



**UNITED STATES NUCLEAR DETERRENCE POLICY:
PAST, PRESENT, AND FUTURE**

GRADUATE RESEARCH PAPER

Jeffrey M. Parrish, Major, USAF

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**DEPARTMENT OF THE AIR FORCE
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AND FUTURE**

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Abstract

This study focuses on the misconception between how the U.S. and Russia views their nuclear weapons and their use. During the transition of Presidents in the U.S., new nuclear policy is developed and implemented as the new administration responds to conflict and controversy. The U.S. views nuclear weapons as only a deterrent to nuclear weapon use and to discourage nuclear proliferation. The U.S. has reduced the role of nuclear weapons in their security strategy and placed greater emphasis on conventional capability. Conversely, this increased conventional capability is a primary motivator for Russian nuclear modernization and the increased role in their security strategy. Russia views nuclear weapons as a way to achieve national objectives. Using a structured query of public source documents, evidence was shown that a disconnect may exist with the policy makers view of nuclear weapons use and how the public views nuclear weapons use. There was not sufficient evidence showing one country is spending more than the other on their nuclear programs.

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*To my loving and understanding wife, thank you for providing the motivation
and encouragement over this past year!*

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UNITED STATES NUCLEAR DETERRENCE POLICY: PAST, PRESENT, AND FUTURE

I. Introduction

Background

The nuclear landscape across the globe has changed. Today, nations have the responsibility to navigate the world through the second nuclear age. Nuclear proliferation among the Asian continent is concerning and the risk of any country deploying a nuclear weapon is growing. During the Cold War, the first nuclear age, the United States (U.S.) and the United Soviet Socialist Republic somehow avoided catastrophe. What policy will the new administration implement to avoid catastrophe in the future? Post-Cold War, the U.S. view of Russia changed from a primary threat to stability in Europe, Central Asia, and the Far East to a critical partner in these regions to combat global challenges (Haass, 2002). During President Clinton's administration, the U.S. nuclear policy evolved into a "Lead and Hedge" strategy. The Nuclear Posture Review (NPR) in 1994 was the first review of nuclear policy post-Cold War and recognized the strategic environment changes on the horizon. The U.S. would lead the way in reduction of nuclear weapons; however, the U.S. must hedge against any uncertainty to include a resurgence of our Russia foe (DoD, 1995).

Currently, there is a reversal of Russia cooperation with the annexation of Crimea. "Putin Reclaims Crimea for Russia and Bitterly Denounces the West" was the *New York Times* headline on 18 March 2014. Post-Cold War accommodations from Russia was over as President Vladimir Putin condemned the U.S. and Europe for garnering support to the Ukraine government (Barry and Myers, 2014). The political relationship between

the U.S. and Russian has degraded and the topics of Ukraine and Syria are contentious between the two. Additionally, the U.S. is dealing with the Russian hacking controversy and meddling with the 2016 U.S. presidential election. Given these challenges, there are discussions of minimum deterrence and nuclear modernization. What is the right mix and number of nuclear weapons? The 1994 NPR and the 2010 NPR decree the need for a nuclear triad consisting of bombers, intercontinental ballistic missiles, and submarines to provide a flexible, responsive, and survivable force (DoD, 1995 and 2010). What is the makeup of the future nuclear force? These are the questions of the current nuclear landscape.

The above challenges illustrate the importance of understanding how the U.S. and Russia view nuclear weapon use from both a policy maker position and the opinion of the public. During the 2016 election campaign, President Donald Trump had been and still is criticized for his unpredictability and penchant for offhand retorts: calling for expansion of American nuclear capabilities while welcoming an arms race (Tharoor, 2017). Former military members wrote a letter published in the *Washington Post* during the campaign saying, “the decision to use nuclear weapons requires composure, judgement, restraint and diplomatic skill...he has shown himself time and again to be easily baited and quick to lash out, dismissive of expert consultation and ill-informed of even basic military and international affairs – including, most especially, nuclear weapons” (Morello, 2016).

Is President Trump really incapable or is this the act of a statesman employing brinkmanship? Thomas Schelling, Nobel Prize winner and one of the most influential in U.S. nuclear policy, defines brinkmanship as, “exploiting the danger that somebody may inadvertently go over the brink, dragging the other with him” (Schelling, 1966: 99).

Shelling also posits that it is not always beneficial to be believed as rational (Schelling, 1966). Therefore, President Trump's behaviour may be used as advantage ensuring the U.S. provides a credible nuclear deterrent by being as his critics say: unpredictable. History will later analyze the effectiveness of President Trump's administration, meanwhile, understanding the misapprehension with policy and opinion between the U.S. and Russia can provide essential data to influence nuclear policy decisions for tomorrow.

Problem Statement

Russia's nuclear weapon modernization programs and aggressive posture towards the U.S. and Europe causes great concern over their future strategic aspirations. Since 2011, the Russian strategic nuclear stockpile has increased by 259 warheads while the U.S. has decreased by 433 warheads. These increases are allowed under the New Strategic Arms Reduction Treaty (START), but provide skepticism in their intention to reduce their nuclear forces by 2018 in accordance with the treaty. Some estimate Russian deployed strategic nuclear warheads will increase to 3,000 by year 2030, almost double the amount allowed under New START. Additionally, Russia has suddenly dropped its agreement to reduce their stockpiles of plutonium (Gertz, 2016).

The U.S. and Russia are in similar situations. Both countries need to modernize their nuclear infrastructure; however, Russia is using this time to gain advantage over the North Atlantic Treaty Organization (NATO). Russia currently believes that their tactical nuclear weapons are superior to both the U.S. and NATO (Conca, 2014). Russia's leadership views nuclear weapons as the source of their superpower recognition and develop strategies to make nuclear weapons useful in the smallest conflict (Nichols,

2017). Conversely, the U.S. seeks to limit the role of nuclear weapons (DoD, 2010). Additionally, there is even more debate over whether the U.S. modernization plan is warranted. One *New York Times* article said conventional weapons are the most important for the U.S. and our allies. The article calls for cuts in all parts of the nuclear triad and calls the upgrade “unnecessary” (Blechman, 2016). The U.S. and Russia utilize nuclear weapons differently: the U.S. seeks to minimize the role as only a strategic deterrent; Russia, uses to achieve political and national objectives. Aware of these differences, policy makers can institute future nuclear deterrence policy to avoid catastrophe and ensure the security if the U.S.

