a nuclear war seemed almost inevitable. Therefore, in Borden’s argument, the ultimate role of nuclear weapons was to provide a disarming first strike capability. Borden believed that the key to victory was not attacking cities or industrial facilities but targeting the enemy’s retaliatory capabilities in a surprise first attack (one of the earliest articulations of the first strike counterforce strategy). Brodie, in contrast, argued that under the circumstances of assured retaliatory capabilities, no victory was worth launching a surprise first attack. These two seminal works outlined what turned out to be the two central challenges of strategic stability as early as the late 1940s: the vulnerability of strategic forces to a surprise first strike versus the assured ability to survive a first strike and “*retaliate in kind.*” (Gerson [2013]: pp. 2-3.)

By the early 1950s, the U.S. had lost its nuclear monopoly and both superpowers were rapidly increasing their nuclear capabilities. As a result of these developments, the mutual fears of a first strike dominated the strategic discourse. One of the first articulations of these fears was the 1950 NSC-68 which claimed that initiating a surprise first strike could provide tremendous strategic advantages and the Soviet Union was moving towards that direction. (NSC-68 [1950]) These conclusions were also reinforced by a 1950 JCS study and fed into the paranoia of the highest political levels. Wohlstetter’s vulnerability study and the horrific scenarios of losing the majority of U.S. bombers on the ground in the event of a Soviet surprise attack only added to these fears. As a result of the notion of vulnerability, Wohlstetter came to the conclusion that deterrence was not automatic and the key to maintain the “*delicate balance of terror*”

was not parity in numbers but a capability to survive a first attack and have enough forces for a retaliatory strike. (Wohlstetter [1958]: pp. 10-16.)

A second consequence of vulnerability was the necessity to make U.S. forces more survivable. A physical solution for this problem was the development of early warning systems, the hardening and dispersal of bomber bases, and the development of an alternative force, the intercontinental ballistic missiles (all these recommendations were included in the 1955 Killian Report). In the meanwhile, a strategic solution was reducing SAC's reaction time by keeping the bombers on a continuous alert status and relying on a preemptive doctrine which would launch the aircrafts in response to the first signs of a surprise attack by the enemy (a very influential doctrine throughout the 1950s and 1960s). In addition to these physical and strategic measures, the 1957 Gaither Report raised another possibility, "*a continuing attempt to arrive at a dependable agreement on the limitation of armaments.*" (Quoted in Gerson [2013]: p. 21.) According to the Gaither Committee's conclusions, the United States and the Soviet Union should cooperate to address their mutual fears of a surprise first strike – this reflected an important evolutionary step in strategic thinking: stability was not a one-sided phenomenon, the U.S. was not able to maintain it by unilateral measures, mutual efforts were needed to preserve the balance. The last important development for the explicit formulation of strategic stability was the Navy's finite deterrence concept. According to their argument, invulnerability was the most important precondition of stability: acquiring survivable forces can diminish the constant pressure to strike first and would significantly calm down tensions between the U.S. and the Soviet Union.

These strategic considerations of the 1940s and 1950s made a major contribution to the concept of strategic stability. Vulnerability and fears of a surprise first attack, ultimately leading to arguments for more survivable forces and a dialogue between the two superpowers were all essential theoretical foundations. As the nuclear arsenals had significantly grown by the end of the decade and weapons systems became more sophisticated, more accurate and more survivable, Washington seemed to overstep the first "window of vulnerability" – i.e. the bomber gap. This was the time when Thomas Schelling appeared on the horizon with his RAND article on '*Surprise Attack and Disarmament.*' (Schelling [1959]) Schelling's theory on stability was strongly influenced by Wohlstetter's final paragraph in the '*Delicate Balance of Terror*' which

argued that if both the U.S. and the Soviet Union had the capability to destroy each other's retaliatory forces, it would result a highly unstable situation, while a protected retaliatory capability would actually stabilize their relationship and reduce the incentives to launch an attack. Schelling elaborated on this idea and claimed that "*the main incentive to initiate a total war with a surprise attack is the fear of being a poor second for not going first.*" (Schelling [1959]: pp. 413-414.) In addition, he argued that "*There is a difference between a balance of terror in which either side can obliterate the other, and one in which both sides can do it no matter who strikes first. It is not the "balance" – the sheer equality or symmetry in the situation – that constitutes mutual deterrence, it is the stability of the balance. The balance is stable only when neither side, in striking first, can destroy the other's ability to strike back.*" Schelling [1959]: pp. 414.) Altogether, Schelling claimed that stability⁶⁸ did not only mean that the U.S. had survivable capabilities for retaliation but the Soviet Union also had to possess such capabilities with a confidence in its own retaliatory forces. Based on this logic, Schelling designated "good" nuclear weapons, which can cause damages to the civilian population but are unable to hurt the enemy's strategic forces; and "bad" nuclear weapons which can provide a strategic advantage if launched first, thus upset the balance and create incentives for a first strike. In Schelling's stability concept, the mutual vulnerability of forces should be eliminated by arms control measures which limit the so called counterforce arsenals and reproduce mutual vulnerability on the level of the populations. This actually strengthened stability and lessened the dangers of a nuclear exchange by introducing serious moral constraints to initiate a war. This argument about the stabilizing effect of arms control measures was accepted on the highest political levels and it formulated the basic foundation of the SALT and START negotiations of the 1970s and 1980s.

Based on Schelling's stability concept, defense intellectuals identify several types of strategic stability: crisis stability, first strike stability, and arms race stability. In general terms, "*Crisis stability is the degree to which strategic force characteristics might, in a crisis situation, reduce incentives to initiate the use of nuclear weapons. Arms race stability involves the effect of planned deployments on the scope and pace of the arms race.*" (U.S. Congress, Office of Technology Assessment [1985]: p. 119.) And first

⁶⁸ According to Schelling himself, back in the 1960s, they did not really use the term strategic stability, instead they called it stability of deterrence. (Colby; Gerson [2013]: p. vii.)

strike stability is “*a condition that exists when neither superpower perceives the other as motivated by the posture of strategic forces to launch the first nuclear strike in a crisis.*” (Kent; Thaler [1989]: p. iii.) While first strike stability is based primarily on the force structures, the other two concepts are much broader. Both crisis stability and arms race stability depend on additional factors like psychological stress, the accuracy of intelligence information, assessments of the intent of the enemy, miscalculations and misperceptions. Therefore, first strike stability is part of both concepts. (Kent; Thaler [1989]: p. 2.)

Despite the end of the Cold War, strategic stability has not lost its importance. While early discussions during the Cold War mostly focused on what we call today crisis stability and first strike stability, the Obama administration seems to put more emphasis on a form of arms race stability. U.S. force planning considers all factors which might endanger stability but the primary driver of medium- and long-term force postures is to avoid setting off arms buildups in Russia and China, while it also maintains sufficient levels to deter and defeat these forces. The big question is how the administration can balance these seemingly contradictory interests. (Interview with Hans M. Kristensen [2014])

Another challenge for the current U.S. administration comes from the U.S. and Russian governments’ different interpretations of strategic stability. While the U.S. seems to apply a narrow approach to strategic stability, the Russian Federation uses a much broader understanding which has already interfered with several dimensions of the ongoing arms control negotiations.

In the 2010 Nuclear Posture Review report, the Obama administration used the concept of strategic stability as a central issue in U.S. nuclear policy vis-à-vis Russia and China. The term strategic stability appeared altogether 29 times, in reference to issues mostly related to nuclear weapons capabilities. In the U.S.-Russian bilateral relationship, strategic stability was associated with a continued dialogue between the two states to further reduce U.S.-Russian nuclear arsenals, to limit the role of nuclear weapons in the national security strategies, and to enhance transparency and confidence-building measures. (NPR [2010a])

Russia, on the other hand, seems to use the term strategic stability in a broader context, claiming that the question of ballistic missile defense, conventional prompt global strike, and the militarization of outer space all affect the strategic stability between Moscow and Washington. U.S. modernization efforts in these areas are seen as attempts to undermine the survivability of the Russian nuclear arsenal and steps to gain strategic advantage over Russia. Therefore, Moscow has been repeatedly arguing that any future arms control agreement should address all factors which affect strategic stability. (Denisov [2011])

Besides the scope of strategic stability, another striking difference between the current U.S. and Russian strategic cultures is their interpretation of the role of strategic parity. Strategic stability from a U.S. perspective is not necessarily dependent on strategic parity. As a result of its tremendous technological leverage, the U.S. could easily maintain strategic stability vis-à-vis Russia even if it had fewer deployed strategic nuclear weapons than its counterpart. Moscow, on the other hand, seems to make strategic stability dependent on the notion of strategic parity. (Lavrov [2011]) This different interpretation is another factor which will affect the next rounds of arms control negotiations between Washington and Moscow.

2. Hypotheses

The history of U.S. nuclear strategy was a constant search for credible nuclear doctrines which could deter the Soviet Union from engaging in any kind of aggression that could lead to a nuclear exchange between the United States and its Allies on the one side, and the Soviet Union with its satellite states on the other. Although the official policy declarations of the U.S. have gone through a long evolution, each administration emphasized the importance of flexible, limited and selective attack options which would give the President the necessary maneuvering capability in a crisis situation to choose the best possible solution. At the core of the U.S. approach was the preparation for the worst case scenarios and the assurance of survivability under any circumstances. Preparing for these worst case scenarios meant constant revisions on the political as well as on the operational levels of nuclear strategy.

The historical overview has already shown the shifting focuses of policy and planning during the Cold War period, the primary focus now is to show how these dynamics work under the Obama administration. With the visionary Prague speech, the President designated a very ambitious policy agenda but the implementation is still far from complete. In the declaratory policy, the emphasis on nuclear weapons has been clearly lessened, a new limited negative security assurance has been announced and the administration promised to reduce reliance on such Cold War relics as the launch under attack policy for example. These declarations suggest that a meaningful shift has been implemented on the policy level but it still needs to be seen what changes it will trigger on the operational level and how it will affect the prospects of further reductions with Russia. Moscow has never based its strategic assumptions on the declarations of U.S. Presidents, it has always carefully examined what changes those declarations produced in the actual war fighting capabilities of the U.S., and the Kremlin formulated its own nuclear policy according to those capabilities. As Walter Slocombe noted in 1981, *“What the Soviets judge we could do, not what we say we would do, has the strongest impact on deterrence.”* (Slocombe [1981]: p. 18.)

Therefore, the most important questions to be answered relate to the operational aspects of the current nuclear strategy. Unfortunately, in this area the Obama administration seems to lag behind its promises: the issue of reducing alert levels has been abandoned after the 2007-2008 campaign period and it did not even make it into the official policy agenda. Despite the declarations that the role of launch under attack is reduced, the capability itself is still maintained; targeting policy still relies on a prompt counterforce strategy; and damage expectancy levels are still much higher than necessary. As a result of the maintenance of many of these conservative elements on the operational level, the prospects of further deep force reductions are not too promising. Altogether, the Obama administration seems to fit well in the paradox Cold War tradition of a considerable divide between the declaratory policy and the operational level.

All these assumptions and conclusions lead to three main hypotheses:

H1: In the declaratory policy, the Obama administration has lessened the reliance on Cold War nuclear thinking.

H2: But on the operational level, it still retains key elements of Cold War nuclear thinking.

H3: Retaining key elements of Cold War nuclear thinking on the operational level has a negative effect on the prospects of further reductions.

Regarding the first hypothesis, having established what the author means under Cold War nuclear thinking on the different levels of nuclear strategy, the first task will be a primary source analysis to examine what aspects of the Obama administration's declaratory policy constitute a shift from Cold War traditions. As defined in the introduction, declaratory policy in this case includes speeches from the campaign and the presidential periods, as well as primary policy documents like for example the official campaign strategy from 2008, the nuclear agenda on the White House webpage, or the 2010 Nuclear Posture Review report. The term "lessened reliance" refers to concrete changes on the policy level, based on the examination of what has disappeared from the Cold War elements and what is still there.

In the case of the second and the third hypotheses, there is a causal connection between the two statements – the third hypothesis depends on the second one and it can only be proved if the second hypothesis is true. In order to defend these statements, the operational policies of the current administration will be compared with the analytical framework on Cold War policies. Presuming that the nature of strategic planning will show major overlaps between the two periods, a final task will be to show the consequences of this continuity. The third hypothesis intends to link the different levels of nuclear policy and show how planning affects force structure requirements.

In this regard, the dissertation uses a broad interpretation of the term "reductions." First, it includes reductions in the overall number of nuclear warheads or delivery vehicles. And second, it also includes reductions in the type of nuclear weapons – reducing the number of the currently deployed seven warhead types or moving from a triad to a dyad in the deliveries would all constitute a reduction. Reducing the overall number and the diversity of weapons does not necessarily come together – one can reduce the number of warheads but still retain all seven types, and similarly, the number of deliveries can be reduced without phasing out one leg of the triad. However, in the case of the Obama administration, if the number of warhead types is reduced, the overall number of

weapons would also be reduced, as the administration took a pledge not to develop new nuclear warheads. (NPR [2010a]: p. 39.)

Regarding the term “negative effect,” it also has two dimensions. From a quantitative point of view, in several aspects, the requirements of the operational level can be reflected in concrete numbers – after all, this is how strategic planners outline the force requirements which are needed to execute the war plans. During the process of plan production, specific targets are identified, calculations are made on the sortie probability of arrival, the desired ground zero aimpoints are chosen, weapons are allocated to individual sorties, and calculations are made on the probability of damage. In the end, all these factors add up to a requirement for a certain number and type of nuclear weapons. (Kristensen [2010]: p. 6.) These data, however, are not available for the public (which makes it almost impossible to reproduce these calculations and apply a quantitative approach to show the exact force requirements of certain operational elements). Therefore, the emphasis will be on the qualitative aspect of the relationship between the operational level and the force structure. A good example for that is the case of the launch under attack policy. The decision of the Obama administration that it intends to maintain the capability to launch under attack means that the military still has to provide a prompt launch capability, which in practice means an ICBM force on a high alert status.

As it was mentioned before, the prospects of nuclear disarmament depend on many issues, starting from the Russian will to cooperate, to the political intentions of Congress, but having favorable conditions in these two fields would still not mean that reductions can be implemented. Without changing the primary operational drivers of weapons requirements, the current force structure will mostly remain intact.

II. Nuclear Strategy under the Obama Administration

1. The Roots of President Obama's Nuclear Strategy – From College Paper to Official Campaign Strategy

President Obama's commitment to global zero goes back to the early 1980s. As a college student in March, 1983 he published a piece in Columbia University's *Sundial* journal. In his '*Breaking the War Mentality*' article, he argued that American militarism and the Reagan administration's hard rhetoric had already frozen the arms control talks in Geneva, and it might lead to a "*dangerous rift*" between the U.S. and its Western allies which would play "*directly into the Russians' hands.*" He criticized "*academic discussions of first versus second strike capabilities*" which in his opinion only "*suit the military-industrial interests, as they continue adding to their billion dollar erector sets.*" He welcomed Mark Bigelow's commitment to a "*Test Ban Treaty as a powerful first step towards a nuclear free world,*" praised student movements for their efforts to establish a "*decent world*" and closed his thoughts with "*an invitation to work towards a peace that is genuine, lasting and non-nuclear.*" (Obama [1983])

These ideas were in the forefront of his agenda under his short term as a U.S. senator between 2005 and 2008. During these years, preventing the spread of nuclear weapons was a top priority for Obama. He worked with Senator Richard Lugar to conclude a law to secure nuclear weapons and materials around the world, and he worked with Senator Chuck Hagel to pass a law to prevent nuclear terrorism and to promote global nuclear disarmament as well as nuclear non-proliferation. (Obama [2007])

In addition to his own deep belief in nuclear disarmament and in global zero, two writings had a significant influence on his campaign strategy and later presidential agenda: the 2007 and 2008 Wall Street Journal (WSJ) op-eds by the so called "four horsemen" and the 2009 Final Report of the Congressional Commission on the Strategic Posture of the United States.

In January, 2007 former Secretaries of State George P. Shultz and Henry A. Kissinger, former Secretary of Defense William J. Perry and former Chairman of the Senate Armed Services Committee Sam Nunn published their first op-ed in the Wall Street Journal, under the title "*A World Free of Nuclear Weapons.*" In their article, the four

horsemen argued that “*mutual Soviet-American deterrence*” became “*obsolete*” with the end of the Cold War and relying on nuclear weapons “*is becoming increasingly hazardous and decreasingly effective.*” With the rising threat of nuclear terrorism, North Korea’s developing nuclear program and Iran’s refusal to halt its uranium enrichment activities, “*the world is now on the precipice of a new and dangerous nuclear era.*” In order to create the conditions of a safer international security environment, the four horsemen proposed a series of steps, most of which were later incorporated in the Obama administration’s nuclear strategy, as well. These steps were the following: change nuclear postures, reduce the size of forces, eliminate short-range nuclear weapons, ratify the Comprehensive Nuclear-Test-Ban Treaty (CTBT), secure nuclear weapons and weapons-usable materials, get control of the uranium enrichment process, halt the production of weapons-usable fissile materials, phase out highly enriched uranium (HEU) from civilian nuclear facilities and resolve regional confrontations. (Shultz; Perry; Kissinger; Nunn [2007])

In their next WSJ op-ed – “*Toward a Nuclear-Free World*” – the four horsemen warned that the “*spread of nuclear weapons, nuclear know-how and nuclear material has brought us to a nuclear tipping point*” and concrete near-term steps are needed to address these dangers: extend key provisions of the 1991 START Treaty, increase warning and decision times for the launch of nuclear weapons systems, discard operational plans for massive attacks, develop cooperative multilateral ballistic-missile defense and early warning systems, set high standards for the security of nuclear weapons and materials, start a dialogue on the consolidation of forward deployed nuclear weapons, strengthen monitoring under the NPT, and bring the CTBT into effect. In parallel, the U.S.-Russia dialogue should be extended to a multilateral level, the risks of the nuclear fuel cycle should be addressed and further substantial reductions should be implemented in the nuclear forces of the U.S. and Russia. (Shultz; Perry; Kissinger; Nunn [2008])

In 2011, the four horsemen issued a new WSJ article on “*Deterrence in the Age of Nuclear Proliferation.*” The authors explained why deterrence based on nuclear weapons is inadequate in the current security environment and what steps need to be taken to move “*from mutual assured destruction toward a new and more stable form of deterrence with decreasing nuclear risks and an increasing measure of assured security*”

for all nations.” (Shultz; Perry; Kissinger; Nunn [2011]) These articles all together, reinvigorated the academic as well as the political debate about the vision of a world free of nuclear weapons and they had an important effect on the incoming Obama administration’s campaign strategy and subsequent nuclear doctrine.

Parallel to the efforts of the four horsemen, another influential write-up was a bipartisan commission report on U.S. nuclear posture. In 2008, Congress established a commission to review the strategic posture of the United States and to make recommendations for the future. Congress designated a 12-person bipartisan group for the task – the Chairman of the commission was William J. Perry and the Vice-Chairman James R. Schlesinger.⁶⁹ The group published its final report in May, 2009 with almost a 100 findings and recommendations. (Congressional Commission on the Strategic Posture of the United States [2009]) The main focus areas were:

- The security environment: since the end of the Cold War, it has generally changed for the better.
- The U.S. nuclear posture: “*the principle functions of the U.S. nuclear posture are to create the conditions in which nuclear weapons are never used;*” assure allies; discourage competition; and encourage strategic cooperation. Sizing U.S. forces is still overwhelmingly dependent on Russia; new challenges have emerged to strategic stability (e.g.: imbalance in non-strategic nuclear weapons); nuclear posture should be able to address a broad set of U.S. objectives; and maintaining the triad is necessary for the immediate future.
- Missile defense: plays a useful role in supporting the deterrence posture; effective defenses are valuable against regional contingencies and limited long-range threats; but these developments should not trigger counter-actions by Russia and China.
- Declaratory policy: the primary goal is to signal U.S. intent to allies and enemies; calculated ambiguity is still important but it must be clear enough to deter potential adversaries; the use of nuclear weapons is only considered for the protection of the U.S. and its allies and only under “*extreme circumstances.*”
- The nuclear weapons stockpile: a safe, secure, and reliable arsenal is needed; the Stockpile Stewardship Program (SSP)⁷⁰ and the Life Extension Programs

⁶⁹ Besides Perry and Schlesinger, the remaining ten members of the commission were: Harry Cartland, John Foster, John Glenn, Morton Halperin, Lee Hamilton, Fred Iklé, Keith Payne, Bruce Tarter, Ellen Williams and James Woolsey.

⁷⁰ As most U.S. nuclear weapons were produced between 30-40 years ago and no new nuclear weapons have been produced since the end of the Cold War, the U.S. had to invest in the nuclear security

(LEP)⁷¹ have been successful in refurbishing and modernizing the U.S. nuclear arsenal; clarify what makes a weapon “new” and what does not; modernization should proceed without a political difficulty; as a matter of policy, the U.S. does not produce fissile materials and does not conduct nuclear explosive tests; and the U.S. does not seek new weapons with new military characteristics but advanced safety, security and reliability should be pursued.

- The nuclear weapons complex: the physical infrastructure needs transformation; the NNSA needs funding for its modernization plans; the intellectual infrastructure also needs to be reinvigorated; interagency cooperation between the nuclear weapons laboratories and the different departments has to be strengthened; the autonomy of the NNSA needs to be enhanced.
- Arms control: follow a modest step-by-step approach with Russia; secure a successor treaty to START I; broaden the scope of negotiations and include non-strategic nuclear weapons; include China and U.S. allies in the process.
- Non-proliferation: the U.S. should reenergize the non-proliferation regime with a strong leadership; broaden the agenda to strengthen the international treaty system; and play a leadership role in the 2010 NPT Review Conference.
- The CTBT: no agreement in the commission about the ratification of the CTBT; but support to a comprehensive net assessment of the benefits, costs and risks of the treaty to update the political arguments.
- Prevention and protection: the overall strategy has to be supplemented with steps to prevent further proliferation and nuclear terrorism; support to the Proliferation Security Initiative (PSI)⁷² and the Global Initiative to Combat Nuclear Terrorism

enterprise and establish a management program which is able to maintain the “*safety, security and effectiveness of the nuclear deterrent. [...] Within the Nuclear Security Enterprise, the central mission which includes maintaining the active stockpile, Life Extension Programs (LEPs) and Weapons Dismantlement, is referred to as the Stockpile Stewardship and Management Program.*” (NNSA [2014b]) It was initiated in the mid-1990s and according to the NNSA’s official website, the “*Stockpile Stewardship Program is a robust program of scientific inquiry used to sustain and assess the nuclear weapons stockpile without the use of underground nuclear tests. The experiments carried out within the program are used in combination with complex computational models and NNSA’s Advanced Simulation and Computing (ASC) Program to assess the safety, security and effectiveness of the stockpile. An extraordinary set of science, technology and engineering (ST&E) facilities have been established in support of the stockpile stewardship program.*” (NNSA [2014c])

⁷¹ “The term “life extension program (LEP)” means a program to repair/replace components of nuclear weapons to ensure the ability to meet military requirements. By extending the “life,” or time that a weapon can safely and reliably remain in the stockpile without having to be replaced or removed, National Nuclear Security Administration (NNSA) is able to maintain a credible nuclear deterrent without producing new weapons or conducting new underground nuclear tests.” (NNSA [2014a])

⁷² The Proliferation Security Initiative was launched on May 31, 2003 and it is a “*global effort that aims to stop trafficking of weapons of mass destruction (WMD), their delivery systems, and related materials to and from states and non-state actors of proliferation concern.*” (U.S. Department of State [2003])

(GICNT);⁷³ reduce the risks of nuclear smuggling; and reduce vulnerability to electromagnetic pulse weapons.

- Visions of the future: commission members had disagreements about the vision of global zero; but they were hopeful about near-term progress in reducing nuclear dangers. In order to advance this goal, pragmatic steps are outlined, “grounded in the strategic tradition of the United States in balancing deterrence and other means, including principally arms control and nonproliferation, to reduce nuclear dangers.” Reaffirm the preservation of nuclear non-use which strongly supports U.S. interests.

The major findings and recommendations of this commission study were channeled in the Obama administration’s 2009-2010 Nuclear Posture Review process and the two documents reflect several overlaps regarding the fundamental role and mission of nuclear weapons.

During the 2007-2008 campaign, presidential candidate Barack Obama repeatedly affirmed his commitment to the goal of a world free of nuclear weapons and he precisely outlined the main elements of his future nuclear strategy. The details of this strategy (the related campaign speeches, fact sheets, policy papers) were worked out by a group of outside experts, who were tasked to turn the visions of the WSJ op-eds into a concrete policy agenda. The group was led by Ivo Daalder and Brooke Anderson. Besides Daalder and Anderson, the group included former officials, think tank experts and academics, such as Graham Allison, Robert Gallucci, Matthew Bunn, Jeffrey Lewis, Jan Lodol, John Holum, Robert Einhorn, Daniel Poneman, Michael Nacht, Laura Holgate, Jon Wolfsthal, and experts who were not officially associated with the campaign but gave their advice from the outside: Ashton Carter, Rose Gottemoeller, Michael McFaul and Gary Samore. (Samore [2013])

Senator Obama announced his candidacy for President in February, 2007 and after winning the primaries, he became the official candidate of the Democratic Party in August, 2008. His first major foreign policy speech took place at DePaul University in Chicago, in October, 2007. In his speech, Obama announced that he would continue his

⁷³ The Global Initiative to Combat Nuclear Terrorism was announced on July 16, 2006 by President George W. Bush and President Vladimir Putin. It is “an international partnership of 85 nations and four official observers who are committed to working individually and collectively to implement a set of shared nuclear security principles. The mission of the GICNT is to strengthen global capacity to prevent, detect, and respond to nuclear terrorism by conducting multilateral activities that strengthen the plans, policies, procedures, and interoperability of partner nations.” (U.S. Department of State [2006])

efforts to secure nuclear weapons and materials from terrorist threats. He pledged to change the U.S. nuclear deterrent posture (which was still focused on deterring the former Soviet Union) and to set it right according to the new threats of a multipolar environment with more nuclear-armed states; and he stated that as President he would seek “*a world in which there are no nuclear weapons.*” At the same time, he also reassured conservative circles that this would not be a unilateral path, and “*as long as nuclear weapons exist, we’ll retain a strong nuclear deterrent.*” (Obama [2007]) Regarding the concrete program areas of his nuclear agenda, Obama pledged to take ballistic missiles off hair trigger alert; dramatically reduce stockpiles of nuclear weapons and materials; pursue a global ban on the production of fissile materials; expand the U.S.-Russian ban on intermediate-range missiles to global; and strengthen the global nuclear non-proliferation regime.

The next major campaign declaration on nuclear weapons was the January, 2008 official “*Statement by Senator Obama Calling for a World Without Nuclear Weapons.*” Obama welcomed the renewed efforts of the four horsemen to the establishment of a world free of nuclear weapons. He repeated most of the elements of the 2007 DePaul University speech but he also included a new commitment: the pledge to stop the development of new nuclear weapons. (Obama [2008c]) In his July, 2008 remarks on Iraq and Afghanistan, Obama devoted again several paragraphs to the repetition of the main focus areas of his nuclear strategy but this time he did not add any new elements to the already announced program. (Obama [2008b])

All these speeches culminated in a detailed policy paper, “*Obama’s New Plan to Confront 21st Century Threats,*” announced on July 16, 2008. (Obama [2008a]) This strategy organized the previously announced elements of Obama’s nuclear agenda into a structured format and added several – more specific – components to the official campaign strategy. In the document, four main areas were identified: 1) reduce the danger of nuclear terrorism, 2) prevent the spread of nuclear weapons capabilities, 3) strengthen the non-proliferation regime, and 4) organize the U.S. government for success. Under these areas, many new elements appeared: phase out HEU from the civilian sector; strengthen policing and interdiction efforts by institutionalizing the PSI; build state capacity to prevent theft, diversion, or spread of nuclear materials; convene a summit on preventing nuclear terrorism; strengthen the International Atomic Energy

Agency (IAEA); prevent nuclear fuel from becoming nuclear bombs; appoint a White House coordinator for nuclear security; and strengthen nuclear risk reduction work at the Defense, State, and Energy Departments. In the meanwhile, it meant a slight difference that the expansion of the U.S.-Russian ban on intermediate-range missiles to the global level was not specifically mentioned.

After Senator Obama won the elections on November 4, 2008, this comprehensive strategy became the backbone of the administration's official nuclear agenda. During the first few months of the new government, the exact same set of principles were uploaded to the White House webpage but as the text of the April, 2009 Prague address was finalized some of the elements suddenly disappeared and the agenda was updated.

Table 3. Senator Obama's Campaign Strategy

Senator Obama's Campaign Strategy (2008)	
Elements of the Nuclear Agenda	Announcement
<u>Reduce the Danger of Nuclear Terrorism:</u>	
secure nuclear weapons materials in four years	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
phase out HEU from the civil sector	Obama's New Plan to Confront... (2008)
strengthen policing and interdiction efforts (institutionalize the PSI)	Obama's New Plan to Confront... (2008)
build state capacity to prevent theft, diversion, or spread of nuclear materials	Obama's New Plan to Confront... (2008)
convene a summit on preventing nuclear terrorism	Obama's New Plan to Confront... (2008)
<u>Prevent the Spread of Nuclear Weapons Capabilities:</u>	
eliminate Iran's and North Korea's nuclear weapons programs through tough, direct diplomacy	DePaul University (2007) Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
strengthen the IAEA	Obama's New Plan to Confront... (2008)
control fissile materials by a global ban on the production of fissile materials	DePaul University (2007) Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
prevent nuclear fuel from becoming nuclear bombs	Obama's New Plan to Confront... (2008)
<u>Strengthen the Nonproliferation Regime:</u>	
set the goal of a nuclear-free world	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)

change U.S. nuclear deterrent posture, reduce the role of nuclear weapons	DePaul University (2007) Obama's New Plan to Confront... (2008)
retain a strong nuclear deterrent by a safe, secure, and reliable nuclear arsenal	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
stop the development of new nuclear weapons	January, 2008 Statement Obama's New Plan to Confront... (2008)
seek real, verifiable reductions in nuclear stockpiles (deployed, non-deployed; strategic, non-strategic; high level dialogue with the P5)	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
work with Russia to increase warning and decision time: take ballistic missiles off hair trigger alert	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
secure CTBT ratification	Obama's New Plan to Confront... (2008)
strengthen the global nuclear non-proliferation regime, achieve successful NPT RevCon in 2010	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008) Obama's New Plan to Confront... (2008)
<u>Organize the U.S. Government for success:</u>	
appoint a White House coordinator for nuclear security	Obama's New Plan to Confront... (2008)
strengthen nuclear risk reduction work at Defense, State, and Energy Departments	Obama's New Plan to Confront... (2008)
<u>Additional measures which were not specifically included in the 2008 official campaign strategy:</u>	
expand the U.S.-Russian ban on intermediate-range missiles to global	DePaul University (2007) January, 2008 Statement Remarks on Iraq and Afghanistan (2008)

2. The Review of U.S. Nuclear Guidance

The Obama administration's Nuclear Posture Review was mandated by Congress in §1070 of the FY 2008 National Defense Authorization Act (NDAA). Section 1070, titled "*Revised Nuclear Posture Review*" declared that "*In order to clarify U.S. nuclear deterrence policy and strategy for the near term, the secretary of defense shall conduct a comprehensive review of the nuclear posture of the United States for the next 5 to 10 years.*" According to the authorization, the review should include the role of nuclear forces; policy requirements and objectives to maintain a safe, reliable, and credible deterrence posture; the relationship of the deterrence policy, the targeting strategy, and arms control objectives; the role of missile defense and conventional forces in determining the role and size of the nuclear arsenal; the size and composition of the delivery capabilities; the nuclear weapons complex; and finally the active and inactive nuclear weapons stockpile necessary to meet the requirements of the national and

military strategy. The Secretary of Defense was designated to submit to Congress a report on the Nuclear Posture Review and it should “*be used as a basis for establishing future U.S. arms control objectives and negotiating positions.*” (NDAA for FY 2008 [2007]: p. 327.)

In general, after the NPR is finished the review of nuclear guidance goes through a similar process as during the Cold War: the President, the Secretary of Defense and the Joint Chiefs of Staff issue their own guidance documents and STRATCOM modifies the war plans according to the given guidance. Although SAC was replaced by STRATCOM in 1992 and SIOP was renamed to OPLAN in 2003, “*the process for developing nuclear targeting and employment guidance [...] has remained virtually unchanged since 1991*” – claims a 2012 Government Accountability Office (GAO) report on nuclear weapons targeting. (GAO [2012]: p. 5.) The process in general consists of four main steps by the President and the NSC, the DoD, the JCS and STRATCOM. “*The President and the National Security Council define the fundamental role of nuclear weapons, deterrence strategy, and basic employment strategy. The Secretary of Defense amplifies presidential guidance for DoD describing how the strategy should be carried out. The Chairman of the Joint Chiefs of Staff refines and implements guidance by adding detail required for military planners. U.S. Strategic Command produces the Nuclear Force Employment Plan detailing options for the employment of nuclear weapons.*” (GAO [2012]: p. 5., Figure 1.)

The strategic documents issued along these steps are traditionally classified, although the Obama administration published an unprecedentedly long report of its 2010 NPR and DoD also submitted a nine pages long public summary for Congress on the presidential guidance document.⁷⁴ As mentioned before, the Nuclear Posture Review is

⁷⁴ Despite the administration’s commitment to transparency, the core documents of nuclear strategy are still highly classified. At a Congressional hearing before the Subcommittee on Strategic Forces of the Committee on Armed Services in the House of Representatives on November 2, 2011, Dr. James N. Miller, Principal Deputy Under Secretary of Defense for Policy at the U.S. Department of Defense testified that within the executive branch only “*a very small group of personnel [...] have access to the nuclear employment guidance issued by the President, the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the Commander, U.S. Strategic Command.*” Within the DoD, “*fewer than twenty copies of the President’s guidance are distributed in the Office of the Secretary of Defense, the Joint Staff, and U.S. Strategic Command. Fewer than 200 copies of the most recent amplifying guidance issued by the Secretary of Defense were produced, and distribution was limited primarily to Office of the Secretary of Defense, the Joint Staff, U.S. Strategic Command, and other Combatant Commanders. The Chairman’s guidance is distributed more widely within DOD (fewer than 200 copies), as the document assigns responsibilities to several defense agencies and the intelligence community. Commander, U.S. Strategic Command must issue guidance to his planners and forces in the field, so distribution is somewhat wider*”

a general overview of the role and mission of nuclear weapons, and it “*establishes U.S. nuclear policy, strategy, capabilities and force posture for the next five to ten years.*” (U.S. Department of Defense [2010a]) Although the NPR touches upon a wide range of issues from declaratory policy and force structure to operational planning, the next four steps are the key phases of the strategic planning process: the presidential, the OSD, the JCS and the STRATCOM guidance documents. (Interviews with James E. Cartwright [2014], Franklin C. Miller [2014] and Amy F. Woolf [2014])

In the framework of the NPR follow-on process, parallel steps take place. On the one hand, the DoD begins to implement the specific decisions of the NPR, and designates concrete implementation timelines to these objectives (in this case, these measures include, for example, the downloading of ICBMs or the retirement of the Tomahawk nuclear-equipped sea-launched cruise missiles (TLAM-N). (Interviews with Hans M. Kristensen [2013c], Bradley H. Roberts [2014] and James N. Miller [2014])

Parallel to these steps, a Nuclear Posture Review Implementation Study (NPR IS) is prepared. It usually takes 90 days to complete the NPR IS but this time it took almost two years (to announce the results)⁷⁵ – as Madelyn R. Creedon, Assistant Secretary of Defense for Global Strategic Affairs called it, “*the so much longer than 90-days review.*” (Interview with Madelyn R. Creedon [2014]) In the summer of 2011 the DoD was tasked to prepare this broader study intended to examine strategy and targeting requirements to update White House nuclear employment guidance, including assessments on the ideal number of nuclear weapons and what kind of force reductions are possible. Based on this study, the Obama administration issued its nuclear weapons employment strategy (Presidential Policy Directive – PPD-24) in June, 2013.

The presidential employment guidance (or as it is officially called, the ‘*Nuclear Employment Strategy of the United States*’) describes the administration’s priorities on what the DoD’s new nuclear weapons employment policy (NUWEP) should look like.

because of that need.” Regarding the legislative branch, Dr. Miller said that there is a long debate about their access to these sensitive materials and there are a few instances when access is provided to members of Congress and senior staff but these cases are “*quite limited*” and they are “*under restrictive terms.*” (Congressional Hearing [2011])

⁷⁵ The NPR IS was reported to be finished by the summer of 2012 but certain elements of the study were leaked and some press releases falsely suggested that the administration considered the option of unilateral cuts to as low as 300 deployed strategic nuclear warheads. As the presidential campaign turned into its final months, the administration decided that it was not the right time to announce the results of the review, and the document was put on the shelf for a while. (Blechman [2012])

In general, this directive identifies potential adversaries, target categories, and scenarios for which preplanned nuclear options should be developed. (GAO [2012]: p. 5.)

After the President signs his guidance document, the OSD prepares the so called Guidance for the Employment of the Force (GEF). NUWEP is an appendix to the GEF which “*provides general and country-specific planning scenarios and objectives*” as well as “*policy guidance for target selection and for the development of different types of attack options.*” (GAO [2012]: p. 6.) In this case, attack options include Emergency Response Options (ERO), Selective Attack Options (SAO), Basic Attack Options (BAO), and Directed/Adaptive Planning Capability options. (Carpenter [2010]) According to issue experts Hans M. Kristensen and Robert S. Norris, these attack options “*range in size from employment of hundreds of nuclear warheads in a single strike against a broad section of an adversary’s targets to the use of a few warheads against a few targets in a limited strike.*” (Kristensen; Norris [2011]) In addition, the OSD guidance also describes the necessary readiness level of forces and the required portions of operationally deployed and responsive forces. Based on the PPD-24, the OSD is presumed to have prepared its new employment guidance (NUWEP-13) sometime in 2013.

The next step in the “bureaucratic labyrinth” is the Nuclear Supplement to the Joint Strategic Capabilities Plan (JSCP-N), prepared by the Joint Chiefs of Staff. This document contains detailed “*targeting constraints and restraints,*”⁷⁶ it designates damage criteria, and “*identifies the force generation timelines.*” (GAO [2012]: p. 6.) This is a significantly longer document than the OSD guidance (in 2001 experts from the academia estimated that the current guidance was approximately 250 pages long). In general, it “*directs and initiates the deliberate joint operations planning process for development of operational plans by assigning planning tasks and nuclear strike forces to the combatant commanders tasked with nuclear operations.*” (McKinzie; Cochran; Norris; Arkin [2001]: p. 9. and Kristensen; Norris [2011])

The JCS then send the JSCP-N to STRATCOM where these guidance documents are transformed into actual war plans. The first step at STRATCOM is the so called

⁷⁶ “A ‘constraint’ is an operational limitation placed on a command by a higher commander that dictates an action, whereas a ‘restraint’ is an operational limitation that prohibits an action.” (GAO [2012]: p. 6.)

Command Guidance (CG) which guides the modifications of the nuclear war plans by the Joint Functional Component Command for Global Strike (JFCC-GS – previously known as JSTPS). The Component Command is responsible for designing, maintaining and executing the war plans. In 2003, SIOP was renamed Operations Plan (OPLAN) to better reflect that this is not a single plan but a family of plans and it does not only contain nuclear components. (Kristensen; Norris [2011]) The current Operations Plan is the “USSTRATCOM OPLAN 8010-12 Strategic Deterrence and Force Employment” which was adopted in July, 2012.⁷⁷ This is the first war plan update since the 2010 NPR but as the presidential guidance and the subsequent NUWEP were only issued in 2013, this probably does not contain changes which were triggered by the review process. (Kristensen [2013c])

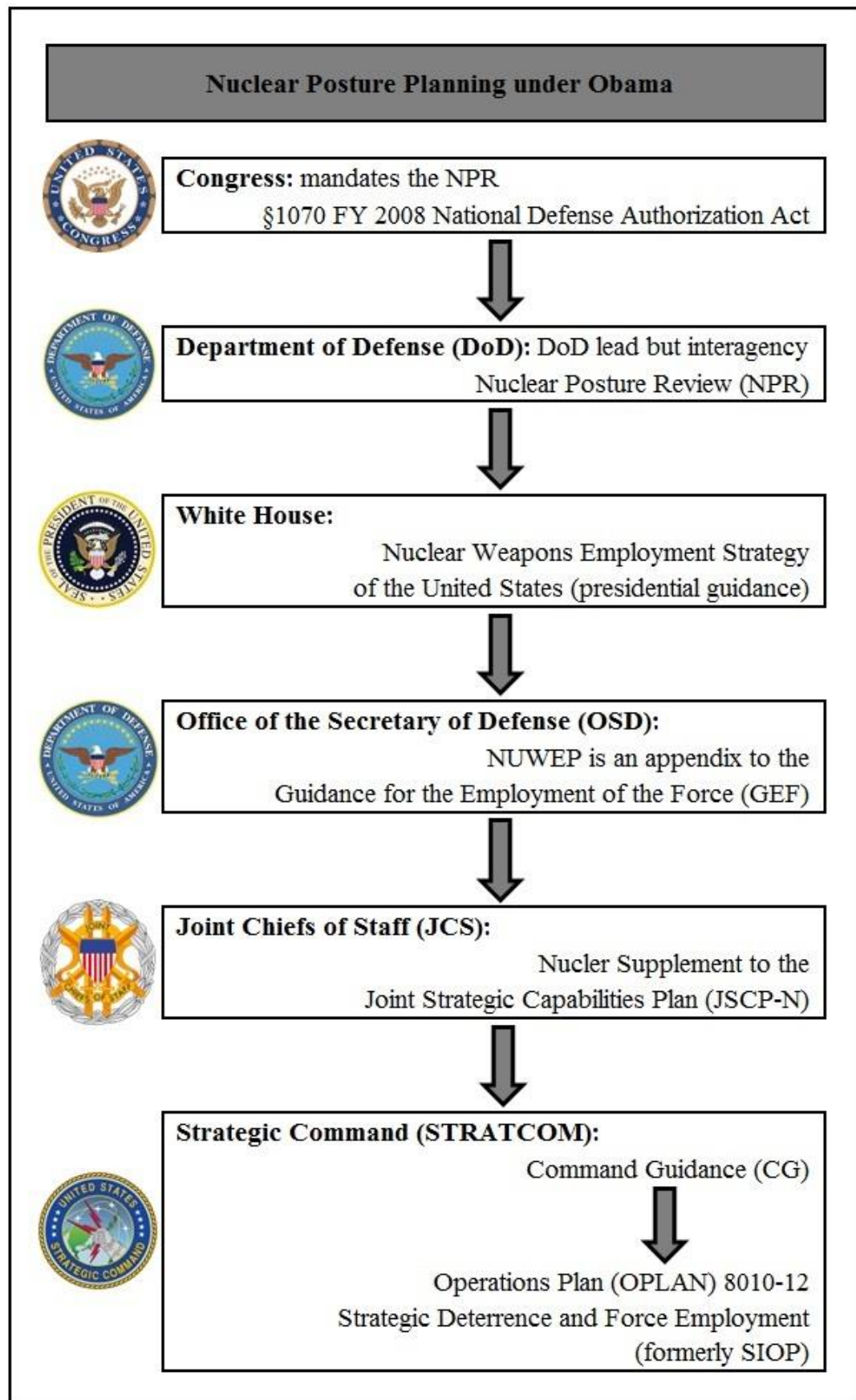
Despite the fact that the different stages follow each other in a subsequent order, the process is not as linear as the above described phases suggest. Although a lot depends on the personalities and on the extent to which the civilians are determined to engage in the process of developing employment guidance and targeting, Franklin C. Miller argues that there has been a significant development since the early 1980s and by now a partnership has evolved between the OSD, the JCS and STRATCOM. (Interview with Franklin C. Miller [2014]) The different phases overlap, there is cooperation within the Department of Defense in the development of the guidance documents, and both civilians and people in uniform have the authority to provide feedback on the war plans. In the case of the OSD, the Under Secretary of Defense for Policy reviews the updated war plans and makes sure that the President’s and Secretary of Defense’s guidance was implemented on the operational level. The Secretary of Defense and the President are typically briefed on the revised plans, and provide additional direction as appropriate. After the review process is finished, and the OPLAN is updated, the Secretary of Defense approves the new strategic war plan. (Interviews with James E. Cartwright [2014] and James N. Miller [2014])

Altogether, as a result of the Obama administration’s review process, a broad set of directives and guidance documents are rewritten. The success of the review, however, mostly depends on the President’s ability to make sure that his principles are interpreted

⁷⁷ Based on the new presidential guidance and the 2013 NUWEP, a new/updated nuclear war plan will probably enter into effect in 2014. Former officials from the administration and the DoD estimated that based on a new presidential guidance, a major update to the war plans generally takes 12-18 months. (Interviews with Jon B. Wolfsthal [2014] and Franklin C. Miller [2014])

correctly and implemented by the following guidance documents. This is not an easy task as the review will definitely trigger some debates between the different departments, agencies and individuals who might not share the President's vision on the role and mission of nuclear weapons. Therefore, a successful review definitely requires strong leadership and strict oversight by the civilians, especially as the process sometimes allows a big maneuvering capability at each step of the review. (Kristensen; Norris [2011]) As STRATCOM Commander Admiral James Ellis said in 2004, “[*The president's direction to me was less than two pages; the Joint Staff's explanation of what the president really meant to say was twenty-six pages.*” (Quoted in Kristensen; Norris [2011]) Each guidance document is reinterpreted by the following level and by the time it gets down to the war plans, the main content might be lost (until the 1980s this happened several times). This significant amount of interpretation in the system does not necessarily help – as Admiral Gerald E. Miller, former deputy director of the JSTPS summarized it, “[*It is in the implementation that the true strategy evolves, regardless of what is generated in the political and policy-meeting rooms of any Administration.*” (Miller [1982])

Figure 2. Nuclear Posture Planning under Obama



3. Declaratory Policy

3.1 The Prague Address

After President Obama took office in January, 2009, the campaign strategy was uploaded to the White House webpage as the official nuclear agenda of the administration. But as the text of the April Prague address was finalized, this strategy was revised and some elements disappeared.