Research Objective and Questions

This study is an attempt to elaborate on and clarify the attitudes of the general public and policy maker between U.S. and Russia on nuclear weapon use through the examination of public source documents. While waiting for new guidance from President Trump, past policy decision shows that the U.S. seeks multilateral arms control while reducing the reliance and role of nuclear weapons (DoD, 2010). The goal of this research is to identify policies and public opinion concerning nuclear weapons between the U.S. and Russia.

As a result, the following research question has been developed: With the new geopolitical nuclear landscape, is there a disconnect between how the U.S. and Russia view the use of nuclear weapons?

The following are additional investigative questions that this research will answer:

- IQ 1: Is there a disproportionate amount of spend between the U.S. and Russia concerning nuclear weapons?
- IQ 2: Are there clear evidences of different public perspectives concerning nuclear weapons between U.S. and Russian policy makers?
- IQ 3: Are there clear evidences of different public perspectives concerning nuclear weapons between U.S. and Russian citizens?

Methodology

This research used a structured query of public source documents as the primary data regarding opinions of U.S. and Russian nuclear weapons use. The public source documents were collected from the internet and represents data from government agencies of Russia and the U.S. Additionally, data used from news agencies represents a sampling of the different philosophies to capture the ideas and sentiments of public opinion. Finally, the data was identified, appraised, and synthesized using a strict protocol to ensure the reliability of data through triangulation.

Scope, Assumptions and Limitations

While this research may be of relevance to policy makers, the emphasis is on only one part of nuclear deterrence, understanding your adversary and yourself. This is one of the most important concepts in deterrence; however, evidence in this research may influence a part but not the whole model of nuclear deterrence. Additionally, the time frame and feasibility, linked with the cumbersome task of collecting and organizing the data consequently leaves data out of the study. Finally, using public sourced data that

includes news agencies provides an indication of society opinion and provides a historical record of events. Conversely, all news agencies have political agendas and some of the data collected may contain biases and offer a limited perspective.

Implications

The findings of this research have the potential to influence public opinion and policy makers in the role of nuclear weapons from the adversary's view point. Understanding your adversary is the first part of deterrence. Deterrence is focused on values and intentions and holding these at risk in order to influence behavior (Schelling, 1966). Understanding how the U.S. and Russia views nuclear weapons use is imperative to developing future nuclear deterrence policy. However, gaining public support is difficult considering a bulk of the nuclear enterprise's capabilities and limitations is cloaked in secrecy. Open source public documents used for this research may potentially bring light to how each country uses nuclear weapons in the unclassified world.

Summary

The U.S. and Russia are in the middle of the biggest nuclear modernization since the end of the Cold War and view the use of nuclear weapons differently. This disconnect between use will be examined and researched. The remaining sections include a thorough literature review of past and present U.S. nuclear deterrence policies, how the U.S. and Russia are distributing their respective budgets to the nuclear weapon programs, and evidence to illustrate differences in perspectives between how the U.S. and Russia view nuclear weapons from a policy maker and public opinion.

II. Literature Review

Chapter Overview

Today's basic nuclear deterrence strategy is based on the same principles used during the Cold War era. Many believe the U.S. and Russia were lucky there was never a miscalculation or nuclear exchange during the Cold War. As we move to an era of nuclear modernization some argue nuclear weapons are not relevant today and the U.S. should move to zero weapons. U.S. President Barrack Obama's April 2009 speech in Prague clearly states this will not happen soon (Obama, 2009). Countries are still developing nuclear weapons and the U.S. must maintain a strong nuclear deterrent for future generations. This chapter steps through a brief history of U.S. nuclear deterrence policy. Following the historical review of policy the focus shifts toward the fiscal expenditures the U.S. and Russia have made and are expected to make towards their respective nuclear weapon programs. In closing, evidence concerning perspectives from a policy maker and citizen on nuclear weapon programs are reviewed.

United States Nuclear Deterrence Policy: Past

President Harry S. Truman (1945 – 1953) was the first and only President of the U.S. to authorize use of a nuclear weapon. The first nuclear attack on Japan was carried out to compel a complete surrender by the Japanese and after the second nuclear attack, Japan surrendered. The need for a second attack to compel a surrender began the debate on the effectiveness of nuclear weapons and what U.S. policy should be regarding nuclear use. The Truman era is known as the genesis era and saw the development of nuclear weapons and the policy for their use.

As World War II came to a close, the Joint Chiefs of Staff struggled with how nuclear weapons would be used in the future (Schnabel, 1996). In the 1940's there were few nuclear weapons and they were not included in initial war plans. Plans changed throughout the 1940's, included a range of targets from industrial facilities in Soviet cities to military resources. Truman's nuclear policy in 1948 stated that the U.S. must be ready to "utilize promptly and effectively all appropriate means available, including atomic weapons, in the interest of national security and must therefore plan accordingly" (NSC-30, 1948).

There was skepticism towards the effectiveness of nuclear weapons that led Secretary of Defense James Forrestal to request an examination of the impact of nuclear weapons against the Soviet Union. The Joint Chiefs of Staff appointed Lieutenant General Hubert R. Harmon of the Air Force as the committee chair. The Harmon report as it became known, concluded that "the planned atomic attack on 70 Soviet cities would not, per se, bring about capitulation, destroy the roots of Communism, or critically weaken the power of the Soviet leadership to dominate the people" (Kunsmann & Lawson, 2001: 23). This report led to disagreements between the Navy and the Air Force that were underpinned by budgetary concerns (Schnabel, 1996). The Navy saw the Air Force was receiving funding to develop bombers which had been called into doubt by the Harmon Report.

By 1950, President Truman announced the decision to pursue a thermonuclear weapon. However, this was met with division among the original weapon designers. Robert Oppenheimer himself, the Los Alamos National Lab director and lead scientist in the development of nuclear weapons, thought it would be unethical to pursue what might be seen as a super bomb (Oppenheimer, 1976). There were 3 of 5 Atomic Energy

Commissioners that were against development which pushed the Joint Chiefs to make a recommendation (Schnabel, 1994). The Department of Defense recommended the development and the Joint Chiefs of Staff formally announced a designated response with the development of three target categories. The first set of targets with the highest priority were to destroy the Soviet capability to deliver nuclear weapons. The second was retardation targets. The third was to destroy liquid fuel, electrical power, and nuclear energy industries. President Truman at the end of his presidency called for greater emphasis to be put on nuclear weapon development but the Joint Chiefs resisted because of budget allocations and the exaggerated Soviet threat (Poole, 1998). President Truman also placed the sole authority for release of nuclear weapons as the Chief Executive which still stands today (NSC-30, 1948).