The Prague address was drafted by President Obama's speechwriter Benjamin Rhodes, based on advice from the State Department, the DoD, the DoE and the JCS. In addition, the President was also deeply engaged in the process and put his own touches on the text⁷⁸ which guaranteed that most of the campaign elements made it to the official presidential agenda. (Samore [2013]) Regarding the President's advisors, their primary role was to make the speech realistic, and shape it in a way that its promises could be implemented without upsetting the closest allies of Washington – the ones with nuclear weapons (especially France), and the ones without nuclear weapons (especially in Asia). (Interview with Gary Samore [2014])

The President delivered his Prague address on April 5, 2009. (Obama [2009]) The speech laid out a detailed nuclear agenda for the next four years which was reflected in the updated White House webpage as well. It designated three main goals, and several concrete steps:

- 1) Work towards a world without nuclear weapons (but as long as nuclear weapons exist, maintain a safe, secure and effective arsenal):
 - reduce the role of nuclear weapons in U.S. national security strategy, and urge others to do the same;
 - reduce the nuclear warheads and stockpiles, negotiate a New START Treaty with Moscow, which will set the stage for further cuts with all nuclear weapon states;
 - ratify the CTBT in order to achieve a global ban on nuclear weapons testing;

⁷⁸ In some cases it meant that the text included a more progressive language, than bureaucrats originally imagined. Setting global zero as the ultimate goal was one of the issues which the president personally wanted. (Interview with Robert J. Einhorn [2014])

- seek a treaty which will verifiably end the production of weapons usable fissile materials (FMCT).

2) Strengthen the Nuclear Non-Proliferation Treaty:

- countries with nuclear weapons will work towards disarmament, countries without nuclear weapons will not pursue nuclear weapons;
- strengthen international inspections and take stronger measures to address non-compliance;
- establish a new framework for civil nuclear cooperation, which would include an international fuel bank;
- pressure North Korea to abide by international norms and rules;
- pursue a peaceful, diplomatic solution with Iran.

3) Secure nuclear weapons and materials from terrorists:

- initiate a new international effort to secure all vulnerable nuclear materials in the next four years (i.e. the Nuclear Security Summit series);
- strengthen export control, break up black markets;
- turn the PSI and the GICNT into durable international institutions.

Several elements of the Prague agenda were implemented during the Spring of 2010: the U.S. announced its new Nuclear Posture Review on April 6, 2010; then it signed the New START Treaty with Moscow on April 8; the first Nuclear Security Summit was organized on April 12-13 in Washington, DC; and the 2010 Review Conference of the NPT was concluded with a final document. These successes proved that a considerable part of the Prague agenda was realistic. Progress, however, significantly slowed afterwards, and there are several fields where no results have been achieved: the FMCT negotiations are still frozen at the Conference on Disarmament (CD), a vote on the CTBT ratification has still not been scheduled, and Russia seems to be reluctant to negotiate any further disarmament agreements before the New START Treaty expires.

Compared to the campaign strategy, there was one striking difference regarding the Prague address: increasing warning and decision time for the President to launch nuclear weapons (i.e. de-alerting) was completely eliminated from the policy priorities.

Besides several technical difficulties, there was strong institutional resistance against it (both U.S. and Russian military circles refused the idea of reducing the readiness of their nuclear forces), and de-alerting was also claimed to weaken the credibility of U.S. security guarantees and affect negatively the relationship of Washington and its allies. (Samore [2013] and Interview with Linton F. Brooks [2014])

3.2 The Nuclear Posture Review

According to the DoD's explanation, "*The Nuclear Posture Review is a legislatively-mandated review that establishes U.S. nuclear policy, strategy, capabilities and force posture for the next five to ten years.*" (U.S. Department of Defense [2010a]) The first NPR was completed in 1994 by President Clinton and the second NPR was submitted to Congress by the Bush administration in December, 2001. The Obama administration's 2010 document is the third NPR.

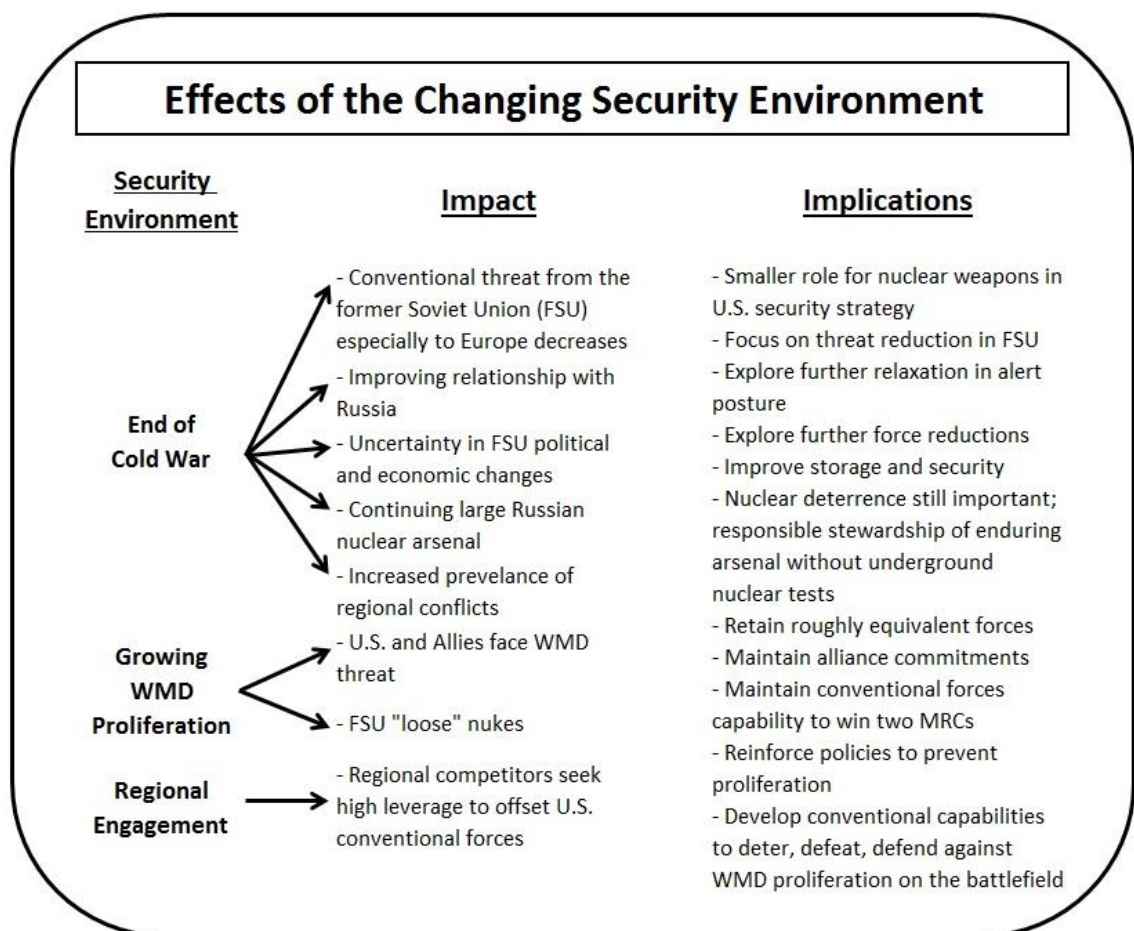
3.2.1 The Clinton Administration's Nuclear Posture Review

All three reviews have been different, regarding the purposes of the review and the process itself. The 1994 NPR was the "brain-child" of Secretary of Defense, Les Aspin who wanted to adapt U.S. nuclear policy to the realities of the post-Cold War environment. Under Les Aspin and Assistant Secretary of Defense, Ashton Carter, the DoD initiated a rather internal bottom-up review process on October 29, 1993. (Sauer [2005]: pp. 102-103.) It was the first review of U.S. nuclear weapons policy since the end of the Cold War and the first comprehensive review in 15 years, which addressed policy, doctrine, force structure, command and control, operations, supporting infrastructure, safety, security and arms control at the same time. The 10-month process was co-chaired by the OSD and the JCS. Although the DoD took the leading role, the working groups included members from the OSD, the JCS, the different services and the unified commands as well. (FAS [1995]) There were six working groups: 1) the role of nuclear weapons in U.S. security strategy; 2) U.S. nuclear force structure; 3) U.S. nuclear force operations; 4) nuclear safety and security; 5) the relationship between U.S. nuclear posture and counterproliferation policy; and 6) the relationship between US

nuclear posture and threat reduction policy with the former Soviet Union. The review was finally approved by President Clinton on September 18, 1994. (Kristensen [2005b]) The document was not released to the public, however, the DoD prepared a brief press release (U.S. Department of Defense [1994a]) with slides (NPR [1994]) on the most important conclusions of the review; and the transcripts of the briefings to the Congress (Congressional Hearing [1994]) and to the media (U.S. Department of Defense [1994b]) became also available.

Regarding the main findings of the 1994 NPR, the DoD prepared the following figure:

Figure 3. Nuclear Posture Review (1994) (NPR [1994]: p. 4.)



Based on these elements, the main conclusion of the 1994 NPR was: “lead but hedge.” With the end of the Cold War, the Clinton administration concluded that the role of nuclear weapons was smaller than any time during the nuclear age, which allowed a smaller nuclear force and dramatic reductions from the Cold War levels. But with the

dissolution of the Soviet Union and the end of the bipolar system, the future became significantly uncertain – the denuclearization process and the reductions in the new independent states were still underway and the U.S. had to hedge against these uncertainties. In addition, the U.S. pledged to continue its commitments and security guarantees towards its allies, and to maintain high standards for nuclear safety and security, command and control, use control and civilian control.

3.2.2 The Bush Administration's Nuclear Posture Review

The Bush administration's NPR was mandated by Congress in 2000. The DoD was tasked "*to lay out the direction for American nuclear forces over the next five to ten years.*" (NPR [2002b]: p. 1.) But the Bush administration's review went beyond its mandate, and looked at a bigger picture as the President had already tasked the DoD to adjust the U.S. military to the 21st century security environment and prepare the Quadrennial Defense Review (QDR). Having a QDR process underway put its stamp on the 2001 NPR as well. The Bush administration's NPR examined nuclear weapons in a broader context, integrating them into a continuum of different force options to address the new threats of the 21st century. The review was co-chaired by senior officials from the DoD and the DoE, and the White House was also engaged in the process. (NPR [2002a]: p. 3.) The NPR was submitted to Congress on December 31, 2001, along with the release of a very brief report on the NPR. (NPR [2001]) The press was briefed on January 9, 2002 (U.S. Department of Defense [2002]) which included the release of some slides on the main findings of the NPR. (NPR [2002a]) In addition to these sources, the Los Angeles Times and the New York Times revealed that they acquired the full text in March, 2002 and substantial excerpts of the NPR were published on the Internet. (NPR [2002b])

These sources suggested that the Bush administration put a huge emphasis on shifting away from the Cold War context. The new NPR recognized that the 21st century represented a change compared to the Cold War in four main aspects: 1) multiple potential opponents, multiple sources of conflict, and unprecedented challenges needed to be addressed; 2) the U.S. had a new relationship with Russia; 3) the spectrum of contingencies has significantly grown; and 4) the opponents will probably not threaten

the survival of the U.S. – the stakes are varying and unequal. (NPR [2002a]: p. 4.) In response to these changes, the Bush NPR suggested a strategy with four legs:

Table 4. Nuclear Posture Review (2001) (NPR [2002a]: p. 7.)

Assure Allies and Friends	Deter Aggressors
<ul style="list-style-type: none"> • Credible non-nuclear and nuclear response options support U.S. commitments 	<ul style="list-style-type: none"> • Nuclear and non-nuclear options provide tailored deterrent
<ul style="list-style-type: none"> • Defenses protect security partners and power projection forces 	<ul style="list-style-type: none"> • Defenses discourage attack by frustrating adversary's attack plans
<ul style="list-style-type: none"> • Second-to-none nuclear capability assures allies and public 	<ul style="list-style-type: none"> • Infrastructure improves U.S. capabilities to counter emerging threats
Dissuade Competitors	Defeat Enemies
<ul style="list-style-type: none"> • Diverse portfolio of capabilities denies payoff from competition 	<ul style="list-style-type: none"> • Strike systems can neutralize range of enemy targets
<ul style="list-style-type: none"> • Non-nuclear strike favors U.S. 	<ul style="list-style-type: none"> • Defenses provide protection if deterrence fails
<ul style="list-style-type: none"> • Infrastructure promises U.S. competitive edge 	

In addition to the strategy of “assure, dissuade, deter, defeat,” the administration also envisioned a synergy of nuclear and non-nuclear capabilities, as well as a synergy of offense and defense. In terms of nuclear planning, a new capabilities-based approach was chosen (instead of the previous threat-based approaches) to provide greater flexibility for a range of contingencies. The NPR also introduced the concept of the “new triad” – the traditional triad of ICBMs, SLBMs and bombers was transformed to only one leg of the new triad and the remaining two became defenses and a responsive infrastructure. (NPR [2002a]: p. 9.)

Besides the introduction of these new concepts, the 2001 NPR was different from the Clinton administration's NPR regarding the role of arms control agreements. In general, the 2001 NPR stated that unilateral reductions were seen as a way of preserving flexibility and transparency, thus disarmament does not necessarily have to happen in treaty framework. (NPR [2002a]: p. 4.) In this spirit, the document also downplayed certain arms control agreements for the objective of maximum flexibility. While the Clinton presidency considered the Anti-Ballistic Missile Treaty important, the Bush administration renounced it in order to eliminate any limitations on its ballistic missile

defense plans. Similarly, the CTBT was also downplayed by the Bush administration. In 1996, President Clinton was the first to sign the treaty and put huge efforts in its ratification (which failed in a 1999 Senate vote). The Bush administration, on the other hand, reaffirmed the 1992 testing moratorium but declared that it would not seek the ratification of the CTBT. In fact, it ordered to reduce the required time for the preparations to resume nuclear weapons testing (from the current 2-3 years to one year). (NPR [2002b]: p. 11.; p. 17.)

Despite these differences, there were many continuities between the two NPRs. First, both documents recognized the changing security environment, the proliferation of threats, the improving relations with Russia, but at the same time the uncertainties about the future of relations also required a hedge force (as the Clinton administration called it) or a responsive force (as the Bush administration called it). The second continuity is the list of potential targets for a nuclear attack – besides Russia, the 2001 NPR named six other countries: North Korea, Iran, Iraq, Syria, Libya and China, which is perceived as a continuity of the previous administration's targeting strategy. Third, the force reductions proposed by the Bush team (reduce the deployed strategic nuclear stockpile to 3,800 warheads by 2007 and to 1,700-2,200 by 2012) are also in line with Clinton's proposals in the 1997 Helsinki Protocol.⁷⁹ Fourth, both documents endorsed adaptive planning in response to unforeseen contingencies. Fifth, both administrations supported the maintenance of all three legs of the strategic triad (in the case of the Bush administration, additional legs were introduced to the concept). And finally, the desire to develop advanced capabilities against hardened and deeply buried bunkers is another issue which was already endorsed in the 1990s. (Ferguson [2002])

Altogether, several elements of the Bush administration's nuclear posture were truly post-Cold War concepts, designed to address the new threats of the 21st century. But the administration failed to explain its posture to the public, to the closest U.S. allies and to Congress as well, and it did not follow through its proposals, which resulted several negative perceptions on the 2001 NPR. According to a 2006 SAIC report on the '*Foreign Perspectives on U.S. Nuclear Policy and Posture*,' U.S. nuclear posture was widely perceived to place "*heightened emphasis on nuclear weapons as part of overall*

⁷⁹ The Helsinki Joint Statement on the START follow-on process was signed by President Clinton and President Yeltsin, and it stated that after the entry into force of the START II agreement, Washington and Moscow will immediately start negotiations on a New START agreement. It envisioned reductions to 2,000-2,500 deployed strategic nuclear warheads for each side.

U.S. defense posture, shifting from a posture of nuclear deterrence to one of nuclear war-fighting if not nuclear preemption,” making the divisive line between conventional and nuclear weapons blurred, and making the use of nuclear weapons more likely. Missile defense developments seriously worried Russia and China, whose modernization programs were primarily “*influenced by their perceptions of U.S. strategic intent, plans, and commitments.*” U.S. extended deterrence was still considered essential to the security of Japan, Turkey, the new NATO members, and Australia; but other non-nuclear allies (especially the so called “old NATO” members) saw U.S. extended nuclear deterrence as “*less critical in today’s post-Cold War world*” and they described “*U.S. development of new, tailored, low-yield nuclear weapons as unnecessary, potentially dangerous, politically divisive, and adversely impacting non-proliferation.*” (Dunn; Giles; Larsen; Skypek [2006]: pp. 2-3.)

Parallel to these negative voices from the allies and the adversaries of the U.S., there were problems on the home front as well. After excerpts of the document were leaked, and the main architect of the 2001 NPR, Keith Payne left office, leadership was lacking, the administration could not defend its policy agenda, and it also lost the support of Congress on the issue. (Interview with John R. Harvey [2014])

3.2.3 The Obama Administration’s Nuclear Posture Review

Because of the above mentioned problems around the Bush administration’s NPR, Congress mandated a new comprehensive review in 2007. §1070 of the FY 2008 National Defense Authorization Act tasked the next administration to deliver a “Revised Nuclear Posture Review” with a very broad scope, which covered all aspects of U.S. nuclear weapons policy:

- 1) *“The role of nuclear forces in United States military strategy, planning, and programming.*
- 2) *The policy requirements and objectives for the United States to maintain a safe, reliable, and credible nuclear deterrence posture.*
- 3) *The relationship among United States nuclear deterrence policy, targeting strategy, and arms control objectives.*

- 4) *The role that missile defense capabilities and conventional strike forces play in determining the role and size of nuclear forces.*
- 5) *The levels and composition of the nuclear delivery systems that will be required for implementing the United States national and military strategy, including any plans for replacing or modifying existing systems.*
- 6) *The nuclear weapons complex that will be required for implementing the United States national and military strategy, including any plans to modernize or modify the complex.*
- 7) *The active and inactive nuclear weapons stockpile that will be required for implementing the United States national and military strategy, including any plans for replacing or modifying warheads.” (NDAA for FY 2008 [2007])*

Drafting the Obama administration’s NPR started in April, 2009 and the report was submitted to Congress in April, 2010. The 2010 NPR process was special for three reasons: 1) it was more of an inter-agency process than any time before; 2) the review of the presidential guidance did not take place in the framework of the Nuclear Posture Review process – the 2010 NPR was adopted under the previous administration’s nuclear guidance; and 3) an unprecedentedly detailed report was published on the major findings of the review.

During the 1994 and 2001 NPR processes, there was interagency input but not to the level of this review – this one was the most inter-agency process of the three reviews. (Interviews with Bradley H. Roberts [2014], Robert J. Einhorn [2014] and James N. Miller [2014]) The OSD and the JCS were leading the process jointly but the State Department, the DoE, the NNSA, STRATCOM, the White House and the intelligence community were also strongly engaged. In addition, the broad scope of the review also made it necessary to involve the Departments of Homeland Security and Treasury, and there were extensive consultations with Congress and the allies of the U.S. as well. The drafting process took shape in three rough organizing constructs/informal phases which were overlapping and each lasted for about one-thirds of the timeframe between April, 2009 and April, 2010. The first phase was divided into seven rings or seven working groups which addressed all the areas included in the Congressional mandate. It was a fully interagency work – there was significant participation from other agencies and the working groups were co-chaired by a DoD and a non-DoD official. In the so called second phase, the results of the first round were reviewed and discussed. The

interagency role evolved, and other departments became engaged at a more senior level – on the level of deputies and principals meetings, the State Department, for example, was represented by officials like Robert Einhorn (special advisor on non-proliferation and arms control) and Ellen Tauscher (Under Secretary of State for Arms Control and International Security) who gave an important input. And finally, phase three was the leadership deliberation and decision phase – the NSC reviewed the results of the first two phases and decided on the main conclusions of the review. President Obama engaged both through National Security Council meetings, and by separate meetings with his staff and others. Regarding the entire process, the media was incorrect to report on inter-agency battles – there were different points of views between the agencies, and divisions between competing priorities but the final NPR document enjoyed the full support of the leadership of all departments. (Interviews with Bradley H. Roberts [2014] and James N. Miller [2014]) In this regard, the process fulfilled the vision of Congress, which included in the mandate that “*The Secretary shall conduct the review in consultation with the Secretary of Energy and the Secretary of State.*” (NDAA for FY 2008 [2007])

The second unique character of the 2009-2010 NPR was the unusual order of reviews – this time the presidential guidance was not revised as part of the NPR process. President Obama’s NPR was delivered without even starting the targeting review, and the Bush administration’s presidential guidance (the NSPD-14 from 2002) remained effective until 2013. As the First START Treaty expired on December 5, 2009, it was imperative to put the U.S.-Russian arms control process back on track and guarantee legally binding verification mechanisms. Because of the pressure to focus on the New START Treaty negotiations and ratification, the NPR process was delivered under the Bush guidance – the Obama administration simply did not want a targeting review underway (or incomplete), while the New START Treaty was negotiated. (Interviews with Jon B. Wolfsthal [2014] and James N. Miller [2014])

And finally, the 2010 review process was also special because – as mentioned before – the 2010 NPR report was the most substantial write-up which has ever been released on a NPR. On April 6, 2010, the DoD published a 49 pages long summary of the results of the review (NPR [2010a]), along with background briefing slides for the media (NPR [2010b] and NPR [2010c]), a fact sheet (U.S. Department of Defense [2010b]) and the

release of the exact size of the U.S. nuclear weapons stockpile as of September, 2009. (U.S. Department of Defense [2010c])

Altogether, the 2010 review process had three main goals: 1) to deliver a nuclear posture for the next five to ten years; 2) (as the Congressional mandate phrased it) to put down the “*basis for establishing future United States arms control objectives and negotiating positions*” (NDAA for FY 2008 [2007]), including negotiating thresholds to the New START Treaty (this is one of the most important reasons why the State Department and especially Rose Gottemoeller was so engaged in the drafting process); and 3) to change the global perspective on the U.S. by accepting self-constraints on the use of nuclear weapons.

The final text of the document was organized around five concrete objectives: 1) prevent nuclear proliferation; 2) reduce the role of nuclear weapons; 3) maintain effective strategic deterrence and stability at lower nuclear force levels; 4) strengthen regional deterrence and reassurance of U.S. allies and partners; and 5) sustain a safe, secure and effective nuclear arsenal as long as nuclear weapons remain. (NPR [2010b])

Based on the NPR report (NPR [2010a]) and the DoD fact sheet (U.S. Department of Defense [2010b]), the specific results of the NPR in these five key areas are:

1) Prevent nuclear proliferation and nuclear terrorism:

- strengthen the global non-proliferation regime by strengthening IAEA safeguards and by enforcing compliance;
- increase DoE non-proliferation programs by 25 percent;
- reaffirm U.S. commitment to fulfill NPT obligations, including Article VI;
- secure all vulnerable nuclear materials worldwide in four years – enhance capabilities to detect and interdict smuggled nuclear materials;
- renew commitment to hold accountable those states, terrorist groups and other non-state actors which support terrorists in obtaining or using WMD (be it by facilitating, financing, providing expertise or safe haven).

2) Reduce the role of nuclear weapons:

- strengthen the U.S. negative security assurance: “*the United States will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with*

their nuclear nonproliferation obligations” (NPR [2010a]: p. 15.) – these states face the prospect of a devastating conventional military response if they use WMD against the U.S. or its allies and partners (however, if the biological threat grows, the U.S. reserves the right to adjust this assurance);

- for nuclear weapon states and non-compliant states: the U.S. would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the U.S. or its allies and partners;
- as long as nuclear weapons exist: the fundamental role of nuclear weapons is to deter nuclear attack on the U.S. or its allies and partners;
- the role of conventional capabilities will be strengthened to reduce the role of nuclear weapons in deterring non-nuclear attacks, with the purpose of making the sole purpose of nuclear weapons to deter nuclear attack on the U.S. or its allies and partners.

3) Maintain effective strategic deterrence and stability at lower nuclear force levels:

- renew arms control and work with Russia to reduce nuclear forces, while maintaining strategic stability – conclude a New START Treaty with the limits of 1,550 accountable strategic warheads and 700 deployed strategic delivery vehicles (altogether 800 deployed and non-deployed strategic launchers);
- the nuclear triad of ICBMs, SLBMs and nuclear-capable heavy bombers will be maintained under the New START;
- all ICBMs will be “de-MIRV”-ed to a single warhead each;
- the New START Treaty does not constrain U.S. missile defense or long-range conventional strike capabilities;
- the U.S. will make an investment in the U.S. command and control system to maximize presidential decision time in a nuclear crisis;
- the U.S. will pursue post-New START arms control with Russia which will also include non-strategic and non-deployed nuclear weapons;
- the U.S. will promote a more stable and more transparent strategic relationship with Russia and China.

4) Strengthen regional deterrence (against 21st century threats) and reassurance of U.S. allies and partners:

- apply a comprehensive approach to broaden regional security architectures, with the inclusion of missile defenses, improved conventional forces and improved counter-WMD capabilities;
- as long as regional nuclear threats remain, deterrence will require a nuclear component;

- the U.S. will retain the capability to forward deploy U.S. nuclear weapons on tactical fighter bombers and heavy bombers, and the full scope life extension program of the B61 bomb will proceed;
- the nuclear tipped, sea-launched cruise missiles (TLAM-N) will be retired as they are redundant in the overall mix of capabilities;
- continue consultations with the allies and partners to ensure the credibility and effectiveness of the U.S. extended deterrent.

5) Sustain a safe, secure and effective nuclear arsenal as long as nuclear weapons remain:

- the U.S. will modernize the nuclear weapons infrastructure, sustain the science, technology, and engineering base, invest in human capital, and ensure senior leadership focus on the nuclear mission – this investment will guarantee the stockpile, facilitate further reductions, enhance the ability to stem nuclear proliferation and nuclear terrorism;
- this will also extend the life of warheads as an alternative to new nuclear weapons which the U.S. rejects – the U.S. will not develop new nuclear warheads, LEPs will use only nuclear components based on previously tested designs, and will not support new military missions or provide for new military capabilities;
- the U.S. will not conduct nuclear testing and will seek the ratification and entry into force of the CTBT;
- the options for ensuring the safety, security and reliability of nuclear warheads will be studied on a case-by-case basis, consistent with the Stockpile Management Plan and the full range of LEP approaches will be considered: refurbishment of existing warheads, reuse of nuclear components from different warheads and replacement of nuclear components;
- in any decision to proceed to engineering development for warhead LEPs, the administration will give strong preference to options for refurbishment or reuse, while replacement of nuclear components would be undertaken only if critical Stockpile Management Program goals could not otherwise be met, and if authorized by the President and approved by Congress.

Altogether, the 2010 NPR meant a significant departure from previous nuclear postures in five main areas: 1) the framework, 2) the role of nuclear weapons, 3) the rhetoric towards Russia and China, 4) the rhetoric towards other adversaries, and 5) the relations with the allies.

Regarding the framework, this review applied a comprehensive approach, and took an integrated look at deterrence. The 2010 NPR named two primary threats to U.S. national security: nuclear terrorism as the “*most immediate and extreme danger*” and nuclear proliferation. (NPR [2010a]: p. 3.) These challenges made it necessary to broaden the scope of the NPR (which traditionally focused on arms control), and the 2010 document became the first to include nuclear security as well.

The second area where the Obama posture presents a major shift is the role of nuclear weapons. The tone of the document is significantly different from previous NPRs. This was the first time that the goal of global zero was explicitly included in a NPR. The administration, however, did not mean to alienate conservative circles and it tried to guarantee a bipartisan support behind the new nuclear posture. In order to keep a bridge between the left and right wings of Congress, the administration brilliantly brought together the long-term goal of eliminating all nuclear weapons and the near-term goal of maintaining a safe, secure and effective nuclear arsenal. (Interview with John R. Harvey [2014]) The latter commitment laid down the ground for major modernization programs and the administration pledged to put the necessary financial support behind it – in a November, 2010 announcement, President Obama promised “*to invest more than \$85 billion over the next decade to modernize the U.S. nuclear weapons complex that supports our deterrent.*” (Obama [2010]) This “grand bargain” served as the basis of the New START Treaty ratification as well.

Besides the long-term goal of global zero, another important statement of the NPR was that “*The fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, our allies, and partners.*” (NPR [2010a]: p. 15.) This represents a more limited role for nuclear weapons than in the previous administrations. The 2001 NPR stated that “*Nuclear weapons play a critical role in the defense capabilities of the United States, its allies and friends. They provide credible military options to deter a wide range of threats, including WMD and large-scale conventional military force. These nuclear capabilities possess unique properties that give the United States options to hold at risk classes of targets [that are] important to achieve strategic and political objectives.*” (NPR [2002b]: p. 3.) While in the 2001 document nuclear weapons had a “critical role” in deterring chemical, biological and large-scale conventional attacks, the 2010 NPR limits

this role to fundamentally deter nuclear attacks, which is a significant shift from a wide range of scenarios to “*a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring a conventional or CBW attack against the United States or its allies and partners.*” (NPR [2010a]: p. 16.)

“*Fundamental role,*” however, does not mean “*sole purpose*” – in fact, the document itself admits that “*The United States is therefore not prepared at the present time to adopt a universal policy that the ‘sole purpose’ of U.S. nuclear weapons is to deter nuclear attack on the United States and our allies and partners, but will work to establish conditions under which such a policy could be safely adopted.*” (NPR [2010a]: p. 16.) This pledge to work towards a “*sole purpose*” posture also means a desire to shift towards a no-first-use declaration – if the sole purpose of nuclear weapons is to deter a nuclear attack, then it essentially means that nuclear weapons will not be used in a first strike. Although the U.S. was not ready for this “*sole purpose*” declaration,⁸⁰ the Nuclear Posture Review clearly circumscribed that “*narrow range of contingencies*” when nuclear weapons had a role other than deterring a nuclear attack, and it stated that the use of nuclear weapons will only happen in “*extreme circumstances to defend the vital interests of the United States or its allies and partners.*” (NPR [2010a]: p. 16.)

The third area, where the 2010 NPR is different from the previous documents is the rhetoric towards Russia and China. In this regard, the first innovation of the 2010 posture is that China was put in the same category as Russia. In 2001, the Bush NPR recognized “*the changed relationship with Russia*” and stated that the “*United States seeks a more cooperative relationship with Russia and a move away from the balance-of-terror policy framework.*” (NPR [2002b]: p. 5.) Beijing, at the same time, was handled in a different framework, as a state of concern and a potential conflict contingency – “*Due to the combination of China's still developing strategic objectives and its ongoing modernization of its nuclear and non nuclear forces, China is a country that could be involved in an immediate or potential contingency.*” (NPR [2002b]: p. 5.)

In contrast, the 2010 NPR mentions both Russia and China in the context of a more stable strategic relationship: “*Russia and the United States are no longer adversaries,*

⁸⁰ There were mainly two reasons why the U.S. did not announce a “*sole purpose*” posture: first, to maintain a strong reassurance towards its allies, and second to maintain a strong deterrent against states of concern like Iran, Syria or North Korea. (Interview with Robert J. Einhorn [2014])

and prospects for military confrontation have declined dramatically. The two have increased their cooperation in areas of shared interest, including preventing nuclear terrorism and nuclear proliferation.” (NPR [2010a]: p. iv.) *“The United States and China are increasingly interdependent and their shared responsibilities for addressing global security threats, such as weapons of mass destruction (WMD) proliferation and terrorism, are growing. The United States welcomes a strong, prosperous, and successful China that plays a greater global role in supporting international rules, norms, and institutions.”* (NPR [2010a]: p. 5.)

Instead of mutual deterrence, the new organizing concept with these two states is strategic stability – *“By promoting strategic stability with Russia and China and improving transparency and mutual confidence, we can help create the conditions for moving toward a world without nuclear weapons and build a stronger basis for addressing nuclear proliferation and nuclear terrorism.”* (NPR [2010a]: p. vi.) In this regard, the 2010 NPR implies that strengthening strategic stability with these two states, and implementing transparency and confidence building measures will lead to a broader cooperation on arms control and nuclear security issues.

The next difference between the 2010 posture and previous NPRs is the rhetoric towards other adversaries (be it non-nuclear weapon states like Syria or Iran, or states in possession of nuclear weapons like North Korea). In this regard, the Obama NPR declared a more limited negative security assurance than any other administration before. The first articulation of a negative security assurance dates back to June, 1978. As quoted before, the Carter administration declared that *“The United States will not use nuclear weapons against any non-nuclear weapons States Party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices, except in the case of an attack on the United States, its territories or armed forces, or its allies, by such a State allied to a nuclear-weapon State or associated with a nuclear-weapon State in carrying out or sustaining the attack.”* (Quoted in Bunn [1997]: p. 6.) This basically excluded from the assurance any non-nuclear weapon state which was allied or associated with a nuclear weapon state (i.e. the Soviet Union) – this was the so called “Warsaw Pact exclusion clause.”

Although the policy of a declared negative security assurance has been present in U.S. nuclear policy since Carter, the conditions of this assurance have significantly changed

over time. After Ukraine joined the NPT in 1994, and transferred all of its (post-Soviet) nuclear warheads back to Russia for elimination, the U.S. rephrased its assurance, and pledged to “*reaffirm, in the case of Ukraine, their commitment not to use nuclear weapons against any non-nuclear weapon state party to the Treaty on the Non-Proliferation of Nuclear Weapons, except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies, by such a state in association or alliance with a nuclear weapon state.*” (Budapest Memorandums [1994]) This eliminated the reference to a “*comparable internationally binding commitment not to acquire nuclear explosive devices,*” thus the NPT membership remained the ultimate guarantor of the U.S. negative security assurance (with some exceptions).

In April, 1995, the Clinton administration went a bit further, and in the NPT Review and Extension Conference declared that “*The United States reaffirms that it will not use nuclear weapons against non-nuclear-weapon states parties to the Treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies, or on a State towards which it has a security commitment, carried out or sustained by such a non-nuclear-weapon State in association or alliance with a nuclear-weapon state.*” (Quoted in Kristensen [2003]: p. 22.) This added two new dimensions to the negative security assurances: first, the case of invasion, which was not included previously; and second, the term “any other attack” which meant to reflect the growing concerns about a chemical or biological attack on the U.S. and its allies. (Kristensen [2003]: p. 22.)

In comparison with these declarations, the 2010 assurance significantly limited the cases when the U.S. considered the use of nuclear weapons against non-nuclear weapon states. The Obama NPR stated that “*the United States will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with their nuclear nonproliferation obligations.*” (NPR [2010a]: p. 15.)

Thus, the assurance became dependent on a single factor, NPT membership and compliance with the non-proliferation obligations. If these criteria are met, non-nuclear weapon states are no longer threatened with U.S. nuclear weapons, even if they attacked the U.S. with biological, chemical or conventional weapons. This is an important rhetorical innovation in two regards: first, the number of contingencies and threatened

states has been reduced (e.g. states like Libya or Iraq which were specifically named in the 2001 NPR now fell out of the group); and second, the NPR provided a positive path to those states which – in a U.S. perspective – are labeled as “non-compliant” (i.e. Iran, Syria and North Korea). If these states abandon their activities and come in compliance with the NPT, the negative security assurance will be extended to them as well. Including an incentive in the NPR, and approaching these proliferation challenges from a positive angle (not just threatening them with nuclear weapons, but also offering a way out) is again an important rhetorical departure from previous NPRs.

Despite the positive message of the new negative security assurance, two questions come up immediately: first, how does the U.S. plan to assess compliance – is it decided by an objective international standard (or organization like the IAEA), or Washington will judge this question on its own, based on a case-by-case assessment? And second, is it really a significant departure in operational terms, or was it just a better rhetorical formulation of the same operational policy?

Regarding the first question, senior officials of the Obama administration implied that the U.S. intends to maintain the right to decide if a state is in compliance with its non-proliferation obligations. In April, 2010 Gary Samore explained at the Carnegie Endowment for International Peace that *“in compliance with their nuclear nonproliferation obligations is intended to be a broad clause and we’ll interpret that – when the time comes, we’ll interpret that in accordance with what we judge to be a meaningful standard. [...] On the question of who determines, that’s a U.S. national determination. I mean, obviously, we’ll be influenced by the actions of other parties. If the IAEA Board of Governors decides that a country is not in compliance with their safeguards obligation, that it would be difficult or – not impossible, but difficult – for the U.S. government to ignore that.”* (Samore [2010])

On the second question, it seems that the NPR was just in a way catching up with reality. As a result of the implementation of the Biological and Toxin Weapons Convention (BTWC) and the Chemical Weapons Convention (CWC) the possible circumstances have been significantly narrowed in which enemies could jeopardize the vital interests of the U.S. and its allies by non-nuclear means. Regarding the potential targets of a U.S. nuclear strike, the new negative security assurance probably did not change anything in operational terms. The proliferation challenges of Libya and Iraq

have been resolved during the Bush administration therefore these countries have already fallen off the list before the 2010 NPR. In the meanwhile, Iran, Syria and North Korea (which are considered as non-compliant by Washington) are still not protected under the new assurance, as well as nuclear weapon states like Russia or China.

Although the new negative security assurance was mostly a rhetorical proof that the role of nuclear weapons has been reduced in U.S. defense policy, it was also meant to send a reassurance message to the allies of the U.S. in the Middle East and in East Asia that U.S. nuclear deterrence still applies against their most important adversaries. As Gary Samore phrased it, the negative security assurance “*was deliberately crafted to exclude countries like North Korea and Iran which threaten our allies – or countries that depend on us – with a range of potential nuclear, biological, chemical and conventional threats.*” (Samore [2010])

The last major difference between the Obama posture and previous documents is linked to the relations of the U.S. and its allies. The 2006 SAIC study found that close U.S. allies and friends would like to see the U.S. “*smarter in dealing with other countries’ perspectives on nuclear issues and to listen more to other countries’ views.*” (Dunn; Giles; Larsen; Skypek [2006]: pp. 3.) In this regard, it was an important change of previous practices that during the drafting of the 2010 NPR, the U.S. consulted with its allies several times. The retirement of the Tomahawk (TLAM-N) cruise missiles (which played an important role in U.S. extended nuclear deterrence against North Korea) was for example discussed with South Korea and Japan in advance. (Interview with James N. Miller [2014])

The 2010 NPR, in addition, stated that any further reductions would be pursued in consideration of the assurances towards the allies of the U.S.: “*any future nuclear reductions must continue to strengthen deterrence of potential regional adversaries, strategic stability vis-à-vis Russia and China, and assurance of our allies and partners. This will require an updated assessment of deterrence requirements; further improvements in U.S., allied, and partner non-nuclear capabilities; focused reductions in strategic and nonstrategic weapons; and close consultations with allies and partners.*” (NPR [2010a]: p. xi.)

The question of disarmament is specifically important in the case of NATO allies which still host around 200 U.S. tactical nuclear weapons on their territory. Given this linkage, the context of President Obama's Prague address, the UN Security Council's nuclear summit in September, 2009, the negotiations on the New START Treaty, the first Nuclear Security Summit, as well as the ongoing review of NATO's strategic concept, the 2010 NPR enjoyed a greater attention in Europe than the previous NPR processes. Based on five different country case studies (France, Estonia, Poland, Germany and Norway), Professor Harald Müller argues that the document allowed each NATO member state to read into the NPR what they wanted, depending on their security interests and preferences: nuclear weapon states welcomed continuities in the validity of nuclear deterrence, and the importance of a safe, secure, and reliable arsenal; Eastern European countries were pleased by the reaffirmed nuclear assurances; and disarmament advocates were content with the inclusion of global zero as the ultimate goal. Although the issue of tactical nuclear deployment in Europe appeared to be the most important question to NATO members, the NPR avoided to take a clear position on it, and linked any changes to a consensual decision of all NATO members. (Müller [2011]) *"The United States will consult with our allies regarding the future basing of nuclear weapons in Europe, and is committed to making consensus decisions through NATO processes. [...] No changes to U.S. extended deterrence capabilities will be made without continued close consultation with allies and partners."* (NPR [2010a]: p. 28.)

Although the 2010 NPR directly explains its innovations in nuclear posture, Scott Sagan and Jane Vaynman identify three *"lingering ambiguities"* which the NPR report failed to clarify. The first issue is the role of allies in supporting the U.S. for a greater reliance on conventional deterrence. The NPR recognizes the improved conventional capabilities of allies which are important assets in defending against regional conventional threats but the NPR does not specify what role the allies play in strengthening regional conventional capabilities, or in the ability of the U.S. to *"project those capabilities."* (Sagan; Vaynman [2011]: p. 24.) The second issue is the question of prevention and preemption. In this regard Sagan and Vaynman argue that the option to use nuclear weapons in prevention or preemption is ruled out in the case of non-nuclear weapon states which are parties to the NPT and are in compliance with their non-proliferation obligations, but there is no discussion about the case of states which do not fall under this negative security assurance. While the Bush administration declared several times

that all options (including the preventive use of nuclear weapons) are on the table in the Iran nuclear debate, the Obama administration's nuclear posture did not clarify its position in the NPR. The third ambiguity according to Sagan and Vaynman relates to the policy towards biological weapons. After the negative security assurance, the 2010 NPR included a clause that "*Given the catastrophic potential of biological weapons and the rapid pace of bio-technology development, the United States reserves the right to make any adjustment in the assurance that may be warranted by the evolution and proliferation of the biological weapons threat and U.S. capacities to counter that threat.*" (NPR [2010a]: p. 16.) According to this reservation, nuclear weapons do not have a role against biological weapons in the case of those states which are protected by the negative security assurance, but it might change in the future – thus, the U.S. maintained a way out of the current commitment.

Altogether, the 2010 NPR represents a significant departure from previous nuclear postures in its rhetoric – it explicitly included the goal of global zero in the text of the nuclear posture, added nuclear security to the scope of the review, declared a more comprehensive negative security assurance than any previous administration, significantly reduced the role of nuclear weapons for a very narrow range of contingencies against a fewer number of states, placed strategic stability in the center of U.S.-Russian and U.S.-Chinese relations, refrained from developing new nuclear weapons and from supporting new nuclear missions, committed to ratify the CTBT, and involved the allies in the drafting process to a greater extent. But despite these results, some ambiguities remained about the role of allies in strengthening reliance on regional conventional capabilities, the role of prevention and preemption under the new posture, and the policy towards biological weapons. In addition, critics of the 2010 NPR still question why the U.S. did not declare a "*sole purpose*" posture; why the negative security assurance did not provide a universal guarantee to all non-nuclear weapon states and why it left a loophole to reevaluate the assurance in case the threat of biological weapons became imminent; why a no-first-use declaration was not included; and if the new posture had any real world effects in operational terms. In this regard, the most important reasons (for not implementing a more dramatic posture) seem to be the reassurance of allies, and the Obama administration's desire to build a bipartisan support behind the document. Transferring the decision on the future of tactical nuclear weapons in Europe to NATO, including global zero in the posture but committing to

modernizations, admitting that the U.S. had more nuclear weapons than needed but excluding unilateral reductions, or pledging to reduce the strategic nuclear arsenal but maintaining the triad all reflect these cautious considerations. Therefore, the assessment of Daryl G. Kimball and Greg Thielmann seems to be accurate that the 2010 NPR is “*transitional, not transformational*” – continuity and significant shifts both describe the Obama posture. (Kimball; Thielmann [2010])

After the NPR was released, the DoD worked out a number of concrete steps and an implementation timeline to those specific commitments which could be realized in the foreseeable future – these implementation steps included for example the retirement of the Tomahawk cruise missiles or the downloading of the ICBMs to a single warhead configuration. (Interviews with Bradley H. Roberts [2014] and James N. Miller [2014])

In addition to these concrete steps, a Nuclear Posture Review Implementation Study was prepared, which usually takes 90 days to complete. In this case, however, it took almost two years to finish the NPR IS, which formed the basis of President Obama’s new employment guidance, announced in the summer of 2013.

3.3 Sustaining U.S. Global Leadership

While the NPR follow-on process was happening, the U.S. was facing unprecedented fiscal difficulties and in response to these circumstances, as well as to the changing geopolitical environment, the DoD was tasked to conduct an overall review of U.S. defense policy. The review was run by the DoD, in cooperation with the JCS, the Secretaries of the Military Departments, and the Combatant Commanders.

The result of the review was an assessment called ‘Sustaining U.S. Global Leadership: Priorities for 21st Century Defense’ which was released on January 5, 2012. This document “*reflects the President’s strategic direction to the Department*” and it was developed to transition the U.S. defense enterprise “*from an emphasis on today’s wars to preparing for future challenges, protects the broad range of U.S. national security interests, advances the Department’s efforts to rebalance and reform, and supports the national security imperative of deficit reduction through a lower level of defense*

spending.” (Sustaining U.S. Global Leadership [2012]: p. 1.) Thus, it intends to guide U.S. decisions on the size and shape of future military forces.

Regarding nuclear threats and capabilities, the document contained four main paragraphs:

“The proliferation of nuclear, biological, and chemical weapons technology has the potential to magnify the threats posed by regional state actors, giving them more freedom of action to challenge U.S. interests. Terrorist access to even simple nuclear devices poses the prospect of devastating consequences for the United States. Accordingly, the Department of Defense will continue to enhance its capabilities, acting with an array of domestic and foreign partners, to conduct effective operations to counter the proliferation of WMD.” (Sustaining U.S. Global Leadership [2012]: p. 3.)

“Counter Weapons of Mass Destruction: U.S. forces conduct a range of activities aimed at preventing the proliferation and use of nuclear, biological, and chemical weapons. These activities include implementing the Cooperative Threat Reduction (Nunn-Lugar) Program, and planning and operations to locate, monitor, track, interdict and secure WMD and WMD-related components and the means and facilities to make them. They also include an active whole-of-government effort to frustrate the ambitions of nations bent on developing WMD, to include preventing Iran’s pursuit of a nuclear weapons capability. In partnership with other elements of the U.S. Government, DoD will continue to invest in capabilities to detect, protect against, and respond to WMD use, should preventive measures fail.” (Sustaining U.S. Global Leadership [2012]: p. 3.)

“Maintain a Safe, Secure, and Effective Nuclear Deterrent: As long as nuclear weapons remain in existence, the United States will maintain a safe, secure, and effective arsenal. We will field nuclear forces that can under any circumstances confront an adversary with the prospect of unacceptable damage, both to deter potential adversaries and to assure U.S. allies and other security partners that they can count on America’s security commitments. It is possible that our deterrence goals can be achieved with a smaller nuclear force, which would reduce the number of nuclear weapons in our inventory as well as their role in U.S. national security strategy.” (Sustaining U.S. Global Leadership [2012]: p. 5.)

“The aforementioned missions will largely determine the shape of the future Joint Force. The overall capacity of U.S. forces, however, will be based on requirements that the following subset of missions demand: counter terrorism and irregular warfare; deter and defeat aggression; maintain a safe, secure, and effective nuclear deterrent; and defend the homeland and support civil authorities.” (Sustaining U.S. Global Leadership [2012]: p. 6.)

Despite the economic difficulties, the new DoD strategy did not constitute a major departure from the 2010 NPR. According to the document, the U.S. still considered the threats of WMD proliferation and terrorism the most important security challenges, and committed to work both on a national and on an international level to counter these threats. An important aspect of these counter measures is the enhanced security of WMD stockpiles which will require an investment in the capabilities to detect, protect and respond to the use of these weapons. In addition to the security concerns, the U.S. reinforced its commitment to maintain a safe, secure and effective nuclear deterrent which will serve as a basis to future force requirements as well. However, in this regard, the document already paved the way in front of future reductions as it projected that U.S. deterrence goals might be met with a smaller nuclear arsenal where the role of nuclear weapons is also smaller.

3.4 The Berlin Address

After the successful reelection campaign, President Obama delivered his second major speech on nuclear issues at the Brandenburg Gate in Berlin, on June 19, 2013. He repeated again that with the fall of the Soviet Union, the global threat of annihilation disappeared but as long as nuclear weapons exist nobody is safe, and the threat of nuclear terrorism is still a danger to U.S. national security. Thus, he reaffirmed his commitment to work towards a world without nuclear weapons.

In this regard, President Obama listed a number of areas where his administration has already reached significant results: first, the efforts to strengthen the nuclear non-proliferation regime; second, the reduced role of nuclear weapons; and third, the reduced number of nuclear weapons – thanks to the New START Treaty which obliged

the U.S. and Russia to reduce their deployed strategic nuclear forces to the lowest levels since the 1950s.

However, he also declared that there was more to be done, and he laid out three main issues which his second presidency aimed to focus on:

The first question was the further reduction of deployed strategic nuclear forces: *“After a comprehensive review, I’ve determined that we can ensure the security of America and our allies, and maintain a strong and credible strategic deterrent, while reducing our deployed strategic nuclear weapons by up to one-third. And I intend to seek negotiated cuts with Russia to move beyond Cold War nuclear postures.”* (Obama [2013b]) In this regard, the announced reduction is the result of the NPR IS which examined strategy and targeting requirements to update the presidential employment guidance of the Obama administration (PPD-24). Based on this review, the administration concluded that the U.S. could go down to as low as 1,000-1,100 deployed strategic nuclear weapons. The Berlin announcement, however, did not specify how the administration planned to implement these reductions – it only implied that it will happen in the framework of “negotiated cuts” with Moscow.

The second major issue area in the Berlin speech was the reduction of tactical nuclear weapons with Russia and the strengthening of the NPT regime: *“At the same time, we’ll work with our NATO allies to seek bold reductions in U.S. and Russian tactical weapons in Europe. And we can forge a new international framework for peaceful nuclear power, and reject the nuclear weaponization that North Korea and Iran may be seeking.”* (Obama [2013b]) The intention to broaden the scope of negotiations with Russia and include tactical nuclear weapons (and non-deployed nuclear weapons) have been on the agenda since the beginning of the Obama administration but in order to break the deadlock, the U.S. needs to get Russia on board, which so far did not show much interest in the reduction of tactical nuclear weapons.

And finally, the President announced that the U.S. will host the next round of the Nuclear Security Summit series, and called for the ratification of the CTBT and the conclusion of the FMCT: *“America will host a summit in 2016 to continue our efforts to secure nuclear materials around the world, and we will work to build support in the United States to ratify the Comprehensive Nuclear Test Ban Treaty, and call on all*

nations to begin negotiations on a treaty that ends the production of fissile materials for nuclear weapons. These are steps we can take to create a world of peace with justice.” (Obama [2013b]) Probably the only surprise of the Berlin address was the announcement to organize a new (and most likely last) Nuclear Security Summit in 2016 which will be brought back to the U.S. Besides that, the CTBT ratification and the desire to conclude a FMCT were already on the Prague agenda and it was rather symbolic that the President reinforced his commitment to these issues, sending a sign to Congress and the international community as well that his promises are not forgotten. But just like in the case of the Prague address, the President did not specify a concrete timeframe to achieve these goals.

Altogether, besides the promise to cut deeper in the strategic nuclear forces, the symbolism of the Berlin address was its most important dimension – speaking in Berlin and putting the question of nuclear disarmament in the larger framework of “*peace with justice*” was an unusual approach from a U.S. President. But there was not much more to the speech besides this symbolism – as Joe Cirincione from the Ploughshares Fund phrased it, “*Everything the president said today had been expected for some time. [...] It was important for him to say it, and to say it in Berlin, and to signal to his own bureaucracy that this agenda is still one of his top priorities.*” (Quoted in Grossman [2013])

As an immediate follow-up to the Berlin address, the administration released a fact sheet on the White House webpage which implied that the President has indeed issued its new guidance which will serve as the basis of further nuclear reductions. (The White House [2013])

3.5 Evaluation

Going through the elements of Cold War nuclear thinking, the Obama administration has indeed changed several aspects of it in its declaratory policy. The first characteristic was related to the worldview – how does the U.S. define its enemies and its own role; what is the ultimate goal of U.S. nuclear weapons policy; and how does the U.S. reassure its allies.

In this regard, the security environment has significantly changed since the Cold War. Instead of the relatively predictable bipolar system, the U.S. is now facing multiple potential opponents, and instead of a global conflict, regional challenges have become more likely to occur. Besides the growing number of potential opponents, the spectrum of contingencies has also increased, the stakes have become varying and unequal, and the mere survival of the U.S. will probably not be challenged.

Regarding the image of Russia, since the Clinton years, each administration recognized that the U.S. had a new relationship with Russia, and as the Obama NPR phrased it, “*Russia and the United States are no longer adversaries, and prospects for military confrontation have declined dramatically.*” (NPR [2010a]: p. iv.) Therefore, the U.S. is no longer afraid of a surprise attack from Moscow, however “*Russia remains America’s only peer in the area of nuclear weapons capabilities*” which makes it necessary for the United States to “*continue to address the more familiar challenge of ensuring strategic stability.*” (NPR [2010a]: p. iv.)

Compared to the Cold War, China has become a more important factor in U.S. strategic planning – after the 1996 Taiwan crisis, it was put back on the target lists, and as a result of its developing military capabilities the U.S. continues to plan for this challenge as well. The 2010 NPR, however, recognized the improved relations and it handled China in the same group with Russia, where mutual interests made it possible for Washington and Beijing to work together for strategic stability.

In addition to these – more traditional – threats, the proliferation challenges of North Korea and Iran were specifically mentioned by the 2010 NPR as potential sources of regional instability. And finally, another new element of the “enemy image” was the threat of nuclear terrorism. President Obama identified this threat as “*today’s most immediate and extreme danger.*”

The changing dynamics in U.S.-Russian and U.S.-Chinese relations, as well as the new threats of nuclear terrorism and nuclear proliferation rearranged the hierarchy of U.S. nuclear concerns and objectives. Therefore, the Obama administration envisioned a role for the U.S. in “*discouraging additional countries from acquiring nuclear weapons capabilities and stopping terrorist groups from acquiring nuclear bombs or the materials to build them.*” In addition to these priorities, the U.S. pledged to “*maintain*

stable strategic relationships with Russia and China and counter threats posed by any emerging nuclear-armed states” in order to protect the U.S. and its allies and partners. (NPR [2010a]: p. v.)

Regarding the relationship of the U.S. and its allies, it has been an important declaration in the 1994 NPR that despite the end of the Cold War, Washington intends to maintain its extended nuclear deterrence towards its allies which was reinforced by the Bush and Obama postures as well. The forward deployment of tactical nuclear weapons still continues, which means that U.S. nuclear forces still play a role in guaranteeing the security of allies, and if necessary, these weapons can be used in order to protect the allies and partners of the U.S.

The second character of Cold War nuclear thinking was the doctrine of flexible response. As already mentioned, the term “flexible response” refers to a posture which means that in a crisis situation the U.S. has multiple options to address a threat appropriately, starting from the use of conventional weapons, through selective nuclear attacks to a general nuclear war. In this sense, flexible response is still appropriate to describe current U.S. nuclear posture, although the focus has somewhat shifted since the Cold War. Until the dissolution of the Soviet Union, the majority of potential challenges required nuclear responses, and war plans addressed a wide spectrum of contingencies with nuclear options. In contrast, the Obama administration tries to minimize those cases when nuclear weapons can be used, and a greater emphasis is put on the development of non-nuclear capabilities, in order to widen the spectrum of options on the level of conventional weapons and to narrow the spectrum on the level of nuclear forces.

The third parameter of Cold War nuclear thinking was prevention and preemption. As mentioned before, the Bush administration’s rhetoric did not rule out any of these options when for example it was addressing the challenge of the Iran nuclear debate. The Obama administration, on the other hand, has been more cautious in its rhetoric. The 2010 NPR ruled out these options in the case of states which are parties to the NPT and are in compliance with their non-proliferation obligations, but it is not clear what the case is with that small number of states which are not covered by the negative security assurance. However, as long as a portion of the U.S. nuclear forces is kept on

high alert, and as long as the U.S. maintains a capability to launch under attack, it obviously has a capability to execute preventive or preemptive strikes as well.

The next issue is the question of negative security assurances. In this regard, the Obama administration's posture is a continuity of previous strategies, as it also refused to declare a universal negative security assurance to all non-nuclear weapon states. But compared to the exceptions of the previous administrations, the 2010 NPR significantly reduced the number of states which are excluded from the assurance. The only decisive factor remained the NPT membership and the compliance with the non-proliferation obligations, which in 2010 was probably directed at only two non-nuclear weapon states (i.e. Iran and Syria). Therefore, this framing is by all means the closest policy so far to a universal negative security assurance.

The last two areas are closely related to each other: the general role of nuclear weapons, and the question of no-first-use declarations. During the Cold War, nuclear weapons were overemphasized and nuclear deterrence had a role against chemical, biological and conventional contingencies as well. The 2010 NPR, on the other hand, minimized the scenarios under which nuclear weapons can be applied – in the case of states which are protected by the negative security assurance nuclear weapons no longer play a role against chemical, biological or conventional weapons. The Obama posture, in addition, contains two important declarations: “*The fundamental role of U.S. nuclear weapons [...] is to deter nuclear attack on the United States, our allies, and partners.*” (NPR [2010a]: p. 15.) And the U.S. will only use nuclear weapons in “*extreme circumstances to defend the vital interests of the United States or its allies and partners.*” (NPR [2010a]: p. 16.) These statements are significant changes compared to the Cold War rhetoric, and the commitment to move towards a “*sole purpose*” posture is, in a way, a commitment to move towards a no-first-use policy as well. An implicit no-first-use policy is already in place in the case of states which are covered by the negative security assurance – this can be complete if all non-nuclear weapon states come in compliance with their non-proliferation obligations.

Altogether, the first hypothesis of this dissertation which claims that “*in the declaratory policy, the Obama administration has lessened the reliance on Cold War nuclear thinking*” seems to stand on a solid basis. In response to the dramatic changes of the security environment, the Obama administration used a more cooperative tone towards

its traditional adversaries (i.e. Russia and China); put a bigger emphasis on non-nuclear options; and reduced the role of nuclear weapons in several different ways: first, by fundamentally limiting their role to deterring a nuclear attack against the U.S. and its allies and partners; second, by declaring an almost universal negative security assurance to non-nuclear weapon states; third, by limiting the scenarios when preventive or preemptive nuclear strikes were possible; and fourth, by committing to move towards a “*sole purpose*” posture which would also mean an implicit no-first-use declaration.

Table 5. Declaratory Policy: Cold War vs. Obama

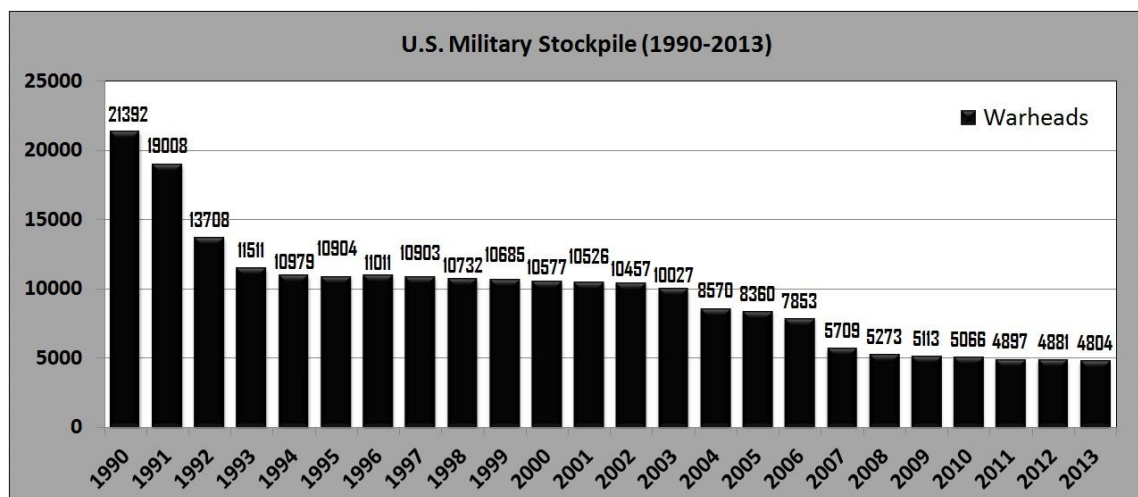
Cold War Nuclear Thinking	Change	Obama Posture
<ul style="list-style-type: none"> enemy image: bipolar system, the Soviet block is the enemy which constantly prepares for a surprise attack on the U.S. 	YES	<ul style="list-style-type: none"> multiple opponents and contingencies, the chances of a military confrontation with Russia has dramatically declined
<ul style="list-style-type: none"> the role of the U.S. as the global leader of the free world the ultimate goal is to ensure the victory of the good cause 	YES	<ul style="list-style-type: none"> the role and the ultimate goal of the U.S. is to prevent nuclear proliferation and nuclear terrorism, and to maintain strategic stability with Russia and China
<ul style="list-style-type: none"> NATO: providing positive security assurances for the allies 	NO	<ul style="list-style-type: none"> the U.S. still provides positive security assurances for its allies
<ul style="list-style-type: none"> main doctrine: flexible response 	NO	<ul style="list-style-type: none"> flexible response is still applicable (although there is a bigger emphasis on conventional options)
<ul style="list-style-type: none"> denial of a preventive war – but maintaining the option of preemptive strikes 	≈	<ul style="list-style-type: none"> the capability is still maintained but the potential scenarios have been significantly reduced
<ul style="list-style-type: none"> rejection of no-first-use declarations 	≈	<ul style="list-style-type: none"> shifts towards a “sole purpose” posture which would mean an implicit no-first-use declaration
<ul style="list-style-type: none"> rejection of a universal negative security assurance to NNWSs (from Carter: introduction of very limited NSAs) 	≈	<ul style="list-style-type: none"> a more comprehensive negative security assurance than any time before – almost universal, only a very few exceptions remained
<ul style="list-style-type: none"> prominent day-to-day role of nuclear weapons against a great variety of contingencies 	YES	<ul style="list-style-type: none"> the role of nuclear weapons has been significantly reduced, their fundamental role is to deter a nuclear attack against the U.S. and its allies and partners + their use is only possible in extreme circumstances

4. Force Structure

4.1 Nuclear Warheads and the Nuclear Triad

Based on the official numbers which the administration released in 2010 and in 2014, the military stockpile of the U.S. nuclear arsenal (or the so called “active stockpile” which consists of the operational warheads) has been reduced from 21,392 warheads to 4,804 between 1990 and 2013. (U.S. Department of State [2014a])

Figure 4. U.S. Military Stockpile (1990-2013)



These numbers show that the most dramatic reductions were implemented under the Republican administrations – the George W. H. Bush administration (1989-1993) cut the arsenal in half from about 22,000 nuclear weapons to 11,000 nuclear weapons, while the George W. Bush administration (2001-2009) reduced it from around 10,000 to 5,000. The Clinton and the Obama administrations, on the other hand, could only realize moderate reductions in the nuclear weapons stockpile of the U.S.⁸¹

⁸¹ As Democratic governments generally face critics for being weak on defense, it turns out to be really difficult to implement serious reductions proposed by these administrations (especially in cases when Congress has a Republican majority). Republican presidents, on the other hand, have been really successful in realizing dramatic force reductions – in which case, having a Democratic majority in Congress further facilitates the implementation of these measures.

4.1.1 Force Levels under the Bush Years (1989-1993)

In terms of force structure reductions, the first milestone in the post-Cold War period was the START I Treaty in 1991. (START I [1991a]) The Treaty was signed by President George W. H. Bush and President Mikhail Gorbachev in July, 1991. But five months later the Soviet Union was dissolved, leaving nuclear weapons in the territory of Russia, Belarus, Kazakhstan and Ukraine as well. Therefore, the Treaty was extended to all four states, plus the United States in the 1992 Lisbon Protocol. (START I [1991b]) The START I Treaty entered into force on December 5, 1994 for 15 years, with a seven years implementation deadline – thus, the reductions had to be realized by December 5, 2001, and the Treaty expired on December 5, 2009.

The most important provisions of the Treaty regarding the number of launchers and the number of warheads:

- “(a) 1600, for deployed ICBMs and their associated launchers, deployed SLBMs and their associated launchers, and deployed heavy bombers, including 154 for deployed heavy ICBMs and their associated launchers;
- (b) 6000, for warheads attributed to deployed ICBMs, deployed SLBMs, and deployed heavy bombers, including:
 - (i) 4900, for warheads attributed to deployed ICBMs and deployed SLBMs;
 - (ii) 1100, for warheads attributed to deployed ICBMs on mobile launchers of ICBMs;
 - (iii) 1540, for warheads attributed to deployed heavy ICBMs.” (START I [1991a]: pp. 1-2.)
- These provisions need to be implemented in three phases:
 - First phase (no later than 36 months after the entry into force): 2,100 for deployed launchers, and 9,150 for deployed warheads (of which 8,050 attributed to deployed ICBMs and SLBMs);
 - Second phase (no later than 60 months after the entry into force): 1,900 for deployed launchers, and 7,950 for deployed warheads (of which 6,750 attributed to deployed ICBMs and SLBMs);
 - Third phase (no later than 84 month after the entry into force): full implementation.
- In addition, special counting rules were also set by the Treaty:

- heavy bombers are counted as carrying one warhead if they are equipped only with bombs or short-range attack missiles (SRAMs);
- in the case of heavy bombers carrying long-range air-launched cruise missiles (ALCMs):
 - U.S. heavy bombers can carry no more than 20 ALCMs each, and the first 150 of these bombers will be counted as carrying only 10 ALCMs;
 - Soviet heavy bombers can carry no more than 16 ALCMs each, and the first 180 of these bombers will be counted as carrying only 8 ALCMs;
- no more than 1,250 warheads can be downloaded and not counted on existing ICBMs and SLBMs.

While the START I Treaty was negotiated, President George H. W. Bush and Soviet President Mikhail Gorbachev issued a Joint Statement at a summit meeting in Washington in June, 1990. This Joint Statement outlined the basic goals of the next START Treaty which was aimed at the further reduction and limitation of strategic offensive forces, with a special focus on heavy ICBMs and SLBMs, as well as on MIRVed ICBMs, SLBMs and ALCMs. (Joint Statement [1990]) This was followed by separate statements from President George H. W. Bush and Russian President Boris Yeltsin, and a Joint Understanding in June, 1992, which became the basis of the final agreement. The START II Treaty was signed on January 3, 1993 by George H. W. Bush and Boris Yeltsin. (START II [1993])

This Treaty did not replace, rather complemented the START I Treaty. It obliged the parties to continue the reduction of the strategic offensive forces – in the first phase (originally in the timeframe of seven years of the entry into force of START I) to reduce the deployed strategic nuclear warheads to 3,800-4,250 (with no more than 2,160 warheads on SLBMs, no more than 650 on heavy ICBMs, and no more than 1,200 warheads on MIRVed ICBMs); while in the second phase (originally by January 1, 2003) to reduce the deployed strategic nuclear warheads to 3,000-3,500 (with no more than 1,700-1,750 warheads on SLBMs, and a total elimination of heavy ICBMs and MIRVed ICBMs). The Treaty, however, never entered into force, and on June 14, 2002 Moscow announced its withdrawal from the START II as the U.S. still did not ratify the agreement and the Bush administration withdrew from the ABM Treaty.

4.1.2 Force Levels under the Clinton Years (1993-2001)

By the time the START I Treaty entered into force in 1994, the U.S. has already dramatically reduced its nuclear forces (mostly in the framework of the PNI's of the early 1990s). According to the Clinton administration's NPR, between 1988 and 1994 the total active stockpile of the U.S. has been reduced by 59 percent, the strategic warheads were reduced by 47 percent, the non-strategic nuclear force warheads were reduced by 90 percent, and no nuclear weapons were left in the custody of U.S. ground forces. In addition to these reductions, several programs were terminated (the small ICBM, the Peacekeeper Rail Garrison, the Lance Follow-on, the New Artillery Fired Atomic Projectile, the Tactical Air to Surface Missile and the Short-Range Attack Missile II), other programs were truncated (the Peacekeeper, the B-2, the B-1 Nuclear Role, the Advanced Cruise Missile and the W-88), and many systems were retired without replacement (the Artillery Fired Atomic Projectile, the FB-111, the Minuteman II, the Lance, the Short-Range Attack Missile-A, the Nuclear Depth Bomb and the C-3 SSBN). (NPR [1994]: p. 10.)

During the Clinton years, U.S. strategic nuclear force requirements were determined by three main factors: the projected military requirements for the next ten years, the assumed implementation of the START I and START II Treaties, and the concerns over the former Soviet capabilities. Regarding the role of the triad, the 1994 NPR stated that the main attribute of submarines is survivability, which provides stability. Bombers, on the other hand, are only survivable if they are on alert status; but bombers also have a role as a *"hedge against catastrophic failure of SSBN leg,"* and as a dual capable carrier (DCA), which can also help in conventional contingencies. In the meanwhile, ICBMs provide a significant upload hedge capability, and the ability to strike selectively. (NPR [1994]: p. 16.) Under the START I and START II Treaties, the Clinton administration envisioned a strategic nuclear force with no more than 20 B-2 bombers for the nuclear role, a reduced B-52 bomber force (from 94 to 66), a reduced Trident submarine fleet (from 18 to 14), equipped with D5 missiles, and a single warhead Minuteman III ICBM force of 500/450. Besides, it maintained flexibility to *"reduce further or reconstitute."* (NPR [1994]: p. 36.)

In addition to the START I and START II Treaties, the Clinton administration explored the options to achieve faster and deeper reductions in the strategic nuclear forces and

concluded that there were three ways to achieve this goal: 1) by accelerating the implementation of the START I and START II Treaties, or 2) by negotiating a new agreement for faster and deeper reductions, or 3) by implementing unilateral reductions, based on the sufficiency of U.S. forces below the START II levels.

Regarding the non-deployed arsenal of the U.S., the Clinton administration was the first to codify a permanent hedge force against the uncertainties of the security environment (mostly against the uncertainties of the relations with Russia and the newly independent post-Soviet states). The Clinton NPR stated that the U.S. “*must preserve options for uploading/reconstituting US nuclear forces should political relations with Russia change for the worse* [or should] *START I and START II not be fully implemented.*” (NPR [1994]: p. 19.)

In the case of the non-strategic nuclear forces, the Clinton administration pledged to maintain the forward-deployed European non-strategic nuclear forces at the current levels (which was less than 10 percent of the Cold War levels), but at the same time it also declared serious reductions in the non-strategic forces, by the elimination of nuclear weapons capability from U.S. Navy surface ships (this meant the elimination of DCA capability from aircraft carriers, and the elimination of nuclear cruise missile capability from surface combatants). At the same time, the administration pledged to retain the nuclear cruise missile capability on submarines and the land-based dual-capable nuclear aircraft capability. (NPR [1994]: p. 36.)

Another priority of the Clinton administration was to deliver a complete ban on nuclear weapons testing. After altogether 1,032 nuclear weapons tests between 1945 and 1992, President Bush signed a testing moratorium on October 2, 1992, which was preceded by a Soviet moratorium in 1991, and followed by a British and a French moratorium in 1992 and 1996 respectively. Since the election campaign, the Clinton administration aimed to codify a comprehensive nuclear-test ban agreement and it strongly supported the negotiations at the Geneva-based Conference on Disarmament. After the treaty was handed over to and approved by the General Assembly of the UN in September, 1996,

the Clinton administration was the first to sign the treaty. The Senate ratification, however, failed in 1999 and the treaty is still not in force.⁸²

The issue of nuclear weapons testing had a direct effect on the production side, and the infrastructure as well. As a nuclear weapons testing moratorium was introduced by the Bush administration in 1992, and the Clinton administration was devoted to codify this ban by the entry into force of the CTBT, alternative ways were needed to assess the aging nuclear arsenal and to guarantee its continued reliability. For these reasons, in 1995 the administration announced the Stockpile Stewardship Program with four main objectives:

- 1) *“Support a focused, multifaceted program to increase the understanding of the enduring stockpile;*
- 2) *Predict, detect, and evaluate potential problems of the aging stockpile;*
- 3) *Refurbish and re-manufacture nuclear weapons and components, as required; and*
- 4) *Maintain the science and engineering institutions needed to support the nation’s nuclear deterrent, now and in the future.”* (U.S. Department of Energy [2013])

In the framework of the SSP, the first modified warhead introduced in the stockpile after the moratorium on testing was announced was the B61-11 earth penetrating bomb. The B61-11 was publicly announced by the Clinton administration in 1995 to replace the retiring B53 warhead because of safety concerns. (Kristensen [2005c])

4.1.3 Force Levels under the Bush Years (2001-2009)

When President Bush took office in January, 2001, the U.S. had around 10,000 nuclear weapons in its military stockpile. During his eight years as President, the number of U.S. nuclear weapons was cut in half which was the most significant force reduction since the early 1990s.

⁸² Article XIV of the CTBT declares that the Treaty will enter into force 180 days after the deposit of the instruments of ratification by all states which are listed in Annex 2 – these 44 states were members of the CD (as of June, 1996), worked on the preparations and the negotiations of the Treaty, and were included in the IAEA’s April 1996 edition of ‘*Nuclear Power Reactors in the World.*’ As of August, 2014, eight of these states have still not ratified the Treaty (China, the Democratic People’s Republic of Korea, Egypt, India, Israel, Iran, Pakistan, and the United States).

In the administration's 2001 NPR, the U.S. declared that its force structure requirements would be guided by the already mentioned "assure, deter, dissuade, defeat" strategy and the primary driver of force levels would be the so called "capabilities-based" approach, instead of the traditional threat-based approach. The capabilities-based approach of the Bush administration meant that the nuclear forces of the U.S. would be adjusted to multiple contingencies and to the new threats of the changing security environment. According to this, the required capabilities are not country-specific, they are maintained for unexpected potential threat contingencies, and as reductions occur, it reflects that the risks are reduced. This includes active defense and non-nuclear capabilities – defenses reduce dependency on offensive strike forces to enforce deterrence, while non-nuclear strike forces reduce dependency on nuclear forces to provide offensive deterrent. In addition to the strengthening of these capabilities, the Bush NPR declared that effectiveness depends upon command and control, intelligence and adaptive planning. (NPR [2002a]: p. 8.)

Under the capabilities-based approach, an operationally deployed force was maintained for immediate and unexpected contingencies, and a responsive force for potential contingencies. This responsive force meant the capability to adapt to the changes of the security environment, both in a positive and in a negative way. The responsive force does not only cover reserve nuclear forces, but it also includes a responsive infrastructure, in order to have the capability to increase the deployed forces if necessary, and also to have the capability to dismantle these forces if this is what the security environment requires (thus, the Bush administration's responsive force concept was broader than the Clinton administration's hedge force). (Interview with John R. Harvey [2014])

Regarding the sizing of these forces, the Bush administration pledged to "*deploy the lowest number of nuclear weapons consistent with the security requirements of the U.S., its allies and friends*" and to achieve these reductions without the requirement of "*Cold War-style treaties.*" (NPR [2002a]: p. 8.) In this regard, the administration envisioned 1,700-2,200 operationally deployed strategic warheads by 2012, which – according to the NPR – was not meant to address an immediate contingency with Russia. These reductions were planned in two phases: in the first phase (until 2007) to 3,800 warheads, and in the second phase (until 2012) to 1,700-2,200. In order to realize these cuts, the

administration outlined the following steps: retire the Peacekeeper (MX) ICBMs, starting from 2002,⁸³ remove four Trident submarines from strategic service,⁸⁴ the B-1 bombers will not have a nuclear role in the future, and warheads will be downloaded on ICBMs and SLBMs.⁸⁵ (NPR [2002a]: p. 14.) In addition to these steps, the 2005 Strategic Capabilities Assessment and the 2006 Quadrennial Defense Review announced additional changes to the U.S. strategic nuclear forces – these included the elimination of 50 Minuteman III missiles (reducing the entire ICBM force from 500 to 450) and hundreds of advanced air-launched cruise missiles. (U.S. Department of Defense [2006])

Regarding the non-deployed arsenal, the NPR declared that a separate force structure and downloaded warheads would be preserved for the responsive force, in case the security environment dramatically deteriorated. In the meanwhile, the role of the nuclear triad was reinforced and a new triad was envisioned with the traditional three legs, complemented with the development of defenses and a responsive infrastructure. The current systems were declared to remain, and life extension programs were initiated for all of them.

Although the 2001 NPR did not contain specific changes to the non-strategic nuclear arsenal of the U.S., unclassified sources suggest that parallel to these steps, the number of forward deployed tactical nuclear weapons in Europe was cut in half (leaving behind the currently deployed 180-200 tactical nuclear weapons). Between 2001 and 2005, the U.S. pulled out tactical nuclear weapons from Greece and Ramstein AFB in Germany, while in 2006 it entirely withdrew its tactical nuclear forces from the United Kingdom. (Woolf [2014a]: p. 17.)

As the 2001 NPR stated, the Bush administration planned to cut with the tradition of Cold War-style arms control treaties, and it was ready to take these steps unilaterally –

⁸³ This initiative came out of the START II Treaty, and the implementation was finished by September, 2005. (Woolf [2014c]: p. 5.)

⁸⁴ The reduction of the ballistic missile submarine force from 18 to 14 boats was already envisioned by the Clinton administration's Nuclear Posture Review. The four Trident submarines were removed from the nuclear fleet by 2007, and the conversion of the first boat to carry conventional cruise missiles and other conventional weapons was completed between 2004 and 2007. (Woolf [2014c]: pp. 17-18.)

⁸⁵ The first phase of downloading warheads from all Trident II missiles was completed by 2005 to an average of six warheads, instead of the maximum eight. (Kristensen; Norris [2007]: p. 80.) Under the START I agreement, the downloading of all 150 Minuteman III ICBMs at Warren AFB to a single warhead configuration was completed by 2001, and the process was continued to download the remaining Minuteman III ICBMs. (Kristensen; Norris [2006]: p. 69.)

as President Bush said himself in November, 2001: “*We don't need arms control negotiations to reduce our weaponry in a significant way.*” (Quoted in Arms Control Association [2013]) Russian President Vladimir Putin also agreed that the deployed strategic nuclear arsenals could be lowered, especially as the Russian forces were expected to decline anyways, because of financial and technical reasons. Moscow, however, insisted to codify these reductions in order to maintain a level of parity and predictability between the two sides. As a result of this pressure from Russia and the U.S. Congress as well, President Bush agreed to put these reductions in a legally binding framework. (Arms Control Association [2006])

The Strategic Offensive Reductions Treaty or the so called Moscow Treaty was signed by President Bush and President Putin on May 24, 2002 and entered into force on June 1, 2003, after the U.S. and Russian lawmakers approved the ratification of the agreement. The main provisions of the treaty obliged Washington and Moscow to reduce and limit the aggregate number of their strategic nuclear warheads to 1,700-2,200 each. The agreement, however, reflected the U.S. desires for flexibility, and allowed each party to decide on the composition of these forces, and on the fate of the decommissioned warheads, which was also not regulated by the SORT Treaty – thus, previously deployed warheads could still be retained in the active stockpile, as a hedge against uncertainties. In addition, the SORT agreement did not contain any specific verification mechanisms besides the regular (at least twice a year) meetings of the Bilateral Implementation Commission. (SORT [2002]) (But as the parties agreed that the START I remained in force, those verification and compliance practices were still maintained.) The SORT agreement remained in force until December 31, 2012 as agreed in the original document.

Regarding other arms control agreements, it was already mentioned that for the sake of flexibility, the Bush administration announced its withdrawal from the ABM Treaty on December 31, 2001, and the NPR also declared that the U.S. would not seek ratification of the CTBT but it would maintain the “*continued adherence to testing moratorium.*” (NPR [2002a]: p. 11.)

4.1.4 Force Levels under the Obama Years (2009-present)

Based on the released stockpile numbers, when President Obama took office in January, 2009 the U.S. had 5,113 nuclear weapons in its military stockpile which has been reduced to 4,804 by 2013. (U.S. Department of State [2014a]) Compared to the powerful rhetoric of the administration, this is a relatively moderate reduction in the force levels.

According to issue experts Hans M. Kristensen and Robert S. Norris, the deployed nuclear arsenal of the U.S. was the following in 2009:

Table 6. U.S. Nuclear Forces (2009)

Type/Designation	Number	Year Deployed	Warheads x Yields	Deployed/Spare
ICBMs				
LGM-30G Minuteman III				
Mk-12	~0	1970	1-3 W62 x 170 kt (MIRV)	~0
Mk-12A	250	1979	1-3 W78 x 335 kt (MIRV)	350/20
Mk-21/SERV	200	2006 ¹	1 W87 x 300 kt	200/10
Total	450			550/30
SLBMs²				
UGM-133A Trident II D5	288			
Mk-4		1992	4-6 W76 x 100 kt (MIRV)	718/40
Mk-4A		2008	4-6 W76-1 x 100 kt (MIRV)	50/10
Mk-5		1990	4-6 W88 x 455 kt (MIRV)	384/20
Total	288			1,152/70
Bombers				
B-52H Stratofortress	93/44 ³	1961	ALCM/W80-1 x 5-150 kt	350/25
B-2A Spirit	20/16	1994	B61-7/-11, B83-1	150/25
Total	113/60			500/50⁴
Nonstrategic forces				
Tomahawk SLCM	325	1984	1 W80-0 x 5-150 kt	100
B61-3/-4 bombs	n/a	1979	0,3-170 kt	400 ⁵
Total	325			500
GRAND TOTAL				~2,702/150⁶

1. *The W87 was first deployed on the MX/Peacekeeper in 1986.*
2. *Two additional subs with 48 missiles are normally in overhaul and not available for deployment. Their 288 warheads are considered part of the responsive force of reserve warheads. Delivery of the W76-1/Mk-4A began in late October 2008, and we estimate that the warhead is currently being deployed.*
3. *The first figure is the aircraft inventory, including those used for training, testing, and backup; the second is the primary mission aircraft inventory, the number of operational aircraft assigned for nuclear and/or conventional missions.*
4. *The large pool of bombs and cruise missiles allows for multiple loading possibilities depending on the mission. We estimate that the force level of 350 ALCMs of all categories by 2012 has already been achieved in preparation for reaching the SORT level in 2010, two years early.*
5. *Approximately 200 of these are deployed at six bases in European NATO countries. Nuclear Tomahawk SLCMs also support NATO and Northeast Asian extended deterrence.*
6. *The U.S. government does not count spares as operational warheads. We have included them in the reserve, which we estimate contains approximately 2,500 warheads. Another 4,200 warheads are awaiting dismantlement.*

Source of table: Kristensen; Norris [2009a]

In terms of force structure requirements, the administration's 2010 Nuclear Posture Review declared that *"Since the end of the Cold War, the United States and Russia have reduced operationally deployed strategic nuclear weapons by about 75 percent, but both still retain many more nuclear weapons than they need for deterrence. The Administration is committed to working with Russia to preserve stability at significantly reduced force levels."* (NPR [2010a]: p. ix.) In order to meet this objective, three main steps were outlined. The first step was the conclusion of the New START Treaty with Moscow, under which the U.S. pledged to maintain the nuclear triad, and also committed to continue the "de-MIRV"-ing of the ICBMs to a one warhead configuration each, in order to enhance crisis stability.

The second step was to maximize presidential decision time. In this regard, the NPR concluded that the current alert posture of the U.S. strategic forces should be maintained but efforts should continue to further reduce the chances of accidental or unauthorized launches, as well as launches based on misperceptions, while the time available to the President to decide on the use of nuclear weapons should be maximized. For this purpose, the three key recommendations of the NPR: 1) continue the practice of "open-ocean targeting" of all ICBMs and SLBMs, 2) further strengthen the U.S. command and control system, and 3) explore new modes of ICBM basing so that their survivability would be enhanced and reduce any incentives for prompt launch.

The third step on the way of reduced force levels is reinforcing strategic stability. As both Russia and China are in the process of modernizing their nuclear forces,

maintaining strategic stability is going to be an important challenge in the future. Therefore, the U.S. pledged to “*pursue high-level, bilateral dialogues on strategic stability with both Russia and China which are aimed at fostering more stable, resilient, and transparent strategic relationships.*” (NPR [2010a]: p. x.)

Regarding further reductions, the NPR also stated that the President initiated a review of post-New START arms control objectives, in order to consider future nuclear reductions. The level of these reductions will primarily depend on three factors. The first factor to consider is the strengthening of the deterrence of potential regional adversaries, the strategic stability vis-à-vis Russia and China, and the continued assurance of the allies of the U.S. The second factor is the implementation of the Stockpile Stewardship Program and the investments in the nuclear weapons infrastructure which will allow the U.S. to reduce the number of the non-deployed warheads in the hedge force. The last influencing factor of future force reductions is the level of Russian nuclear forces. As it has been in the past, Russia will remain a significant factor in future U.S. force reductions. Although strict numerical parity is no longer imperative, the NPR still argued that large disparities would raise concerns in the U.S. and among allies as well, therefore the U.S. will try to pursue further reductions together with Russia. These further reductions should expand the scope of traditional arms control agreements and include non-strategic and non-deployed forces as well; and consultation with allies is imperative because of the continued U.S. commitments towards their reassurance.

Under the umbrella of strengthening regional deterrence and reassuring allies, the NPR contained some additional commitments. The conventional capabilities and the regional missile defense systems will be further strengthened in the future, and the U.S. will retain the capability to forward-deploy its nuclear forces on tactical fighter- and heavy bombers. The full scope of the B61 Life Extension Program will proceed and the nuclear-armed sea-launched cruise missiles (TLAM-N) of the Navy will be retired (in 2009 the U.S. still deployed around 100 non-strategic nuclear weapons on these systems).

As already mentioned, the NPR also committed the U.S. to maintain the strategic triad under the New START Treaty. In the framework of the START reductions, the U.S. would maintain a smaller triad which was seen as the best way to “*maintain strategic*

stability at reasonable cost, while hedging against potential technical problems or vulnerabilities.” (NPR [2010a]: p. 21.) The NPR also explained why all three legs were deemed necessary: SSBNs and SLBMs are the most survivable leg of the triad and there is no current or mid-term threat to the survivability of these systems. Single-warhead ICBMs contribute to stability as they are not vulnerable to air defenses (like the SLBMs) and finally, the bombers are essential as they can be visibly deployed as a signal in a crisis situation which would strengthen deterrence and reassure allies.

After the NPR was announced, the next result of the Obama administration was the New START Treaty. As the START I agreement expired on December 5, 2009, there was a huge pressure on the Obama administration to conclude the Treaty as soon as possible. At the G-20 meeting in London on April 1, 2009, President Obama and President Medvedev expressed their support to reduce the level of strategic offensive forces below the SORT agreement, and declared their commitment to conclude a new treaty before the START I expires. Negotiations, however, were slowed mostly because of disagreements around the U.S. planned missile defense system in Europe⁸⁶ and the parties missed the December deadline.⁸⁷ An agreement was finally reached on March 26, 2010 and the Treaty was signed by President Obama and President Medvedev on April 8, 2010.⁸⁸ (START III [2010a])

⁸⁶ In September, 2009, President Obama announced that the U.S. will seek a “Phased Adaptive Approach” in the European missile defense system, to be deployed between 2011 and 2018 in three phases (originally the U.S. planned to build four phases but the last phase was officially withdrawn in March, 2013 to ease some of the Russian concerns about the system’s capabilities against long-range ballistic missiles). The proposal is based on the Aegis missile defense system, and it will include sea-based elements on the Mediterranean Sea, and ashore deployments in Romania (Phase 2), and in Poland (Phase 3). The system, in addition, will include AN/TPY-2 radar deployment in Turkey, and a basic command and control capability at the NATO Headquarters Allied Air Command in Ramstein, Germany. At the 2010 Lisbon Summit, the European Phased Adaptive Approach (EPAA) was approved by NATO as its official ballistic missile defense system, and the 2012 Chicago Summit announced an “interim BMD capability.” Russia, in general, is worried about the capabilities of the ashore interceptors (SM-3 Block IA and IIA), which they claim could mean a threat to their ICBM capabilities in the third (and potential future phases).

⁸⁷ On December 4, 2009, Washington and Moscow issued a joint statement that “*Recognizing our mutual determination to support strategic stability between the United States of America and the Russian Federation, we express our commitment, as a matter of principle, to continue to work together in the spirit of the START Treaty following its expiration, as well as our firm intention to ensure that a new treaty on strategic arms enter into force at the earliest possible date.*” (The White House [2009])

⁸⁸ Moscow’s concerns about the European missile defense system, however, have not been adequately addressed, and it declared in a unilateral statement on April 7, 2010 that the New START agreement “*may be effective and viable only in conditions where there is no qualitative or quantitative build-up in the missile defense system capabilities of the United States of America.*” (Russian Federation [2010]) In response to this statement, the U.S. also released two unilateral statements which assured Russia that the U.S. missile defense plans in Europe are not intended to upset the strategic balance between the U.S. and Russia.