President Dwight D. Eisenhower's (1953 – 1961) administration continued a containment policy toward the Soviet Union but adopted a policy of "massive retaliation" early to deter Soviet aggression (Colby, 2014). President Eisenhower continued and accelerated President Truman's idea of using nuclear weapons to offset the cost of a large conventional military force (Poole, 1998). Policy clearly showed that the U.S. would not initiate a war but would respond. Secretary of State, John F. Dulles articulated the president's policy in a 1954 speech, "threatening to retaliate 'massively' against Soviet aggression" (Herken, 1993). The administration stayed committed to early and general use of nuclear weapons and if the Soviets believed that the U.S. would respond with a superior U.S. nuclear arsenal, the Soviets would be deterred (Colby, 2014). Supporting this rhetoric, the President changed the wording in the NSC 5707 to say nuclear weapons

would be considered as conventional weapons for military planning purposes to achieve national objectives (Kunsman & Lawson, 2001).

President Eisenhower saw the start of the arms race with the Soviet Union when Sputnik was launched in 1957. The U.S. intelligence community (IC) believed the Soviet's would not have an Intercontinental Ballistic Missile technology until 1963 (NSCR 5501, 1955). The Eisenhower administration faced other challenges, massive retaliation was one. One theory was counter value; the targeting of cities which required fewer weapons. The Gaither report identified vulnerabilities to the U.S. strategic forces as another issue. To counter the vulnerability, Distant Early Warning and Ballistic Missile Early Warning systems were developed to detect approaching bombers and incoming missiles. In addition to the warning systems, the bomber force initiated continuous alert requirements of 6-70 aircraft (Kunsman & Lawson, 2001). Later in President Eisenhower's presidency, it became clear that an integrated targeting system should be established under the Joint Chiefs of Staff. At the time, both the Air Force and Navy had separate war plans. The Eisenhower administration consolidated the two plans and saw the first Single Integrated Operational Plan (SIOP) put into effect.

President John F. Kennedy (1961 – 1963) was against massive retaliation as the only response for U.S. nuclear weapons. Massive retaliation was one of President Kennedy's campaign highlights and major disagreement with the Eisenhower administration (Colby, 2014). Therefore, President Kennedy pursued a flexible response and became the first president to implement limited response in the U.S. nuclear war plan. President Kennedy believed that a single massive response limited the U.S. capability to keep a conflict with the Soviet Union limited vice total destruction via nuclear weapons at the earliest

provocation. The change in emphasis required changing allocation of resources to fund both nuclear development and conventional military forces. The new nuclear SIOP had five major options versus one from the previous plan to increase the possibilities for withholding more targets to compel an adversary's behavior. Under President Kennedy, the U.S. nuclear force was to be "an effective, invulnerable, and reliable U.S. nuclear retaliatory force...to deter general war and to frustrate nuclear blackmail" (Patterson, 1961). This brought about the limited response and the idea of counterforce theory. It was believed that the U.S. and the Soviet Union were in a stalemate and it would be impossible to achieve nuclear superiority (NSC 517, 1963). Counterforce theory provides a good deterrent, but proved to be unsustainable because no logical limits to size of the force could be determined.

President Lyndon B. Johnson (1963 – 1969) emphasized assured destruction due to the increased requirement for strategic forces spending to meet the growth of the Soviet Union. Under assured destruction the Soviets would be deterred from pursuing a first strike because the U.S. could respond with a devastating retaliatory strike. To offset the U.S. nuclear strategic force responsibility, the Johnson administration pursued better conventional forces with the U.S. but also encourage NATO allies to improve their conventional forces (Colby, 2014). The nuclear policy in effect remained unchanged from President Kennedy to President Johnson. The Johnson administration enabled nuclear forces to be used in a limited and controlled way.

President Richard Nixon (1969 – 1974) sought to develop more meaningful broader options with greater flexibility. This led to the introduction of limited nuclear options into the SIOP. The Nixon administration believed that the emphasis on mutually assured

destruction raised doubts about the credibility of the U.S. nuclear deterrent. Mutually assured destruction emphasized that strategic nuclear weapons would not be used to defend Europe and limited nuclear options would send a clear message to the Soviet Union that strategic forces were back on the table. Along with a clear message to the Soviet Union, limited nuclear options also sent a clear message to NATO allies that the U.S. strategic force was there to protect them (Colby, 2014). President Nixon brought about the ability to adaptively plan to increase the flexibility for a U.S. response to a developing crisis, not relying solely on pre-planned nuclear options. President Nixon also introduced a policy of *Détente*. *Détente* was meant to relax the tensions between superpowers and encourage cooperation. To facilitate this cooperation the Nixon administration removed the trade restrictions with China and President Nixon was invited to visit in 1972. If the U.S. and China could improve relations it could encourage the Soviet Union to cooperate. The plan worked and the U.S. moved away from mutually assured destruction to a limited strategic war that led to the Strategic Arms Limitation Treaty in 1972.

President Gerald Ford (1974 – 1977) continued President Nixon's goal of limiting strategic weapons. President Ford participated in a series of talks with the Soviet Union paving the way for the Vladivostok Summit to control and limit strategic arms so both countries would have equal aggregate numbers. President Ford's cooperation with the Soviet Union brought about the Threshold Test Ban Treaty, limiting nuclear explosions and the reaffirmed commitment from both the Soviet and the U.S. to the Limited Test Ban Treaty essentially paving the way for the Strategic Arms Limitation Treaty II.

President Ford continued to improve relations with the Soviet Union by participating in the Helinski Accords.

President Jimmy Carter (1977 – 1981) continued the past two administrations pursuit of limited nuclear options but emphasized a countervailing strategy. Countervailing focused on different criteria for targets to deny the Soviet Union victory on its own terms (Colby, 2014). Presidential Directive 59 was the centerpiece of President Carter’s policy and “ordained that the U.S. needed nuclear capabilities sufficient such that any adversary would recognize that no plausible outcome would represent a victory on any plausible definition of victory” (Colby, 2014: 59). This directive sought to improve command, control, communications, intelligence, employment plans, and the planning apparatus to achieve flexibility, survivability, and performance. This required the ability to employ nuclear forces selectively. The Carter administration focused on the saliency of command and the continuity of the U.S. government and its ability to communication and control nuclear forces. One issue the administration had to deal with was the neglect of theater nuclear forces of NATO that led to anxiety about the U.S. commitment to extended deterrence. To respond, the Carter administration introduced modernized tactical nuclear forces in Europe providing Europe with a credible and capable force to respond to Soviet aggression.