In its first two years, the administration was really effective and successful in the implementation of its nuclear agenda therefore the White House expected a quick ratification process of no more than three months, and after the ratification of the New START agreement, they hoped to use the momentum and submit the CTBT immediately for a vote. But the difficulties of ratifying the New START agreement already projected that future initiatives will be extremely hard to implement (including the ratification of the CTBT).⁸⁹ President Obama's rhetoric was too progressive for some conservative lawmakers who feared that the New START agreement would be only the first step in a series of more dramatic reductions therefore they developed a reflexive opposition against any arms control measures which was put forward by the administration. (Interviews with Steven Pifer [2013] and Robert J. Einhorn [2014]) In order to address these fears, the administration was forced into a "grand bargain" and President Obama made a commitment to invest in the nuclear weapons infrastructure –

⁸⁹ Ratifying the CTBT was an important element of the Obama campaign in 2008, and it was high on the agenda in the Prague address, and the 2010 NPR as well. As the NPR stated, "*Ratification of the CTBT is central to leading other nuclear weapons states toward a world of diminished reliance on nuclear weapons, reduced nuclear competition, and eventual nuclear disarmament. U.S. ratification could also encourage ratification by other states, including China, and provide incentives for the remaining states to work toward entry into force of the treaty.*" (NPR [2010a]: p. 13.) In this regard, the administration took some promising steps in the first two years by putting in place the technical background for the debate. Two non-partisan research groups were asked to provide an updated assessment on the technical issues related to the CTBT: the National Academy of Sciences updated its 2002 study on the CTBT and the JASONs also came out with a new report in 2009. The updated NAS study was released in March, 2012 and it concluded that the U.S. "*has the technical capabilities to maintain a safe, secure, and reliable stockpile of nuclear weapons into the foreseeable future without nuclear-explosion testing*" and "*is now better able to maintain a safe and effective nuclear stockpile and to monitor clandestine nuclear-explosion testing than at any time in the past.*" (NAS [2012]: p. 4; 12.) While, the JASONs found that the "*lifetimes of today's nuclear warheads could be extended for decades, with no anticipated loss in confidence*" and there is "*no evidence that accumulation of changes incurred from aging and LEPs have increased risk to certification of today's deployed nuclear warheads.*" (JASON [2009]: p. 2.)

Although the technical background of the CTBT seems to be stronger than ever, the ratification is still a captive of political turf wars. The administration expected a quick ratification process for the New START Treaty, and hoped to submit the CTBT for a Senate vote immediately afterwards. But the unforeseen difficulties of the START ratification sent a warning sign to the CTBT process as well, and the momentum of the first two years was lost. After President Clinton's failure to ratify the CTBT, the Obama White House did not want to repeat the mistake to submit the treaty without the necessary number of supporters. This projected a long and painful process of lobbying in the Senate. In 2011, Under Secretary of State for Arms Control and International Security Ellen O. Tauscher spoke at the Arms Control Association's annual meeting and outlined a strategy which was based on three arguments: "*One, the United States no longer needs to conduct nuclear explosive tests, plain and simple. Two, a CTBT that has entered into force will obligate other states not to test and provide a disincentive for states to conduct such tests. And three, we now have a greater ability to catch those who cheat.*" (Tauscher [2011])

Although the CTBT is the "*most verifiable treaty*," the chances of ratification seem to be less by each year. "*Democrats would ratify but can't, while Republicans could but wouldn't*" – the Democrats are running out of time, and it will probably take the next moderate Republican President to ratify the treaty. However, regardless of which party wins the next elections, there is a strong norm against testing and the moratorium seems to firm. (Interview with Robert J. Einhorn [2014])

in November, 2010, the administration announced an unprecedented \$85 billion package “*to modernize the U.S. nuclear weapons complex that supports our deterrent.*” (Obama [2010])

After a long process of Congressional Hearings, on December 22, 2010 the U.S. Senate finally approved the ratification of the New START agreement by a vote of 71 to 26 in favor. This success was partly due to President Obama’s commitment to modernizations, and partly to Senator Lugar’s efforts in the Senate Foreign Relations Committee, who was instrumental in bringing the necessary number of Republican votes to the table, in order to reach the two thirds majority. After the successful Senate vote in the U.S., the Russian Duma also gave its endorsement to the Treaty which entered into force on February 5, 2011.

Since the entry into force of the START I agreement in 1994, this was the first verifiable arms control agreement to take effect between Washington and Moscow. The New START agreement was concluded for a duration of ten years, with the option to extend the agreement for an additional five years. The implementation deadline is seven years, which means that the two sides have to reduce their forces to the levels of the agreement by February 5, 2018.

The main provisions of the New START agreement oblige Washington and Moscow to reduce their deployed strategic nuclear forces to 1,550 “treaty accountable” warheads and 700 ICBMs, SLBMs and heavy bombers. This reduction means approximately 30 percent less than the 2,200 upper limit of the 2002 SORT agreement, and 74 percent less than the START I limit of 6,000. The combined limit for deployed and non-deployed ICBMs, SLBMs and heavy bombers is 800.

The term “treaty accountable” in this case means the actual number of re-entry vehicles emplaced on ICBMs and SLBMs, while one warhead is counted for each deployed heavy bomber (even if there are more warheads assigned to it). As the NPR explains, “*Under the New START, dual-capable bombers will count as both one strategic delivery vehicle, and as one warhead. This counting rule was adopted in recognition of the facts that heavy bombers do not pose a first-strike threat to either side, and that on a day-to-day basis few or no bombers are loaded with nuclear weapons.*” (NPR [2010a]: p. 21.)

As a result of this counting rule, the absolute number of deployed warheads can exceed the 1,550 limit, which will bring it exactly to the ranges of the 2002 SORT Treaty (1,700-2,200). This is why critics of the New START agreement argue that the numbers are not low enough, and in fact the treaty only codified the projected numbers of the Bush administration. The main reason for these moderate reductions is that the START negotiations were conducted under the Bush administration's presidential guidance document (the NSPD-14 from 2002), which determined that the numbers would reflect the previous administration's force structure.⁹⁰ Although the New START limits are extremely moderate, it is also important to emphasize that the U.S. was ready to go deeper but Russia was not willing to agree to it (as the number of launchers was already set).⁹¹ Joe Cirincione, president of the Ploughshares Fund argued that *“Even under the Bush 2002 guidance, which [affected] our forces until yesterday [June, 2013], the [Joint Chiefs of Staff] were ready to go down to 1,300 operationally deployed strategic weapons.”* (Quoted in Grossman [2013])

In terms of verification mechanisms and transparency measures, the New START Treaty combines elements of the 1991 START I agreement with some new practices. These measures include national technical means (for example satellites), on-site inspections and exhibitions, data exchanges and notifications related to strategic offensive arms and facilities covered by the Treaty. For the sake of increased transparency, the treaty also allows an annual exchange of telemetry on an agreed number of ICBM and SLBM launchers. Verification mechanisms also differentiate between Type One and Type Two inspections: Type One focuses on sites with deployed and non-deployed strategic systems; while Type Two focuses on sites with only non-deployed strategic systems. According to the webpage of the Department of State, as of July 10, 2014 the U.S. and Russia conducted altogether 123 inspections and 6,802 notifications were exchanged since the entry into force of the Treaty. (START III [2010b])

⁹⁰ As already mentioned before, it was a strategic (and unprecedented) decision by the administration that the targeting review, or the so called review of the presidential guidance was postponed until the New START negotiations were finished, so that no review would be underway while the U.S. was negotiating with Russia. Therefore, the Bush guidance remained in force until mid-2013 and the negotiating thresholds were laid out by the 2010 Nuclear Posture Review.

⁹¹ Russia is already below the U.S. regarding the number of launchers, and this number is expected to shrink further in the coming decades. Therefore, Moscow tries to keep strategic parity with the U.S. by higher warhead loadings on the deployed launchers – this is why lower warhead limits were not in their interest if the number of launchers was already settled at a relatively high limit (if they agreed to these terms, the U.S. would have a much bigger upload capability on its strategic deliveries).

The Treaty, in general, provides a lot more flexibility to the parties than the START I agreement. It gives total flexibility on the composition of forces and it also emphasizes that it does not constrain U.S. programs or plans for missile defense or conventional systems. It does ban the conversion of ICBM and SLBM launchers to launchers of missile defense interceptors but as Amy Woolf from the Congressional Research Service argues, “*the United States never intended to pursue such conversions when deploying missile defense interceptors.*” (Woolf [2014b]: p. ii.) Regarding conventional weapons, the U.S. can also deploy conventional warheads on ballistic missiles, but these systems will count under the limits of the treaty.

In April, 2014, three years after the treaty’s entry into force, the DoD finally released its plan on the implementation of the New START agreement. (U.S. Department of Defense [2014])

Table 7. Nuclear Force Structure under the New START Treaty

Existing Types of ICBMs, SLBMs, and heavy bombers	2014 Deployed and Non-Deployed ICBM launchers, SLBM launchers, and heavy bombers	2018 Deployed ICBMs, SLBMs, and heavy bombers	2018 Deployed and Non-Deployed ICBM launchers, SLBM launchers, and heavy bombers
Minuteman III ICBMs	454 ¹	400	454
Trident II SLBMs	336	240	280
B-2A/B-52H Bombers	96 ²	60	66
Total	886	700	800

1. Does not include 53 non-operational ICBM launchers (52 Minuteman III and one Peacekeeper) currently being eliminated.

2. Does not include 13 non-operational B-52H bombers scheduled to be converted or eliminated.

Source of table: U.S. Department of Defense [2014]

The DoD plan reveals that in order to meet the New START limits by 2018, the U.S. will place 50 currently deployed ICBM launchers into a non-deployed status, by removing the ICBMs from the silos. Four SSBN launch tubes will be converted on each of the 14 SSBNs, removing 56 launch tubes from accountability. As a result of this reduction, a maximum of 12 SSBNs will remain with 20 loaded missiles at any given time (with two SSBNs staying in overhaul), providing 240 deployed SLBMs and SLBM launchers. Regarding the bomber force, the U.S. will retain 19 B-2As and 41 B-52Hs as

nuclear capable heavy bombers, and 30 B-52H bombers will be converted to a conventional role only (thus, removing them from accountability). The DoD will manage the 1,550 accountable warheads on the deployed ICBMs, SLBMs, and heavy bombers based on these numbers. (U.S. Department of Defense [2014])

A discrepancy in this regard is that the administration pledged to retain those 50 silos which will be emptied under the New START Treaty. While the 50 silos at Malmstrom Air Force Base (AFB) and the 50 at F.E Warren AFB – which were emptied by the Bush administration’s reductions – will be destroyed by 2016, the Obama administration decided to keep the empty silos to provide a reloading capacity for the Minuteman III ICBMs. This goes against previous practices (i.e. destroy empty launchers), and it might also weaken the flexibility of the U.S. as the 50 empty silos would “eat up” half of the 100 non-deployed launchers, allowed under the New START Treaty. (Kristensen [2014d])

Based on the official stockpile numbers released by the administration, between 2009 and 2014 the Obama administration has reduced its nuclear forces by only 309 nuclear warheads (a reduction from 5,113 to 4,804 warheads). (U.S. Department of State [2014a]) This reduction is most likely the result of four factors: 1) retiring the TLAM-N systems from the service of the Navy, 2) retiring some tactical nuclear weapons, 3) retiring some strategic nuclear weapons, and 4) reducing the number of legacy warheads.

In 2009, the U.S. still had a hundred warheads deployed on TLAM-N launchers, which was retired by the 2010 NPR in order to reduce the redundancy in the stockpile. The retirement was probably completed by early 2013, as unlike every previous document, the new Secretary of the Navy Instruction of February 15 no longer contained a subsection describing the role of the TLAM-N systems. (Secretary of the Navy [2013]) This reduction meant that the Navy completed a 25-year process to get out of the business of non-strategic nuclear weapons.⁹² This is an important milestone in putting

⁹² The retirement of these systems started in 1989, when the Navy unilaterally decided to retire its submarine-launched rocket (SUBROC), ship-launched rocket (ASROC) and ship-launched surface-to-air Terrier missiles. The Reagan administration planned to replace these systems but all of these replacement programs were cancelled. After these retirements, the Navy still had the B61 and B57 bombs on aircraft carriers and land-based anti-submarine aircrafts, and the TLAM-N system. The PNIs of the Bush administration unilaterally cancelled the replacement programs for the naval B61 and B57, and declared to offload and withdraw all non-strategic nuclear weapons. This process was continued by the Clinton

an end to the Cold War force structure. In 1987, the U.S. Navy possessed around 3,700 non-strategic nuclear weapons, on almost 240 nuclear-capable ships and attack submarines. The retirement of the TLAM-N system means that there are no more such weapons left, which also indicates the decreasing military and political value of non-strategic nuclear weapons in the reassurance of allies. Moreover, these steps also triggered some reciprocal measures in Russia, where a third of the non-strategic naval nuclear weapons have been eliminated since 1991. (Kristensen [2013b])

Regarding the three other sources of reduction, some B61 tactical nuclear weapons were retired, as well as some B61-7 strategic nuclear weapons. In addition, some W76 legacy warheads were also taken out of the stockpile, which were only maintained to hedge warheads which were undergoing life extension. (Interview with Hans M. Kristensen [2014])

Parallel to these reductions, another source of change in the U.S. force structure comes from the implementation of the New START Treaty – although it probably did not (and will not) reduce the overall number of the active stockpile (the weapons to be taken out of deployed status will most likely remain in the non-deployed hedge force). In this regard, the first main result of the implementation is the reconfiguration of the ICBMs. The process of “de-MIRV”-ing the ICBMs was already started during the Clinton administration and President Obama pledged to finish the job under the New START Treaty (however, official statements suggested that a “re-MIRV”-ing capability will be retained as a hedge against the uncertainties of the security environment). (Congressional Hearing [2011]) As a result of this “de-MIRV”-ing process, on June 18, 2014, the Great Falls Tribune reported that the nation’s last Minuteman III ICBM was reconfigured at Malmstrom AFB to carry only a single warhead. (Rowell [2014]) The Minuteman III ICBMs were originally designed to carry up to three independently targetable re-entry vehicles, able to hit three separate targets. The reconfiguration of the Minuteman III ICBMs was also a historic milestone in shifting away from Cold War force structures as MIRV-ed ICBMs had been in the U.S. arsenal since the first

administration, which denuclearized the entire surface fleet, leaving only the TLAM-N system on the navy’s attack submarines. (Although the missiles were stored on land and did not make it back to sea.) During the Bush administration, the Navy already wanted to retire the TLAM-N but NSC and OSD officials insisted that these systems still play a role in the reassurance of allies, therefore the TLAM-N survived the 2001 NPR. The Obama administration, on the other hand, was determined enough to retire the system. (Kristensen [2013b])

Minuteman III came on alert in 1970. When the Obama administration took office in 2009, the U.S. still had a few ICBMs, carrying multiple⁹³ W78 warheads, which by mid-2014 has been reduced to zero. As the NPR stated, this step “*will enhance the stability of the nuclear balance by reducing the incentives for either side to strike first.*” (NPR [2010a]: p. 23.)

Although the ICBMs have been successfully “de-MIRV”-ed by 2014, SLBMs are still carrying three, four, or five warheads, depending on their mission. According to the latest data exchange (July 1, 2014) under the New START Treaty (U.S. Department of State [2014b]), the U.S. and Russian strategic nuclear arsenals are the following:

Table 8. New START Treaty Aggregate Numbers of Strategic Offensive Arms

Category of Data	United States of America	Russian Federation
Deployed ICBMs, Deployed SLBMs, and Deployed Heavy Bombers	778	498
Warheads on Deployed ICBMs, on Deployed SLBMs, and Nuclear Warheads Counted for Deployed Heavy Bombers	1,585	1,512
Deployed and Non-deployed Launchers of ICBMs, Deployed and Non-deployed Launchers of SLBMs, and Deployed and Non-deployed Heavy Bombers	952	905

Source of table: U.S. Department of State [2014b]

Based on these numbers, Moscow has already met the New START limits, both in terms of deployed deliveries and in terms of deployed warheads. The U.S., on the other hand, is still above all limits. According to the 2014 Nuclear Notebook on U.S. nuclear forces, the current arsenal consists of 2,120 operational warheads (1,150 on SLBMs; 470 on ICBMs; 300 strategic warheads are located at bomber bases; and around 200 non-strategic nuclear weapons are deployed in Europe). It leaves around 2,530 warheads in storage as a so-called hedge force, and another 2,700 nuclear warheads are awaiting dismantlement. (Kristensen; Norris [2014b]: p. 85.) In this regard, the revealed stockpile numbers of the Obama administration contain concrete data on weapon

⁹³ If the capability to carry multiple warheads was still there in the case of a few ICBMs, then the assumption is that the maximum number of three warheads was probably deployed on those ICBMs. (Interview with Hans M. Kristensen [2014])

dismantlements since 1994.⁹⁴ These numbers show that between 1994 and 2013, altogether 9,952 nuclear warheads had been dismantled – while during the first half of the 1990s more than 1,000 nuclear warheads were dismantled each year, the Obama administration dismantles between 350 and 240 nuclear weapons each year. (U.S. Department of State [2014a])

Based on these data, the 2014 Nuclear Notebook contains the following U.S. force structure:

Table 9. U.S. Nuclear Forces (2014)

Type/Designation	Number	Year Deployed	Warheads x Yields	Deployed
ICBMs				
LGM-30G Minuteman III				
Mk-12A	200	1979	1-3 W78 x 335 kt (MIRV)	220
Mk-21/SERV	250	2006 ¹	1 W87 x 300 kt	250
Total	450			470
SLBMs				
UGM-133A Trident II D5	288 ²			
Mk-4		1992	4 W76 x 100 kt (MIRV)	268
Mk-4A		2008	4 W76-1 x 100 kt (MIRV)	500
Mk-5		1990	4 W88 x 455 kt (MIRV)	384
Total	288			1,152
Bombers				
B-52H Stratofortress	93/44 ³	1961	ALCM/W80-1 x 5-150kt	200
B-2A Spirit	20/16	1994	B61-7/-11, B83-1	100
Total	113/60			300⁴
Nonstrategic forces				
B61-3/-4 bombs	n/a	1979	0,3-170 kt	200 ⁵
Total				200
Total deployed				~2,120⁶
Reserve				~2,530
Total stockpile				~4,650
Awaiting dismantlement				~2,700
TOTAL INVENTORY				~7,400

⁹⁴ By definition a warhead is dismantled if it is reduced to its component parts. (U.S. Department of State [2014a])

1. *The W87 was first deployed on the MX/Peacekeeper in 1986.*
2. *Two additional submarines with 48 missile tubes (total) are normally in overhaul and not available for deployment. Their 48 missiles, with 288 warheads, are considered part of the responsive force of reserve warheads. Sometimes more than two submarines are in overhaul.*
3. *The first figure is the aircraft inventory, including those used for training, testing, and backup; the second is the primary mission aircraft inventory – the number of operational aircraft assigned for nuclear or conventional missions.*
4. *The pool of bombs and cruise missiles allows for multiple loading possibilities depending on the mission. The Air Force has 528 ALCMs, of which 200 are deployed at Minot AFB. Although B-52Hs can also carry B61-7 and B83-1, gravity bombs are only planned for delivery by the B-2s.*
5. *These are deployed in Europe. Another 300 bombs are in storage in the United States, for a total inventory of 500 nonstrategic bombs.*
6. *The U.S. government does not count spares as operational warheads. We have included them in the reserve.*

Source of table: Kristensen; Norris [2014b]

Between January, 2009 and January, 2014, the number of deployed ICBMs did not change, it remained on the level of 450 Minuteman III ICBMs, but as a result of the “de-MIRV”-ing process, the number of assigned warheads has been cut from 550 to 470 (by mid-2014 it was further reduced to 450, as the “de-MIRV”-ing was completed). Regarding the SLBMs, there was no change either in the number of missiles or in the number of warheads. The strategic bombers also remained on the levels of 2009, and the number of the assigned warheads has probably also remained at around the same levels.⁹⁵

In addition, the TLAM-N system was retired, leaving the 200 B61 bombs in Europe as the only deployed non-strategic nuclear capability of the U.S. Although the U.S. and NATO do not officially disclose the number and location of non-strategic nuclear weapons, it is widely believed that the current inventory of B61-3, B61-4 and B61-10 gravity bombs is about 500. Of this 500, 180-200 B61-3 and B61-4 warheads are deployed at six bases in five European countries: Belgium, Germany, Italy, the Netherlands, and Turkey. The remaining 300 B61 tactical bombs are stored in the continental U.S. for potential overseas deployment to support extended deterrence. (Besides the B61 bombs, around 260 W80-0 ALCM warheads (for the TLAM-N systems) were also part of the non-strategic nuclear arsenal of the U.S. but these weapons have been retired by the 2010 NPR.) (Kristensen [2012]: pp. 11-14.)

⁹⁵ The authors of the Nuclear Notebook received information that their 2009 estimates for deployed bomber weapons were too high, and the 2014 numbers seem to be closer to reality, which basically implies that no major changes were implemented between 2009 and 2014. (Interview with Hans M. Kristensen [2014])

In terms of future reductions, President Obama announced in his 2013 Berlin address that the administration finished the review of nuclear guidance, and according to the “Obama guidance,” the U.S. can safely cut the number of deployed strategic nuclear weapons by up-to a third. Accordingly, the administration pledged to seek negotiated cuts with Russia to further reduce the deployed strategic nuclear forces to 1,100-1,000 (but the framework and form of these reductions is still not clarified). (Obama [2013b])

4.2 Nuclear Modernizations

As most U.S. nuclear weapons systems were developed during the Cold War, they are coming close to the end of their service life. The U.S. is currently in the process of modernizing all of its strategic delivery systems and it is refurbishing its nuclear warheads so that they could continue their mission for at least 20-30 years into the future. This robust modernization program has essentially three legs: modernizing the strategic delivery systems, refurbishing nuclear warheads, and modernizing the nuclear weapons infrastructure.

The first leg of the modernization program is directed at the delivery systems. According to the 2014 Nuclear Notebook, at the moment, the U.S. Air Force operates 450 silo-based Minuteman III ICBMs, evenly split between the F.E. Warren AFB in Wyoming, the Minot AFB in North Dakota, and the Malmstrom AFB in Montana. Each wing is divided into three squadrons, with 50 missiles and five launch-control centers. Under the New START Treaty, the ICBM force will be reduced to 400 missiles, retiring one squadron at one of the three bases. These missiles traditionally carry either the 335-kiloton W78 or the 300-kiloton W87 warheads. (Kristensen; Norris [2014b]: pp. 89-90.) As a result of the downloading process, since mid-2014 each ICBM carries a single warhead. The modernization program of the ICBM force will be completed in 2015 and it aims to extend the service life of the Minuteman III ICBMs to 2030 (the LEP of the ICBMs is already underway and it is estimated to cost \$7 billion). The “new” missiles will have expanded target options, enhanced accuracy and survivability. In addition, options are weighed to sustain or replace the Minuteman III missiles after 2030 (the costs of developing the new missiles and rebuilding the warheads could reach \$10 billion over the next decade). (Collina [2014])

The Navy currently operates 14 Ohio-class ballistic missile submarines (in general, 12 subs are operational, while the 13th and the 14th are in overhaul at any given time). Although the Navy does not disclose the exact mission of these submarines, based on the Navy's public list of SSBN homeports, it is believed to assign eight boats to the Pacific and six to the Atlantic. The submarines are based at Bangor, Washington (eight subs), and Kings Bay, Georgia (six subs). (U.S. Department of the Navy [2014] and Kristensen; Norris [2014b]: p. 90.) The service life of an Ohio-class submarine is 42 years – two twenty year cycles and a two-year mid-life nuclear refueling. (Collina [2014])

All of these SSBNs carry Trident II D5 SLBMs, although the data exchanges under the New START agreement suggest that normally only 10 or 11 boats are fully equipped with missiles, ready to fulfill their mission. At the moment, SSBNs carry 1,152 warheads – each SLBM is usually equipped with three, four or five warheads (instead of the maximum eight). These warheads include the 100-kiloton W76-0, the 100-kiloton W76-1 (which is the refurbished version of the W76-0 with an added safety device), and the 455-kiloton W88. The number of deterrent patrols has been decreasing – while submarines executed 64 patrols in 1999, today each submarine conducts 2.5 patrols in average per year. Eight or nine of the operational submarines are at sea at any given time – four or five (two-three at the Pacific and one-two at the Atlantic) are at “hard alert” within the range of their targets, while the other three or four are in transit to or from their patrols, on a so called “modified alert.” (Kristensen; Norris [2014b]: pp. 90-91.) Currently there are 24 missile tubes on each submarine, which will be reduced to 20 launch tubes and altogether 240 SLBMs under the New START agreement. In the framework of the SSBN modernization program, twelve new replacement boats (called SSBNX) are planned, instead of the current fleet of 14 boats. The construction of the first new boat is scheduled to start in 2021, and it will be operational by 2031 (in the meanwhile, the “old” submarines are scheduled to retire between 2027 and 2040 at a rate of one boat per year). Beginning in 2017, the new submarines will be equipped with the life extended D5LE missiles, which have an upgraded guidance system for more flexibility and accuracy. The Congressional Budget Office estimates that the lead boat would cost \$13.3 billion, and each subsequent boat \$7 billion, for a total cost of \$85 billion. In addition to this amount, research, development and evaluation of the SSBNX will cost another \$10-15 billion, adding up to \$100 billion total for the project. The

entire lifecycle cost of the next generation SSBNXs is estimated at \$347 billion. (Collina [2014])

The Air Force currently operates 20 B-2 and 93 B-52H bombers at three bases: the B-2 Spirit bombers at Whiteman AFB in Missouri, and the B-52H bombers at Minot AFB, North Dakota, and at Barksdale AFB, Louisiana. Of this fleet, 20 B-2s and 78 B-52Hs are nuclear capable and approximately 60 bombers (16 B-2s and 44 B-52Hs) are assigned for nuclear missions. (Woolf [2014c] and Kristensen; Norris [2014b]: p. 91.) Under the New START agreement, the DoD will retain 19 B-2s and 41 B-52Hs as nuclear capable, and convert 30 B-52Hs to a conventional role only. (U.S. Department of Defense [2014]) The B-2s can carry up to 16 nuclear bombs (B61-7, B61-11 and B83-1), while the B-52Hs carry air-launched cruise missiles and no longer assigned to gravity bombs. According to estimates, approximately 1,000 nuclear weapons are assigned to the bombers (528 ALCMs, plus the gravity bombs), but most of these weapons are in central storage at Kirkland AFB, New Mexico; at Nellis AFB, Nevada; at Minot AFB, North Dakota; and at Whiteman AFB, Missouri. Since the bombers were taken off alert status, these weapons are no longer loaded on bombers under normal circumstances, but they can be deployed very quickly. (Kristensen; Norris [2014b]: p. 91.) In the framework of the modernization programs, the B2s are scheduled to receive the new B61-12 precision guided nuclear bombs in the 2020s, and from the mid-2020s the replacement of the B-52s will start with a new long-range bomber (as the service life of the B-2s is expected to last until 2058, their replacement will only start decades later, but there will be upgrades to their survivability and mission effectiveness). According to the 2012 Aircraft Procurement Plan, 80-100 new bombers are planned, of which some will be nuclear-capable. The procurement of each unit is estimated to cost \$550 million, with a total cost of \$40-60 billion for the next generation bombers (including research and development). (U.S. Department of Defense [2011]: pp. 21-22.) The new long-range bombers will also be equipped with the new B61-12 bombs and the new ALCM missiles, called Long-Range Stand-Off (LRSO) missiles. At the moment, the LRSO warhead is delayed by 1-3 years to FY2025-2027, and the LRSO missile is delayed by three years. If the Pentagon decides to move forward with the LRSO program, the new cruise missiles are expected to enter into service around 2025, and it could cost \$10-20 billion in total. These missiles will probably be equipped with the life-extended W80-1

or the life-extended retired W-84 warheads. (Collina [2014] and Kristensen; Norris [2014b]: pp. 91-92.)

The second leg of the modernization programs is the refurbishment of the nuclear weapons stockpile. The National Nuclear Security Administration (NNSA) is responsible for the Life Extension Program (LEP) of the nuclear warheads and bombs. In this regard, the NNSA revealed its long-term “3+2” modernization program in the Fiscal Year 2014 Stockpile Stewardship and Management Plan, submitted to Congress in June, 2013. (FY 2014 SSMP [2013]) According to the SSMP, the “3+2” is a long-term strategic vision “*to transition the composition of the stockpile to a total of five unique systems:*

- *Three ballistic missile-type warheads, each deployable on both Air Force and Navy delivery systems, employing three interoperable nuclear explosive packages with adaptable non-nuclear components.*
- *Two types of air-delivered nuclear weapons, both deployable in a cruise missile and a bomb weapon system, employing interoperable nuclear explosive packages with adaptable non-nuclear components.”* (FY 2014 SSMP [2013]: p. 1-2)

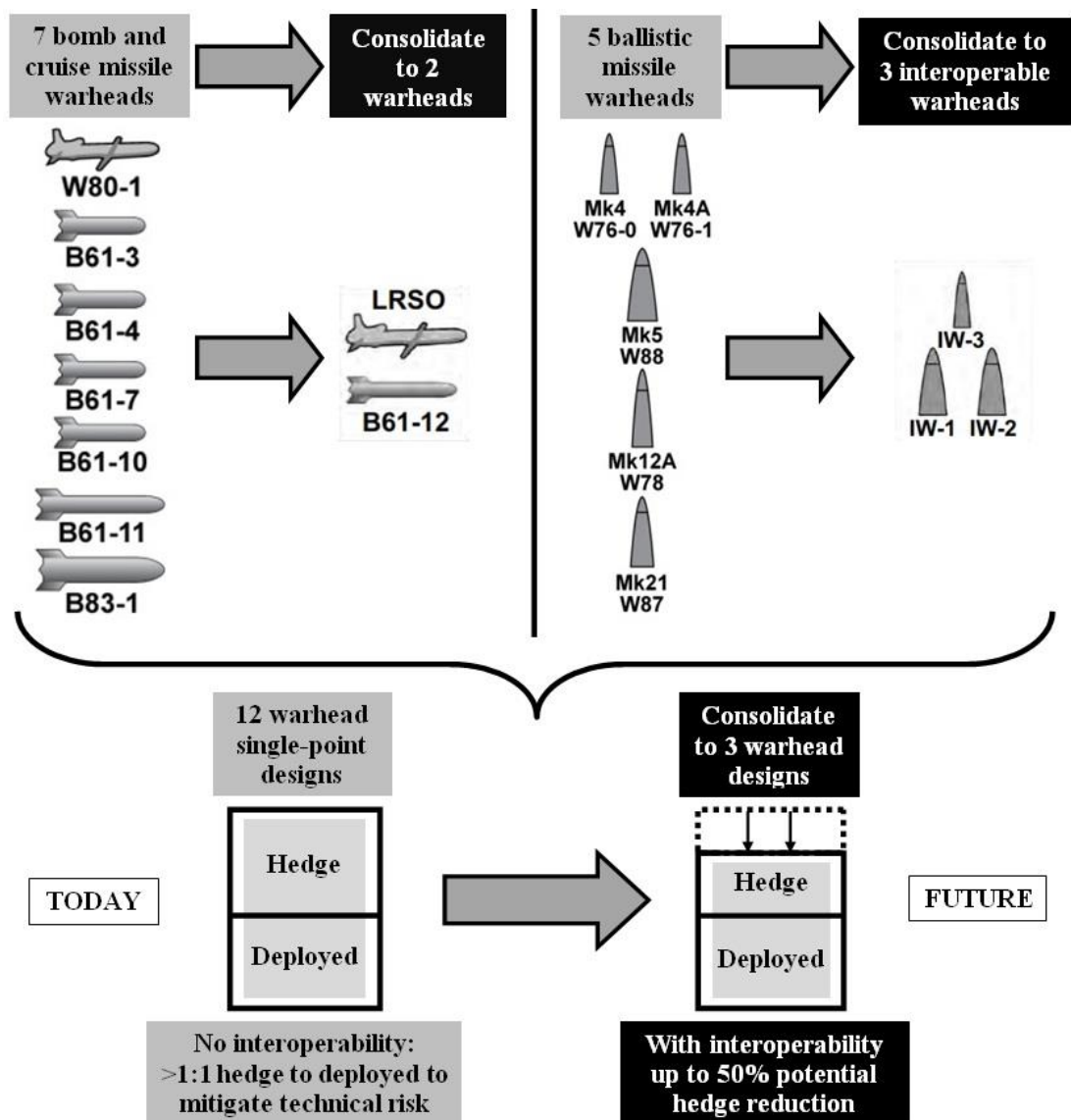
In cooperation with the DoD, the LEP schedules will be aligned with the DoD delivery platform upgrades. As a consequence of the interoperable warheads (IW), the program objectives include a long term vision to reduce the total number of systems, as well as the amount of warheads in the technical hedge; to stay within the NNSA’s planned production capabilities and capacities; and finally to balance the workload in the nuclear security enterprise. (FY 2014 SSMP [2013]: p. 2-16)

The current U.S. nuclear arsenal includes two types of ICBM warheads (the W78 and the W87), two types of SLBM warheads (the W88 and the W76), while there are three types of warheads for long-range bombers and fighter jets (the B61-3/4/7/10 bombs, the W80-1 ALCM warheads and the B83 bombs). In the framework of the “3+2” program, the current seven types would be reduced to five – three interoperable ballistic missile-types and two air-delivered. In terms of implementation, this would mean that:

- the first interoperable warhead (IW-1) will be the life extended W78/W88-1 warhead (available for ICBMs and SLBMs),

- the second interoperable warhead (IW-2) will be the life extended W87/W88-1 warhead (available for ICBMs and SLBMs),
- the third interoperable warhead (IW-3) will be the life extended W76-1 warhead (available for ICBMs and SLBMs),
- a cruise missile warhead (probably the life extended W80-1 or the W84) will be assigned to the ALCM missiles (and the future LRSOs),
- and the new B61-12 precision-guided standoff bomb will be assigned to the B2s.

Figure 5. The “3+2” Nuclear Modernization Program



Source of figure: FY 2014 SSMP [2013]: p. 1-3. (modified by the author)

The NNSA claimed that the “3+2” would provide multiple advantages: 1) fewer warhead types, which would permit reductions in the hedge; 2) modified warheads with increased safety, use control, and performance margin; and 3) fewer warheads, which will be cheaper to maintain and deploy. (Kristensen [2014c]) But despite these promises, Congress had been skeptical about the proposal since the very beginning. As the Senate Appropriations Committee wrote it last year, the “3+2” vision “*may be unnecessarily complex and expensive, increase uncertainty about certification [and] fail to address aging issues in a timely manner.*” (Quoted in Arms Control Association [2014]) In addition, it is not guaranteed that interoperable warheads will provide a necessary level of confidence, as they are further from the tested designs; and it is also questionable that the IWs will not go against President Obama’s pledge to stop the development of new nuclear weapons. Besides, as lawmakers said, the “3+2” is complex and expensive (it is expected to cost \$60 billion), which projects potential delays and cost overruns. (Kristensen [2014c]) As a result of these skeptical voices, key components of the “3+2” were delayed by the FY 2015 SSMP. While the NNSA expressed its additional support to the project, strict budget realities forced the agency to implement adjustments, and it decided to delay the production of the first interoperable warhead by five years to FY 2030. (FY 2015 SSMP [2014]: pp. iii-iv.) Altogether, despite the continued support of the NNSA, it still remains questionable if the “3+2” can survive in the current budget environment.

Although the future of the overall “3+2” strategy might be in question, the key life extension programs seem to be on track. In January, 2014, the President requested full funding for the W76-1 and the B61-12 LEPs, which was essentially matched by the FY15 National Defense Authorization Act (NDAA) of the House. The W76-1 LEP will be finished by 2019, while the initial production of the B61-12 and the W88 Alt 370 are scheduled for early 2020. (Harvey [2014])

The most controversial program of these life extensions is the B61-12. In the framework of the LEP of the B61 gravity bomb, the old versions of the bomb (B61-3/4/7/10/11)⁹⁶ will be replaced by the 12th modification, which will be a low-yield, precision-guided nuclear weapon. The B61-12 will receive a guided tail kit to increase its accuracy, and it

⁹⁶ The currently deployed five versions of the B61 include the B61-3, -4, and -10 tactical bombs; the B61-7 strategic bomb; and the B61-11 strategic earth-penetrating bomb. The Mod 3 and 4 versions are the tactical nuclear weapons, which are still deployed in Europe. (Kristensen; Norris [2014a]: p. 79, 82.)

will be able to strike targets more accurately, with a smaller yield, and with a reduced radioactive fallout from the attack. This modification would enable the current 50-kiloton warhead from the B61-4 to hold at risk the same targets which are currently targeted by the higher yield B61-7. In the framework of the LEP program, the administration plans to retire three of the currently deployed versions of the B61, and convert the B61-4 into the B61-12, which would be able to serve on both strategic and tactical aircrafts. The Obama administration approved the development of the B61-12, which entered the engineering phase in 2013, and the first production unit is expected by 2020. (Kristensen; Norris [2014a])

Regarding the overall program, two fundamental issues are debated by members of Congress and the expert community as well: first, the record high price of the weapon, which makes the new B61-12 bombs more expensive than if they were made of solid gold – the NNSA’s estimated cost for the B61 LEP has doubled between 2010 and 2012 from the initial \$4 billion to \$8 billion. A DoD Cost Assessment & Program Evaluation study projected \$10.4 billion, in addition to which the guided tail kit assembly will cost \$1.4 billion. As plans are about building 500 B61-12s, this will be the most expensive bomb project ever. (Kristensen [2014b]: p. 10.) The second concerning issue relates to the enhanced capabilities of the new modification, which raise concerns that the B61 LEP might go against President Obama’s promises, and provide the Air Force with an essentially new weapon, which supports new missions. The increased accuracy and the standoff capability, deployed on the future F-35A fighters will definitely improve NATO’s nuclear posture (although the enhanced capabilities of the new B61-12 will not be so “visible” on the current F-16A/B and Tornado fighters, as the B61-12 tail kit will be locked on these systems).⁹⁷ (Kristensen; Norris [2014a])

The third leg of the nuclear modernization programs is the nuclear weapons infrastructure – the NNSA continues “*to work to deliver an infrastructure that supports our uranium, plutonium, non-nuclear, and high-explosive manufacturing capabilities.*” (FY 2015 SSMP [2014]: p. 1-4.) In this regard, the NNSA has three flagship projects: the construction of a Uranium Processing Facility (UPF), a plutonium production facility, and a National Ignition Facility.

⁹⁷ The FY 2015 budget request of the Air Force indicates that the integration of the B61-12 on NATO F-16 and Tornado aircrafts will start in 2015, and it will be completed in 2017 and 2018. In Europe, the Air Force also plans to equip all F-35s with nuclear capability by 2024. (Kristensen [2014a])

The Uranium Processing Facility is in the preliminary design phase at Oak Ridge, Tennessee, and it would “*provide capabilities for highly enriched uranium that are now performed in aging facilities to be replaced by FY 2025.*” The construction of the UPF was proposed to support the “3+2” strategy and to satisfy military requirements. (FY 2015 SSMP [2014]: p. 1-4.) When the construction of the UPF was mandated in 2011, the NNSA estimated that its overall cost would be between \$4.2 billion to \$6.5 billion. (Roth; Kristensen; Young [2011]) However, as a result of budget restrictions, for FY 2014 the UPF received less funding (\$309 million) than originally projected, and the entire concept is being rethought now. As the NNSA stated, the “*FY 2015 SSMP is based on a lower spending profile for the Uranium Processing Facility that allows the project to continue but focuses on an initial phase to move crucial functions out of an aged building by FY 2025.*” (FY 2015 SSMP [2014]: p. 1-4.)

Regarding plutonium production, since the end of the Cold War U.S. plutonium pit production has been significantly reduced and the U.S. has made at most 11 pits per year. But in order to maintain existing weapons, the DoD stated that it needs the DoE to produce 50-80 pits per year by 2030.⁹⁸ Therefore, the Obama administration proposed the construction of a Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) at Los Alamos National Laboratory. In 2011, the NNSA estimated that the total costs of building the CMRR-NF would be between \$3.7 billion and \$5.8 billion. (Roth; Kristensen; Young [2011]) Although the project was mandated by Congress in the FY 2013 cycle, no funds were provided for its construction, and it was deferred for at least five years. The main argument for its delay was that the building of the UPF and the CMRR-NF, parallel to the B-61 LEP would be unaffordable, and there are available options on the table, which could perform the tasks of the CMRR-NF. (Medalia [2014]: p. ii., p. 31.) In its FY2015 request, the administration basically killed the CMRR-NF project but unlike in FY2014, it also delayed funding for the alternate plutonium strategy by an additional five years. This means that the originally projected interim capacity of 30 pits per year by 2021 was also delayed by five years, as well as the 50-80 pits per year final capacity – which is now scheduled for FY2031. (Harvey [2014])

⁹⁸ In this regard, the FY 2015 SSMP declared that the “*NNSA is planning for a pit production capability of 30 pits per year by FY 2026 to better align with the planned life extension program activity and delivery system schedule, and will support the modular acquisition of additional capability to support production beyond the 30-pit-per-year level.*” (FY 2015 SSMP [2014]: p. iv.)

The National Ignition Facility (NIF) is the third flagship project of the NNSA, which is crucial in the future maintenance of the nuclear weapons stockpile. NIF is located at the Lawrence Livermore National Laboratory in Livermore, California. The construction of the facility started in 1997, and it was certified by the DoE in March, 2009. Regarding its role in the maintenance of the nuclear weapons stockpile, the Lawrence Livermore National Laboratory (LLNL) claimed that “*NIF experiments are an essential component of the nation’s stockpile assessment and certification strategy because NIF provides the only process for scientists to gain access to and examine thermonuclear burn. These experiments will also help the nation maintain the skills of nuclear weapon scientists, which is crucial in order to assess the age-related changes that could compromise weapon reliability.*” (LLNL [2014])

4.3 Budget Debates and the Future of the Stockpile

In the 2010 NPR, the administration pledged to maintain all three legs of triad, to maintain the capability to forward deploy tactical nuclear weapons, and to maintain a safe, secure, and reliable nuclear arsenal by an unprecedented \$85 billion modernization package. The problem is that almost all of these systems are coming close to the end of their service life, and they need to be modernized in the next two decades. These programs will significantly increase the cost of nuclear forces in a budget environment where most defense programs are being cut.

In order to see more clearly, the FY 2013 National Defense Authorization Act mandated the Congressional Budget Office (CBO) to estimate the cost of these nuclear modernization programs for the next ten years. According to CBO estimates, over the next decade the maintenance and the modernization of the U.S. nuclear enterprise will cost \$355 billion, which is a significant increase compared to the Obama administration’s 2011 projection of \$213 billion. (CBO [2013b]: p. 2.) Besides, experts of the James Martin Center for Nonproliferation Studies expect this amount to reach \$1 trillion over the next 30 years. (Wolfsthal; Lewis; Quint [2014]: p. 4.)

The scale of these nuclear modernizations exceeds by far the Bush administration’s plans, and based on the budget allocations, it seems that nuclear modernizations enjoy a priority over conventional modernizations, which proves the administration’s

commitment to maintain a safe, secure, and reliable nuclear arsenal but at the same time it is also an interesting contradiction with several aspects of the Obama administration's arms control agenda.

Regarding the overall \$355 billion dollar amount for 2014-2023, \$136 billion is expected for strategic and tactical nuclear delivery systems; \$105 billion for the nuclear weapons enterprise, and SSBN nuclear reactors; \$56 billion for command, control, communications, and early-warning systems; and \$59 for additional costs (which was estimated for the next decade based on historical cost growth). According to these numbers, the combined cost of delivery systems and nuclear weapons is \$241 billion which will cover the maintenance of the currently deployed systems (\$152 billion), as well as the replacement and development of the next generation of nuclear forces (\$89 billion). (CBO [2013b]: p. 2.)

Looking at the annual cost of the nuclear enterprise, for FY 2014, the DoD and the DoE requested \$23.1 billion for the nuclear delivery systems and the nuclear weapons – according to the CBO, \$9.7 billion of this amount was requested for DoD's strategic and tactical nuclear delivery systems; \$8.3 for the DoE's nuclear weapons activities, the supporting laboratories, and the nuclear reactors for ballistic missile submarines; while an additional \$5.1 billion was requested for the command, control, communications, and early-warning systems. In addition to this \$23.1 billion dollar, another \$20.8 billion was projected for "other nuclear-related activities," which include the budget for threat reduction and arms control, as well as costs for missile defense and other defenses. (CBO [2013b]: p. 2.)

Regarding the different legs of the modernization programs, the most expensive package will be the maintenance and modernization of the delivery systems under the aegis of the DoD. A June, 2014 GAO study examined the DoD's 2013 projections for the next ten years, divided into two five-year cycles. Although the report found that the DoD significantly underestimated the cost of nuclear delivery systems (as it did not include the cost of Air Force efforts to modernize the ICBM missiles, and the

development of new bombers), the DoD's table still provides a detailed outline of the potential costs of the delivery systems.⁹⁹ (GAO [2014]: p. 16.)

Table 10. DoD's 5-Year and 10-Year Nuclear Delivery System Sustainment and Modernization Estimates as of July 2013 (Dollars in billions)

Delivery system	FY 2014-2018	FY 2019-2023	Total
Heavy bombers			
• B-2 and B-52	\$12.9	\$14.8	\$27.7
• New bomber	8.8	Not provided	8.8
Cruise missiles			
• Air-launched cruise missile	0.3	0.4	0.7
• Air-launched cruise missile replacement	1.0	1.7	2.7
Intercontinental ballistic missiles (ICBM)			
• Minuteman III	7.3	6.8	14.1
• Minuteman III replacement	Not provided	Not provided	Not provided
Dual-capable aircraft^a			
• Dual-capable aircraft	1.6	1.1	2.7
Fleet ballistic-missile submarine (SSBN)			
• Ohio-class submarine	7.0	7.4	14.4
• Ohio-replacement submarine ^b	8.4	19.4	27.8
• Submarine-launched ballistic missile (SLBM) (Trident II)	12.8	13.8	26.6
Total	\$60.1	\$65.4	\$125.5^c

- a. Dual-capable aircraft are fighter aircraft capable of delivering nuclear weapons. Currently the Air Force maintains F-15 and F-16 fighter aircraft capable of delivering specific versions of the B61 nuclear bomb.
- b. Includes \$0.8 billion through fiscal year 2018, and \$1.2 billion total funding, from the National Nuclear Security Administration (NNSA) for nuclear reactor design.
- c. DOD published in the July 2013 joint report a 10-year estimate for strategic delivery systems of \$116.7 billion. However, DOD did not include \$8.8 billion for research and development for a new bomber as part of the 10-year estimate published in the report, even though it had included this amount as part of the \$60.1 billion estimate through fiscal year 2018.

Source of table: GAO [2014]: p. 16.

⁹⁹ The DoD estimates concluded that the total cost of sustaining and modernizing the nuclear delivery systems will be \$125.5 billion. If the missing amounts for modernizing the ICBM missiles, and developing new bombers are included, the total cost gets very close to the estimates of the CBO report, which put this amount to \$136 billion.

The second and third legs of the modernizations are the refurbishment of the nuclear warheads, and the development of the supporting facilities and infrastructure, under the DoE. In the CBO report, these costs were estimated as follows: (CBO [2013b]: p. 5.)

Table 11. Costs of U.S. Nuclear Forces (Dollars in billions)

Nuclear weapons laboratories and supporting activities	2014	2014-2023
Stockpile services	\$0.9	\$12
Facilities and infrastructure	\$2.5	\$30
Other stewardship and support activities ^a	\$3.1	\$35
Subtotal	\$6.5	\$77

a. *Activities include scientific research and high-performance computing for improving understanding of nuclear explosions, security forces, and transportation of nuclear materials and weapons. This category also includes \$400 million in 2014 and \$4 billion over the 2014–2023 period for the Office of the Administrator at the National Nuclear Security Administration.*

Source of table: CBO [2013b]: p. 5.

In addition to this \$77 billion, the DoE was also projected to spend \$28 billion on sustainment and modernization activities, unique to specific warheads: \$25 billion for strategic warheads and nuclear reactors, as well as \$3 billion for tactical warheads – this is how the already mentioned \$105 billion adds up for overall DoE costs to maintain and modernize the nuclear weapons enterprise and SSBN nuclear reactors over the next decade. (CBO [2013b]: p. 5.)

The biggest challenge of these modernization programs will be the strict budget environment. Since the Obama administration entered office, budget deficits have reached a record height and the federal debt held by the public has become equivalent to 74 percent of the GDP, which is higher than any time before (except for a short period around the Second World War). In order to address these problems, serious restrictions and cuts were implemented, and the enormous defense spendings are high priority targets for these budget cuts.

In this regard, the first milestone was President Obama’s April 2011 message to the DoD, in which he ordered to cut the defense budget by \$400 billion over the next twelve years. (Brannen; Weisgerber [2011]) The announcement enjoyed wide support in both political parties and this “coercive-consent” on the necessity of deficit-reduction became the basis of the 2011 Budget Control Act (BCA) as well. On August 2, 2011 President

Obama signed the BCA into law which increased the debt limit by \$400 billion immediately, provisioned immediate spending cuts and projected concrete savings of \$917 billion over the next ten years. Besides these immediate cuts, the BCA ordered a \$1.2-1.5 trillion deficit reduction plan which should be projected either by a new bill (to be passed by December 23, 2011), or by automatic spending cuts (sequestration). (BCA [2011]) White House officials estimated that the BCA would mean at least \$350 billion in defense cuts over the next ten years. Although explicit defense programs were not mentioned in the bill, both the Pentagon and the NNSA were included in the text, suggesting that these restrictions would definitely hit the budget of the nuclear industry as well.

In the framework of the \$917 billion projected BCA cuts, \$21 billion had to be realized already in FY 2012. To lay out a new bill for the \$1.2-1.5 trillion reduction, the BCA established a 12-member Budget Super Committee of 6 Republican and 6 Democrat lawmakers. The committee had to specifically define these cuts and prepare a deficit reduction plan by November 23, 2011. The BCA declared that the committee should reach an agreement over at least \$1.2 trillion and Congress must approve the plan by the end of December, otherwise automatic budget reductions will be enacted. These restrictions were supposed to implement the \$1.2 trillion cut in a predetermined way, slicing \$500 billion directly from the defense budget, starting from FY 2013.

Although both the Pentagon and the White House wanted to avoid these automatisms, the committee could not come to an agreement in the given timeframe. As a result of the failure of the Budget Super Committee, the sequestration took effect on March 1, 2013 with a mandatory budget cut of \$1.2 trillion over the next ten years. For the DoD, this meant that between March 1 and September 30, 2013, the defense budget had to be cut by roughly \$43 billion. For the entire 10-year period, the sequestration means around a \$500 billion reduction in defense spending, which comes in addition to the more than \$450 billion reduction, originally planned by the Pentagon for the next decade. (Reif [2011])

On the whole, these mandatory cuts have already forced the administration to reschedule some of its modernization programs, and as the already started life extension programs proceed, cost overruns will definitely have a negative effect on the next round of modernizations, some of which might fall victim to these strict budget realities. So

far, the B61 LEP seems to survive the sequestration, it has been funded by Congress, but the “3+2” and the CMRR-NF have already been delayed, and the construction of the UPF also runs on a smaller funding than anticipated.

4.4 Evaluation

Looking at the concept of Cold War nuclear thinking, the first characteristic was the high number of nuclear weapons, with multiple warheads on the delivery systems. In this regard, there have been significant changes since the Cold War – both Bush administrations halved the U.S. nuclear forces (the George W. H. Bush administration from 22,000 to 11,000 and then the George W. Bush administration from 10,000 to 5,000). In the meanwhile, the Clinton and the Obama administrations implemented only moderate changes – between 2009 and 2014, the Obama administration reduced its stockpile by only 309 nuclear warheads. Therefore, the overall force levels have been significantly reduced since the Cold War times, but it was not primarily realized by the Obama administration; and despite the reductions of the Republican administrations, the remaining military stockpile of 4,804 nuclear warheads is still high compared to the nuclear capabilities of other states. Today, the U.S. and Russia still possess 89 percent of the globally deployed nuclear forces, and 94 percent of the total nuclear weapons inventories of the world. (SIPRI [2014])

Regarding the number of warheads on the delivery systems, the reliance on MIRV-ed ICBMs and SLBMs has also been reduced since the Cold War. President Obama continued the efforts of the Clinton and the Bush administrations to download the ICBM and SLBM forces. By mid-2014, all ICBMs have been “de-MIRV”-ed to a single warhead configuration, and the SLBMs have also been downloaded to carry three, four or five nuclear warheads, instead of the maximum eight. However, despite these shifts, MIRVs will continue to have an important strategic role in the future stockpile of the U.S. – under the New START Treaty and the projected next generation SSBN force as well, SLBMs will remain loaded with multiple warheads; and a “re-MIRV”-ing capability is also maintained for the ICBMs.

Regarding the delivery systems, the administration pledged to maintain all three legs of the nuclear triad under the New START Treaty. In terms of numbers, by 2018 the

deployed ICBMs will be cut from 450 to 400, the number of SLBMs will be cut from 336 to 240, and the number of bombers will be cut from 96 to 60. Looking at the post-2018 period, the service life of the Minuteman III ICBMs is being extended until 2030, and the Air Force is in the process of examining the options to replace these missiles after 2030. In the case of the submarine fleet, the Navy committed to retire the current fourteen submarines between 2027 and 2040, and replace them with twelve new SSBNX replacement subs, starting from 2031. Regarding the bombers, the replacement of the current B-52s will start in the mid-2020s, while the B-2s will only go through upgrades to their survivability and mission effectiveness, as their service life is expected to last until 2058. Altogether, the Obama administration maintained the commitment to the nuclear triad, and the transformation from a triad to a dyad seems to be unlikely as long as the life extended Minuteman IIIs remain in the stockpile.

The next parameter of Cold War Nuclear Thinking is the great diversity of nuclear weapons. Since 1945 the U.S. has developed and deployed altogether 66,500 nuclear bombs and warheads of 100 types and modifications (the air force has adopted 52 types, the navy 35, the army 26, and the marines 15 – some designs were adopted by two or even three services) with yields from 100 tons to 25 megatons. The peak year was 1967, when the U.S. reached 32,000 warheads of 33 types and modifications. (Kristensen; Norris [2009b]) In comparison to these numbers, the diversity has been significantly reduced but the current stockpile of seven types of warheads still includes multiple options for each delivery systems – two types of ICBM warheads (the W78 and the W87), two types of SLBM warheads (the W88 and the W76), and three types for long-range bombers and fighter jets (the B61-3/4/7/10 bombs, the W80-1 ALCM warheads and the B83 bombs). The Obama administration intends to maintain this diversity under the “3+2” strategy as well. Despite the reduction from seven types to five types, three interoperable warheads are planned for ICBMs and SLBMs, and two types for long-range bombers and fighter jets (the LRSO cruise missile warheads and the B61-12 precision-guided standoff bombs).

In terms of maintaining and developing the nuclear stockpile, nuclear weapons testing was a central element of the Cold War strategy. This practice, however, was abandoned by the Bush administration in 1992, and a new approach was initiated by President Clinton in 1995 to assess the aging nuclear arsenal. The Stockpile Stewardship Program

aims to maintain the safety, security and effectiveness of the nuclear deterrent without the necessity of continued reliance on nuclear weapons testing. The SSP proved to be successful so far, and a 2009 study from the JASON independent scientific advisory group concluded that “*in the absence of underground nuclear testing,*” the “*lifetimes of today’s nuclear warheads could be extended for decades, with no anticipated loss in confidence, by using approaches similar to those employed in LEPs to date.*” (JASON [2009]: p. 2.) As a result of these technical developments, both the George W. Bush administration and the Obama administration pledged to maintain the testing moratorium and the reliance on the Stockpile Stewardship Program.

Partly as a result of abandoning nuclear weapons testing, the Clinton administration announced the concept of a constant reserve force in its 1994 NPR to hedge against the technical failures of a warhead type, and also to address the dramatic changes of the security environment. The Bush administration broadened the concept and introduced the so called responsive force which included a constant reserve force, as well as a responsive infrastructure. The Obama administration reinforced the importance of the development of the nuclear weapons infrastructure, and seems to maintain the reliance on a constant reserve force, although it envisioned a nuclear modernization program which would allow cutting the hedge in half.

Regarding the forward deployment of nuclear weapons, the end of the Cold War brought some significant changes. According to issue experts, “*Between 1945 and 1977, the United States based thousands of nuclear weapons abroad. The weapons’ hosts did not always know they were there.*” (Norris; Arkin; Burr [1999]) Since then, the locations of nine places have been declassified by the DoD (these include Alaska, Cuba, Guam, Hawaii, Johnston Island, Midway, Puerto Rico, Britain, and West Germany), while another eighteen locations were blacked out. In certain cases, the withdrawal of these weapons was already completed in the 1960s (e.g. Alaska and Okinawa in 1967), and by the early 1990s only seven European NATO members remained with these weapons on their territory (Belgium, Germany, Greece, Italy, the Netherlands, Turkey, and the United Kingdom). (Norris; Arkin; Burr [1999]) Both the Clinton and the Bush administrations reinforced the importance of forward deployment in the territory of European allies, although the Bush administration significantly reduced the number of forward deployed weapons, and it completely withdrew the tactical nuclear weapons of

the U.S. from Greece and the United Kingdom. In the 2010 NPR, the Obama administration declared that “*a small number of U.S. nuclear weapons remain*” in Europe. “*Although the risk of nuclear attack against NATO members is at an historic low, the presence of U.S. nuclear weapons [...] contribute to Alliance cohesion and provide reassurance to allies and partners who feel exposed to regional threats.*” (NPR [2010a]: p. xii.) Despite the maintained capability, it means a significant difference that during the Cold War, the forward deployment of tactical nuclear weapons was about deterring the Eastern Block and preparing for a theater nuclear exchange in Europe, while today it is more about reassuring allies.

Altogether, force planning under the Obama administration is different from the Bush posture as it prefers bilateral cuts instead of unilateral reductions; it favors addressing arms control issues in a treaty framework; and it seeks the ratification of the CTBT. In this regard, the most genuine effect of the 2010 NPR is the transformation of the force structure. The Navy completely got out of the business of tactical nuclear weapons, and ICBMs were “de-MIRV”-ed. These changes, however, did not go together with dramatic reductions. As the Bush guidance remained in force until mid-2013, what the Obama administration envisioned for its force structure under the New START Treaty was basically a moderate¹⁰⁰ implementation of the Bush numbers. The next round of reductions, which was projected under the new Obama guidance (PPD-24), was announced in June, 2013 in Berlin, but looking at the current status of U.S.-Russian relations and the (lack of) willingness of Congress to approve any further cuts in the stockpile, the feasibility of these reductions is highly questionable.

In general terms, the primary drivers of the Obama administration’s force structure are: 1) strengthening the deterrence of potential regional adversaries, maintaining strategic stability vis-à-vis Russia and China, and continued assurance of the allies; 2) the implementation of the Stockpile Stewardship Program, and the investments in the nuclear weapons infrastructure; 3) and finally, the level of Russian nuclear forces. Although Washington has made it clear that strategic stability from a U.S. perspective is no longer dependent on strategic parity,¹⁰¹ U.S. force planning still seems to reflect a

¹⁰⁰ The New START Treaty limits of 1,550 deployed strategic nuclear weapons were moderate even for the Bush guidance (the NSPD-14 from 2002), as the JCS were reported to consider reductions to 1,300 already under the 2002 presidential guidance. (Grossman [2013])

¹⁰¹ As the 2010 NPR stated, “*the need for strict numerical parity between the two countries is no longer as compelling as it was during the Cold War.*” (NPR [2010a]: p. xi.)

continued reliance on parallel reductions with Moscow, and the level of Russian nuclear forces still seems to determine U.S. forces as well.

In addition to these factors, budget realities will play an increased role in the future of the stockpile – just to mention one example, the projected reductions in the hedge totally depend on the implementation of the “3+2” strategy (thus, in certain cases there is a causal connection between the nuclear modernization programs and the future of reductions).

Table 12. Force Structure: Cold War vs. Obama

Cold War Nuclear Thinking	Change	Obama Posture
<ul style="list-style-type: none"> high number of nuclear weapons and deliveries + multiple warheads on the delivery systems (MIRVs) 	≈	<ul style="list-style-type: none"> significant reductions since the Cold War (moderate reductions under Obama) but still high number of warheads and deliveries + MIRVs are still maintained (although ICBMs have been “de-MIRV”-ed)
<ul style="list-style-type: none"> nuclear triad 	NO	<ul style="list-style-type: none"> continued commitment to the nuclear triad (under the New START Treaty)
<ul style="list-style-type: none"> great diversity of nuclear weapons 	≈	<ul style="list-style-type: none"> reduced diversity of nuclear weapons but still multiple types for all three legs of the triad (even under the “3+2” strategy), which includes strategic and tactical capabilities as well
<ul style="list-style-type: none"> nuclear weapons testing 	YES	<ul style="list-style-type: none"> since 1992: testing moratorium, and using the stockpile stewardship program instead
<ul style="list-style-type: none"> no systematic hedging policy 	YES	<ul style="list-style-type: none"> since 1994: a constant reserve (hedge) force
<ul style="list-style-type: none"> forward deployment of nuclear weapons 	≈	<ul style="list-style-type: none"> continued commitment to forward deployment in Europe (but nuclear weapons were withdrawn from other countries)

5. Operational Level

5.1 Operational Level under the Clinton and Bush Administrations

The revisions of nuclear war planning against the Soviet Block already started in the late 1980s. In September, 1992 General Butler, head of SAC claimed that “*As early as October 1989 [before the Soviet Union had broken up] we abandoned global war with the Soviet Union as the principle planning and programming paradigm for the U.S. armed forces.*” (Quoted in Kristensen [2003]: p. 6.) The end of the Cold War gave a big push to these transformations, and the George W. H. Bush administration implemented several significant changes in U.S. nuclear policy, both in terms of numbers and in terms of planning. Parallel to the most dramatic force reductions in U.S. history, all strategic bombers were taken off day-to-day alert; ICBMs and SLBMs were detargeted to mitigate the risks coming from the unlikely event of an unauthorized or accidental launch; more SSBNs were conducted to patrol on “modified alert,” instead of “alert;”¹⁰² naval non-strategic nuclear weapons were no longer routinely deployed at sea; and airborne command and control operations were reduced. (NPR [1994]: p. 10.) In addition, the DoD and the JCS initiated the most comprehensive targeting review process ever, which eliminated thousands of obsolete targets in the Warsaw Pact countries and the post-Soviet region. In terms of target categories, tactical nuclear installations and transportation lines out of Russia were eliminated from the target lists; and less emphasis was put on leadership targets, and on industrial and war-supporting infrastructure.

Despite the significant changes in the number of targets, the Clinton administration inherited almost the same conservative targeting criteria, which was used during the Cold War. It allowed loose interpretation of the different target categories – the role of war-supporting industry was, for example, deemphasized but it still remained a priority

¹⁰² In general, the two most important differences between a (hard) “alert” and a “modified alert” status are: “*U.S. submarines on modified alert have not reached their assigned launch stations and their weapons systems are technically unprepared for launch.*” (Shultz; Andreasen; Drell; Goodby [2008]: p. 79.) This means that submarines on modified alert are in transit between their home port and their on-station alert areas, and the crew needs to perform specific procedures – such as installing code devices, or so called electronic “inverters” on the launch tubes – in order to reach launch readiness. After leaving home port, installing these devices takes about eighteen hours. (Feiveson [1999]: p. 116.) Besides, submarines on modified alert only periodically listen for messages which are transmitted from the shore. Submarines on (hard) alert, in contrast, are always on their assigned launch stations; in case of a launch order, they are ready to launch their missiles within fifteen minutes; and they constantly listen for low-frequency radio signs from the shore. (Shultz; Andreasen; Drell; Goodby [2008]: p. 79.)

category. The primary focus on the adversary's (especially Russia's) nuclear forces also remained, as both the Bush and the Clinton administrations felt that holding at risk the other side's nuclear forces had a strong deterrent value, while threatening major cities was not credible, and targeting civilians would also be immoral. (Nolan [1999]: p. 44-49.)

Besides these "traditional" targets, it was a new development that in a Congressional testimony in June, 1990 Defense Secretary Dick Cheney claimed, for the first time, that maintaining U.S. nuclear weapons was partly due to WMD proliferators. Targeting these proliferators was a relatively new concept in the SIOP, and it projected a future shift in attention to more limited but also more widespread targeting against the so called "rogue states," like for example Iraq, Iran, Libya, North Korea or Syria. (Kristensen [2003]: p. 6.) Although the Bush administration tried to codify these changes in a presidential guidance document, but they ran out of time and the Reagan administration's 1981 NSDD-13 document remained in force until the second half of the 1990s. Despite the prolonged reliance on the old guidance, institutional and procedural changes on the operational level made it possible that the new focus on regional scenarios was already channeled in the target plans and capabilities by the time the Clinton administration issued its own presidential guidance document.

From a procedural perspective, the end of the Cold War and the new challenges of the international system gave a big push to the transformation of U.S. war planning capabilities. Since the late 1980s, SAC was running a continuous effort to become more responsive to the changes of the security environment – the SIOP was restructured, more flexible targeting capabilities were invented to rapidly reevaluate targeting criteria, and to reduce the necessary time to adjust war plans. (Nolan [1999]: p. 28.)

In 1991, General Butler was appointed head of SAC (replaced by STRATCOM in 1992) and he initiated several efforts to revise planning assumptions and procedures. One of these initiatives was the establishment of a Strategic Planning Study Group (SPSG) in December, 1992 to develop a new global planning process, the Strategic War Planning System (SWPS). In the framework of these efforts, "adaptive targeting" was introduced to provide the military planners with rapid and flexible retargeting capabilities, which were more appropriate to address the unforeseen contingencies of the post-Cold War security environment. These changes required "*continuous analysis of guidance, forces,*

and target changes,” and they apparently led to a dramatic decrease in the time required to update and develop the next SIOP. (Quoted in Nolan [1999]: p. 31.) The new SIOP, or as they called it, the “living SIOP” was a real-time war plan, which was able to transform the incoming commands into specific attack options in a very short amount of time. These changes in retargeting made it possible that new regional threats could be rapidly added to the existing preplanned scenarios – according to William Arkin, a “*wholesale revision of an attack plan for a new enemy will be possible in a matter of months.*” (Arkin [1994]) The new regional contingencies, or the so called rogue states were mostly covered by the strategic reserve forces through limited and selected attack options. These attack options were developed based on information from the newly established Intelligence Center, which was tasked to provide threat assessments for STRATCOM on the global WMD proliferation trends. (Kristensen [2003]: p. 10.)

When the Clinton administration came into office in January, 1993, the JCS and STRATCOM continued their efforts to extend the scope of planning from the previous Soviet Block to a global scale; and to include more limited and flexible options against regional scenarios, involving WMD. As General Butler summarized in 1993, “*Adaptive planning challenges the headquarters to formulate plans very quickly in response to spontaneous threats which are more likely to emerge in a new international environment unconstrained by the Super Power stand-off. We can accomplish this task by using generic targets, rather than identifying specific scenarios and specific enemies, and then crafting a variety of response options to address these threats. To ensure their completeness, these options consider the employment of both nuclear and conventional weapons. Thus, by its very nature, adaptive planning offers unique solutions, tailored to generic regional dangers involving weapons of mass destruction.*” (Quoted in Kristensen; Handler [1996]: p. 390.) In April, 1993 the Joint Chiefs explicitly stated that U.S. nuclear strategy was expanded to counter all WMD. The Doctrine for Joint Nuclear Operations (Joint Pub 3-12) claimed that “*the fundamental purpose of US nuclear forces is to deter the use of weapons of mass destruction (WMD), particularly nuclear weapons, and to serve as a hedge against the emergence of an overwhelming conventional threat.*” (JCS [1993]: p. I-1.)

As the fall of the Soviet Union did not only change the strategic calculations of the U.S. but it also erased the most important source of threat for Washington’s European allies,

the focus on WMD proliferation, and the term “adaptive planning” were adopted by NATO as well.

On the operational level, the shifting priorities towards countering regional WMD scenarios led to the introduction of the Strategic Installation List of Vulnerability Effects and Results, or the so called “SILVER Books.” These books were regional target plans, developed by STRATCOM to aid civilian leadership and theater CINCs in planning against WMD proliferators. Each regional command was to receive its own Silver Book, which contained “*the planning associated with a series of ‘silver bullet’ missions aimed at counterproliferation.*” (Quoted in Kristensen [2003]: p. 17.) The designated targets in these books included nuclear, chemical, biological and C3 installations. As the nuclear (weapons) capabilities of these rogue states were very limited (in the early 1990s none of them possessed nuclear weapons, and only a few had an active nuclear weapons program), the primary focus was on fixed chemical and biological installations and buried targets.¹⁰³ The first Silver Book was developed for the European Command by late 1994 (and a prototype was developed for the Pacific Command). STRATCOM hoped that these books would provide them with a stronger role in counterproliferation efforts, but the regional commands did not approve STRATCOM’s take-over. In a 1995 Counterproliferation Mission and Function Study, the JCS concluded that CINCs would remain responsible for regional target planning and execution, but STRATCOM would assist them. This meant that the Silver Book project was officially ended but some of its elements remained to guarantee a better cooperation between STRATCOM and the CINCs. (Kristensen [2003]: p. 17-18.)

The increased focus on these theater missions, put pressure on the force structure as well. The first important consequence was the requirement to develop low-yield precision-guided weapons for possible use in regional contingencies. The other concerning issue was the necessary number of weapons to cover both the traditional target categories and the new theater missions. As the Clinton administration was

¹⁰³ Although the Silver Book project was abandoned in 1995, planning for the theater use of nuclear weapons remained a priority. In February, 1996 the JCS issued a doctrine for non-strategic nuclear employment in regional scenarios, the Doctrine for Joint Theater Nuclear Operations (Joint Pub 3-12.1). In the document, the following targets were included as potential targets for a nuclear attack: WMD and their delivery systems, as well as associated command and control, production, and logistical support units; ground combat units and their associated command and control and support units; air defense facilities and support installations; naval installations, combat vessels, and associated support facilities and command and control capabilities; non-state actors (facilities and operation centers) that possess WMD; and underground facilities. (JCS [1996]: pp. III-6-7.)

devoted to implement and continue the arms control efforts of the Bush administration, preparations were taken to further reduce U.S. nuclear forces, which started to upset STRATCOM. Under the lowered numbers, STRATCOM was worried that the United States might no longer be able to hold at risk the traditional targets in Russia, as well as the new targets in a number of rogue states. Thus, deeper cuts became dependent on revising the presidential employment guidance, and on abandoning certain targets in Russia. (Kristensen [2003]: p. 20-21.)

As a result of the pressure from STRATCOM, the Clinton administration issued a new presidential guidance document, the PDD-60 in November, 1997. According to Robert G. Bell, senior Director for Defense Policy at the NSC, the new guidance “*recognizes that we’re at the end of the Cold War and that nuclear weapons now play a smaller role in our nuclear strategy than at any point during the nuclear era.*” He also stated that “*the PDD removes from presidential guidance all previous references to being able to wage a nuclear war successfully or to prevail in a nuclear war... The emphasis in this PDD is therefore on deterring nuclear wars or the use of nuclear weapons at any level, not fighting [with] them.*” (Quoted in Kunsman; Lawson [2001]: p. 67.) By abandoning the planning for a protracted nuclear war with Russia, several target categories could be removed from the war plans – these included a major part of Russian conventional forces and war-making industry. Although these changes meant an important departure from the Reagan administration’s guidance, to some extent, PDD-60 only caught up with reality and codified what STRATCOM was already doing for years.

Besides putting an end to planning for President Reagan’s prevailing strategy, the new guidance implemented another significant change in the potential target categories. During the 1994 NPR process, STRATCOM and the JCS already tried to put China back in the SIOP but they failed to implement it.¹⁰⁴ (Kristensen [2004]: p. 23.) In the partially declassified 1994 Sun City Extended Study, STRATCOM identified two potential adversarial scenarios between the U.S. and China: 1) a crisis (on the Korean Peninsula), involving the U.S., North Korea and China; and 2) a direct confrontation between the continental U.S. (CONUS) and China. Under the first scenario, STRATCOM proposed a “*not a full scale attack against China*” with DPF (Deliberate Planning Force), NSNF (Non-Strategic Nuclear Force), or conventional air-

¹⁰⁴ As already mentioned before, China was taken out of the SIOP in 1982, as a result of the Nixon administration’s appeasement with Beijing in the 1970s.

launched/sea-launched cruise missiles. In the meanwhile, the second scenario implied “*a need for a major-attack response plan*” which was probably meant to justify the arguments for putting China back in the SIOP. (USSTRATCOM [1994]: p. 39.) After the 1996 Taiwan crisis, PDD-60 finally broadened targeting against China, and according to the unclassified minutes of a Strategic Nuclear Action Group conference, China was put back in the SIOP, and a Chinese Integrated Strategic Operations Plan (CHISOP) was created by 2000. (Kristensen [2004]: p. 23.)

When President George W. Bush took office in January, 2001, the main goal was to reevaluate U.S. nuclear strategy in a way that would reduce reliance on offensive nuclear forces, in exchange for an increased reliance on defensive capabilities and conventional forces. The 9/11 terrorist attacks on the U.S., however, put their stamp on the review process, and rogue states with WMD capabilities featured prominently in the 2001 Nuclear Posture Review. Accordingly, the role of nuclear weapons was expanded to deter not only the use (and development) of nuclear but other types of weapons of mass destruction as well. The NPR, in addition, called for the massive modernization of U.S. nuclear forces, delivery vehicles, command and control systems, satellites, and the nuclear weapons infrastructure, in order to be able to address these more limited regional contingencies. As the NPR stated, “*The current nuclear planning system, including target identification, weapons systems assignment, and the nuclear command and control systems requirements, is optimized to support large, deliberately planned nuclear strikes. In the future, as the nation moves beyond the concept of a large, Single Integrated Operational Plan (SIOP) and moves toward more flexibility, adaptive planning will play a much larger role.*” (NPR [2002b]: p. 9.)

In relation to the expanded role of nuclear weapons, the 2001 NPR put the WMD proliferator states on the list of most likely crisis scenarios, according to which the U.S. should formulate its nuclear war plans, and according to which the U.S. should size its nuclear arsenal (in addition to Russia and China, the 2001 NPR specifically named five potential adversaries against which the U.S. anticipated the use of nuclear weapons: Iran, Iraq, Libya, North Korea and Syria). The new focus on WMD proliferators meant that an increased role was attached to low-yield and earth-penetrating nuclear weapons, which were designed to destroy underground facilities and forces. In the public version of the 2002 National Strategy to Combat Weapons of Mass Destruction, the Bush

administration stated that it “*reserves the right to respond with overwhelming force – including through resort to all of our options – to the use of WMD against the United States, our forces abroad, and friends and allies.*” (National Strategy to Combat Weapons of Mass Destruction [2002]: p. 3.) According to the Washington Times, the classified version of the strategy (the September, 2002 NSPD-17) specifies the meaning of “*all of our options*” and uses the term “*potentially nuclear weapons*” instead. This meant that military planners were given a more specific instruction to prepare nuclear attack options against these regional scenarios. (Kralev [2003])

After the 2002 National Strategy to Combat Weapons of Mass Destruction, the Bush administration approved a number of guidance documents which were meant to codify the increased attention on WMD proliferators, and adjust U.S. nuclear weapons policy to these new threats. (Kristensen [2005a]: p. 16.) The unclassified version of NSPD-17 was followed by the National Policy on Ballistic Missile Defense in December, 2002; the Nuclear Posture Review Implementation Plan in March, 2003; the National Military Strategy of the United States in March, 2004; the DoD’s Nuclear Weapons Employment Policy in April, 2004; the Fiscal Year 2004-2012 Nuclear Weapons Stockpile Plan in May, 2004; the Nuclear Weapons Deployment Authorization in May, 2004; a new nuclear supplement to the Joint Strategic Capabilities Plan for FY 2005 in December, 2004; and finally, the Joint Chiefs’ March, 2005 Doctrine for Joint Nuclear Operations. (JCS [2005]) According to issue expert Hans M. Kristensen, the Bush nuclear doctrine is different from Clinton’s 1995 Doctrine for Joint Nuclear Operations in three aspects: the threshold for nuclear use, the relevance of international law with regards to targeting, and the role of conventional forces and missile defense. (Kristensen [2005a])

Regarding the issue of nuclear use, the new doctrine included some indications that the bar had been lowered for the employment of nuclear weapons. With the developments in adaptive planning, the transformation of the war plans had become much faster, providing the U.S. with the capability to rapidly respond with nuclear weapons anywhere in the world. The new doctrine differentiated three main planning scenarios: Deliberate Planning, Crisis Action Planning, and Adaptive Planning. While Deliberate Planning “*is a highly structured process that engages commanders and staffs of the entire joint planning and execution community,*” Crisis Action Planning is the “*time-sensitive development of joint operation plans and orders in response to an imminent*

crisis [...] it is distinct from adaptive planning in that emerging targets are likely to have no preexisting plans that could be adapted. Success in engaging these types of targets depends heavily upon the speed with which they are identified, targeted, and attacked.” (JCS [2005]: p. II-6.) And finally, adaptive planning was identified as a subset of crisis action planning, which is based on changing an existing deliberate plan according to national security needs. The first indicator of a lowered bar is the increased need for rapid response, which implied that the new threats of the 21st century (which are most likely regional threats, unable to threaten the existence of the U.S.) actually qualify for the same responses as the potential Cold War scenarios, and the U.S. needs to plan against them with nuclear weapons. The fact that the new doctrine replaced the word “*war*” with “*conflict*” seems to justify these fears about the potential use of nuclear weapons in lower-intensity crises. (Kristensen [2005a]: p. 15.)

In this regard, the second indicator of the increased likelihood of nuclear weapons employment was the strengthened reliance on preemption. Unlike the previous JCS document, the Bush doctrine specifically identified several potential scenarios for the preemptive use of nuclear weapons, and embraced this policy into official U.S. nuclear doctrine.¹⁰⁵

The last indicator was that the 2005 document included an additional chapter on the theater uses of nuclear weapons where it did not separate strategic and non-strategic nuclear weapons. In previous guidance documents, theater missions were traditionally considered an arena for non-strategic nuclear weapons, applied in limited form to control the conflict and prevent escalation. The new doctrine, in contrast, assigned both strategic and non-strategic nuclear weapons to these missions, blurring the line between

¹⁰⁵ The scenarios for the preemptive use of nuclear weapons were the following:

- a) “An adversary using or intending to use WMD against US, multinational, or alliance forces or civilian populations.
- b) Imminent attack from adversary biological weapons that only effects from nuclear weapons can safely destroy.
- c) Attacks on adversary installations including WMD, deep, hardened bunkers containing chemical or biological weapons or the C2 infrastructure required for the adversary to execute a WMD attack against the United States or its friends and allies.
- d) To counter potentially overwhelming adversary conventional forces, including mobile and area targets (troop concentration).
- e) For rapid and favorable war termination on US terms.
- f) To ensure success of US and multinational operations.
- g) To demonstrate US intent and capability to use nuclear weapons to deter adversary use of WMD.
- h) To respond to adversary-supplied WMD use by surrogates against US and multinational forces or civilian populations.” (JCS [2005]: p. III-2.)

these capabilities and bringing down strategic nuclear weapons to the level of lower intensity regional crises. (Kristensen [2005a]: p. 17.)

On the issue of nuclear targeting and international law, the new doctrine also raised some important concerns. Although the target selection factors¹⁰⁶ included proximity to populated areas, and potential for collateral damage, the expansion of targeting to regional scenarios and non-nuclear facilities definitely increased the pool of the so called “counter-value” targets in the war plans, which STRATCOM itself designated as a violation of the Law of Armed Conflict. (Kristensen [2005a]: p. 19.) Besides, the lowered bar for the employment of nuclear weapons, and the various scenarios for their preemptive use also seemed to go against these norms. In addition, the 1996 advisory opinion of the International Court of Justice on the ‘Legality of the Threat or Use of Nuclear Weapons’ stated unanimously that “*There is in neither customary nor conventional international law any specific authorization of the threat or use of nuclear weapons*” (ICJ [1996]) – a norm, which seemed to be repeatedly ignored by the Bush administration’s rhetoric when it tried to deter rogue states with the explicit threat of the (preemptive) use of nuclear weapons.

The third major difference between the Clinton and the Bush administration’s operational doctrine was the role of conventional weapons and missile defense. The integration of conventional weapons and missile defense was a completely new element in strategic planning. Although the idea itself had the potential to reduce reliance on nuclear weapons but the new doctrine still implied that these capabilities rather complemented and not substituted nuclear forces. Besides, it also became apparent that conventional capabilities had to develop a lot in order to take over the role of nuclear weapons, and merging these two capabilities had its own dangers due to the different line of command in conventional and nuclear strikes, and due to the potential misperceptions of the adversaries on employing conventional warheads on strategic delivery systems.

¹⁰⁶ The Bush doctrine listed the following target selection factors: “*time sensitivity; hardness (ability to withstand conventional strikes); size of target; surrounding geology and depth (for underground targets); required level of damage; defenses; mobility; proximity to populated areas; and finally potential for collateral damage.*” (JCS [2005]: p. II-7-8.) Based on these factors, the following target categories were designated: “*WMD, associated delivery systems, C2, production, and logistic support units; ground combat units, associated C2, and support units; air defense facilities and support installations; naval installations, combat vessels, associated support facilities, and C2 capabilities; nonstate actors (their facilities and operation centers that possess WMD); nuclear storage, nonnuclear storage, and hardened ICBM launch facilities; and political and military C2.*” (JCS [2005]: p. II-8.)

Parallel to the development of the new operational doctrine for nuclear weapons, the Bush administration implemented several innovations to better reflect the increased attention on regional aggressors and their terrorist clients, as well as to better adjust the war plans to these changes in the threat environment. In March, 2003, STRATCOM Commander Admiral James Ellis sent a message to the JCS that the term “SIOP” no longer properly described the post-Cold War war plans – these plans had been transformed from a single integrated plan into a family of plans, covering a much larger range of scenarios. Ellis suggested turning SIOP into an Operations Plan (OPLAN) to stand along with the other war plans. As Chairman of the Joint Chiefs General Richard Myers agreed with these arguments, STRATCOM was authorized in February, 2003 to change the name of SIOP to OPLAN to better reflect that in essence it covered a family of plans. (Kristensen [2007]: p. 378.)

Only three years after 9/11, the Bush administration implemented its next big innovation, a new operational strategy – the Global Strike mission. The first milestone in this regard was January, 2003 when President Bush signed Change-2 to the Unified Command Plan, assigning four additional missions to STARTCCOM: 1) missile defense planning; 2) global strike planning; 3) information operations; and 4) global C⁴ISR (Command, Control, Computers, Communication, Intelligence, Surveillance, and Reconnaissance). (Kristensen [2005a]: p. 16.) According to the Unified Command Plan, the global strike mission was tasked “*to deliver rapid, extended-range, precision kinetic (nuclear and conventional), and nonkinetic (elements of space and information operations) effects in support of theater and national objectives.*” (Unified Command Plan [2002]: p. 13.)

Although Global Strike was the result of a long post-Cold War process of developing nuclear weapons and planning capabilities, implementing rapid retargeting,¹⁰⁷ and increasing the attention on WMD threats, it was still a new mission in the sense that it incorporated a wider range of capabilities (including Special Operations Forces, cyber

¹⁰⁷ In this regard, the Bush administration continued the efforts of the Clinton and Bush 41 administrations. The modernization of the Strategic War Planning System was completed by 2003, and as a result of continued improvements in adaptive planning, the necessary time for a complete overhaul of the war plans was reduced from eighteen to six months, developing a major plan was possible in four months, and developing limited options for a smaller contingency became possible in 24 hours. Similar procedures were introduced in the framework of NATO as well – the NATO Nuclear Planning System (NNPS) automated the nuclear planning process in NATO, and facilitated the rapid development of Major Contingency Options, as well as Selective Contingency Options. (Kristensen [2004])

attacks, advanced conventional weapons, and nuclear weapons), and it was mostly intended for preemptive and preventive strikes against regional adversaries. The employment component of Global Strike was Concept Plan (CONPLAN) 8022, developed to give the President prompt strike options against immediate threats. CONPLAN 8022 was completed by November, 2003, and became a fully operational contingency plan by August, 2004. This meant that selected nuclear forces were assigned to the countries of concern, identified by the OSD's 2004 NUWEP. For the execution of the mission, STRATCOM established a new functional component command (Joint Functional Component Command – JFCC), which was later divided into a Global Strike and Integration (JFCC-GSI), and a Space component. (Kristensen [2007]: pp. 376-377.)

According to the administration, the stronger integration of nuclear and non-nuclear capabilities in the framework of Global Strike provided the President with a greater variety of (better) capabilities, which increased the credibility of deterrence. But the integration of the forces in a preemptive nuclear posture raised some concerns in arms control advocates, and in the adversaries of the U.S. as well. Blurring the line between conventional and nuclear capabilities implies that nuclear weapons are just one more tool in the box, and their employment is more likely in a great variety of regional scenarios, which were not even covered by nuclear weapons before.

Besides, despite the administration's arguments, the increased credibility of deterrence will probably still have zero effect on the intentions of terrorist organizations, while it might actually worsen highly asymmetric crisis scenarios where small adversaries might take desperate measures under the perception of a potential preemptive strike from the U.S. Looking at the more balanced U.S.-Russian and U.S.-Chinese dimensions, the concept of Global Strike seemed to backfire in these cases as well – in response to the extended offensive posture of the U.S., both Moscow and Beijing expressed serious concerns about the implications of this new mission to crisis stability, and they used Global Strike as a justification to their own modernization programs. (Kristensen [2007]: pp. 383-384.)

Hans M. Kristensen from the Federation of American Scientists argued that although CONPLAN 8022 was formally separated from OPLAN 8044 (which was the larger “basic” war plan of the Bush administration), JFCC-GSI was still responsible for the

planning and execution of a significant portion of OPLAN 8044, which made it difficult to differentiate the two (targets were designated from the same database, and strikes were supposed to be launched from the same deliveries) therefore CONPLAN 8022 almost appeared to be a sub-plan of OPLAN, which was primarily designed for prompt attacks, including preemption and prevention. (Kristensen [2007]: pp. 379-380.) During the Fall of 2004 – after a really short lifetime – CONPLAN 8022 was finally withdrawn. Over the course of the next few years, it was formally canceled, but the mission capabilities were believed to “migrate” to other plans. (Kristensen [2008])

Altogether, the Bush administration continued the Clinton administration’s efforts to develop more flexible and adaptive planning capabilities, and to shift the focus of war plans – strike planning against Russia was reduced as it was no longer an immediate contingency, while strike planning against China and WMD proliferators was significantly increased. In terms of rhetoric, the Bush administration’s declaratory policy was a truly post-Cold War doctrine, which included several major innovations (for example the new triad concept, the responsive force, or the capabilities-based approach in the force structure). But looking at the actual employment policy, the role of nuclear weapons was significantly expanded to cover regional WMD scenarios, the preemptive use of nuclear weapons was explicitly elevated into official nuclear doctrine, the threshold to use nuclear weapons seems to be lowered, and the dividing lines between strategic and non-strategic nuclear weapons, as well as between conventional and nuclear weapons have been blurred, implying an increased likelihood of nuclear weapons employment, and raising some serious concerns about crisis stability vis-à-vis both Russia and China, and rogue states.

5.2 Operational Level under the Obama Administration

5.2.1 War Plans under Obama

Although the Bush administration changed the name of the strategic war plan from SIOP to OPLAN in 2003, OPLAN 8044 was still a transitional war plan to future plans. The first real non-SIOP war plan is thought to be OPLAN 8010, which was adopted in February, 2008. It was overwhelmingly nuclear but it also included conventional strike options, and it clearly had the fingerprints of the Bush administration’s presidential

guidance from 2001 (NSDP-10) and 2002 (NSDP-14). OPLAN 8010 was first revised in December, 2008 (OPLAN 8010-08), and in February, 2009 the newly elected Obama administration inherited OPLAN 8010-08 Change 1, which was the 17th major update of the war plan since the end of the Cold War. (Kristensen [2010]: pp. 2-5.)

OPLAN 8010 is a “base plan” with annexes, one of which was OPLAN 8010-08, the nuclear combat employment portion. In general, the annexes include strike plans for the entire range of STRATCOM missions, including nuclear forces, conventional strikes, non-kinetic operations (cyber belongs to this category), missile defense, intelligence, surveillance and reconnaissance, and counter-WMD. (Kristensen [2013c])

The next (and latest) revision of the strategic war plan was concluded by July, 2012. OPLAN 8010-12 was the first update since the Obama administration’s 2010 NPR. Although the review of the presidential employment guidance or the so called targeting review was already underway, the new guidance was not yet issued therefore OPLAN 8010-12 was probably still based on the Bush guidance. Nevertheless, a change in the numbers is believed to imply a more significant shift in the plans, as owing to the new flexible and adaptive capabilities, minor revision and changes are made to the war plans on a day-to-day basis. (Interview with James E. Cartwright [2014]) In this case, the most important developments between February, 2009 and July, 2012 include the adoption of the Obama administration’s NPR in April, 2010; the Cyber Command’s reach to full operational capability in October, 2010; the New START entry into force in February, 2011; Change 2 of the JCS’s Nuclear Supplement to the Joint Strategic Capabilities Plan (CJCSI 3110.04B) in June, 2011; the retirement of the Tomahawk land-attack cruise missiles between 2011 and 2012; the undergoing NPR IS between 2011 and 2012; President Obama’s announcement that the U.S. had “*narrowed the range of contingencies under which we would ever use or threaten to use nuclear weapons*” in March, 2012 (Obama [2012]); and the downloading of the remaining MIRVed ICBMs. From this list, the most likely triggers for the major revision of the war plan are: 1) the update of the JSCP-N, which provides nuclear planning guidance for the combatant commanders, and it probably eliminated strike scenarios for the retired TLAM-N system; and 2) the decline of the Russian ICBM force by 80 missiles (mostly silo-based SS-18s and SS-19s), which based on the current war plan requirements (e.g. cross-targeting and damage expectancy) allowed the reduction of

U.S. nuclear warheads by at least 160. (Kristensen [2013c]) (According to Morton Halperin, ICBMs are probably still among the targets which are targeted with two warheads, from two different delivery platforms.) (Interview with Morton H. Halperin [2014])

Besides the new numbers, the new names of the war plan also indicate that the plan is in evolution:

- December 1, 2008: OPLAN 8010-08 Revision: Global Deterrence and Strike
- February 1, 2009: OPLAN 8010-08 Change 1: Strategic Deterrence and Global Strike
- July 30, 2012: OPLAN 8010-12: Strategic Deterrence and Force Employment

In general, STRATCOM identifies “strategic deterrence” as its *“first line of operation [...] that includes nuclear force operations. That’s the old SAC, translated to STRATCOM back in the ’90s, translated to today.”* (Quoted in Kristensen [2010]: p. 7.)