President Ronald W. Reagan (1981 – 1989) continued a similar nuclear policy started by President Carter; however, he considered potential nuclear war to be a catastrophic failure and believed in ridding the world of nuclear weapons. President Reagan became physically ill when briefed on the execution plans and had to reschedule the briefing (Bracken, 2012). President Reagan continued countervailing and added “prevailing” to

the nuclear policy to ensure a decisive U.S. victory (Kunsman & Lawson, 2001). National Security Decision Directive 32 stated, “the U.S. will enhance its strategic nuclear deterrent by developing a capability to sustain protracted nuclear conflict” (Colby, 2014: 54). To prevail, President Reagan expanded the buildup started by his predecessor to modernize the entire U.S. nuclear triad of ground based missiles, bombers, and submarine launched missiles.

There were two major exercises or war games that were played under President Reagan: Proud Prophet and Able Archer. Proud Prophet was one of the most realistic U.S. exercises to date while Able Archer was a realistic NATO exercise. Able Archer seemed so real that it is said that the Soviets thought NATO actions were real and armed Soviet missiles for firing. After Proud Prophet and Able Archer, there were no more over-the-top exercises that could lead to miscalculation by the Soviets (Bracken, 2012). During President Reagan’s tenure, he successfully reduced the amount of tactical nuclear weapons in Europe, eventually bankrupted the Soviet Union, and brought the Cold War to a close.

President George H.W. Bush (1989 – 1993) continued the work of ridding the world of nuclear weapons, a task he began as Vice President under Reagan. President Bush saw the collapse of the Berlin wall and two years later the dissolution of the Soviet Union. When the Soviet Union collapsed, 27,000 nuclear weapons were scattered among Ukraine, Belarus, Georgia, Kazakhstan, and the Central Asian Republics (Stillman & Reed, 2010). In 1991, both Russia and the U.S. signed the Strategic Arms Reduction Treaty (START) and in 1992, President Bush and Russian Premier Boris Yeltsin convinced those states that gained nuclear power through the collapse of the Soviet

Union to return those weapons to Russian custody. With the weapons returning to Russia and the ratification of START I, President Bush was rapidly working towards President Reagan's goal to rid the world of nuclear weapons.

President Bush built a relationship with Russia and START I was the first time that both countries agreed to restrain the deployment of nuclear weapons. President Bush also signed START II that further reduced the operational deployed nuclear weapons. In 1991, reductions in the strategic forces was announced: "strategic bombers and Minuteman II (MMII) Intercontinental Ballistic Missiles (ICBMs) were taken off alert; 450 MMII silos were placed in a stand-down status pending destruction; all deployed ground-launched, short-range nuclear forces were recalled to the U.S. and slated for retirement and elimination; nonstrategic nuclear weapons were ordered removed from routine deployment on Navy ships and submarines; development programs for the mobile ICBM, small ICBM, and SRAM II missiles were canceled or suspended...B-2 procurement was terminated; production of the Peacekeeper missile was stopped; the ACM build was truncated... and production of new warheads for the Trident missile was stopped" (Kunsmann & Lawson, 2001: 64) President Bush implemented significant reduction in strategic arms under these Presidential Nuclear Initiatives.

President Bill Clinton (1993 – 2001) nuclear policy and strategy was dominated by the congressionally mandated Nuclear Posture Review (NPR). The NPR examined nuclear policy and said that the role of nuclear weapons in a post-Cold War was diminished (Berstein, 2014). The NPR also recommended that the U.S. required smaller nuclear arsenal and that Weapons of Mass Destruction (WMD) proliferation was a growing concern. Counter proliferation of WMD was of equal importance to direct deterrence.

“Lead” and “Hedge” were the catch phrases the NPR used to say that the U.S. would continue with arms control reductions but avoid changes to nuclear policy to hedge against a reversal of Russian policy. While the NPR may have seemed to move emphasis away from nuclear weapons, it reaffirmed its commitment to a reliable nuclear triad to provide a competent deterrent (Kunsman & Lawson, 2001). The National Security Strategy in 1999 said, “Our nuclear deterrent posture is one example of how U.S. military capabilities are used effectively to deter aggression and coercion against U.S. interests. Nuclear weapons serve as a guarantee of our security commitments to allies and a disincentive to those who would contemplate developing or otherwise acquiring their own nuclear weapons. “The US will continue to maintain a robust triad of strategic nuclear forces sufficient to deter any potential adversaries” (Kunsman & Lawson, 2001: 68). Malcolm Rifkind, former defense and foreign secretary for the United Kingdom in a 1993 House of Commons Speech said, “nuclear weapons have played, and continue to play, a fundamental role in perhaps the most effective system of war-prevention of modern times-the Atlantic Alliance...the value of nuclear weapons...lies not in classical concepts of war-fighting or war-winning, nor just in deterring the use of nuclear weapons by an adversary but it actually preventing war” (Rifkind, 1993). The one major change in nuclear policy was the Presidential Decision Directive 60 that nuclear weapons are to be used to deter the use of nuclear weapons and nuclear wars, not to fight wars with nuclear weapons. This directive retained the capability to use nuclear weapons should the U.S. see fit, while emphasizing the value of deterrence.

President George W. Bush (2001 – 2008) faced a changing security environment with the 9/11 attacks. In the 2001 NPR, President Bush pushed forward with a change in the

original strategic triad of ICBMs, SLBMs, and bombers to a new triad composed of: nuclear and non-nuclear strike capabilities, defenses, and responsive infrastructure (DoD, 2001). The original triad was encompassed in this nuclear and non-nuclear strike capability. Defenses include active defenses against missiles and aircraft to passive defenses such as concealment and civil defenses. The responsive infrastructure leg includes research, development, testing, and evaluation of modernization of the strategic force. This policy was a move to a full spectrum deterrent with a focus on war fighting. President Bush's offensive position weakened relations with China and the U.S. eventually reversed its position on the Comprehensive Test Ban Treaty.