Global strike, on the other hand, is an “old” new concept. When it was assigned to STRATCOM in 2003, it mostly meant a prompt strike plan (in certain scenarios even preemptive) to provide capabilities against theater contingencies which were not covered by OPLAN 8044. The separate Global Strike war plan, CONPLAN 8022 was a mix of conventional and nuclear options, with overlapping responsibilities to the strategic war plan. After CONPLAN 8022 was canceled, Global Strike became a synonym for the offensive leg of the “New Triad” with nuclear, conventional, and non-kinetic capabilities, while its previous missions migrated into the other plans. Mixing strategic deterrence and Global Strike probably meant to provide a link between strategic missions of a global scope and the more limited regional contingencies. (Kristensen [2010]) The most recent name change from ‘Strategic Deterrence and Global Strike’ to ‘Strategic Deterrence and Force Employment’ meant to reflect a more accurate description of the plan, and it probably also meant to eliminate some confusion around today’s Global Strike mission and its relation to programs like Conventional Prompt Global Strike.

Compared to the Bush administration’s targeting policy, OPLAN 8010 meant a slight shift in the list of adversaries. The Bush administration’s 2001 NPR declared that besides Russia and China, *“North Korea, Iraq, Iran, Syria, and Libya are among the countries that could be involved in immediate, potential, or unexpected contingencies.”*

(NPR [2002b]: p. 5.) Since 2001, Iraq and Libya got off the list as they both agreed to dismantle their WMD capabilities under international monitoring, and adhered to the relevant arms control agreements. Although the current list of adversaries is secret, the Obama administration's war plan is believed to be directed against six potential adversaries: Russia, China, North Korea, Iran and Syria probably remained on the list, and in addition to these states, a new element is the "9/11-type scenario" – "*a catastrophic WMD attack by a terrorist organization in collaboration with a regional state.*" (Kristensen [2010]: p. 3.) From this list, Iran, Syria and the last element do not have nuclear weapons capabilities, and both Iran and Syria are signatories to the NPT (although they are still not protected by the negative security assurance of the 2010 NPR, as their treaty compliance is questioned by the U.S.).¹⁰⁸ Regarding Russia and China, Bruce G. Blair estimates that currently there are around 1,000 targets in Russia which are covered with nuclear weapons, and around 500 in China. (Interview with Bruce G. Blair [2014]) But thinking in terms of trends, parallel to the reductions in the U.S.-Russian nuclear arsenals, there is a steady decline in the number of Russian targets, while the constant developments in the military capabilities of China required an increase in the number of Chinese targets. (Interview with James E. Cartwright [2014])

Each of these potential adversaries are covered with a range of strike options which might significantly differ in size and objective. Based on a 2010 briefing from Major General Floyd Carpenter, Commander of STRATCOM's JFCC-GS, the four major attack options of OPLAN 8010 are: Emergency Response Option (ERO), Selective Attack Option (SAO), Basic Attack Option (BAO), and Directed/Adaptive Planning Capability (DPO/APO) options. (Carpenter [2010]: p. 10.) These attack options range in size from the employment of hundreds of nuclear weapons in preplanned options¹⁰⁹ to the employment of only a few warheads in adaptive options, against a carefully selected number of targets. The modification of the preplanned options might take several

¹⁰⁸ In this regard, Syria is likely to fall off the list very soon. Damascus was believed to harbor nuclear weapons intentions but with the 2007 Israeli airstrike on Al-Kibar (which was suspected by the U.S. and Israel to be the location of an undeclared plutonium production reactor), and with the ongoing civil war, it is highly unlikely that Syria would still have an active nuclear weapons program. Besides, with the conclusion of the chemical weapons dismantlement it will probably no longer mean a serious WMD challenge, and it can be taken off the list.

¹⁰⁹ Although the current war plans no longer explicitly contain massive attack options, the idea of using hundreds of nuclear warheads, based on preplanned attack options is still very similar to the Cold War MAO concept.

months, while changes in the adaptive options might be realized in a few hours. Besides, these plans do not have the same readiness level – Level 4 options are fully executable, while lower level options have to be worked up for execution. (Kristensen [2010]: p. 5.) In the current security environment, limited attack options are expected to be more active than major attack options, for the execution of which forces have to be generated, and reserve forces need to be uploaded on the launch platforms.

As already mentioned, OPLAN 8010 covers the entire spectrum of STRATCOM's missions, which includes conventional capabilities as well. These conventional strike options are based on systems like for example the conventional version of the Tomahawk sea-launched cruise missiles (which are deployed on the four converted Ohio-class submarines, attack submarines and surface ships), precision guided munitions and bunker busters.

To a certain extent, the target categories in the six potential adversaries are roughly the same categories, which were designated during the Cold War. Based on the 1974 NUWEP guidance, the 1976 SIOP-5 targeted 1) economic and industrial facilities critical for war initiation and post-war recovery, 2) political leadership and command and control targets, 3) nuclear offensive capabilities and storage locations, and 4) conventional forces. (NUWEP [1974]: pp. 4-5.) In the meanwhile, the 2001 NPR (which was reflected in the Bush administration's NSDP-10 and NSDP-14 presidential employment guidance documents, and in the OPLAN 8044 and OPLAN 8010 war plans as well) declared that *“The types of targets to be held at risk for deterrence purposes include leadership and military capabilities, particularly WMD, military command facilities and other centers of control and infrastructure that support military forces.”* (NPR [2002b]: p. 6.)

Table 13. Nuclear Target Categories

Nuclear Target Categories	
SIOP-5 (1976)	OPLAN 8010 (2009)
Nuclear forces and storage locations	Military forces
Conventional forces	WMD infrastructure
Leadership and Command and Control	Military and national leadership
Economic and industrial facilities	War-supporting infrastructure

Source of table: Kristensen [2010]

Looking at these categories, there are two major differences: the first one is the increased focus on WMD capabilities; and in close relation to the first element, the second one is the extension of potential targets in general. Shifting away from the Cold War concept of deterring a nuclear attack on the U.S. and its allies to deterring all types of WMD attacks on the U.S. and its allies and partners means a broadening in two aspects. First, WMD is broader than nuclear, which means more potential targets to be held at risk; and second, the inclusion of partners is a broader concept than just the U.S. and its closest allies. In addition to these changes, a third important broadening comes from the inclusion of terrorist organizations and other non-state actors.

Altogether, OPLAN 8010-12 is significantly different from the SIOP in terms of the security environment and the challenges that need to be addressed by the plan; the number of warheads have been significantly reduced; while the planning capabilities have been dramatically improved which provides a better capability to cover a wider range of target categories with fewer nuclear weapons. But despite these changes, the Obama administration's nuclear war plan still seems to maintain planning for Cold War-style nuclear war fighting scenarios, focusing on traditional damage limiting counterforce targeting with a nuclear triad on high alert, preplanned attack options involving the employment of hundreds of nuclear weapons against a somewhat extended range of target categories (despite the significantly different rhetoric, the Obama administration's 2010 NPR, and the new negative security assurance did not exclude from the target lists any of the previously targeted adversaries). Therefore, if the administration is serious about ending Cold War nuclear thinking and reducing the role and number of nuclear weapons, many of these relics have to be limited or abandoned in the framework of the next revisions of the strategic war plan.

5.2.2 Presidential Employment Guidance (2013)

In 2011, after the New START negotiations were concluded and the Nuclear Posture Review was announced, the President directed the DoD to conduct a follow-on analysis to the 2010 NPR, in consultation with other departments and agencies. This review examined U.S. nuclear deterrence requirements to align planning to the present and anticipated future security environment. The review was an interagency process, led by

the DoD, but the OSD, the JCS, STRATCOM, the Department of State, the DoE, the intelligence community, and the NSC were also involved. This team presented a range of options to the President, with potential implications of each strategy option. Based on the findings of this review, and the advice of the DoD and the participating departments and agencies, the President updated nuclear employment guidance to better align with today's security environment (Presidential Policy Directive: PPD-24 – announced in June, 2013 in the Berlin address). (U.S. Department of Defense [2013]: pp. 1-2.)

This was the third revision since the end of the Cold War, and the first one since the conclusion of the Bush administration's review in 2002. As already mentioned, the new guidance is a classified document, but the White House uploaded a fact sheet on its webpage (The White House [2013]), and the DoD published a nine pages long summary of the guidance, which was submitted to Congress. (U.S. Department of Defense [2013]) The DoD summary emphasized, that although the new guidance is a White House document, it enjoyed the support of the Commander of STRATCOM, the JCS and the Secretary of Defense. (U.S. Department of Defense [2013]: p. 2.)

Based on these two key documents, the most important guiding principles for the role of nuclear weapons are: 1) the fundamental role of nuclear weapons is to deter a nuclear attack on the U.S. and its allies and partners; 2) align U.S. defense guidance with the policies of the NPR (reaffirming that the use of nuclear weapons is only considered in extreme circumstances to defend the vital interests of the U.S. and its allies and partners; 3) maintain a credible deterrent; 4) credible deterrent is to be maintained with the lowest possible number of nuclear weapons. (U.S. Department of Defense [2013]: p. 4.)

Regarding the security environment, the new guidance repeated the conclusions of the 2010 NPR that the most extreme danger of the current international security environment remains nuclear terrorism, and the threat of nuclear proliferation (in particular Iran and North Korea). But besides these dangers, the U.S. will “*continue to address the more familiar challenge of ensuring strategic stability with Russia and China.*” (U.S. Department of Defense [2013]: p. 3.)

In terms of nuclear employment planning, the guidance stated that although the U.S. will maintain a strong and credible deterrent, it will also continue to prepare for the

possibility that deterrence will fail therefore DoD was directed to develop nuclear employment plans. For these cases, PPD-24 pledged to maintain “*significant counterforce capabilities against potential adversaries*,” and it also stated that “*the new guidance does not rely on a ‘counter-value’ or ‘minimum deterrence’ strategy*.” (U.S. Department of Defense [2013]: p. 4.) In order to reduce the role of nuclear weapons, PPD-24 reaffirmed the 2010 NPR’s pledge that the U.S. would continue to work towards a “*sole purpose*” posture, and the DoD was directed “*to conduct deliberate planning for non-nuclear strike options to assess what objectives and effects could be achieved through integrated non-nuclear strike options*.” Although the guidance stated that these non-nuclear options are “*not a substitute for nuclear weapons*,” planning for these options “*is a central part of reducing the role of nuclear weapons*.” (U.S. Department of Defense [2013]: p. 5.) In recognition of “*the significantly diminished possibility of a disarming surprise nuclear attack*,” the guidance directed the DoD to examine options to reduce reliance on Launch Under Attack, while “*retaining the ability to Launch Under Attack if directed*.” (U.S. Department of Defense [2013]: p. 5.) And finally, the guidance also stated that the hedging approach was also reexamined, and the DoD and the DoE “*developed a more efficient strategy that allows the United States to maintain a robust hedge against technical or geopolitical risk with fewer nuclear weapons*.” (U.S. Department of Defense [2013]: p. 5.)

The implications of the new guidance for the stockpile are: a continued reliance on all three legs of the triad (as it “*will best maintain strategic stability at reasonable cost*”), operated on a day-to-day basis that maintains strategic stability vis-à-vis Russia and China, while also deters potential regional adversaries; a continued practice of open-ocean targeting; a maintenance of the capability to forward-deploy nuclear weapons with heavy bombers and dual-capable aircrafts to support extended deterrence and assurance of allies and partners; a maintenance of a forward-based posture in Europe; and finally a pledge to seek a one-third reduction from the New START levels in the number of deployed strategic nuclear weapons. (U.S. Department of Defense [2013]: pp. 5-6.)

The additional implications of the new guidance include three major areas: 1) resilience and flexibility; 2) nuclear deterrence, extended deterrence, assurance, and defense; and 3) increased reliance on conventional or non-nuclear strike capabilities or missile

defenses. Regarding resilience and flexibility, the DoD was directed to maintain a sufficient, diversified, and survivable capability for deterrence, and the flexibility “*to respond with a wide range of options to meet the President’s stated objective*” – this latter objective is guaranteed by the nuclear triad, the ability to upload strategic delivery platforms, the ability to forward deploy nuclear weapons, and the additional options of non-nuclear strikes. (U.S. Department of Defense [2013]: pp. 7-8.)

In terms of nuclear deterrence, extended deterrence, assurance, and defense, the most important objective was to provide the “*capability to threaten credibly a wide range of nuclear responses*” which will persuade any potential adversary that the perceived benefits of attacking the U.S. or its allies and partners can never outweigh the costs of the U.S. response on them. These capabilities will assure allies and partners and clearly reflect that their defense is “*non-negotiable.*” (U.S. Department of Defense [2013]: pp. 8-9.)

The last implication was increased reliance on conventional or non-nuclear strike capabilities or missile defenses, which means that the DoD will conduct deliberate planning for and integration of non-nuclear strike options; and Washington will continue to strengthen the regional security architectures through “*forward U.S. conventional presence and effective theater ballistic missile defenses,*” which “*will take on a greater share of the deterrence burden.*” (U.S. Department of Defense [2013]: p. 9.)

Looking at this Pentagon summary on the presidential employment guidance, it is significantly different from the declassified Cold War employment guidance documents, both in terms of focus and in terms of content. As Clark Murdock from the Center for Strategic and International Studies argues, the Pentagon report, in essence, does not say a lot about employment guidance, it basically repeats the goals of the 2010 NPR, describes how the NPR should be implemented, and how the role and number of nuclear weapons should be reduced. (Murdock [2013]) During the Cold War, White House employment directives included concrete guidance for the targeting categories, they contained concrete requests for the type of strike options which were needed to hold these targets at risk, and they aligned force requirements to these demands. The unclassified summary of the Obama administration’s directive, on the other hand, fails to give any targeting guidance on how to maintain strategic stability vis-à-vis Russia

and China, and on what type of targets need to be held at risk in order to deter rogue states.

Despite its lack of providing a real targeting guidance, PPD-24 does contain concrete achievements in terms of force structure requirements. The guidance made the case for further nuclear reductions, regardless of Russian reciprocity (although President Obama announced in Berlin that the U.S. would seek “*negotiated cuts*” with Moscow, he did not say that the implementation of the reductions can only happen if Russia agrees to reciprocal measures). As the guidance said, “*the President has determined that we can ensure the security of the United States and our Allies and partners and maintain a strong and credible strategic deterrent while safely pursuing up to a one-third reduction in deployed nuclear weapons from the level established in the New START Treaty.*” (U.S. Department of Defense [2013]: p. 6.) This was an important step as it acknowledged that the U.S. had more nuclear weapons than necessary, and Russia was not given an explicit veto power over the fate of these reductions. (Wolfsthal [2013])

Although the guidance reaffirmed the President’s commitment to reducing the role of nuclear weapons, and paved the way for further nuclear reductions, it still failed to implement dramatic changes regarding the operational aspects of nuclear weapons employment. The fact that the guidance did not move forward with the issue of a “*sole purpose*” posture, and maintained the wording of the 2010 NPR on the “*fundamental role*” of nuclear weapons implies that there is still “*a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring a conventional or CBW [chemical or biological weapons] attack against the United States or its allies and partners.*” (NPR [2010a]: p. viii.)

Another way to limit the role of nuclear weapons, outlined by the guidance, was an increased reliance on non-nuclear capabilities and a deliberate planning for non-nuclear strike options. Advanced non-nuclear capabilities definitely have the potential to take over several missions from nuclear weapons and they can play an important role in reducing reliance on nuclear weapons, but the guidance also stated that “*they are not a substitute for nuclear weapons,*” which means that there are serious limits to their capability to take over nuclear missions.

The next issue where the guidance had the promise to reduce the role of nuclear weapons but it eventually failed to fulfill this promise is the launch under attack (LUA) policy. Under the LUA policy, a country launches a nuclear response once it has confirmed that it is under nuclear attack. Relying on this prompt response posture is incredibly dangerous as it reduces the decision time of the National Command Authority and it risks initiating an all-out nuclear war. In this regard, the new guidance acknowledged that with the end of the Cold War, and the fall of the Soviet Union, “*the potential for a surprise, disarming nuclear attack is exceedingly remote*” and the U.S. can finally afford to reduce the role of this strategy, at the same time, the DoD was also directed to maintain the capability to launch under attack if necessary. This mixed message to change the policy but do not change the capability will probably have only limited effects on nuclear planning. According to Hans M. Kristensen, “*the strategy seems to have little relevance in any but the most extreme war-fighting scenarios; nor does it matter much for deterrence as long as the United States maintains a sufficient, secure retaliatory capability. The key potential benefit of reducing reliance on the strategy appears to be extending the decision time for the commander-in-chief during a crisis.*” (Kristensen [2013a])

In this regard, maintaining the capability seems to be a missed opportunity for reducing alert levels as well. While de-alerting was high on the 2007-2008 campaign agenda, the 2010 NPR stated that “*the current alert posture of U.S. strategic forces – with heavy bombers off full-time alert, nearly all ICBMs on alert, and a significant number of SSBNs at sea at any given time – should be maintained for the present.*” (NPR [2010a]: p. x.) This means that none of the bombers are kept on alert at the moment, but almost all 450 ICBMs and 100-120 SLBMs are on alert with about 800 nuclear warheads. Upon receiving the launch order, these weapons are ready to launch within fifteen minutes. In a 2011 Congressional hearing, Principal Deputy Under Secretary of Defense for Policy James N. Miller explained that “*the Nuclear Posture Review (NPR) considered the possibility of reducing alert response requirements for ICBMs and at-sea response requirements of SSBNs, and concluded that such steps could reduce crisis stability by giving an adversary the incentive to attack before “re-alerting” was complete. At the same time, the NPR concluded that returning heavy bombers to full-time nuclear alert was not necessary, assuming the other two Triad legs retain an adequate alert posture. The current alert posture supports strategic stability through an*

assured second-strike capability. It ensures that, in the calculations of any potential opponent, the perceived gains of attacking the United States or its Allies and partners would be far outweighed by the unacceptable costs of the response.” (Congressional Hearing [2011])

In the framework of the targeting review, giving up the capability to launch under attack could have paved the way for reducing alert levels, but retaining the capability and “only” reducing the reliance on LUA does not seem to have any effect on the current alert posture. In a July, 2013 Huesy Breakfast Series seminar, Miller repeated that the guidance review “*did examine postures that involved some additional de-alerting [...] we found that additional steps in this regard would be difficult to verify on the other side, and more importantly could be destabilizing in a crisis as alert levels were raised back up.*” (Miller [2013]) In addition to these challenges, Admiral Richard Mies, former head of STRATCOM noted that “*our forces are postured such that we have the capability to respond promptly to any attack, without relying upon ‘launch on warning’ or ‘launch under attack’*” which explains why a reduced reliance on LUA did not have any direct effect on the current alert posture of the U.S. (Mies [2001]) (It is important to note that Admiral Mies is right to say that a country can give up the reliance on LUA and LOW and still have a prompt response capability due to high alert levels, but giving up high alert levels would mean the end of a day-to-day LUA or LOW capability. In this case, the U.S. could still have a LUA or LOW policy but it is more problematic, as it would also require the adversaries to be on a de-alerted posture – if the adversaries have also de-alerted their nuclear forces, then in a crisis situation, the U.S. could regain its LUA or LOW capability by a quick re-alerting process.)

The new guidance also reaffirmed that the U.S. will “*maintain significant counterforce capabilities against potential adversaries [and] does not rely on a ‘counter-value’ or ‘minimum deterrence’ strategy.*” (U.S. Department of Defense [2013]: p. 4.) According to the JCS, counterforce strategy means “*The employment of strategic air and missile forces in an effort to destroy, or render impotent, selected military capabilities of an enemy force under any of the circumstances by which hostilities may be initiated.*” (The definition was quoted from the JCS in Arkin; Handler; Morrissey; Walsh [1990]: p. 184.) As mentioned before, this strategy has a much stronger requirement in terms of nuclear weapons capabilities than the counter-value strategies – counterforce requires

more nuclear weapons to hold at risk the most difficult targets of the adversaries, and these weapons have to be more advanced and more accurate in order to fulfill this mission. As STRATCOM concluded in its 2002 Counterproliferation Operational Architecture, counterforce “*is preemptive, or offensively reactive*” – it is preemptive, as it aims to destroy the adversary’s military capabilities before they could be used; and it is offensively reactive, as it requires the other side to intercept, absorb, or mitigate the attack. (USSTRATCOM [2002]: p. 6.) Therefore, maintaining the counterforce strategy definitely sets limits to how deep the U.S. is able to cut its own nuclear forces, and it also links these reductions to the military capabilities of its potential adversaries. In the future, if the U.S. wants to dramatically reduce its nuclear stockpile, it will require a dramatic change in the military capabilities of its adversaries, or the U.S. will have to give up the counterforce strategy and shift to a more relaxed, deterrence-based posture.

Despite this distinction in the guidance, it is important to repeat that the dividing line between counterforce and counter-value strategies is artificial, and U.S. targeting policy has never been one or the other, it has always been a mix of the two. The main rule is to hold at risk what the enemy values the most. This explains why the composition of targets is different from state to state. In the case of Russia, U.S. targeting policy is overwhelmingly counterforce, with a primary focus on its nuclear weapons capabilities. But as a result of its considerably smaller nuclear arsenal, China for example is a more equal mix of counterforce and counter-value elements, with a greater emphasis on war-supporting industry targets. In the meanwhile, rogue states are mainly targeted for their WMD capabilities (although it is decreasing as a result of the implementation of the Chemical Weapons Convention and the Biological and Toxin Weapons Convention). Despite these different priorities, leadership targets, in general, are believed to be at the end of the escalation ladder, based on the assumption that they are essential to keep the conflict under control. (Interview with Bruce G. Blair [2014])

Altogether, the new guidance does not seem to be a transformational document, it just catches up with reality like many previous guidance documents. It definitely deserves credit for setting the stage for further reductions, reaffirming the rhetoric of the 2010 NPR, and setting additional constraints to the use of nuclear weapons; but regarding the operational aspects of nuclear weapons employment, it does not seem to implement any dramatic changes, instead it maintains several key elements of Cold War employment

policy. The new guidance considered moving towards a “*sole purpose*” posture but it concluded that it is not the right time to do that. Similarly, it ordered the DoD to reduce reliance on launch under attack, but it retained the capability, which means that it will only affect a very few “*extreme war-fighting scenarios*.” In the meanwhile, the maintained capability requires a continued reliance on high alert postures, which was also examined during the review but remained untouched in the end. And finally, the refusal of counter-value and minimum deterrence strategies clearly signals that there is a serious limit to how deep the U.S. is able to cut its nuclear forces, and to a certain extent, it is still tied to the nuclear capabilities of its adversaries (mostly to Russia and China).

Now that the new guidance was signed by President Obama in June, 2013, the updates will go through the OSD, the JCS and STRATCOM, and they will translate the President’s directive into more concrete guidance documents. These documents will lead the Joint Functional Component Command Global Strike to update the current strategic war plan (OPLAN 8010-12), and the Geographic Combatant Commanders to update their regional plans. Based on previous practices, this process takes around 18 months, which means that the first war plan which is based on the Obama administration’s guidance is due by the end of 2014.

5.3 Evaluation

Regarding the characteristics of Cold War nuclear thinking, the first element was high alert levels. In this regard, there were considerable changes since the Cold War, both in terms of numbers and in terms of content. With the dramatic decrease of nuclear forces in the 1990s, the number of nuclear weapons on high alert has also been significantly cut, and in the framework of the Bush administration’s Presidential Nuclear Initiatives, thousands of non-strategic nuclear weapons and all strategic bombers were taken off day-to-day alert. In addition, the dangers of an accidental or unauthorized launch were much higher at the early stages of the Cold War, but many of these dangers have been mitigated by the gradual installment of real technical safeguards since the late 1970s. Despite these developments, today there are still 800 nuclear warheads on high alert (450 on ICBMs and about 350 on 100-120 SLBMs). In the 2008 campaign strategy,

presidential candidate Obama declared that “*keeping nuclear weapons ready to launch on a moment's notice is a dangerous relic of the Cold War,*” and he pledged to “*work with Russia to end such Cold War policies in a mutual and verifiable manner.*” (Obama [2008a]) Despite these promises, the 2010 NPR and the 2013 employment guidance concluded that the current alert levels should be maintained. According Bradley H. Roberts, former Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy, the issue of alert levels was debated during the interagency review process but the administration came to the conclusion that “*additional steps beyond the ones already taken would be unwise, especially unilaterally.*” It is true that the U.S. would love to see the Russian forces operate differently, but it is not likely that Moscow would agree to any reciprocal de-alerting measures considering the current tensions with the U.S. over the annexation of Crimea, the crisis in Ukraine, and the allegations of violating the 1987 INF Treaty. (Interview with Bradley H. Roberts [2014]) In fact, Moscow has done the exact opposite, and it has increased the readiness level of its ICBMs and SSBNs.

Taking into consideration all these developments, the Obama administration concluded that this was not the right moment to implement de-alerting measures. But despite the decision to take concrete de-alerting measures off the agenda, the White House pledged to continue its efforts to further mitigate the risks of launches resulting from accidents, unauthorized actions, or misperceptions and to maximize the decision time available for the President in a crisis. These measures included a continued practice of open-ocean targeting, further strengthening the U.S. command and control system, and exploring new modes of ICBM basing for enhanced survivability and to reduce incentives for prompt launch. (NPR [2010a]: p. x.)

In close relation to the issue of alert levels, the next characteristic of Cold War nuclear thinking is preemption, launch on warning, and launch under attack. While all these strategies were operational policies during the Cold War, their significance has been considerably reduced since then. During the Bush administration, there was a short reemergence of preemptive thinking, with regards to regional WMD proliferators. In the framework of the Global Strike mission, STRATCOM was tasked to work out a separate war plan (CONPLAN 8022) to provide the President with prompt strike options against immediate threats, and to deliver rapid, extended-range attacks in theater

missions. Although Global Strike was canceled very soon, some of its missions migrated into OPLAN 8044. Under the Obama administration, the reliance on these operational policies has been further limited, and the administration directed the DoD to reduce the role of launch under attack but maintain the capability.¹¹⁰ During the Cold War, having a prompt launch capability was claimed to deter a deliberate first strike from Moscow. Today, as the 2013 guidance said, this possibility is extremely remote but decision makers still thought that the capability has to be maintained.

There are several reasons why the administration came to this conclusion. On the one hand, it is partly a result of bureaucratic resistance from the military – a common argument of military advisors is that removing LUA would reduce the flexibility of the U.S., it would make the ICBMs vulnerable, while there would be no serious gains with it. (Interview with Jon B. Wolfsthal [2014]) On the other hand, there are still many operational policies which require a capability to launch under attack. The targeting criteria which demand the U.S. to plan to destroy the entire nuclear arsenal of Russia, and the still high damage expectancy levels require a Minuteman force on high alert. (Interview with Bruce G. Blair [2014]) In this regard, James N. Miller mentioned some additional reasons which played a role in the administration's decision to maintain the prompt launch capability. The first and most important reason was to retain a hedge against any future survivability challenges to the submarine leg of the triad. If U.S. strategic submarines became vulnerable to attack (as unlikely as that may seem today), and U.S. bombers were off nuclear alert as they have been for many years, the ability to launch ICBMs under attack would provide the main U.S. strategic nuclear response capability until the survivability of submarines and/or bombers was established. Another and significantly less important reason was the deterrence value of LUA – today, it is not exclusively directed against Moscow, but it is more about deterrence vis-à-vis North Korea, as a surprise first strike is more likely to come from the DPRK than from Russia. (Interview with James N. Miller [2014])

¹¹⁰ Maintaining a capability to launch under attack means that there is a capability for launch on warning and preemption as well but the role of these operational policies has been significantly reduced. Reliance on the LOW strategy has already been limited by the 1980 PD-59, and despite the maintained capability, the chances of its implementation are incredibly remote. Regarding preemption, the U.S. still has not declared a no-first-use policy, and there is no hard evidence that preemption would be ruled out, but it is not likely that nuclear weapons would be used preemptively other than in the case of a small regional scenario, with an immediate WMD threat. (Interview with Madelyn R. Creedon [2014])

Even though the Obama administration decided to maintain the capability for launch under attack, John R. Harvey argues that there are several ways to reduce its role in strategic planning. The first way is to make the ICBMs more survivable to a first strike, which would reduce the pressure “to launch them or lose them.” The second way is to make them less “lucrative” targets for a potential attack. While during the Cold War some ICBM designs were capable to carry up to ten warheads and they were really attractive targets for a potential first strike, the recently completed “de-MIRV”-ing process of the ICBM force served exactly this purpose to eliminate the incentives to take them out in a first strike. And finally, a third way to reduce the role of LUA in operational planning is to strengthen the command and control system and to guarantee the survivability of the National Command Authority, which would reduce pressure on the President to launch an immediate counterstrike in a crisis. (Interview with John R. Harvey [2014])

The third element of Cold War nuclear thinking is pre-delegation of control. As already mentioned before, this practice was mostly dominant in the late 1950s and 1960s, but it was entirely rolled back during the 1980s when the DoD retired most of the air defense weapons which were pre-delegated before.

The fourth issue is counterforce targeting and conservative targeting criteria. Although the current targeting criteria is still characterized as conservative, but the standards of damage have declined – during the Cold War, the main driver was damage limitation under which the U.S. was planning to disrupt a potential Soviet attack in progress by initiating a massive attack against its military capabilities – especially the nuclear forces. (Interview with Bruce G. Blair [2014]) Damage expectancy levels were extremely high, and there was a lot of cross targeting (sometimes 5-6-7 nuclear warheads were aimed at one target).¹¹¹ Franklin C. Miller, however, noted that this level of redundancy was not the result of seeking ever-higher levels of damage but the result of poor-planning, which has been significantly improved since the mid-1980s.

¹¹¹ According to Bruce G. Blair and Chen Yali, during the Cold War, U.S. commanders were instructed to “*destroy no less than 70 to 90 percent of the Soviet targets in each of four categories – nuclear forces, conventional forces, war-supporting industry, and leadership*” which meant that military planners were aiming to meet an average of 80 percent damage expectancy. In order to meet these goals, some high value targets were covered with an extremely high number of nuclear weapons – Blair and Yali specifically mentions the Pushkino battle management radar (tasked to control the anti-ballistic missile interceptors protecting Moscow) which in 1991 was still targeted by as many as 69 U.S. nuclear weapons. (Blair; Yali [2006]: p. 55.)

(Interview with Franklin C. Miller [2014]) Addressing some of these problems means that today the damage expectancy levels are probably lower, and it is likely that the requirements for cross targeting and redundancy have also been relaxed as a result of significant developments in planning capabilities, and a much stronger confidence in the accuracy and success of the potential strikes. (Interview with Amy F. Woolf [2014])

Looking at the targeting strategy, the main logic has not changed since the Cold War. U.S. targeting policy still derives from what the adversaries value the most, which leads to a continued focus on counterforce targets – the new employment guidance also reaffirmed that the U.S. still relies on a counterforce strategy and does not follow a counter-value policy. This is clearly reflected in the current targeting categories as well: based on the 2002 NPR, OPLAN 8010 holds at risk military forces, WMD infrastructure, military and national leadership, and war-supporting infrastructure. If these categories are forced into the (somewhat sterile and artificial) definitions of counterforce vs. counter-value, then most of these target categories seem to fit the model of the JCS's counterforce definition – only certain portions of the national leadership targets and the war-supporting infrastructure might rather be described as counter-value elements. In the case of Russia, the primary focus on the nuclear weapons capabilities and its supporting infrastructure guarantees that U.S. targeting policy is overwhelmingly counterforce, reflecting a similar damage limitation logic, which was characteristic during the Cold War. In the case of China, the picture is more mixed, as a result of its limited nuclear weapons capabilities, there is a bigger emphasis on softer (industry) targets, which might rather be described as counter-value. Looking at the remaining 3+1 contingencies (North Korea, Iran, Syria and “9/11-type scenarios”), these countries are probably covered with very limited attack options, against their crucial WMD capabilities, which are clearly counterforce targets.

The next element of Cold War nuclear thinking is the dominance of massive attack options in contrast to a very few real limited attack option. The history of Cold War operational planning was a constant struggle for real limited options, which could serve the policy makers' concepts like for example limited nuclear war, or intrawar bargaining. But despite the policy guidance of the White House, nuclear war plans contained overwhelmingly massive attack options, which were based on the employment of hundreds or even thousands of nuclear warheads in one single “Sunday

punch.” Since the end of the Cold War, the number of nuclear weapons has been dramatically reduced, which had an effect on the strike options as well. Although it has never been clearly defined what is a massive attack option, and what is a limited attack option,¹¹² the nominal category of massive attack options has been abandoned, and today’s strike options do not contain it anymore. Based on a 2010 STRATCOM presentation, there are four main attack options at the moment: Emergency Response Options, Selective Attack Options, Basic Attack Options, and Directed/Adaptive Planning Capability options. These attack options still contain larger attacks involving the use of hundreds of nuclear weapons if the President decides, but the emphasis has probably shifted towards very limited attacks, with the employment of only a few nuclear warheads in primarily regional scenarios. In addition to these changes, another new element was the integration of conventional strike options. According to Bruce Blair, the first conventional option was introduced in the strategic war plan in 1983. (Interview with Bruce G. Blair [2014]) Although there has always been a certain level of integration between conventional and nuclear capabilities, but after the Cold War, this integration has become increasingly strong. With a revolutionary development in conventional technologies, these capabilities have become able to take over certain missions from nuclear weapons – although OPLAN 8010 is still predominantly nuclear. While during the Bush administration the lines between conventional and nuclear weapons have been significantly blurred, the Obama administration seems to apply a greater integration in execution but not in planning.

The next characteristic of Cold War nuclear thinking refers to the war plans, which were preplanned and not flexible at all. In this regard, today’s planning capabilities are a result of a long development process, which started already during the second half of the 1980s. With the dramatic changes in the Eastern Bloc, SIOP was restructured and SAC (replaced by STRATCOM) introduced more flexible targeting capabilities in order to reduce the necessary time to adjust the strategic war plans. With the establishment of the Strategic Planning Study Group, and the development of the Strategic War Planning System, adaptive targeting was introduced. It provided the military planners with rapid and flexible retargeting capabilities, which were more appropriate to adjust the war plans according to the unforeseen challenges of the post-Cold War security

¹¹² There is no “magic number” or dividing line between the concepts of massive attack options and limited attack options. However, it has never only been about the numbers, but about the objectives as well.

environment. As a result of these developments, changes in the targets and forces were immediately channeled in the war plans, and the overall time to update and develop the next SIOP was dramatically reduced. On the planning level, these changes had further requirements: an increased reliance on accurate intelligence information, and a dramatic development in computing technologies which made the day-to-day calculations and adjustments possible. The new SIOP concept was called the “living SIOP,” which was significantly different from the Cold War times as it was almost a real-time war plan with many adaptive options, and a rapid replanning capability to adjust the preplanned options. While, the old SIOP gave the President the option to use almost everything very quickly, the new war plans recognized that it was nearly impossible to foresee all circumstances therefore adaptive and flexible scenarios were included besides the preplanned scenarios, which were prepared according to the presidential guidance. In this regard, Russia and China are definitely covered with (larger) preplanned scenarios, while in the case of North Korea, Iran, and Syria adaptive planning is more likely to be used – however, probably there are (smaller) preplanned options against the key WMD capabilities of these countries as well.

NATO also introduced the necessary capabilities for adaptive planning, and it is believed that it has no standing war plans, instead it relies on adaptive contingency plans, which can be brought up to full status within a very short amount of time. (Kristensen [2012]: p. 31.)

Regarding the next characteristic, planning for a protracted global war was typical for the entire Cold War, and as the George H. W. Bush administration did not issue its own presidential employment guidance, President Reagan’s 1981 NSDD-13 remained in force until President Clinton issued his PDD-60 guidance in 1997. PDD-60 removed all previous references to prevailing in a nuclear war, and planning for a global nuclear exchange. Instead, the new guidance reduced contingency planning against Russia and put a greater emphasis on very limited regional scenarios. This focus remained during the Bush and the Obama administrations as well – in reference to the reduced role of Russia, the new guidance specifically noted that the chances of a nuclear exchange with Moscow are extremely remote.

Similarly, the issue of civilian oversight has also significantly changed since the Cold War. Until the 1980s, there were no clear procedures for civilian oversight, which gave

the planners and targeteers a big maneuvering capability in the interpretation and implementation of the presidential guidance. Thanks to the efforts of Franklin C. Miller during the 1980s and early 1990s, today there are clear procedures for the civilians to make sure that the war plans actually reflect the guidance of the policy level. Regarding the process itself, the first step is when the President and the NSC define the fundamental role of nuclear weapons, the most important directions of the deterrence strategy, and lay out the basic employment strategy. Then the Secretary of Defense translates the presidential guidance for the DoD, describing how the guidance should be implemented. Afterwards, the Chairman of the JCS adds specific directions to the military planners and STRATCOM prepares the Nuclear Force Employment Plan, which includes several different options for the employment of nuclear weapons. As mentioned before, the process is not as linear as it may seem, there are overlaps between the different phases, there is interagency cooperation on every step of the process, and both civilians and military personnel have the authority to review the different guidance documents and provide feedback. Once the war plan update is complete, the Under Secretary of Defense for Policy has the authority to review the plan, and the President and the Secretary of Defense approves it. As Franklin C. Miller said, a lot depends on the willingness of the policy level to engage in the process, but it is a fundamental change compared to the Cold War that today the OSD, the JCS and STRATCOM operate in a kind of partnership. (Interview with Franklin C. Miller [2014]) In the meanwhile, Congress has no Constitutional role in forming or challenging the process, and it has no access to the operational planning documents (however, they might get a very general briefing on the war plan if they require).

Regarding the calculations on the secondary effects of a nuclear blast, there were some developments since the Cold War but war plans still do not take account of the entire damage a nuclear strike might cause. As mentioned before, blaming the difficulty to calculate the secondary effects of a nuclear blast, war plans during the Cold War only included the blast effect in their damage assessments, and mostly excluded everything else. The issue itself was not ignored, there were several attempts to calculate these effects, and complete models were worked out, but based on the weather conditions and several other factors, many of the effects were very unpredictable, thus difficult to incorporate in the war plans. In this regard, Lynn Eden's research on the effect of firestorms concluded that the reality was not so much about the difficulty to include

these factors, but also about how organizations, in this case the DoD, framed the issue – the focus on the elimination of certain targets seemed to enjoy a priority above the potential death and destruction caused by the employment of nuclear weapons. As a result, during the entire Cold War, the U.S. dramatically underestimated the potential damage of its strategic war plans, and developed significantly more nuclear weapons than actually needed. (Eden [2004]) According to Bruce Blair, today’s war plans pay a bigger attention on the secondary effects, and a large number of them are taken into account during the process of strategic planning. Present strategic thinking calculations and force calculations consider the electromagnetic pulse (EMP) effects, radiation patterns and fallout as well. Although not all of these effects are formally included in the war planning models but firestorms and radiation, in general, are considered to a much greater extent than during the Cold War. Besides, the practice of withholding attacks based on the secondary effects also appeared in the war plans – a good example for that is the missile base to the West of Moscow. (Interview with Bruce G. Blair [2014])

The last characteristic of Cold War nuclear thinking was the low profile of humanitarian aspects in operational planning. During the Cold War, massive attack options did not spare the targeting of cities and civilians in general. Some SAC officials were talking about major civilian losses as a bonus effect of urban-industrial targeting. Although the focus on counterforce targeting did not allow the direct targeting of civilians per se, but crucial military and economic targets have not been excluded from the target lists for their proximity to civilians either. The present target categories are very similar to the Cold War, but the situation is somewhat different today – with the decrease in the number of nuclear weapons, the abandonment of massive attack options, and the new focus on limited regional scenarios, the execution of the OPLAN would probably result in less civilian casualties, and – as it was just mentioned – some of the crucial military and industrial targets are withheld, based on the potential secondary effects of the blast on the civilian population. The Obama administration, in addition, specifically included in its 2013 employment guidance that *“all plans must also be consistent with the fundamental principles of the Law of Armed Conflict. Accordingly, plans will, for example, apply the principles of distinction and proportionality and seek to minimize collateral damage to civilian populations and civilian objects. The United States will not intentionally target civilian populations or civilian objects.”* (U.S. Department of

Defense [2013]: pp. 4-5.) This means that major cities cannot be targeted, unless they host crucial military targets. Thus, Moscow and Beijing are probably still in the war plans, but even if such cities are targeted, STRATCOM has to minimize collateral damage.

Altogether, the end of the Cold War brought significant changes both in terms of guidance and in terms of planning capabilities. The introduction of flexible and adaptive planning made it possible to adjust the strategic war plans to real 21st century threats, and to cover a wider range of contingencies and a wider range of adversaries. But many of the guiding principles still seem to reflect the same thinking, which was characteristic of the bipolar system.

The Obama administration took office with a pledge to put an end to Cold War thinking but the second hypothesis of this dissertation claims that it failed to meet this promise on the operational level, and “*it still retains key elements of Cold War nuclear thinking.*” In this regard, the 2013 employment guidance outlined a vision to reduce the role of nuclear weapons and to abandon the legacies of the Cold War, but at the same time, it also reaffirmed several elements of Cold War operational planning. Counter-value and minimum deterrence postures were rejected, while the counterforce strategy was reaffirmed; the triad and a significant upload capability was pledged to be maintained; the role of nuclear weapons against non-nuclear states was retained; DoD was directed to maintain the capability to launch under attack; and the current alert postures were also retained. These elements have significant requirements regarding the nuclear force structure, and they put serious constraints on the future of deep reductions.

Table 14. Operational Level: Cold War vs. Obama

Cold War Nuclear Thinking	Change	Obama Posture
• high alert levels	≈	• bombers have been taken off alert but there are still 800 ICBM and SLBM warheads on high alert
• preemption, LOW and LUA	≈	• reduced reliance but maintained capability
• pre-delegation of control	YES	• abandoned in the 1980s

<ul style="list-style-type: none"> • (mostly) counterforce targeting + very conservative targeting criteria 	≈	<ul style="list-style-type: none"> • still (mostly) counterforce targeting but thanks to the developments in planning capabilities and weapons systems, targeting criteria is less conservative today
<ul style="list-style-type: none"> • massive attack options + a very few real limited attack option 	≈	<ul style="list-style-type: none"> • there are no more massive attack options and there is a bigger emphasis on limited attacks but there are still major attack options with hundreds of NWs
<ul style="list-style-type: none"> • target plans are preplanned and not flexible 	≈	<ul style="list-style-type: none"> • there are still preplanned target plans but flexible and adaptive planning also appeared
<ul style="list-style-type: none"> • duration of war: protracted, global war 	YES	<ul style="list-style-type: none"> • there is no more planning for a protracted global war
<ul style="list-style-type: none"> • lack of clear procedures for civilian oversight 	YES	<ul style="list-style-type: none"> • since the 1980s there are clear procedures for civilian oversight
<ul style="list-style-type: none"> • lack of calculations on the secondary effects of a nuclear blast in operational plans (serious underestimation of the potential damages) 	≈	<ul style="list-style-type: none"> • there are several secondary effects which are still not calculated but some of them have been included
<ul style="list-style-type: none"> • low profile of humanitarian aspects in operational planning 	≈	<ul style="list-style-type: none"> • the Obama guidance specifically mentions humanitarian aspects in it employment guidance, although counter-value elements are still present in the war plans

6. Reductions and Nuclear Strategy

6.1 Deployed Nuclear Weapons

In terms of deployed strategic nuclear weapons, the 2009 Prague address primarily focused on the conclusion of the New START Treaty, but after the ratification of the agreement, the attention of the administration immediately shifted towards the implementation of deeper force reductions. The first indicator of the Obama administration's intention to cut deeper was the January, 2012 '*Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*' Pentagon strategy, which concluded that "*it is possible that our deterrence goals can be achieved with a smaller nuclear force.*" (Sustaining U.S. Global Leadership [2012]: p. 5.) More than a year later, in his February, 2013 State of the Union Address President Obama reenergized his nuclear policy and stated that the U.S. would engage with Russia to seek further reductions in

their nuclear arsenals – although specific details of the second Obama administration’s nuclear agenda were only announced later. (Obama [2013a]) In the June, 2013 Berlin address the President declared that the overall review of U.S. nuclear guidance was completed, which allowed his administration to seek further negotiated cuts with Russia in the deployed strategic nuclear arsenals by up to one-third. As already mentioned, this would mean a reduction from the 1,550 New START ceilings to between 1,000 and 1,100 deployed strategic nuclear weapons. (Obama [2013b])

Regarding the implementation of these numbers, going down from 1,550 to 1,000-1,100 deployed strategic nuclear weapons will probably affect the ballistic missile force, most likely the SLBMs (mainly because bombers are counted as one, regardless of the assigned warheads, and ICBMs no longer carry multiple warheads, therefore reducing MIRVed SLBMs is the “most economic” way to implement the cuts). As the number of submarines will go down from 14 to 12, STRATCOM is probably already planning for these lower numbers.¹¹³ According to a 2011 Congressional hearing, STRATCOM proposed to equip the 12 new submarines with 16 missile tubes each (a reduction by four, compared to the force structure under the New START agreement), which would mean 192 SLBMs. (Congressional Hearing [2011]) Although all 12 next generation SSBNX submarines will be deployable, not all of them will necessarily be deployed. Some of them will probably undergo repairs and other maintenance therefore the actual number of deployed SSBNX will most likely be up to 10. (Interview with Hans M. Kristensen [2014]) To meet the proposed reduction to 1,000-1,100, this would mean that each deployed SLBM should be loaded with an average of around four warheads. This would add up to 1,100 (treaty accountable) strategic warheads,¹¹⁴ without changing the number of the ICBMs or the bomber force. In 2011, Commander of STRATCOM General Kehler, in addition, stated that these proposals “*did not assume any specific changes to targeting or employment guidance. Analyses considered a range of potential security environments, strategy requirements, and submarine force structures. [...] While there is uncertainty about the future strategic environment and policy*

¹¹³ An alternative explanation for the one-third reduction is that it is a “self amplifying feedback” on the projected number of Russian forces, which are expected to decline significantly in the coming years, as a result of retiring the aging nuclear weapons systems of the Cold War. (Interview with Bruce G. Blair [2014])

¹¹⁴ 400 single-warhead ICBMs, 60 bombers, and 640 SLBM warheads, deployed on 10 submarines and 160 SLBMs (the remaining two submarines with altogether 32 SLBMs being in overhaul).

requirements, I am confident that a plan to procure 12 Ohio Replacement SSBNs with 16 missile tubes will meet deterrence requirements.” (Congressional Hearing [2011])

From a political perspective, there are many ways to implement these reductions, depending on the legal framework and the administration’s willingness to move on with or without Russian reciprocity. First, the administration could decide to pursue a completely new agreement with Moscow; second, a bilateral amendment could be attached to the New START, lowering the ceilings of the treaty; third, informal reciprocal reductions could be concluded, based on presidential directives; and fourth, the U.S. could also implement the reductions unilaterally, regardless of the actions of the Russian counterpart. At the moment, the White House seems to prefer a legally binding new treaty with Moscow, but the political circumstances are not really favorable for the initiation of a new round of arms control talks. (Interview with Madelyn R. Creedon [2014])

Whatever option the administration (or the next one) decides to pursue, STRATCOM and the JCS already concluded that they are comfortable with these cuts, and they are planning with these lower numbers. In terms of operational strategies, the big question is how to go even lower. In this regard, the most important factors are targeting criteria and targeting strategy – these requirements put tremendous pressure on the force structure (especially on the deployed strategic nuclear arsenal), and they clearly define how many nuclear weapons are needed for the execution of the war plans.