United States Nuclear Deterrence Policy: Present

President Barrack H. Obama (2008 – 2016) pledged to reduce the role of nuclear weapons in U.S. national security strategy with a long term aspiration to eliminate all nuclear weapons. Speaking in Prague, President Obama expressed a vision for “peace and security of a world without nuclear weapons” (Berstein, 2014: 89). However, President Obama followed those words, “as long as these weapons exist, the U.S. will maintain a safe, secure, and effective arsenal to deter any adversary and guarantee that defenses to our allies – including the Czech Republic” (Obama, 2009). President Obama was committed to disarmament and restraint in nuclear policies. The 2010 NPR outlined five objectives for nuclear policy: prevent nuclear proliferation and nuclear terrorism; reduce the role of U.S. nuclear weapons in U.S. national security strategy; maintain strategic deterrence and stability at reduced nuclear force levels; strengthening regional

deterrence and reassure U.S. allies and partners; and sustaining a safe, secure, and effective nuclear arsenal.

This NPR linked nonproliferation policy and nuclear weapons policy. The NPR also reversed previous positions that the U.S. could respond with nuclear weapons should they or allies be attacked with any type of WMD to ensuring those in compliance with the Non-Proliferation Treaty that the U.S. would not use or threaten to use nuclear weapons against them (Berstein, 2014). President Obama, in an effort to further reduce strategic weapons, signed and put into force the New START that reduced weapons to 1,500 deployed warheads and non-deployed launchers to 800. These reductions were substantial but they do not take into account Russia's growing arsenal of tactical nuclear weapons.

U.S. and Russia Nuclear Weapon Investment

Russia and the U.S. have been pursuing nuclear weapon modernization to update the decrepit infrastructure that has been around since the Cold War. Much of the discussion about nuclear modernization has been in front of the media and has been well documented. This section will review the nuclear systems that each country will be modernizing and the expected cost that the U.S. and Russia will spend for their nuclear deterrent force.

Russia is rejuvenating their forces through nuclear modernization efforts that are driven by President Putin's pursuit to restore Russia's power among the world. On 10 September 2014, President Putin announced a plan to develop a new nuclear deterrent guaranteed to counter the U.S. and NATO forces (Conca, 2014). To fund the

modernization plan, Russia is using the revenues from high oil sales in 2004-2014 (Pifer, 2016). The majority of Russia nuclear modernization has been well known and are replacing systems that are either set to retire in 2020 or ones Russia would have liked to retire earlier but a weak economy following the end of the Cold War prevented modernization or retirement of older systems. (Kristensen & Norris, 2016; Pifer, 2016).

Russia implements a triad, the same as the U.S. for their nuclear force structure. The force structure consists of Intercontinental Ballistic Missiles (ICBM), a nuclear submarine component, and strategic bombers. ICBMs are organized under the Strategic Rocket Forces distributed through 3 armies, 12 divisions, and 40 regiments. Russia currently operates three missile systems from the Soviet-era: SS-18, SS-19, and the SS-25. All of these systems are set to retire in the next decade with the production of 400 new ICMBs and submarine launched ballistic missile (SLBM) (Pifer, 2016). The SS-18 is a silo based ICBM and is slowly being replaced by the RS-28. The ICBM was first deployed in 1988 and is set to retire in the early 2020's. The SS-19 is another silo based ICBM and is being replaced by the SS-27 Mod-2. The system entered into service in 1980 and scheduled to be retired in 2019. The SS-25 is a mobile ICBM system and has been or will be replaced by the SS-27 Mod-1 or Mod-2. The SS-25 entered into service in 1988 and is set to retire in 2021 (Kristensen & Norris, 2016).

The new systems: SS-27 Mod-1, SS-27 Mod-2, and the RS-28 are replacing the older systems with significantly more capable delivery systems (Davis, 2017). The deployment of SS-27 Mod-1 was completed in 2012 and Mod-2 is still in process at an accelerated state. Russia is moving away from silo-based weapons and the SS-27 Mod-1 consisted of 60 silo-based missiles and 18 road-mobile missiles (Kristensen & Norris,

2016). The RS-28, also known as the Sarmat, is the final ICBM upgrade. The RS-28 research and development is complete and the first stage of testing was accomplished in August 2016. The missile will have the ability to hit a target anywhere on the globe and is capable of flying over both the North and South Poles (“Russia’s Nuclear Triad Modernization,” 2016). Additionally, the RS-28 will be able to carry up to 16 warheads and is expected to be in service between 2018 and 2020 (Mortimer, 2016).

The second leg of the Russian triad is the 12 nuclear powered submarines operated by the Russian Navy. The Navy operates three classes of submarines: 6 Delta IVs, 3 Delta IIIs, and 3 Boreis all capable of carrying up to 16 SLBMs. Russia is procuring eight Boreis submarines with three already in operation and completion of the others by 2020 (Kristensen & Norris, 2016; Pifer, 2016; “Russia’s Nuclear Triad Modernization,” 2016). The Delta IVs are the mainstay of the Russian Navy and were put to sea between 1985 and 1992. Russia has upgraded the Delta IV to carry a new SLBM, “Sineva” and the “Layner.” The Layner is an upgraded Sineva (Davis, 2017; Kristensen & Norris, 2016). The Delta IIIs were launched in the 1970’s and are quickly being replaced by the new Borei-class submarine. There are five Borei-class submarines in various stages of construction and will increase the capability of the Russian Navy (Kristensen & Norris, 2016).

Strategic bombers make up the final leg of the triad. Russia currently operates the Tu-160 Blackjack and the Tu-95MS Bear H nuclear capable bombers. Both bombers can carry the Kh-55 air-launched cruise missile and gravity bombs. The Tu-160 can also employ the Kh-15 short-range attack missile. There is also a new long-range cruise missile in development. The bomber fleet consists of two bases with 54-57 deployed

bombers for a total of 70 (Kristensen & Norris, 2016). All of the Tu-90s are being upgraded and most Tu-95s will be upgraded. Seven upgraded airplanes were completed in 2014 with two Tu-160s and seven Tu-95s delivered in 2016. Around 44 Tu-95s and 10 T-160s are scheduled to be completed by 2019. Cost of modernizing 10 aircraft is estimated to be \$10 billion (Kristensen & Norris, 2016; Pifer, 2016). Russia signed a contract to produce a new bomber in 2013, PAK-DA, with first delivery in 2023. However, in 2015, Russia restarted production on the Tu-160. Speculation is the PAK-DA is behind schedule and the new Tu-160M2s are filling the void and will later complement the PAK-DA (Davis, 2017; Pifer, 2016; Kristensen & Norris, 2016; “Russia’s Nuclear Triad Modernization,” 2016).