The intellectual debate over targeting strategies (comparing the advantages and dangers of counterforce and counter-value policies) go back to the early years of the Cold War. In this regard, the first big illusion is that the U.S. cannot maintain a counterforce strategy under significantly lower numbers. Opponents of deep reductions argue that after a certain point, the U.S. would be forced to shift to a counter-value strategy which would mean the targeting of the civilian population, which is immoral.¹¹⁵ First of all, a lot depends on the military capabilities of the potential adversaries. Maintaining a

¹¹⁵ As already mentioned before, the author of this dissertation does not agree with the so called “city busting” characterization of counter-value strategies, which aims the deliberate destruction of civilian populations. Counter-value targets are generally softer economic targets, closer to highly populated areas, therefore aiming at these targets would inevitably result in a higher loss of civilians. Launching hundreds of nuclear weapons on counter-value targets would definitely be immoral but it would also be immoral to launch them against counterforce targets. Therefore, rejecting one of these strategies on moral grounds is ambiguous at best, as the current counterforce strategy already “accepts” a significant level of civilian casualties.

counterforce strategy under lower numbers could actually be more attractive than under larger numbers, if the potential opponents also reduced their nuclear forces. As James N. Miller noted, in a bilateral situation where each side had only one nuclear weapon, both sides would have extremely strong incentives to target the other's nuclear capability. If reductions happen in a multilateral form, the lower you go, the more attractive counterforce becomes; therefore having survivable forces is increasingly important for stability as numbers are reduced. (Interview with James N. Miller [2014])

The alternative scenario is that the U.S. reduces its nuclear forces significantly, but its adversaries would remain on the current levels, or even increase their arsenals. In this case, the existing targeting categories – 1) military forces; 2) WMD infrastructure; 3) military and national leadership; and 4) war-supporting infrastructure – are obviously unsustainable and there is a strong pressure to abandon certain categories. Having for example 200 nuclear weapons altogether, and using them against the nuclear forces of an adversary with 2,000 nuclear weapons does not make any sense, and it does not constitute a real deterrence value. Under both scenarios, stability will depend on effective deterrence, and an assured second strike capability.

Although this second scenario will definitely require a reevaluation of the current targeting policies, it still does not mean that the U.S. is forced to shift to a city-busting counter-value strategy. For the transitional period with extremely low numbers (which will eventually lead to global zero), experts of the Federation of American Scientists and the Natural Resources Defense Council suggested a so called 'minimal deterrence' posture, which "*will make retaliation after nuclear attack the sole mission for nuclear weapons.*" (Kristensen; Norris; Oelrich [2009]: p. 2.) This strategy is based on a new targeting policy, which explicitly avoids targeting cities and focuses on industrial infrastructure facilities, like for example power plants, or oil and metal refineries. A central concept of this strategy is a secured nuclear retaliatory capability, instead of the current Cold War-style ready-to-launch damage limitation policies – as the authors argue, nuclear deterrence must be separated from war fighting. The main characteristics of this posture would include: reduced missions for nuclear weapons, the removal of planning for a first strike, a constrained second-use policy, no nuclear forces on alert, and the clear separation of nuclear and conventional forces. Kristensen, Norris, and Oelrich claim that minimal deterrence would turn off Cold War dynamics, and permit a

significant relaxation of warhead requirements (with the eliminated need to take off underground targets and hardened silos, the current “legacy warheads” would be more than enough to fulfill the mission of nuclear weapons). This would pave the way for further deep reductions, and it would create a stable equilibrium before the last step is taken towards total nuclear elimination. (Kristensen; Norris; Oelrich [2009])

An additional challenge of abandoning hard counterforce targeting and moving towards lower numbers is the reassurance of allies. Allies do not seem to understand these concepts, and they seem to worry about “*what is left for their reassurance if the U.S. goes down to a few hundred nuclear weapons.*” (Interview with Jon B. Wolfsthal [2014]) In this regard, Kristensen, Norris, and Oelrich argue that “*Knowing that the attack on infrastructure would follow if any nation were unwise enough to attack the United States or its allies with nuclear weapons should be enough of a deterrent – to the extent anything is – to prevent an attack in the first place.*” (Kristensen; Norris; Oelrich [2009]: p. 51.) Besides, the reduced reliance on nuclear weapons could be counterbalanced with an increased reliance on forward deployed non-nuclear assurances, which are more appropriate to address the challenges these states are facing today, and which can more credibly deter a potential aggression against their sovereign territory.

Altogether, the current Cold War-style counterforce targeting sets a serious limit to how deep the U.S. can reduce its nuclear forces, and ties the future of reductions to the capabilities of the potential adversaries. But, if further deep reductions are to be pursued, some elements of the present (hard) counterforce targeting might have to be abandoned (depending on the adversaries’ military capabilities). Whether the existing targeting categories can be maintained or need to be reevaluated, the U.S. will not be forced to pursue a city-busting counter-value strategy, and it can still avoid the deliberate targeting of civilians. Whatever the future numbers and strategy will look like, the main driving factors should be effective deterrence, stability and survivability.

Regarding the reassurance of allies, tactical nuclear weapons play a crucial role, especially vis-à-vis NATO allies. Both in the 2010 NPR, and in the 2013 employment guidance Washington reaffirmed its commitment to “*maintain the capability to forward-deploy nuclear weapons with heavy bombers and dual-capable aircraft in support of extended deterrence and assurance of U.S. Allies and partners. In Europe, a*

forward-based posture should be maintained, consistent with the 2012 North Atlantic treaty Organization (NATO) Deterrence and Defence Posture Review, and until such time as NATO has agreed the conditions are appropriate to change the Alliance's nuclear posture." (U.S. Department of Defense [2013]: p. 6.) In the framework of the B61 life extension program, the U.S. is planning to build 500 new B61-12 tactical nuclear weapons, of which probably 200 will replace the old versions, and remain deployed in Europe. From an operational perspective, reducing the reliance on tactical nuclear weapons, and facilitating a withdrawal from Europe would require an increased reliance on forward-deployed conventional forces and regional missile defense systems (which the U.S. already pledged to strengthen in order to limit the role of nuclear weapons in general). And even if tactical nuclear weapons would be withdrawn from Europe, the nuclear deterrence of the Alliance could still be maintained by the tactical nuclear forces, currently kept in storage in the continental U.S., and also by the strategic nuclear forces of the U.S., as well as "*the independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own*" (as stated by the 2012 Deterrence and Defence Posture Review – DDPR). (DDPR [2012])

6.2 Non-Deployed Nuclear Weapons¹¹⁶

Regarding the strategic aspects of nuclear reductions, the prospects to cut the non-deployed nuclear arsenal depend both on operational factors, and on developments in the nuclear modernization programs. The technical requirements to hedge against the failure of a warhead type or a leg of the triad, and the need to have a constant reserve force against unforeseen geopolitical challenges both influence the number and type of non-deployed nuclear weapons. In this regard, the administration claimed that the new "3+2" warhead modernization strategy could bring significant changes, and facilitate cutting the hedge force in half.

During the Cold War, the role of non-deployed nuclear forces was very limited as both superpowers tried to deploy the majority of their nuclear weapons inventories. Reserve nuclear forces were small as a result of the continuous development and production of

¹¹⁶ This chapter is based on the author's article '*Hedging and Strategic Stability*,' which was published in the Public Interest Report – The Journal for Science and Security. Volume 67, Number 1, Winter 2014.

new nuclear weapons, which guaranteed the rapid exchange of the entire stockpile in every few years. The United States only started to create a permanent reserve or hedge force in the early 1990s. The role of the hedge was twofold: first, to guarantee an up-build capability in case of a reemerging confrontation with Russia, and second, a technical insurance to secure against the potential failure of a warhead type or a delivery system. Despite the dissolution of the Soviet Union, during the first years of the 1990s, the United States was skeptical about the democratic transition of the previous Eastern Block and the commitment of the Russian Federation to arms control measures in general. Therefore, the Clinton administration's 1994 NPR officially codified – for the first time – the concept of a hedge force against the uncertainties and the potential risks of the security environment. (NPR [1994]) This concept gradually lost importance as the number of deployed strategic and non-strategic nuclear weapons kept shrinking on both sides and relations improved between Washington and Moscow. By the end of the 1990s, the main rationale for upholding the hedge force shifted towards the necessity of maintaining a back-up against technical failures. Although the nuclear arsenal was aging, a moratorium was declared on nuclear weapons testing, and several production facilities were closed. Therefore, it seemed imperative to retain fully functional nuclear warheads in reserve as an insurance policy. (Ritchie [2009]: pp. 96-97.)

While the Clinton administration's NPR was not too explicit about what the hedge really was, both the Bush and the Obama administrations made the specific role of the hedge clearer. Although technical considerations remained important, the Bush administration's 2001 NPR refocused U.S. hedging policy on safeguarding against geopolitical surprises, originating from a wider range of adversaries. (NPR [2001]) This shift in planning meant that the force structure was designed for a post-Cold War environment with a more cooperative Russia. Therefore, the primary goal of the hedge was to provide guarantees in case this environment changed and U.S.-Russian relations significantly deteriorated.

Regardless of the main focus of the acting administration, the hedge has always served two different roles which belong to two separate institutions: the military considers the hedge a responsive force against the uncertainties of the international geopolitical environment, while the National Nuclear Security Administration views the hedge as a repository to safeguard the aging U.S. nuclear arsenal. These two institutions advise the

administration on the required size of the hedge.¹¹⁷ Since the end of the Cold War, both the United States and Russia considerably reduced their deployed nuclear warheads, but Washington retained many of these weapons in the hedge. By now there are more non-deployed nuclear weapons than deployed nuclear weapons in its military stockpile.

According to FAS estimates (Kristensen; Norris [2014b]), the United States has a military stockpile of 4,650 nuclear weapons, of which roughly 1,900 strategic and 200 tactical nuclear weapons are deployed. Altogether this leaves around 2,500 non-deployed nuclear weapons in reserve – approximately 2,200 strategic and 300 non-strategic.¹¹⁸ This hedge force¹¹⁹ provides the United States with a capability to increase its deployed nuclear arsenal to more than 4,000 nuclear weapons within three years.¹²⁰ In the long run, this capability might feed into Russian paranoia as it has the potential to undermine strategic parity and it could become a serious roadblock on the way towards further reductions in deployed strategic as well as non-strategic nuclear arsenals.

The Obama administration has already indicated in the 2010 NPR that it is considering reductions in the nuclear hedge. According to the document, the “*non-deployed stockpile currently includes more warheads than required*” and the “*implementation of the Stockpile Stewardship Program and the nuclear infrastructure investments*” could set the ground for “*major reductions*” in the stockpile. (NPR [2010]: p. 38.) However, in parallel to these significant reductions, the United States “*will retain the ability to ‘upload’ some nuclear warheads as a technical hedge against any future problems with*

¹¹⁷ Regarding the size of the hedge, there are concrete calculations based on technical considerations to determine the size of the technical hedge, which is needed to safeguard against the potential failure of a warhead type or a delivery system. In general terms, the hedge contains one back-up warhead for each deployed warhead (and some additional warheads for example to support LEPs). Sizing the geopolitical hedge, on the other hand, is more difficult to calculate. According to Bradley H. Roberts, the general rule has been to have enough warheads in the hedge to get the deployed forces back to the level of the previous arms control agreement – for example, in the case of the George W. Bush administration this meant getting back to the levels of the START I agreement. (Interview with Bradley H. Roberts [2014])

¹¹⁸ Some warheads in the hedge are active (they are maintained in an operational status but non-deployed, mostly stored at a depot or at an operational base) and some of them are inactive (they are maintained in a non-operational status, they have their tritium components removed and other limited life components are not replaced until the warheads are reactivated). (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011])

¹¹⁹ In general, the hedge force does not necessarily cover a 100 percent of the non-deployed arsenal – there are some “grey areas.” According to certain accounts, bomber weapons on bomber bases are not part of the deployed arsenal but they are definitely not part of the hedge either. Another example is the category of the so called “legacy warheads” which are not being refurbished but kept to support an undergoing Life Extension Program and kept only until there is confidence in the LEP.

¹²⁰ Reserve warheads can be added to bombers within days or weeks, additional warheads can be uploaded to SSBNs within months but uploading again three warheads on each ICBM takes more time. At each ICBM base, approximately one week is needed for the reconfiguration of a missile, therefore uploading all 450 ICBMs would require more than two years.

U.S. delivery systems or warheads, or as a result of a fundamental deterioration of the security environment.” (NPR [2010]: p. 22.) In line with the 2010 NPR, the 2013 Presidential Employment Guidance also envisioned reductions in the deployed strategic nuclear arsenal and reaffirmed the intention to reduce the hedge as well. The Pentagon report discussed an “*alternative approach to hedging*” which would allow the United States to provide the necessary back-up capabilities “*with fewer nuclear weapons.*” This alternative approach puts the main emphasis on the technical role of the hedge, claiming that “*a non-deployed hedge that is sized and ready to address these technical risks will also provide the United States the capability to upload additional weapons in response to geopolitical developments.*” (U.S. Department of Defense [2013]: pp. 6-7.) According to Hans M. Kristensen, this might imply that the hedge will no longer contain “two categories” of warheads – the number of reserve warheads that is enough to protect against technical failures will be enough against potential geopolitical challenges as well. (Kristensen [2013a]) However, at this point it is still unclear if (and when) this new approach will lead to actual force reductions in the non-deployed nuclear arsenal.

U.S. government documents (for example the employment guidance or the FY 2014 SSMP) have been setting up a number of preconditions for reducing the size of the hedge. Beyond “geopolitical stability,” the two most important preconditions are the establishment of a responsive infrastructure by constructing new warhead production facilities and the successful completion of the warhead modernization programs. The DoE’s FY 2014 SSMP, which proposed the so-called “3+2” warhead plan, claimed that the development of interoperable warheads could permit a considerable reduction in the number of hedge warheads. However, in light of the current budget constraints, it is still unclear if the program will start as planned and even if completed according to schedule, the gradual reduction of the technical hedge would not begin until the mid-2030s. Similar challenges will arise if the administration wishes to link the reduction of the hedge to the construction of new warhead production facilities – some of which have already been delayed due to budget considerations, and the exact dates and technical details of their future completion are still unclear.

The preconditions would mean that significant reductions in the hedge¹²¹ are unlikely to materialize for at least another 15 years. In the meanwhile, the deployed arsenal faces two scenarios in the coming decades: 1) the number of warheads and delivery platforms could keep shrinking, or 2) arms control negotiations might fail to produce further reductions as a result of strategic disparities (partly caused by the huge U.S. non-deployed arsenal). Under the first scenario, keeping the hedge in its current size would be illogical because a smaller deployed arsenal would require fewer replacement warheads for the case of technical failures, and because fewer delivery platforms would require fewer up-load warheads in case of geopolitical surprises. Maintaining the current non-deployed arsenal would not make any more sense under the second scenario either. If future arms control negotiations get stuck based on arguments over strategic parity, maintaining a large hedge force will be part of the problem, not the solution. Therefore, insisting on the “modernization precondition” and keeping the current hedge for another 15 years would not bring any benefits for the United States.

Moreover, this might also send a bad signal to Russia, where U.S. missile defense developments and its alleged impact on strategic stability are already a primary source of concern to the Kremlin. As a result of aging technologies and necessary retirements, Russian nuclear forces have been constantly decreasing, and despite all modernization efforts,¹²² it is expected that by the early 2020s the ICBM arsenal will shrink to 220 missiles. (Kristensen; Norris [2013b]) Russia already deploys 40 percent less strategic delivery systems than the United States and tries to keep the balance of deployed weapons by higher warhead loadings. This does not give Russia the ability to significantly increase the deployed number of warheads – not just because of the lower number of delivery platforms but also because of the lack of reserve warheads comparable in number to the United States hedge force. In this regard there is an important asymmetry between Russia and the United States – while Washington keeps a hedge for technical and geopolitical challenges, Moscow maintains an active production infrastructure, which – if necessary – enables the production of hundreds of new

¹²¹ Regardless of the status of nuclear modernization programs, some moderate reductions will eventually occur in the hedge force. In the framework of the New START Treaty, the number of deployed strategic nuclear weapons will shrink and it will facilitate some reductions in the technical hedge, as well.

¹²² Russian has an ongoing modernization program, in the framework of which it has already begun to build a new heavy ICBM and a multiple-warhead Bulava SLBM.

weapons every year.¹²³ In the meantime, the United States loads only 4-5 warheads on its SLBMs (instead of their maximum capacity of 8 warheads) and finished downloading all of its ICBMs to a single warhead configuration (with a maintained capability to re-MIRV). Taken into account the upload potential on these delivery vehicles and the number of warheads in the hedge force, in case of a dramatic deterioration of the international security environment the United States could increase its strategic nuclear arsenal to above 4,000 deployed warheads in about three years.

These dynamics work against strategic stability (which, according to Russia, is partly identified by strategic parity), and might have a negative effect on the chances of cutting the deployed arsenals as well. The intentions of the Obama administration to cut the hedge in half if the “3+2” is completed are good, but it would take too much time, and it seems to be more urgent to start implementing gradual reductions as it could indicate good faith and contribute to the establishment of a more favorable geopolitical environment. It could signal President Obama’s serious commitment to further disarmament, send a positive message to Russian military planners and ease some of their paranoia about U.S. force structure trends.

6.2 The Future of the Triad

Although the 2010 NPR examined the status of the strategic triad and the possibility of slicing it down to a dyad, it finally endorsed keeping all three legs. According to the 2010 NPR, the three legs have a complementary role to each other: SSBNs provide survivability, ICBMs provide prompt launch capability, and bombers provide flexibility and the capability to signal in a crisis. Besides, proponents of the triad argue that it provides the President with a wider range of options; it is more appropriate to credibly deter opponents, and reassure allies; it serves strategic stability as it reduces the incentives for an attack in a crisis situation; and a variety in delivery vehicles provides a hedge against the failure of an entire leg. As James N. Miller argued, the lower you go, the more important it is to hedge and reduce vulnerabilities, and as long as nuclear weapons exist, this logic supports maintaining the triad. (Interview with James N. Miller

¹²³ This asymmetry definitely has its implications for the long term (10-15 years) status of strategic parity, but certainly less impact on short term relations.

[2014]) Morton Halperin, in addition, reminded that a pledge to maintain all three legs of the triad can advance the administration's goals to implement significant reductions in the number of warheads. As all three legs have a powerful lobby in Congress, they have the power to undermine any further cuts in the arsenal. But, if the different services do not have to worry about the future of their programs, they might be less interested in preventing any kind of force reductions, and might support some cuts to the overall number of the stockpile. (Interview with Morton H. Halperin [2014])

Although there are several advantages to keeping all three legs of the triad, the economic problems and the budget cuts put this issue back on the table, and they might force the administration to reconsider its position. The main reason is that these delivery vehicles are the most expensive elements of the modernization programs. As General James Cartwright, former Commander of STRATCOM and former Vice Chairman of the JCS highlighted, the delivery vehicles are aging, *"the challenge here is that we have to recapitalize all three [triad] legs, and we don't have the money to do it"*. General Robert Kehler, also former Commander of STRATCOM expressed similar thoughts: *"we're not going to be able to go forward with weapon systems that cost what weapon systems cost today"*. (Quoted in Woolf [2012]) While, Admiral Mike Mullen, former Chairman of the JCS, predicted that in the future the U.S. might be forced to reduce its capabilities to a dyad: *"At some point in time, that triad becomes very, very expensive. [...] At some point in time, in the future, certainly I think a decision will have to be made in terms of whether we keep the triad or drop it down to a dyad."* (Mullen [2011]: p. 14.)

Regarding the SSBN submarines, they have the strongest place among the delivery vehicles, and most likely they will be the last leg to fall from the strategic triad. But maintaining the current fleet of 14 submarines is costly, and building 12 new submarines is projected to cost an additional \$347 billion for their entire lifecycle. (Collina [2014]) Therefore, a 2013 CBO report proposed that the U.S. should reduce the current size of its fleet to eight SSBNs, and it should only build eight new SSBNX submarines. (CBO [2013a]) There are two major arguments against maintaining such a robust SSBN arsenal, the first one is the potential to save billions of dollars in a tight budget environment (according to the CBO, reducing the fleet to eight submarines could save \$11 billion between 2015 and 2023, and another \$30 billion during the 2030s); and

the second argument is the fact that submarines do not run on full capacity. Even now, submarines only carry around 4-5 nuclear warheads, and by the time the first SSBNX enters into service in 2031, the strategic nuclear arsenal will probably be even smaller.

Implementing these changes, however, will definitely require several revisions on the operational level as well. Constantly holding at risk a certain number of targets in Russia, China, North Korea, and the Middle East requires that eight or nine of the operational submarines are at sea at any given time, of which four or five (two-three at the Pacific, and one-two at the Atlantic) are at “hard alert” within the range of their targets, while the other three or four are in transit to, or from their patrols, on a so called “modified alert.” This means that the first step to reduce these numbers is the limitation of operational strategies, such as target categories, and alert level requirements.

Looking at the other two legs of the triad, bombers seem to be at a safe place for now. While the service life of the B-2s is expected to last until 2058, the Air Force already reported that it had secretly started the development of a new Long Range Strike Bomber, which will replace the ageing B-52s in the 2020s. Besides, the Air Force lays a huge emphasis on developing dual-capable aircrafts, which can also be used for conventional missions. ICBMs, on the other hand, are endangered for three reasons: first, the service life of the Minuteman III ICBMs can be extended to 2030, which means that their replacement is not the most urgent issue and they might fall victim to reductions because of the cost overruns of other modernization programs. The second issue is the projected decrease of the Russian ICBM forces. As already mentioned, Moscow’s ICBM arsenal is expected to shrink to 220 missiles by the early 2020s, which could set the ground for significant reductions in the U.S. ICBM force as well. The third issue, which might influence the future of the ICBMs is a change in the operational policies that could directly affect their strategic role. In this regard, alert levels and the launch under attack policy are the most important factors.

Although the Obama administration seems determined to maintain the current alert levels, a future change in this policy might trigger reductions in the ICBM force as well. Advocates of de-alerting, in general, argue that the potential consequences of an inadvertent launch would outweigh by far the benefits that may come from keeping nuclear weapons on high alert in the current security environment. They claim that this is an outdated Cold War practice which is dangerous and totally inappropriate to

address the challenges of the 21st century. (Kristensen; McKinzie [2012]: p. 17.) These people believe that the fears of a re-alerting race are “*overblown because today’s highly alerted nuclear postures involve visibly deploying, or ‘generating,’ nuclear forces and increasing alert levels in a crisis.*” They also claim that reducing alert levels is possible in a gradual and verifiable manner, which would eliminate the risks, and also discourage smaller nuclear weapon states from increasing their own readiness levels. The current excessive alert postures of the U.S. and Russia lock nuclear planning into Cold War-style scenarios, while a gradual reduction in their alert postures could “*reduce readiness levels, lengthen decision times, and develop the experience and means to verify the process.*” (Kristensen; McKinzie [2013])

Opponents of de-alerting, in contrast, argue that the risks of an inadvertent launch are exaggerated and highly unlikely,¹²⁴ while the risks of de-alerting are more imminent, as reducing the operational readiness of nuclear forces would harm crisis stability, and make the idea of a preemptive strike more attractive. In case of a crisis, they claim, a re-alerting race would intensify tensions, and it would make the use of nuclear weapons more likely. (Kristensen; McKinzie [2012]: p. 17.) Opponents, in addition, argue that there is no support in the military for de-alerting as there are technical difficulties to implement de-alerting measures in the strategic nuclear forces (Interview with Gary Samore [2014]) – these physical problems, however, could be overcome by the next generation designs. (Interview with James E. Cartwright [2014]) On top of these concerns, Franklin C. Miller, adds that “*no verification scheme has yet been devised to provide confidence that a missile, land- or sea-based, either has been taken off alert or returned to alert status.*” And finally, opponents also worry about the morale consequences of de-alerting, “*once crews stop believing their mission is real they cease to pay attention to their responsibilities and lose competency; de-alerting would create such attitudes.*” (Miller [2009]: pp. 289-290.)

After serious discussions in the framework of the interagency review process, the White House came to the conclusion that the dangers of de-alerting outlined above outweigh the potential benefits of it therefore the administration pledged to keep the current alert levels. Despite this decision, President Obama also directed the DoD to reduce reliance

¹²⁴ Those, who question the benefits of de-alerting, emphasize that the alert postures of both the U.S. and Russia are “*highly stable and subject to multiple layers of controls,*” ensuring clear civilian (i.e. presidential) decision-making. (Miller [2009])

on, but maintain the capability of launch under attack, which is a closely related policy to alert levels.

In theory, in case of a first strike from the adversaries, a prompt launch capability can guarantee the survivability of fixed and vulnerable forces (i.e. ICBMs), and provide the President with a range of immediate options. Although the current security environment does not seem to justify planning for such a scenario, no President can allow an adversary to believe with confidence that the entire U.S. ICBM force can be taken out with hundreds of nuclear warheads deployed on them – giving up the option of prompt launch would create an asymmetric vulnerability, and it would be an invitation for a first strike. (Interview with Bradley H. Roberts [2014])

ICBMs, in general, complicate an adversary's targeting policy, as they absorb hundreds of nuclear weapons, and there is a strong deterrent value to them.¹²⁵ (Interview with Madelyn R. Creedon [2014]) Besides, ICBMs on high alert provide a prompt launch capability, which might still be necessary in case of a regional crisis, when the vital interests of an ally are at stake, and further escalation could be prevented by a limited nuclear strike. (Interview with Amy R. Woolf [2014]) But if the administration decides to take ICBMs off alert, and give up the capability to prompt launch, then some people would argue that the U.S. would diminish their most important strategic value, and it would eventually make them vulnerable and lead to their complete withdrawal of the nuclear triad. Therefore, any future initiative to reduce the alert status of ICBMs, and diminish the capability to launch under attack could probably have significant consequences to the future of the land-based leg of the nuclear triad.

6.4 The Strategic Requirements of Lower Numbers

When President Obama announced his plans to reduce the number of deployed strategic nuclear weapons to between 1,000 and 1,100 nuclear warheads, conservative circles

¹²⁵ In relation to this point, Franklin C. Miller argued that without ICBMs, an adversary could easily calculate how to cripple U.S. nuclear forces with only a few nuclear weapons (by targeting air bases and SSBN bases, significant damages could be caused). But launching a very few nuclear weapons could still be explained by the adversary as an accidental or unauthorized launch, despite the devastating damage it might cause to the overall U.S. nuclear arsenal. Having 400 ICBMs, on the other hand, would require launching at least 800 nuclear warheads if an adversary really wants to take out U.S. nuclear forces – in this case, there would be no questions about the intentions of the given adversary, and there would be no ambiguity about the nature of the attack. (Interview with Franklin C. Miller [2014])

attacked him for going too deep, while arms control advocates claimed that these numbers were too moderate. By 2013, a number of reports have already been published on how to implement really deep force reductions in the U.S.-Russian nuclear arsenals. In a 2005 Arms Control Association report,¹²⁶ *‘What Are Nuclear Weapons For’* physics Professor Sidney D. Drell and Ambassador James E. Goodby argued that “*Based on an analysis of the present and prospective threats that define missions for U.S. nuclear weapons we conclude that the strategic arsenal required by the United States can be reduced to considerably lower numbers. We recommend a U.S. force structure of 500 operationally deployed nuclear warheads, plus 500 in a responsive force.*” (Drell; Goodby [2007]: p. v.) The document called for an operationally deployed force of three Trident submarines on station at sea, carrying 24 missiles and 96 warheads each (a mix of low-yield W76s and high-yield W88s). In addition to that, the deployed force structure would include 100 single-warhead (W87) Minuteman III ICBMs, placed in hardened silos, and 20–25 B2 and B52H bombers. The responsive force would consist of three Trident submarines (similarly loaded with 96 warheads), in transit or in port, plus two or three unarmed boats in overhaul. It would also include 50–100 Minuteman III ICBMs off alert and without warheads, and 20–25 unarmed bombers. Altogether, the Drell-Goodby report recommended a force structure, which included already existing warhead designs, maintained the current diversity, and the potential to hedge against the uncertainties of the security environment and the technical failures of a warhead type or a delivery system.

Even more dramatic numbers were outlined by Global Zero in a 2012 U.S. Nuclear Policy Commission report, *‘Modernizing U.S. Nuclear Strategy, Force Structure and Posture.’*¹²⁷ (Global Zero [2012]). The report called for steps on five main areas: 1) a dramatically reduced force structure to 450 deployed strategic nuclear weapons, and an additional 450 in reserve; 2) a de-alerted posture, which would require “*24-72 hours to generate the capacity for offensive nuclear strikes;*” 3) a “*more secure, consolidated and ‘locked down’ nuclear weapons stockpile,*” which would reduce the threats of theft or unintended use; 4) “*a stood-up alert missile defense and conventional force capability that is prompt and global,*” which in a crisis situation could function

¹²⁶ The original report was revised in 2007.

¹²⁷ The project was chaired by General (ret.) James Cartwright, and the commission included Ambassador Richard Burt, Senator Chuck Hagel (now Secretary of Defense), Ambassador Thomas Pickering, General (ret.) Jack Sheehan, and Dr. Bruce Blair, co-founder of Global Zero.

effectively in the 24-72 hours timeframe, while the nuclear forces are generated; and 5) a reliable and effective command, control, communications and early warning system, which can manage the transition from negative to positive control over nuclear forces. (Global Zero [2012]: p. 6.) The force structure would include ten SSBNs (seven assigned to the Pacific and three to the Atlantic), carrying 720 strategic nuclear warheads (half of it deployed, half non-deployed), and 18 B-2s with 180 gravity bombs (half of it deployed, half non-deployed). ICBMs and tactical nuclear weapons, on the other hand, would be phased out. The report argued that ICBMs are dangerous and they can only support nuclear wartime operations against Russia, as their minimum energy trajectories would cross Russian territory, whether the missile is directed against China, North Korea, Syria, or Iran. It would be ambiguous and it has the potential to trigger a nuclear retaliation. Moreover, ICBMs were argued to be “*inherently targetable and depend heavily upon launch on warning for survival under some scenarios of enemy attack.*” (Global Zero [2012]: p. 8.) Regarding tactical nuclear weapons, the report recommends their elimination, as “*Their military utility is practically nil. They do not have assigned missions as part of any war plan and remained deployed today only for political reasons within the NATO alliance.*” (Global Zero [2012]: pp. 8-9.) In terms of implementation, the report proposed a ten year timeframe by 2022, either with Russian reciprocity (by reciprocal presidential directives or a new arms control treaty), or unilaterally.

One of the most ambitious proposals was outlined by James Wood Forsyth Jr., Colonel B. Chance Saltzman, and Gary Schaub Jr. who argued that “*In fact, the United States could address military utility concerns with only 311 nuclear weapons in its nuclear force structure while maintaining a stable deterrence.*” (Forsyth; Saltzman; Schaub [2010]: p. 82.) This would mean 192 de-MIRVed Trident D5 SLBMs on twelve Ohio class submarines, a hundred single-warhead Minuteman III ICBMs, and 19 B-2s with air-launched cruise missiles for continued standoff capability and flexibility. (Forsyth; Saltzman; Schaub [2010]: pp. 82-83.)

The most important reason why it is worth comparing these proposals is that it clearly shows that there is not just one right way to implement deep cuts. While the Global Zero report advocated for a dyad, the other two studies planned to maintain the triad, the question of de-alerting was also not crucial in two of the three proposals, and tactical

nuclear weapons were also not crossed out by all of them. Altogether, it shows that a lot depends on the operational requirements, the targets that need to be held at risk, and the deterrence strategy a state decides to pursue. Despite this flexibility in certain aspects of the implementation, it is clear that in order to reach these numbers, some of the current operational elements definitely need to be limited (or abandoned).

In this regard, the following areas have the potential to facilitate significant force reductions, and pave the way towards a more relaxed posture and a more limited future arsenal:

1) Reduce the mission of nuclear weapons:

- Introduce a “sole purpose” posture: declare that the sole purpose of nuclear weapons is to deter a nuclear attack against the U.S., its allies and partners. And apply an unconditional negative security assurance: declare that the U.S. will not use or threaten to use nuclear weapons against non-nuclear weapon states.
 - First, these changes would reduce the number of potential adversaries from the current six to three (Russia, China, and North Korea), as only those states would remain targetable by the U.S. nuclear arsenal, which possess nuclear weapons.
 - Second, these changes would also limit the target categories and the target lists, as they would eliminate the requirement to plan against chemical and biological weapons, which do not have the potential to threaten the survival of the U.S. or its allies, and could be credibly deterred with conventional weapons.¹²⁸

Altogether, this would require planning for a smaller range of contingencies, against a smaller number of states, which could definitely eliminate the need for certain types and number of nuclear weapons. (Besides, it would also result a more relaxed posture, with an implicit no-first-use declaration, as the U.S. would only use its nuclear arsenal in response to a nuclear attack.)

¹²⁸ Paradoxically, reducing the planning against non-nuclear weapon states, and contingencies involving chemical and biological weapons would not be a shift from Cold War to post-Cold War policies but it would be abandoning a post-Cold War phenomenon which was essentially raised to operational policy during the Clinton and the Bush administrations, and it would mean returning to a kind of Cold War logic, which puts a huge emphasis on deterring nuclear attacks.

2) Change targeting principles:

- Limit damage criteria: reduce the requirements for damage expectancy in strike options.
 - As long as damage requirements are high, high-priority targets need to be covered with multiple warheads, or with more accurate, higher yield weapons. But if these requirements are lowered, it could significantly reduce the number and type of warheads required to meet the target plans and destroy a target.
- Reduce flexibility requirements: plan for fewer scenarios and provide the President with fewer (but more realistic) strike options.
 - Once the number of adversaries is reduced, and the target categories are limited, there is a reduced requirement to plan against certain scenarios, and there is an opportunity to reduce the diversity of strike options as well. Taken into consideration the dramatic developments in adaptive planning, the number of preplanned scenarios can be reduced, and adaptive plans can take over further responsibilities. The reductions in the strike options, and the reduced reliance on preplanned war plans would also have a positive effect on the prospects of further reductions.
- End (hard) counterforce targeting:¹²⁹ The Cold War-style counterforce targeting policy meant a force-on-force strategy, which required a robust and advanced nuclear arsenal.
 - Reducing the counterforce mission, and shifting the focus to softer targets (by implementing, for example, the already mentioned counter-infrastructure strategy) could eliminate the requirement for hundreds (or thousands) of nuclear weapons. U.S. nuclear forces would still remain

¹²⁹ As mentioned before, the reduced number of nuclear weapons does not necessarily have to come with an alternative targeting policy – if the adversaries keep reducing their capabilities in a reciprocal manner, then the current categories can be maintained. (Essentially this is the reason why the current target categories are so similar to the Cold War categories, whereas the number of nuclear weapons has been significantly cut since then.) But the dynamics of the past few years suggest that major force reductions are less and less likely, therefore waiting for reciprocal measures (from Russia and eventually from China as well) might not pay off. The advantage of ending Cold War-style counterforce targeting is that it can significantly fasten the process of reductions, and it does not make these cuts dependent on any adversary.

capable to destroy critical war-making and industrial targets, but it would be under significantly lower numbers.

3) Focus on retaliation instead of war fighting:

- Reduce planning for damage limitation: during the Cold War, U.S. targeting policy reflected an increased planning for damage limitation, which meant that the U.S. was planning to destroy the adversaries' forces before they could be used. This required a high level of readiness, and a robust arsenal, aimed at the most valuable counterforce targets. Today, there is already a reduced reliance on damage limitation as a huge portion of the nuclear forces is in reserve and needs to be generated before use, while alert levels have also been significantly reduced. These changes allowed significant reductions during the two Bush administrations, and further limiting these policies could probably facilitate even more significant cuts.
 - Reduce alert levels and eliminate LUA capability: a reduced planning for damage limitation, and an increased reliance on retaliation would reduce the necessity for prompt launch capability, and it could reduce the necessity for high alert levels as well. Changing these two policies could trigger changes in the nuclear delivery systems, and pave the way to a transition from the strategic triad to a dyad.

This list of operational policies does not mean that all of these elements need to be changed in order to implement dramatic reductions in the force structure. It only showed a variety of factors which have a strong requirement with regards to force levels. Future administrations will need to pick their own preferences and implement some of these changes in their nuclear posture, if they want to implement significant reductions. President Obama's employment guidance, which reaffirmed the Cold War-style counterforce targeting policy, the high alert levels, the capability to launch under attack, and the mission of nuclear weapons against biological and chemical weapons, as well as against a few non-nuclear weapon states, reflects that it will not pursue dramatic force reductions below the levels it already announced. The current operational principles would not even allow much deeper cuts, because of the above mentioned force requirements. As the third hypothesis of this dissertation framed it, "*Retaining key*

elements of Cold War nuclear thinking on the operational level has a negative effect on the prospects of further reductions.” In this regard, the most important factors are the mission of nuclear weapons, which designates the potential adversaries and target categories; the targeting policy with the damage expectancy levels, and the diversity in strike options; the reliance on counterforce strategy; and the requirements for a prompt launch capability with high alert levels and a launch under attack capability. If the current or future administrations decide to pursue further deep reductions, some (or all) of these elements need to be limited (or abandoned).

Conclusions

In the 2009 Prague address, the Obama administration set for itself the standard of shifting away from Cold War nuclear thinking, which is the main reason why this dissertation approached this question from a historical perspective. The 45 years of the Cold War have been a dynamic period with several major innovations in nuclear weapons policy. Every administration tried to put its own stamp on U.S. nuclear doctrine and introduced new concepts and principles to guide military planners in the preparation of strategic war plans. But despite the shifting priorities of these administrations, there were several elements in U.S. nuclear strategy, which were characteristic during the entire period of the Cold War. Based on these elements, the dissertation clearly identified Cold War nuclear thinking on three main levels: the declaratory policy, the force structure, and the operational level. This analytical framework was used to evaluate the Obama administration's achievements in nuclear weapons policy, and to define the current nature of U.S. nuclear strategy.

Considering the developments in the institutional framework and the changes of the security environment, the analytical framework was based on the 1961-1989 period, from the Kennedy to the Reagan administrations. After a careful examination of these three decades, six main characteristics were identified in the declaratory policy. The first element was the worldview, which was based on a clearly identified enemy image, where the Soviet Union was the peer opponent of the U.S., and it was believed to constantly prepare for a surprise first strike against the Western Block; the role of the U.S. was seen as the global leader of the free world, tasked to ensure the victory of the good cause; and ready to use its nuclear weapons in the defense of its most important allies. The main doctrine was flexible response, which meant that the President was offered a number of options, starting from the use of conventional weapons, to an all-out nuclear war. Preventive strikes, as a matter of policy, were ruled out, but the U.S. reserved the options to act preemptively if the enemy was seen to prepare for an attack. In order to preserve this option, Presidents rejected (with the exception of Kennedy) the policy of no-first-use, and they also retained their flexibility in terms of potential enemy targets, which required a rejection of a universal negative security assurance to all non-nuclear weapon states. This meant that nuclear weapons occupied a prominent day-to-day role in strategic planning, and they had to cover a great variety of contingencies.

Cold War nuclear thinking in the force structure meant an extremely robust nuclear arsenal with high number of nuclear weapons and delivery platforms, as well as a preference to deploy MIRVed ballistic missiles, which were able to hit several different targets in the same target group. The delivery vehicles included all three legs of the strategic triad, land-based ICBMs, sea-based SLBMs, and airborne strategic bombers. In order to minimize vulnerability to technical failures, and ensure a high level of credibility, there was a great diversity of nuclear warheads and nuclear weapons were regularly tested. This was guaranteed by an active infrastructure, which kept replacing portions of the arsenal in every few years, and eliminated the need to develop a constant hedging policy. Nuclear weapons, in addition, were forward deployed to the territory of allied states in order to more effectively protect them, and also to reflect U.S. commitments to their defense.

On the operational level, Cold War nuclear thinking required a high readiness of forces, and nuclear weapons were kept on “hair-trigger” alert levels, some of them ready to be launched on a few minute notice. This high level of readiness served to provide prompt launch operational policies, like for example preemptive strike options, launch on warning, or launch under attack. For a few decades during the Cold War, the control of nuclear weapons was pre-delegated in order to mitigate the risks of a decapitating first strike, and also to raise mission effectiveness in regional scenarios. U.S. targeting policy was based on a counterforce strategy, which meant a primary focus on Soviet nuclear weapons capabilities, leadership and command and control targets, as well as war-supporting and war-initiating infrastructure. Some administrations included softer categories, like for example after-war recovery infrastructure, but the primacy of counterforce targeting was never questioned. The focus on these hardened military targets required very conservative targeting criteria, which was based on high damage expectancy levels, and a lot of cross targeting and redundancy. War plans were mostly dominated by massive attack options, and only a very few real limited options were offered to the President. Target plans were preplanned and not flexible at all, which meant that it took a lot of time to adjust them and develop new options. Planning for a nuclear war meant that the U.S. was preparing to fight a prolonged nuclear exchange, potentially extended to a global scale. Although the policy level tried to reflect to the developments of the security environment and implement changes accordingly, but the lack of clear procedures for civilian oversight meant that military planners had a lot of

maneuvering capability to interpret the policy guidance documents and implement them according to their own judgment. War plans, in addition, seriously underestimated the potential damages of a nuclear strike, neglecting most of the secondary effects in their damage calculations. Humanitarian aspects, in general, also had a low profile in operational planning. Although civilians were not targeted per se and the emphasis was on military capabilities, targeting war-supporting, and after-war recovery infrastructure still held at risk massive civilian populations, and there was no guidance in place to hold these targets back, only because of their proximity to densely populated areas.

These elements altogether add up to a comprehensive definition of Cold War nuclear thinking. A big advantage of this framework is to show that there are many different aspects of Cold War nuclear thinking, and – unlike many academic papers simplistically suggest – not all of these elements are outdated or inappropriate today. The idea of flexible response, for example, is still logical in the current security environment, although the focus seems to shift from a variety of nuclear options to a narrowed spectrum in nuclear, and a widened spectrum in conventional options. Or another example is providing positive security assurances to the closest allies, which is still an important bond between the U.S. and its allies, and some would argue that it still keeps some of these states from building their own nuclear weapons capabilities. Besides, the examination of these elements one-by-one revealed that some of these strategic policies have been developed for significantly different reasons than the ones they serve today. This means that ‘Cold War nuclear thinking’ as a concept might still be present in the current U.S. nuclear strategy, but it might no longer be Cold War thinking behind it.

Regarding the main research questions of this dissertation, the author intended to show how President Obama’s Prague agenda affected U.S. nuclear weapons policy, and what practical changes did it trigger in nuclear strategy. The main goal was to objectively examine through the lens of the historical framework if the Obama White House really shifted U.S. nuclear strategy away from the Cold War. The basic assumption was that the administration’s declaratory policy showed significant changes but the operational level still maintained key elements of Cold War nuclear strategies, which sets serious limits on the minimum level of force requirements, and acts against future deep reductions. The comparative analysis of the Obama administration was always twofold, first the author showed how the Obama administration’s nuclear policy was different

from the previous post-Cold War administrations; and second, it also showed how the administration's policy related to the Cold War traditions.