Additionally, Russia has developed and tested a ground launched intermediate-range ballistic missile in violation of the Intermediate-Range Nuclear Forces Treaty (INF). They have developed non-strategic nuclear capabilities with cruise missiles and short-range missiles (Pifer, 2016). Russia’s General Staff also announced the development of retargeting of reentry vehicles post launch for ICMBs. Finally, Russia is currently constructing the Voronzh-DM over-the-horizon ballistic missile attack early warning radar (“Russia’s Nuclear Triad Modernization,” 2016).

The Russian defense budget is strained over the massive nuclear modernization efforts. The high fuel prices have receded and sanctions are forcing trade-offs in the budget; however, Russian Defense Minister Sergei Shoigu and Russian Chief of Staff Valeriy Gerasimov have declared the nuclear force modernization as a top priority (Rinna, 2015). Russia announced in the 2012 that the budget for nuclear programs would be increased by \$88 million from 2013-2015 with a total of \$134 million (Rinna, 2015). According to

SIPRI April 2016 report, the 2015 total defense budget for Russia was \$66.4 billion. This is the second highest level of military expenditures in share of GDP since 1990 at 5.4% (Perlo-Freeman, Fleurant, Wezeman, and Wezeman, 2016). However, the defense budget is set to drop by 12% in 2017 (Caffrey, 2016).

The U.S., in the same position as Russia, has to modernize the nuclear infrastructure due to aging systems. The infrastructure is old and it is cheaper to pursue new technology instead of using service life extension programs (Korb and Mount, 2016). There is much debate whether the Department of Defense and Department of Energy can implement the modernization plan as it stands. Critics say that \$1 trillion over 30 years is a conservative assumption and the modernization will most likely be more (Guarino, 2014; Ewing, 2016). Others call the modernization efforts a Cold War resurgence, a point that has been disputed by the former administration (Emmons, 2016). However, others argue that the modernization budget is an easy target for critics and in reality, the Atomic Energy Defense activities only accounted for 3.7% of the defense budget in 2013 and with all nuclear modernization will account for less than 7% of the defense budget and 1% of the federal budget (Spring and Dodge, 2013). Figure 1 shows the modernization efforts for both conventional and nuclear forces with nuclear forces using less than 19% of all modernization programs. The following paragraphs discuss the Department of Defense and Department of Energy modernization efforts for the nuclear infrastructure and will close with final cost estimates for the U.S. modernization program.

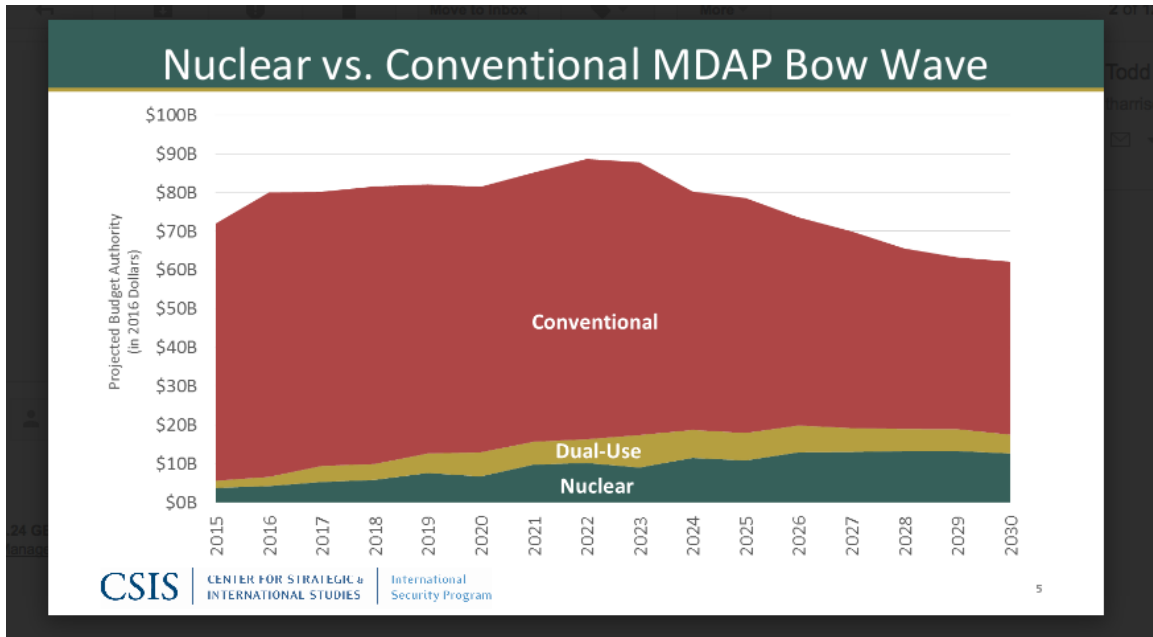


Figure 1: Nuclear Modernization Cost (Harrison, 2016)

The U.S. utilizes the triad construct of ICBMs, bombers, and submarines to provide prompt, flexible and survivable capability. Within the U.S. Air Force, Air Force Global Strike Command (AFGSC) has the responsibility for nuclear weapons. The ICBM and bomber force structure are organized under AFGSC. There are two numbered air forces that separate the ICBM and bomber entities. ICBMs are organized under 20th Air Force and bombers are organized under 8th Air Force. Additionally, there are three ICBM wings with a total of nine operations squadrons. The LGM-30 “Minuteman III” is the only ICBM in use today. The Minuteman III was initially deployed in 1970 with the capability to carry three warheads and there are currently 400 deployed ICBMs (“LGM-30 Minuteman III, 2016). The system has been updated throughout the years with continuous enhancement and life extension programs. These programs aimed to keep the Minuteman III safe, secure, and reliable through 2030 come at a cost of \$7 billion over 15 years; however, in 2014, the Air Force decided on procuring a new missile (Reif, 2017).

This system is called the Ground-Based Strategic Deterrent (GBSD) and according to a 2015 estimate, GBSD will cost \$62.3 billion over 30 years; however, more recent estimates say the program will cost between \$85 to \$100 billion. The Air Force is requesting 642 missiles with increased capability for expanded targeting options to include improved accuracy and survivability (Reif, 2017). The new system is scheduled to be operational in 2029 and be deployed to 2070 with an estimated total life cycle cost of \$238 billion. The previous administration requested \$113.9 billion for 2017 (Korb and Mount, 2016; Reif, 2017).