In this regard, analyzing the Obama administration's declaratory policy revealed that the 2010 Nuclear Posture Review was indeed a significantly different document than the Clinton or the Bush administrations' nuclear strategy. Building on the 2007-2008 presidential campaign, and the 2009 Prague address, the Obama NPR meant a significant shift in five main areas. First, the framework of the NPR was extended, and besides the traditional focus on arms control, it also included nuclear security in its scope. Second, the administration implemented significant rhetorical changes in the role of nuclear weapons: it included, for the first time, the long term objective of global zero; it pledged to refrain from developing new nuclear weapons and from supporting new nuclear missions; it committed to ratify the CTBT; and it took steps towards a "sole purpose" posture, where nuclear weapons would only have a role in deterring a nuclear attack. The third area was the rhetoric towards Russia and China, which laid a huge emphasis on a cooperative relationship to promote strategic stability. China has never been handled in the same context as Russia – previous NPR documents rather put Beijing in the same group as rogue states. Similarly, the rhetoric towards other adversaries has also changed a lot. The U.S. extended its negative security assurance, and the only criteria remained the NPT membership, and the compliance with its obligations. This meant that only a few non-nuclear states remained, which were still threatened by U.S. nuclear weapons. But even for these states, the U.S. offered a way out, and the negative security assurance meant to provide them with a positive path. (In this regard, however, the U.S. maintained the right to unilaterally assess compliance, and despite the favorable rhetoric it did not change anything in operational terms, as none of the previously targeted countries was excluded by the new formulation of the negative security assurance.) The last issue was the relationship of the U.S. and its allies. The reception of the NPR was generally positive, as most of the allies could read their preferences into the NPR. The U.S., in addition, paid a bigger attention to their priorities, involved them in the drafting of the NPR, and reaffirmed that it will maintain its standing positive security assurances towards them.

Despite these results, the U.S. still failed to clarify some ambiguities about the role of allies in strengthening reliance on regional conventional capabilities, the role of

prevention and preemption, and the policy towards biological weapons. Critics, in addition, question why the U.S. hesitated to declare a “*sole purpose*” posture; why the negative security assurance was not universal, why it retained the right to reevaluate the assurance in case biological weapons became more alarming; why a no-first-use declaration was not included; and if the new posture had any effect on the actual targeting policy. The author found that there were two main reasons for not implementing a more dramatic posture. The first one is the reassurance of allies which explains, for example, the wording of the negative security assurance, and the hesitation towards the “*sole purpose*” posture. The second reason is the Obama administration’s desire to build a bipartisan support behind its nuclear strategy, which explains most of the cautious linkages between issues like for example global zero and the maintenance of a safe, secure, and reliable arsenal; admitting to have more nuclear weapons than necessary but rejecting unilateral disarmament measures; expressing the desire to cut the arsenal but maintaining the triad, and transferring the decision on the withdrawal of tactical nuclear weapons to NATO.

Examining these results along the Cold War framework showed that the security environment has significantly changed. While the chances of a U.S.-Russian nuclear exchange have dramatically reduced, Washington now faces a much wider range of potential opponents, and preventing nuclear proliferation and nuclear terrorism have become the number one security challenge. As mentioned before, there are no changes in terms of a continued assurance of the allies with positive security guarantees, and in terms of a continued reliance on the concept of flexible response. The Obama administration, however, lessened the role of preemption in its rhetoric; reduced the mission of nuclear weapons; shifted towards a “*sole purpose*” posture, which would be an implicit no-first-use declaration; declared a more comprehensive negative security assurance than any U.S. President before; and declared that the fundamental role of nuclear weapons is to deter a nuclear attack, and the use of nuclear weapons would only be considered in extreme circumstances. Compared to the prominent day-to-day role of nuclear weapons during the Cold War, these changes clearly show that the first hypothesis of the dissertation, which claims that “*in the declaratory policy, the Obama administration has lessened the reliance on Cold War nuclear thinking*” is true.

Looking at the force structure, the end of the Cold War brought significant reductions in the U.S. nuclear arsenal. Both Bush administrations cut the nuclear arsenal in half. In addition, the George W. H. Bush administration dramatically transformed U.S. nuclear forces in the framework of the Presidential Nuclear Initiatives, it declared a testing moratorium, and it concluded the START I and START II agreements. The Clinton administration introduced the concept of a permanent hedge force, it initiated the Stockpile Stewardship Program, and it was deeply engaged in the drafting of the CTBT. The George W. Bush administration continued the efforts of its predecessors, it concluded the SORT Treaty and it introduced several innovations in U.S. nuclear forces – these initiatives included the concept of a responsive force, the capabilities-based approach, or the idea of a “new triad.”

In contrast to the two Bush administrations, the Obama administration only implemented moderate force reductions. Between 2009 and 2014, the military stockpile of the U.S. was only reduced by 309 nuclear warheads. The administration, however, concluded the New START agreement, which was the first verifiable arms control agreement since the START I. Although the treaty did not implement significant force reductions (the actual number of nuclear weapons allowed under the counting rules was well in the range of the SORT agreement), but New START put the U.S.-Russian arms control process back on track – it guaranteed transparency and confidence about the other side’s strategic nuclear capabilities, and it brought back serious verification mechanisms in the process. In addition to the New START agreement, the administration implemented two important structural changes in the U.S. nuclear arsenal. Under President Obama, the process of “de-MIRV”-ing the ICBMs was finished, and after 25 years, the Navy completely got out of the business of non-strategic nuclear weapons. Looking at the future, the Obama administration committed to further reductions in the deployed strategic nuclear arsenals, and it also expressed its desire to seek reductions in the non-deployed, and non-strategic nuclear arsenals as well.

Altogether, the force structure of the Obama administration showed significant continuities with the previous administrations, both in terms of numbers, and in terms of content (besides the moderate reductions of the New START Treaty, which reflected the Bush administration’s employment guidance, the Obama administration also

pledged to maintain all three legs of the strategic triad), but unlike the Bush administration, President Obama prefers seeking reductions in a bilateral treaty framework, and he is committed to ratify the CTBT. The main drivers of the Obama administration's force structure are: maintaining strategic stability vis-à-vis Russia and China; strengthening the deterrence of potential regional adversaries; continued assurance of the allies; the implementation of the Stockpile Stewardship Program with continued investments in the nuclear weapons infrastructure; and finally, the level of Russian nuclear forces, which is still considered as the only peer in nuclear weapons capabilities.

In addition to these elements, budget realities might become a new factor in the future of the stockpile. The United States is facing a "perfect storm" where the nuclear warheads, the delivery platforms and the nuclear weapons infrastructure are all in desperate need of significant investments to refurbish the ageing systems, develop the next generation of nuclear weapons, and build the necessary infrastructure to support these programs. The only problem is that the U.S. does not have the money to do that. In light of the sequestration and the shrinking defense budget, some crucial elements of the nuclear modernization programs are seriously endangered by the strict budget environment. The "3+2" warhead modernization strategy has already been postponed by five years (which directly affects the future of the non-deployed stockpile), and the CMRR-NF project has essentially been killed, while the UPF is running on a reduced budget. Therefore, cost overruns and further reductions in the available funds might slice some elements of the robust modernization programs, which will have a direct effect on the size and shape of the future nuclear arsenal of the U.S.

Regarding the concept of Cold War nuclear thinking, strictly speaking only the continued commitment to the nuclear triad (at least under the New START agreement) remained the same. As opposed to that, the number and diversity of nuclear weapons have been significantly reduced, although the current number of U.S. nuclear forces was still identified as high, based on the comparison of U.S.-Russian nuclear arsenals with the nuclear weapons capabilities of any other state. The diversity of nuclear weapons has not disappeared either, as there are still multiple warhead types for all three legs of the triad. In the meanwhile, nuclear weapons testing was replaced by the Stockpile Stewardship Program, and a hedging policy was introduced in the early 1990s to

address the unforeseen geopolitical challenges of the security environment, and the potential technical failures of a warhead type or a delivery vehicle. The last element of Cold War nuclear thinking was forward deployment of nuclear weapons, which was reaffirmed by the Obama administration as well, although the number of these weapons has been significantly cut since the Cold War, and all forward deployed nuclear weapons have been withdrawn with the exception of 180-200 tactical nuclear weapons in the territory of five NATO allies.

Examining the main reasons behind these policies showed that there were significant shifts in the case of many of these elements. The high number of nuclear weapons no longer seems to address the Russia-threat in itself: the U.S. admitted that the chances of a nuclear exchange with Russia are extremely remote, and today these nuclear forces serve a much wider range of contingencies. The current nuclear arsenal has to maintain strategic stability with Moscow and Beijing, but it also has a new role in deterring regional WMD proliferator states. In the case of the delivery platforms, the triad traditionally served to guarantee survivability by the SSBNs, prompt launch capability by the ICBMs, and flexibility by the strategic bombers. These three legs provided Presidents with a wide range of options, they were considered the most effective way to deter opponents and reassure allies, they served strategic stability by reducing the incentives for a first strike, and they erased vulnerabilities by providing inter-leg hedging capabilities for the potential technical failures of an entire platform. These arguments still seem to be present in the debate, but in addition to them the political aspect of maintaining the triad seems to gain a bigger and bigger emphasis. As Morton Halperin highlighted, maintaining the triad can also be used as a political bargaining chip to enhance further reductions in the number of warheads.

Similarly, the diversity of nuclear weapons, and the forward deployment of tactical nuclear weapons also have some alternative justifications today, in comparison to the bipolar system. During the Cold War, the diversity of nuclear weapons was a result of an active infrastructure, and it was rather a sign of constant technological developments, which provided the U.S. military with newer and more capable weapons systems year-by-year. In the meanwhile, maintaining the diversity today is mostly important for technical reasons. As the U.S. declared a testing moratorium, and switched to the Stockpile Stewardship Program and the Life Extension Programs, it became imperative

to provide a constant technical back-up to the deployed nuclear weapons. Having a diverse stockpile with multiple options for each delivery platform is increasingly important to erase potential technical failures and to maintain the credibility of the arsenal.

Regarding the last element, the forward deployment of tactical nuclear weapons used to have many justifications, including reassurance, deterrence, burden-sharing and signaling. But from this list, the most important mission was to deter the Warsaw Pact from attacking NATO and, in case deterrence would fail, to support a theater nuclear war between the two alliances. Today, on the other hand, this focus has shifted towards the reassurance of allies (especially the new members of NATO), who still seem to attach a significant political value to these nuclear weapons. Altogether, these shifts show again that Cold War nuclear thinking might still be there as a concept, but the thinking behind does not necessarily reflect Cold War logic, or at least not necessarily with the same emphasis as before.

On the operational level, President Obama inherited from the Clinton and the two Bush administrations flexible and adaptive planning capabilities, which on the one hand significantly reduced the time to adjust the war plans, and the development of new strike options; and on the other hand, these capabilities also allowed the U.S. to cover a much wider range of scenarios with significantly less nuclear weapons than before. This latter capability was especially important, as the post-Cold War targeting policy significantly extended the scope of potential contingencies, which the U.S. had to cover with nuclear weapons. This shift in focus meant that Russia was no longer considered an immediate contingency, and strike plans increased their attention on China and WMD proliferator states. Although the rhetoric of these administrations reflected an essentially post-Cold War thinking, the operational level did not limit the role of nuclear weapons, in fact it expanded the mission of nuclear weapons to cover regional WMD scenarios, where under the Bush administration, the preemptive use of nuclear weapons was an explicit operational policy. A new war plan (CONPLAN 8022) was developed to cover these contingencies, which seemed to lower the threshold to use nuclear weapons; increased the role of strategic nuclear weapons in theater missions; and significantly blurred the lines between conventional and nuclear weapons. This on the one hand seemed to increase the likelihood of nuclear use, and on the other hand raised some

serious concerns about the different lines of command, and the reactions of adversaries and allies as well. Moscow and Beijing repeatedly expressed their worries about the new Global Strike mission and used it as a justification to their own modernization programs. Although the employment component of Global Strike was withdrawn and the entire program was canceled, some of its missions were believed to migrate into the other plans.

Under the Obama administration, there were two major updates to the war plan, the first one probably as a result of the retirement of the nuclear capable Tomahawk cruise missiles, and the retirement of 80 Russian ICBMs. In the meanwhile, the second one is believed to be underway at the moment, in reflection to the new presidential guidance of the administration, issued in June, 2013. Regarding the potential adversaries, Iraq and Libya have fallen off the list since the Bush administration, and the Obama administration is believed to have added a new category, a “9/11-type” terrorist organization, which initiates a WMD attack on the U.S. or its allies and partners. Besides these changes, Russia, China, North Korea, Iran and Syria probably remained on the list, which adds up to six adversaries – half of which is non-nuclear. In Russia, the number of targets is estimated at around 1,000 with a primary focus on Russian nuclear weapons capabilities, while in China this number is estimated at 500, with a bigger emphasis on war-supporting industry targets. The strike options range in size from very limited regional employments to the use of hundreds of nuclear weapons in a more robust preplanned strike option. The target categories surprisingly reflect a very similar system to the Cold War: in addition to the traditional focus on military forces, leadership and command and control targets, and war-supporting infrastructure, the only new element is WMD infrastructure, which gradually gained a bigger significance after the fall of the Soviet Union.

A key document of the Obama administration’s operational policy is the 2013 presidential employment guidance (PPD-24), which was only initiated after the NPR was issued, and the New START negotiations were completed. This was the third major targeting review since end of the Cold War, and the first one since the Bush administration’s review in 2002. The first big problem of this document (or at least in the case of the unclassified Pentagon summary of PPD-24) was that it did not seem to provide any real guidance on targeting categories and strike options – it basically

repeated the main goals of the 2010 NPR, and explained how these elements should be implemented. The most genuine effect of the guidance was that it made the case for further reductions in the number of deployed strategic nuclear weapons by up-to one third, and it included some constraints with regards to the use of nuclear weapons. But besides these declarations, the new guidance did not implement any major changes, and it seemed to provide only half-solutions – the wording of the document implied discussions about implementing really progressive policies but it seemed that there was always some kind of push-back in the next sentence. President Obama, for example, pledged to reduce the role of nuclear weapons, but his guidance failed to declare a “sole purpose” posture, which implied that there is still a narrow range of contingencies where the U.S. would consider the use of nuclear weapons in response to conventional, or chemical and biological attacks. Although the guidance stated that the President directed the DoD to deliberately plan for non-nuclear strike options, it also stated that these capabilities cannot substitute nuclear weapons. Another example is the case of launch under attack policy – the White House directed the DoD to reduce reliance on this policy, but in the meanwhile it also directed to maintain the capability. While the issue of reducing alert levels was high on the campaign agenda, it suddenly disappeared from the list of priorities, and both the 2010 NPR and the 2013 employment guidance pledged to maintain the current levels. The guidance in addition reinforced counterforce targeting, and rejected the counter-value strategy and the minimum deterrence posture. But as STRATCOM said itself, counterforce “*is preemptive, or offensively reactive*” and it also has strong requirements on the force structure.

Looking at these policies through the lens of the Cold War, every element of Cold War nuclear thinking changed in a way but only the policies of pre-delegation of control, and the planning for a protracted global war disappeared entirely. In addition to these policies, the lack of clear civilian oversight was also addressed, and it was dramatically improved as a result of a much closer cooperation between the different players of strategic planning. Despite these changes, all the other elements of Cold War nuclear thinking were somehow transformed or limited but not abandoned, which means that they still define the operational level of U.S. nuclear strategy. The first one of these elements is high alert levels. In this regard, there were significant reductions, bombers have been taken off day-to-day alert, as well as thousands of tactical nuclear weapons. But the U.S. still has 800 SLBM and ICBM warheads on high alert, ready to launch in

fifteen minutes. In close relation to this element, the reliance on prompt strike operational policies like preemption, launch on warning and launch under attack has also been significantly reduced but the capability to execute these policies remained. Although the current employment guidance does not discuss preemption or launch on warning, the capability to maintain LUA means that the other two policies are also executable (only there is probably even less thinking about them – in the case of the launch on warning policy, the 1980 PD-59 has already used a similar wording to the current employment guidance: it reduced the reliance on LOW, while it also directed the DoD to maintain the capability). Regarding the targeting policy of the U.S., it remained mostly counterforce, which shows slight differences from adversary to adversary – China for example is a mix of hard counterforce elements and softer targets, while Russia and the WMD proliferators are predominantly counterforce. The targeting criteria has also changed somewhat since the Cold War: it is still conservative but damage expectancy levels have been lowered, and there is significantly less cross targeting and redundancy in the system. In the case of attack options, massive attack options disappeared, and the current options include Emergency Response Options, Selective Attack Options, Basic Attack Options, and Directed/Adaptive Planning Capability options. Although the U.S. still has huge preplanned attack options with the employment of hundreds of nuclear weapons, today there is probably bigger emphasis on very limited attacks in primarily regional scenarios, and conventional integration is becoming stronger and stronger. Since the Cold War, the strategic war plans have been restructured, the SIOP was renamed to OPLAN, and the U.S. developed adaptive targeting capabilities, which allow real-time targeting adjustments, and a very quick development of new attack options. In terms of considering calculations on the secondary effects of a nuclear blast, there have been some developments – even if not all of the factors are included in the war planning models, strategic thinkers consider EMP effects, radiation patterns and fallout, and they probably include to a greater extent firestorms and radiation in general. Besides, withholding targets based on these effects has also appeared. In close relation to these issues, President Obama included in his 2013 employment guidance that the humanitarian aspects should be included in the strategic war plans, and planners should minimize collateral damage to civilians – this might not mean avoiding the targeting of Moscow or Beijing, but it is still an important constraint for targeteers.

The second hypothesis of this dissertation claims that President Obama failed to implement his own promises on the operational level, and “*it still retains key elements of Cold War nuclear thinking.*” Summarizing this long list above, the most important Cold War legacies, which still seem to guide U.S. operational policy are: the rejection of counter-value and minimum deterrence postures, while counterforce targeting was reaffirmed; the maintenance of the triad and a significant upload capability; the continued role of nuclear weapons against non-nuclear states; the maintained capability to launch under attack; and the still high alert levels. These elements put a huge pressure on the force structure and they seem to stand in the way of future deep reductions.

In comparison to the declaratory policy level, where mainly political reasons (seeking a bipartisan support and reassuring allies) seemed to be the most important reasons for not implementing even more progressive measures in the strategy, the case of the operational level shows a more significant reliance on “parochial” interests. Bureaucratic resistance and greater strategic considerations seem to feature strongly in these debates. In the case of alert levels, opponents of de-alerting claimed that it would be risky to reduce the readiness of forces for crisis stability considerations, as a re-alerting race in a conflict situation could actually make the use of nuclear weapons more likely. Besides, there was a strong resistance in the military against de-alerting measures, because of technical difficulties in the implementation, fears of the morale consequences on the ballistic missile crews, and also because they do not see any reliable verification mechanism to provide confidence that the adversary has implemented the same measures. This latter issue has some political relevance as well – the administration also held it against reducing alert levels that the current relations with Moscow do not imply any willingness in the Russians to engage in an agreement over alert levels, and unilateral measures were not a preferred option for the administration.

Similarly to the issue of alert levels, bureaucratic resistance was important in the case of launch under attack policy as well. Military planners claim that LUA provides survivability to the ICBMs, and in a crisis situation it gives the President a wider range of options, while abandoning this policy would not bring any real world gains for the U.S. They argued that abandoning the capability to launch under attack would reduce the flexibility of the President, and it would leave the ICBMs vulnerable. From a strategic perspective, this was claimed to be dangerous, as letting an adversary

confidently believe that it can take out a significant portion of U.S. nuclear forces would be an invitation for a first strike, which no President can allow. In addition, the current operational policies (like for example counterforce targeting against Russia, and high damage expectancy criteria) still require U.S. forces to be on a high readiness level, and to be able to launch immediately. Besides, it provides a hedge against any future survivability challenges to the submarine leg of the triad, and an additional strategic value of this policy is that it has a strong deterrence effect, which is not necessarily directed against Russia anymore, but much rather against North Korea.

All these considerations guaranteed that instead of abandoning these two (Cold War) operational policies, the U.S. would retain them, and only implement supplementary measures to mitigate the most important risks of their maintenance. In the case of alert levels, the administration pledged to continue the practice of open ocean targeting, take measures to increase presidential decision time, and explore new modes for ICBM basing to make them more survivable. In the case of LUA, there are continuing efforts to make ICBMs more survivable, make them less lucrative targets for a first strike (i.e. de-MIRV them), and also to strengthen the command and control systems, and increase presidential decision time.

By examining the requirements of these operational policies on the force structure, the following measures were identified as potential steps to pave the way for further significant reductions: introduce a “sole purpose” posture, and apply an unconditional negative security assurance to limit the number of contingencies and adversaries against which nuclear weapons play a role; limit damage criteria to reduce the reliance on more capable, higher yield nuclear weapons; reduce flexibility requirements for strike options, which could reduce the number of scenarios that nuclear weapons have to cover; end (hard) counterforce targeting, which would reduce reliance on a robust and advanced nuclear arsenal, and could also significantly reduce the amount of weapons, which are needed to hold at risk the designated targets; and finally reduce planning for damage limitation, which would mean a reduced reliance on alert levels and LUA capability, potentially triggering significant changes in the delivery platforms.

Based on the third hypothesis of this dissertation, as long as these elements are maintained, there is a tremendous pressure on the force structure, and the administration cannot implement any major reductions. In the meanwhile, all the above mentioned

elements have the potential to reduce force requirements, and facilitate further disarmament measures. Although changing these operational policies is only the first step of the implementation, it cannot be avoided. The future of reductions will still depend on the security environment, the U.S.-Russian, U.S.-Chinese strategic relations, or the composition of Congress, but without reducing these operational requirements, even the most favorable political conditions would fail to trigger any dramatic reduction in the U.S. nuclear arsenal. This is the main reason why the Obama administration's 2013 employment guidance seems to miss a huge opportunity to pave the way for even more significant reductions, and if any future U.S. administration wants to continue these efforts, it has to be more effective in leaving the legacies of the Cold War behind.

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Glossary

3+2 warhead modernization strategy: The “3+2” strategic vision aims “*to transition the composition of the stockpile to a total of five unique systems: Three ballistic missile-type warheads, each deployable on both Air Force and Navy delivery systems, employing three interoperable nuclear explosive packages with adaptable non-nuclear components [and] two types of air-delivered nuclear weapons, both deployable in a cruise missile and a bomb weapon system, employing interoperable nuclear explosive packages with adaptable non-nuclear components.*” (FY 2014 SSMP [2013]: p. 1-2.)

Alert level: The operational readiness of nuclear weapon systems. “*There are differences in levels of alert across time and across nuclear geography.*” Based on these differences, one can differentiate between the following categories: high alert (ready to fire within minutes); medium alert (ready to fire within hours); low alert (ready to fire on several days notice); and de-alerted (cannot be fired for a long period, for example, weeks). (EWI [2009]: p. 3.)

Arms race stability: “*Arms race stability involves the effect of planned deployments on the scope and pace of the arms race.*” (U.S. Congress, Office of Technology Assessment [1985]: p. 119.)

Command and control: “*The exercise of authority and direction by the president, as commander in chief through established command lines over nuclear weapon operations of military forces, as chief executive over all government activities that support those operations, and as head of state over required multinational actions that support those operations.*” (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: p. 312.)

Command and control system: “*The facilities, equipment, communications, procedures, and personnel that enable presidential nuclear direction to be carried out.*” (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: p. 312.)

Counterforce targeting: “*The employment of strategic air and missile forces in an effort to destroy, or render impotent, selected military capabilities of an enemy force under any of the circumstances by which hostilities may be initiated.*” (The definition was quoted from the JCS in Arkin; Handler; Morrissey; Walsh [1990]: p. 184.) “*Typical counter-force targets include:*

bomber bases, ballistic missile submarine bases, intercontinental ballistic missile (ICBM) silos, antiballistic and air defense installations, command and control centers, and weapons of mass destruction storage facilities.” (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: p. 240.)

Countervailing strategy: It was announced by President Carter's PD-59 employment guidance in 1980. It means that *“in an era of strategic nuclear equivalence, it is necessary to have nuclear (as well as conventional) forces such that in considering aggression against our interests any adversary would recognize that no plausible outcome would represent a victory on any plausible definition of victory [...] if deterrence fails initially, we must be capable of fighting successfully so that the adversary would not achieve his war aims and would suffer costs that are unacceptable, or in any event greater than his gains, from having initiated an attack.”* (PD-59 [1980])

Counter-value targeting: *“Strategies or attacks against an opponent’s civilian population and general economic centers that constitute the social fabric of the nation.”* (Arkin; Handler; Morrissey; Walsh [1990]: p. 185.)

Crisis stability: *“Crisis stability is the degree to which strategic force characteristics might, in a crisis situation, reduce incentives to initiate the use of nuclear weapons.”* (U.S. Congress, Office of Technology Assessment [1985]: p. 119.)

Damage expectancy: *“The probability that a weapon will arrive, detonate, and achieve at least a specified level of damage (severe or moderate) against a given target. Damage expectancy is a function of both probability of arrival and probability of damage of a weapon.”* (U.S. Department of Defense [2001]: p. 141.)

Declaratory policy: It basically refers to a broad set of public statements and written documents made by the President, the Secretary of Defense and other high-ranking officials on the requirements of deterrence, the strategic doctrine and the most important guidelines for nuclear weapons policy.

De-alerting: *“Implementing some reversible physical changes in a weapon system that would significantly increase time between decision to use the weapon and the actual moment of its launch.”* (EWI [2009]: p. 2.)

De-targeting: *“Removing the targeting information, or substituting ocean-area target coordinates, from a ballistic missile so that an accidental or unintentional launch will not result in a nuclear catastrophe (USIA).”* (NATO [2007]: p. 1-17.)

Disarmament: *“The reduction of a military establishment to some level set by international agreement”* or by a unilateral declaration. (U.S. Department of Defense [2001]: p. 164.)

Dismantlement: *“The process of taking apart a nuclear warhead and removing all subassemblies, components, and individual parts for the purpose of physical elimination of the nuclear warhead. Dismantled subassemblies, components and parts, including nuclear materials, may be put into a disposal process, may be used again in another warhead, or may be held in strategic reserve.”* (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: pp. 307-308.)

Downloading: Removing some warheads from a multiple independently targetable re-entry vehicle (MIRV).

Dual-capable aircraft: *“Allied and US fighter aircraft tasked and configured to perform either conventional or theatre nuclear missions. Also called DCA.”* (NATO [2007]: p. 1-17.)

First strike stability: *“A condition that exists when neither superpower perceives the other as motivated by the posture of strategic forces to launch the first nuclear strike in a crisis.”* (Kent; Thaler [1989]: p. iii.)

Flexible response: *“The capability of military forces for effective reaction to any enemy threat or attack with actions appropriate and adaptable to the circumstances existing.”* (U.S. Department of Defense [2001]: p. 206.)

Force structure: The necessary type and number of nuclear weapons and delivery vehicles needed to meet the requirements of the operational level and to fulfill the role and mission set by the declaratory policy.

Heavy ICBM: *“The term ‘heavy ICBM’ means an ICBM of a type, any one of which has a launch weight greater than 106,000 kilograms or a throw-weight greater than 4350 kilograms.”* (START I [1991c]: Annex p. 5.)

Hedge: The hedge force was officially codified by the 1994 Nuclear Posture Review of the Clinton administration. It is a permanent reserve force to provide an up-build capability against a dramatic deterioration of the security environment, and a technical insurance to secure against the potential failure of a warhead type or a delivery system. In general, it is smaller than the operational non-deployed arsenal (there are some “grey areas” between the hedge and the non-deployed arsenal), and it contains both active and inactive warheads.

Joint Strategic Target Planning Staff (JSTPS): *“The joint staff of the air force, navy, army, marine corps, and representatives of NATO allies that plans strategic nuclear force allocations to enemy targets listed in the SIOP [and OPLAN].”* (Pringle; Arkin [1983]: p. 255.)

Launch on warning (LOW): *“A condition under which bombers and missiles would be launched on receipt of early warning that an opponent has launched his missiles.”* (Pringle; Arkin [1983]: p. 255.)

Launch under attack (LUA): *“A condition where the early-warning information received on the launch of an opponent's missiles is confirmed and bombers and missiles are launched to survive an attack.”* (Pringle; Arkin [1983]: p. 255.)

Life Extension Program (LEP): *“A program to repair/replace components of nuclear weapons to ensure the ability to meet military requirements. By extending the ‘life,’ or time that a weapon can safely and reliably remain in the stockpile without having to be replaced or removed, National Nuclear Security Administration (NNSA) is able to maintain a credible nuclear deterrent without producing new weapons or conducting new underground nuclear tests.”* (NNSA [2014a])

Massive retaliation: A doctrine announced by the 1953 NSC-162/2 guidance and by John Foster Dulles in January, 1954. *“A strong military posture, with emphasis on the capability of inflicting massive retaliatory damage by offensive striking power; U.S. and allied forces in readiness to move rapidly initially to counter aggression by Soviet bloc forces and to hold vital areas and lines of communication; and a mobilization base, and its protection against crippling damage, adequate to insure victory in the event of general war.”* (NSC-162/2 [1953]: pp. 5-6)

Mutual Assured Destruction (MAD): *“A doctrine of reciprocal deterrence that rests on the ability of two opponents to inflict unacceptable damage on one another after surviving a nuclear first strike.”* (Pringle; Arkin [1983]: p. 256.) It was announced by Secretary of Defense Robert McNamara in 1964.

Military stockpile: The military stockpile of the U.S. nuclear arsenal (also called as “active stockpile”) consists of the operational warheads.

Multiple Independently Targetable Reentry Vehicle (MIRV): *“A reentry vehicle carried by a delivery system that can place one or more reentry vehicles over each of several separate targets.”* (U.S. Department of Defense [2001]: p. 359.)

National Command Authority: *“The president and the secretary of defense or their duly deputized stand-ins or successors. The chain of command runs from the president to the secretary of defense and through the Joint Chiefs of Staff to the commanders of the regional and specified commands.”* (Pringle; Arkin [1983]: p. 256.)

Negative security assurance: It is a guarantee by a state that possesses nuclear weapons that it will not use or threaten to use nuclear weapons against non-nuclear weapon states.

No cities doctrine: A strategy which aims to totally avoid hitting major cities by nuclear strikes. It was announced by Secretary of Defense Robert McNamara in 1962.

No first use declaration: A pledge by a state that possesses nuclear weapons that it will not use nuclear weapons as a means of warfare unless an adversary attacks it first by nuclear weapons.

Non-nuclear weapon state (NNWS): According to the 1967 Nuclear Non-Proliferation Treaty, all states which did not manufacture and explode a nuclear weapon or other nuclear explosive device prior to 1 January 1967 were considered a non-nuclear weapon state. (NPT [1967]: Article IX)

Nuclear parity: *“A condition at a given point in time when opposing forces possess nuclear offensive and defensive systems approximately equal in overall combat effectiveness (USDoD).”* (NATO [2007]: p. 1-21.)

Nuclear Posture Review (NPR): *“The Nuclear Posture Review is a legislatively-mandated review that establishes U.S. nuclear policy, strategy, capabilities and force posture for the next five to ten years.”* (U.S. Department of Defense [2010a])

Nuclear Weapons Employment Policy (NUWEP): The Office of the Secretary of Defense prepares the so called Guidance for the Employment of the Force, and the NUWEP is an appendix to the GEF which *“provides general and country-specific planning scenarios and objectives”* as well as *“policy guidance for target selection and for the development of different types of attack options.”* (GAO [2012]: p. 6.)

Nuclear weapon state (NWS): According to the 1967 Nuclear Non-Proliferation Treaty, *“a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.”* This means the United States, Russia, the United Kingdom, France, and China. (NPT [1967]: Article IX)

Nuclear yields: *“The energy released in the detonation of a nuclear weapon, measured in terms of the kilotons or megatons of trinitrotoluene required to produce the same energy release.”* (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: pp. 313.)

Operational level: This is the level where the “declaratory policy” should be implemented into concrete military strategies and war plans (while the principles of the declaratory policy are defined by politicians, the making of operational level strategies mostly falls under the control of the military – although since the mid-1980s civilians are having an increased role in the oversight of these strategies).

Positive security assurance: It is a guarantee by a state that possesses nuclear weapons that it will come to the aid of a non-nuclear weapon state if it is attacked or threatened by another state with nuclear weapons.

Pre-delegation of control: Predesignated officers are empowered by the commander *“to act under stipulated emergency conditions in the accomplishment of previously defined functions.”* (U.S. Department of Defense [2001]: p. 31.)

Preemptive attack: *“An attack initiated on the basis of incontrovertible evidence that an enemy attack is imminent.”* (U.S. Department of Defense [2001]: p. 424.)

Presidential employment guidance: It describes the administration’s priorities on what the DoD’s nuclear weapons employment policy (NUWEP) should look like. In general, this directive identifies potential adversaries, target categories, and scenarios for which preplanned nuclear options should be developed. (GAO [2012]: p. 5.)

Prevailing strategy: As the 1981 NSDD-13 document stated, *“the most fundamental national security objective is to deter direct attack – particularly nuclear attack – on the United States and its Allies. Should nuclear attack nonetheless occur, the United States and its Allies must prevail. Our nuclear forces are of crucial importance both in the prevention of nuclear attack and in protecting our national interests at any level of nuclear conflict. [...] This requires that we be convincingly capable of responding in such a way that the Soviets or other adversary would be denied their political and military objectives.”* (NSDD-13 [1981]: p. 1.)

Preventive war: *“A war initiated in the belief that military conflict, while not imminent, is inevitable, and that to delay would involve greater risk.”* (U.S. Department of Defense [2001]: p. 428.)

Reliability replacement warheads: *“Warheads retained in the inactive stockpile that provide the assets to replace Active Stockpile Warheads should reliability or safety problems develop.”* (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: pp. 314.)

Refurbishment: *“All nuclear weapons alterations and modifications including life extensions, modernizations, and revised military requirements.”* (Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs [2011]: pp. 314.)

Ride out policy: Forces are postured so that they will strike only after absorbing a first strike from the enemy.

Sole purpose posture: A declaration by a state in possession of nuclear weapons that the sole purpose of its nuclear arsenal is to deter a nuclear attack against itself, and its allies and partners.

Stockpile Stewardship Program (SSP): *“A management program which is able to maintain the “safety, security and effectiveness of the nuclear deterrent. [...] Within the Nuclear Security Enterprise, the central mission which includes maintaining the active stockpile, Life Extension Programs (LEPs) and Weapons Dismantlement, is referred to as the Stockpile Stewardship and Management Program.”* (NNSA [2014b])

Strategic nuclear weapon: *“Strategic nuclear weapons are designed to engage objects in geographically remote strategic regions (over 5500 km) to accomplish strategic missions. In exceptional situations, strategic nuclear weapons may be used to accomplish operational missions. Strategic nuclear weapons are in service with the strategic nuclear forces.”* (NATO [2007]: p. 1-26.)

Strategic stability: *“A situation is stable when “nations would only use nuclear weapons to vindicate their vital interests in extreme circumstances” – in effect, a situation in which nuclear arms would only be employed for essentially “political” and basically defensive purposes, capturing the benefits of the nuclear revolution while minimizing its unnecessarily perilous aspects.”* (Colby [2014]: p. 7.)

Strategic triad: Strategic delivery vehicles which can deliver a nuclear attack by land, sea, or air: with land-based intercontinental ballistic missiles, sea-based submarine-launched ballistic missiles, and airborne strategic bombers.

Strategic war plan: The general plan for nuclear weapons employment. Between 1961 and 2003 it was called SIOP, and since 2003 it is called OPLAN. The strategic war plan is not a single plan, but a family of plan, which is

overwhelmingly nuclear but it also contains conventional options. It provides the President with a range of targeting and strike options, and it describes the launch procedures and the target sets against which nuclear weapons would be launched. (Freedman [2003]: p. 395.)

Tactical nuclear weapon/non-strategic nuclear weapon: *“Those nuclear-capable forces located in an operational area with a capability to employ nuclear weapons by land, sea, or air forces against opposing forces, supporting installations, or facilities. Such forces may be employed, when authorized by competent authority, to support operations that contribute to the accomplishment of the commander’s mission within the theater of operations.”* (U.S. Department of Defense [2001]: p. 379.) *“While there are several ways to distinguish between strategic and nonstrategic nuclear weapons, most analysts consider nonstrategic weapons to be shorter-range delivery systems with lower yield warheads that might be used to attack troops or facilities on the battlefield.”* (Woolf [2014a]: Summary) Or more simplistically, everything that is not covered by the START agreements.

Target base: The intelligence community develops a list of worldwide military targets, called the Modified Integrated Database (MIDB), and based on the employment guidance documents STRATCOM selects the potential targets for nuclear weapons use, which is a subset of the MIDB and called the National Target Base (NTB). (McKinzie; Cochran; Norris; Arkin [2001]: pp. 9-10.)

Weapons of mass destruction (WMD): *“Atomic explosive weapons, radio active material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above.”* (UN [1948])

List of Interviews for this Research Project

Achton , James M.	December 5, 2013
Blair , Bruce G.	April 3, 2014
Brooks , Linton F.	January 16, 2014
Cartwright , James E.	April 1, 2014
Creedon , Madelyn R.	July 24, 2014
Einhorn , Robert J.	March 26, 2014
Halperin , Morton H.	March 31, 2014
Harvey , John R.	January 24; February 7; and July 23, 2014
Kristensen , Hans M.	several occasions between October, 2013-May, 2014
Luongo , Kenneth N.	December 11, 2013
Malin , Martin B.	January 29, 2014
Miller , Franklin C.	April 8, 2014
Miller , James N.	April 7, 2014
Miller , Steven E.	January 29, 2014
Norris , Robert S.	several occasions between October, 2013-May, 2014
Oelrich , Ivan	January 17, 2014
Pavel , Barry	July 23, 2014
Pifer , Steven	January 17, 2014

Roberts, Bradley H.	March 31, 2014
Rose, Frank A.	Roundtable discussion at the Brookings Institution in Washington, DC on November 15, 2013
Samore, Gary	January 29, 2014
Sokov, Nikolai N.	October 27, 2013
Wolfsthal, Jon B.	April 1, 2014
Woolf, Amy F.	April 8, 2014

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<http://www.sipri.org/research/disarmament/eu-consortium/publications/nonproliferation-paper-31>
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 - Project coordinator and co-editor
 - Author: Chemical Weapons Chapter (pp. 173-204.)
 - Co-author:
 - Nuclear Weapons Chapter (pp. 53-172.)
 - Missile Technologies and Missiles Defense Chapter (pp. 289-336.)

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- Lecture: *The Nuclear Security Summit and its Two Side Events*. Hungarian Institute of International Affairs, Permanent Mission of Hungary to the United Nations Office and Other International Organizations in Vienna, VCDNP, UNODA: CBRN Security Seminar. Hungary: Budapest, June 17-18, 2014
- Lecture: The Central Asian Nuclear-Weapon-Free Zone and Other Regional Treaties as Models for the Middle East. Indiana University: Guest Lecture at Inner Asian & Uralic National Resource Center. United States: Bloomington, 6 April, 2014.
- Participant of the 2014 Nuclear Knowledge Summit – An official side event of the 2014 Nuclear Security Summit. The Netherlands: Amsterdam, 23-24 March, 2014.
- Lecture: Central European Perspectives on NATO's Nuclear Policy. Center for Strategic and International Studies (CSIS) Project on Nuclear Issues (PONI) Fall Conference 2013. United States: Washington, DC, 17-18 December, 2013. Presentation:
https://csis.org/images/stories/poni/131217_Central_European_Perspectives_on_NATO_Nuclear_Policy_Peczeli.pdf
- Lecture: Prospects of the Obama Administration's Disarmament Policy. 8th International Student/Young Pugwash (ISYP) Conference. Also participant of the 60th Pugwash Conference on Science and World Affairs: Dialogue, Disarmament, and Regional and Global Security. Turkey: Istanbul, 30 October-5 November, 2013. ISYP Event report:
http://pugwashconferences.files.wordpress.com/2014/04/20131101_istanbul_isyp_report.pdf
- Lecture: Revisiting the Theory of Nuclear Deterrence – Pre-Existential Deterrence and the Case of Iran. International Studies Association ISSS-ISAC Joint Annual Conference: Bridging the Academic/Policy Divide – George Washington University. United States: Washington, DC, 4-6 October, 2013.
- Participant of the Second EU Non-Proliferation and Disarmament Conference – Lecture at the Next Generation Workshop: The Obama Administration's Nuclear Policy and the Way forward in U.S.-Russian Nuclear Disarmament. Belgium: Brussels, 30 September-2 October, 2013.

- Lecture: Nuclear Identity in Central Europe. European Consortium for Political Research (ECPR) 7th General Conference. France: Bordeaux, 4-7 September, 2013.
- Participant of the second consultative meeting of the EU Non-Proliferation and Disarmament Consortium. Belgium: Brussels, 17-18 June, 2013.
- Lecture: Asymmetries in Deterrence – A Common Theory, But Different Practices. Peace Research Institute Frankfurt (HSFK/PRIF): Academic Peace Orchestra Middle East. Turkey: Istanbul, 27-29 May, 2013.
- Lecture: No-First Use Declarations: Opportunities and Pitfalls. Peace Research Institute Frankfurt (HSFK/PRIF): Academic Peace Orchestra Middle East. Malta: Valletta, 23-25 January, 2013.
- Lecture: Middle East vs. Other Nuclear Weapon Free Zones – Feasibility, Applicability or Impossibility. Arab Institute for Security Studies: Maintaining the Momentum and Supporting the Facilitator – Prospects for a Zone Free from Weapons of Mass Destruction in the Middle East. Jordan: Amman, 13-14 November, 2012
- Participant of the Hungarian Delegation to the 56th General Conference of the International Atomic Energy Agency. Austria: Vienna, 17-22 September, 2012.
- Lecture: NATO's Nuclear Policy and the future of U.S. Tactical Nuclear Weapons in Europe. 7th International Summer School for Young Professionals (SSYP) – Center for European and North Atlantic Affairs (CENAA) – Challenges of Global Security Environment. Ukraine: Mukachevo, 29 June – 1 July, 2012.
- Participant of the 8th Annual NATO Conference on WMD Arms Control, Disarmament and Non-Proliferation. Hungary: Budapest, 14-15 June, 2012.
- Participant of a nuclear seminar by Polish Institute of International Affairs (PISM) & Nuclear Threat Initiative (NTI) – Reducing the Role of Nuclear Weapons in European Security: Central and Eastern European Perspectives. Poland: Warsaw, 19 April, 2012.
- Lecture: The Future of U.S. Tactical Nuclear Weapons in Europe. Pugwash & UNESCO – Science and Social Responsibility: Rising Problems, Wise Initiatives. France: Paris, 13-15 March, 2012.

- Participant of the first EU Non-Proliferation and Disarmament Conference. EU Non-Proliferation Consortium – Fondation pour la recherche stratégique (Paris), Peace Research Institute Frankfurt (HSFK/PRIF), International Institute for Strategic Studies (IISS – London), Stockholm International Peace Research Institute (SIPRI). Belgium: Brussels, 3-4 February, 2012.
- Lecture: The United States as an External Actor – Nuclear Non-Proliferation and Nuclear Security: A Possible Unified Approach. Arab Institute for Security Studies (ACSIS) & Partnership for Global Security (PGS) – Laying the Grounds for 2012: Opportunities for Nuclear Non-Proliferation and Nuclear Security. Jordan: Amman, 29 November-1 December, 2011.
- Lecture: The Role of External Actors – The United States and the Middle Eastern WMD/FZ. Peace Research Institute Frankfurt (HSFK/PRIF): Academic Peace Orchestra Middle East. Hungary: Budapest, 26-28 September, 2011.
- Lecture: The Two Faces of Ronald Reagan – Nuclear Arms Control under the Reagan Administration. International Conference – Cold War History Research Center (Corvinus University of Budapest): Second Annual Cold War History Research Center International Student Conference. Hungary: Budapest, 11-12 July, 2011.
- Lecture: Global Zero in American Nuclear Policy. 7th International Student/Young Pugwash (ISYP) Conference. Also participant of the 59th Pugwash Conference on Science and World Affairs: European Contributions to Nuclear Disarmament & Conflict Resolution. Germany: Berlin, 29 June-4 July, 2011.
- Lecture: The ‘self’ and the ‘other’: Arab and Israeli Perceptions and Attitudes to the Middle Eastern Nuclear-Weapon-Free Zone. BRISMES (British Society for Middle Eastern Studies) Graduate Conference. United Kingdom: Manchester, 13-14 January, 2011.

Book Reviews

- Mohamed ElBaradei: A megtévesztés kora [The Age of Deception – Nuclear Diplomacy in Treacherous Times]. *Külügyi Szemle* [Review of Foreign Affairs]. Vol. 10. No. 3. (2011/3) pp. 175-181. HU ISSN 1587-9089
- Bob Woodward: Obama háborúi [Obama’s Wars]. *Külügyi Szemle* [Review of Foreign Affairs]. Vol. 10. No. 1. (2011/1) pp. 190-196. HU ISSN 1587-9089