The bomber fleet makes up the second leg of the triad. Bombers are organized under the 8th Air Force and are further delineated between conventional and nuclear strike. The focus of this research is the nuclear strike. The bombers have three wings with a total of seven operational bomb squadrons. The Air Force currently uses the B-52H and the B-2A for the air leg of the nuclear triad. Both bombers can carry nuclear gravity bombs and the air-launched cruise missile (ALCM) and are dual capable; the ability to carry non-nuclear conventional bombs and nuclear bombs (Korb and Mount, 2016). The Air Force is developing a new long range strike bomber called the B-21. The B-21 contract has recently been awarded to Northrop Grumman and the Air Force is planning on purchasing 100 of the new dual capable bombers (Emmons, 2016). Current estimates for procurement of the B-21 is \$511 million per aircraft and a total cost of \$38.5 billion (Reif, 2017; Ewing, 2016). The new B-21 will eventually replace the B-52 and the B-1. The B-52 was first deployed in 1961 and like other systems has been in life extension and modernization programs. The latest modernization to upgrade the B-52 computer infrastructure cost \$1.1 billion. The latest estimate sees the B-52 in service until the

2040s. The B-2 first deployed in 1997 and is also in continuing modernization programs to ensure the B-2 can operate in anti-access environment through 2058 (Reif, 2017).

In addition to the new B-21, the Air Force is developing an ALCM follow-on, long-range standoff cruise missile (LRSO). The ALCM was deployed in 1981 and has a current inventory of 570 nuclear-capable ALCMs. To replace the ALCM the Air Force proposed the LRSO and plans to purchase 1,000 missiles. The LRSO is scheduled to be deployed in 2026. The budget request for 2017 was \$220.3 million for development and production of the LRSO and an additional \$95.6 million for the war head with a total life cycle cost estimated to be \$34.3 billion, which includes the Department of Energy warhead sustainment (Reif, 2017).

The final leg of the triad is the U.S. submarine force. Currently, the Navy operates a fleet of 14 Ohio-class submarines capable of carrying 20 missiles each. The Ohio-class submarine was first deployed in 1981 and have a service life of 42 years (Korb and Mount, 2016). To meet the 42 year life span there are two twenty year cycles and a two year mid-life refueling. The Ohio-class service life starts expiring in 2027 with approximately one boat a year retired until 2040. The Navy has developed the new Columbia-class submarine to replace the aging fleet starting in 2029; however, there was a two year delay and the first boat is scheduled for operation in 2031. The current plan is to purchase 12 new boats with the total cost for development and buying at \$128 billion (Ewing, 2016). The Navy asked for \$1.86 billion in 2017. The total life cycle cost of the new submarine fleet is \$282 billion. Additionally, the Navy employs the Trident II D5 missile on the Ohio-class submarine. The Trident is going through life extension and

modernizations programs of their own. The Navy requested \$1.2 billion for the Trident updates in 2017 (Reif, 2017).

The National Nuclear Security Administration (NNSA) oversees the nuclear programs for Department of Energy. The nuclear infrastructure under NNSA consists of the facilities that supports production testing, sustaining, and designing nuclear weapons. These facilities include Pantex in Amarillo, Texas; Kansas City Plant in Missouri; Y-12 National Security Complex in Oak Ridge, Tennessee; and the Savannah River Site in South Carolina. Additionally, there are three national laboratories: Los Alamos and Sandia in New Mexico and Lawrence Livermore in California (Spring and Dodge, 2013). The NNSA's part in the modernization plan involves refurbishing the nuclear stockpile and updating the production complex facilities. For the stockpile, the NNSA is pursuing an extensive plan to consolidate the 10 existing warheads to 5, known as the 3+2 strategy. The cost associated with the consolidation and life extension plan is estimated to be over \$60 billion. The production complex is being updated with a new Uranium Processing Facility that is estimated to cost \$11 billion (Reif, 2017).

The Congressional Budget Office (CBO) released the report, "Projected Costs of U.S. Nuclear Forces, 2017 to 2026" outlining the modernization costs of both the Department of Defense and Department of Energy. The report showed a 15% increase in the cost from the last CBO report in 2015. The 2015 report listed the cost at \$348 billion over the 10 year period. The new cost is listed at \$400 billion from 2017 to 2026. CBO report says the increases stem from better defined parameters leading to better cost projections (CBO, 2017). For similar comparison between Russia and the U.S., the 2015 military expenditures from the 2016 SIPRI report was used. The U.S. remains the largest military

spender at \$596 billion in 2015 but has seen a 21% decrease since 2010. Part of this decrease is from the withdrawal of troops from the Middle East. While the U.S. is the largest military spender it is behind Russia when viewed by GDP. The Share of GDP for the U.S. in 2015 was 3.3% (Perlo-Freeman, Fleurant, Wezeman, and Wezeman, 2016).

The CBO report estimates \$189 billion for strategic nuclear delivery systems which include the ICBMs, submarines, and long-range bombers. Tactical nuclear delivery systems will require \$9 billion and that accounts for aircraft as the delivery platform. The Department of Energy will require \$87 billion for nuclear weapons design, production, and sustainment. There is an additional \$58 billion for the nation's command and control network to ensure communication with nuclear forces. Finally, there is \$56 billion set aside for cost overruns (CBO, 2017). Table 1 has the breakout of the costs per system from the CBO report.

Table 1: Modernization Costs (CBO, 2017)

Projected Costs of U.S. Nuclear Forces, By Department and Functions						
Billions of Dollars						
	2017			Total, 2017-2026		
	DoD	DoE	Total	DoD	DoE	Total
CBO's Projections of Budgeted Amounts for Nuclear Forces ^a						
Nuclear delivery systems and weapons						
Strategic nuclear delivery systems and weapons						
Ballistic missile submarines	6.0	1.1	7.1	80	10	90
Intercontinental ballistic missiles	1.9	0.1	2.0	39	3	43
Bombers	2.4	0.6	3.0	34	9	43
Other nuclear activities	1.2	n.a.	1.2	13	n.a.	13
Subtotal	11.5	1.8	13.3	167	22	189
Tactical nuclear delivery systems	0.4	0.4	0.8	6	3	9
Nuclear weapons laboratories and supporting activities						
Stockpile services	n.a.	1.5	1.5	n.a.	18	18
Facilities and infrastructure	n.a.	2.7	2.7	n.a.	32	32
Other stewardship and support activities	n.a.	3.3	3.3	n.a.	37	37
Subtotal	n.a.	7.5	7.5	n.a.	87	87
Subtotal, Nuclear Delivery Systems and Weapons	11.9	9.7	21.6	174	112	286
Command, control, communications, and early-warning						
Command and control	1.3	n.a.	1.3	14	n.a.	14
Communications	2.4	n.a.	2.4	20	n.a.	20
Early warning	1.6	n.a.	1.6	24	n.a.	24
Subtotal, Command, Control, and Early-Warning Systems	5.3	n.a.	5.3	58	n.a.	58
Total Budgeted Amounts for Nuclear Forces	17.2	9.7	26.8	232	112	344
CBO's Estimates of Additional Costs Based on Historical Cost	n.a.	n.a.	n.a.	35	21	56
Total Estimated Cost of Nuclear Forces	17.2	9.7	26.8	267	134	400

Source: Congressional Budget Office, using data from the Department of Defense and the Department of Energy

DoD = Department of Defense; DoE = Department of Energy; n.a. = not applicable

- a. These budgeted amounts do not reflect independent estimates by CBO of the costs of U.S. nuclear forces. Instead, this category is based on CBO's analysis of DoD's and DoE's budget proposals and accompanying documents, as well as on CBO's projections of those budget figures beyond the next five years under the assumption that programs proceed as described in budget documents. The category also includes several programs for which plans are still being formulated. In those cases, CBO based its estimates on historical costs of analogous programs.
- b. This category includes nuclear-related research and operations support activities by DoD that CBO could not associate with a specific type of delivery system or weapon.
- c. This category includes security forces, transportation of nuclear material and weapons, and scientific research and high-performance computing to improve understanding of nuclear explosions. This category also includes \$400 million in 2017 and \$5 billion over the 2017-2026 period for federal salaries and expenses to support DoE's oversight of contractor-operated nuclear weapons laboratories and production facilities.

Russia and U.S. Policy Makers Perspective on Nuclear Weapons Use

The relationship between Russia and the U.S. has gone through phases from the end of the Cold War to today. Many feel that the U.S. and Russia relationship is the worst it has been since the Cold War (Mortimer, 2016; Schneider, 2016). Russian Ambassador to the United Nations, Vitaly Churkin argues it is the worst since the 1973 Middle East Crisis because Russia and the U.S. continue to work in areas, something that did not happen during the Cold War. Nevertheless, the reason for the inimical relationship according to Churkin is, “It’s kind of a fundamental lack of respect and lack of in-depth discussions” on political issues (Lederer, 2016). However, this attitude from the Russian leadership did not always exist. During the 1990s, post-Cold War, the emphasis from the Russian government was on cooperation. There was a mutual goal between Russia and the U.S. on securing the nuclear stockpile from the disbandment of the former Soviet Union and to keep nuclear weapons out of the hands of terrorists (Shuster, 2016). Russia’s behavior in Ukraine and Syria changed the dynamic of the two superpowers cooperation to almost adversarial (Mortimer, 2016).

Post-Cold War brought cooperation for the U.S. and Russia; however, internally Russia never viewed the Cold War as ending (Conca, 2014; Shuster, 2016). Even through desperate times for the Russian military, great attention was paid towards the readiness and modernization of their nuclear forces (Shuster, 2016). Russia’s current nuclear use policy has evolved through the years through direct input by President Putin. During the 1990’s, President Putin, then Secretary of the Russian National Security Council, developed Russia’s doctrine on first use during a conventional war (Schneider, 2016). President Putin’s first act as the new president was changing a long lasting pledge

from the Soviet Union of never launching a nuclear weapon first. President Putin's justified the change because he felt that a nuclear weapon was the best source of countering U.S. conventional forces (Shuster, 2016).

Russia remains concerned over the U.S. conventional military capability. Russia feels weak and vulnerable to the U.S.'s conventional and strategic capability and concerned about the survivability of their forces (Colby, 2016; Shuster, 2016). Therefore, Russia emphasizes the primacy of their nuclear weapons in their defense policy and believe that the possession of a strong nuclear force is a sign of national strength (CSIS, 2017; Davis 2017). Additionally, Russia's aggressive modernization of their nuclear forces suggest an increase role in their strategic forces in Russian foreign policy and reflects the government's convictions that nuclear weapons are indispensable to their security and status as a great power (Kristensen & Norris, 2016; "Russia's Nuclear Triad Modernization", 2016). Their modernization plan is focused on providing a credible and flexible nuclear deterrent. This is achieved through modernizing their delivery capabilities to penetrate all current and future defense systems causing any potential adversary to back down or risk a possible nuclear exchange with Russia ("Russia's Nuclear Triad Modernization", 2016). The new 'Sarmat' missile was created to provide an assured and effective deterrent (Mortimer, 2016). Motivated to maintain parity with the U.S., Russia is using their nuclear forces to pressure the U.S. to remove their missile defense from Europe and to accept Russian domination of Eastern Europe (Kristensen & Norris, 2016; Schneider, 2016). Former Secretary of Defense, Ashton Carter said, "Russia may resort to small but sill unprecedentedly terrible attacks...to try to coerce a conventionally superior opponent to back off or abandon an ally during a crisis" (Carter,

2016). President Putin is a risk taker and his proclivity to coerce other countries to Russia's will is proven in the practices and policies of the Russian strategic military forces.

Russia's most recent policy on nuclear weapons, published in 2014, is the same as the previous version; however, Russian leadership have publically announced use of nuclear weapons that go above the published doctrine (Kristensen & Norris, 2016). Russia has emphasized their right to use nuclear weapons in response to a nuclear weapon, WMD strike, and in conventional warfare. Russia has embraced a doctrine of "escalate to de-escalate" strategy (Davis, 2017). It appears that Russia is seeking ways to employ nuclear weapons in a limited and controlled way to terminate conflict (Colby, 2016; Davis, 2017; Pifer, 2016). Leadership has utilized nuclear signaling through implicit and explicit nuclear threats. This is partly instituted through the integration of nuclear and non-nuclear forces. This makes any crisis with Russia more dangerous and provides greater flexibility to their conventional forces (Davis, 2017; Shuster, 2016). Russia has also conducted several exercises that have encompassed their nuclear forces simulating attacks against Western countries and NATO targets (Kristensen & Norris, 2016). Russia's modernization, nuclear exercises, nuclear threats, and 'escalate to de-escalate' policy is lowering the threshold for nuclear weapons use in a limited or regional conflict (Davis, 2017; Kristensen & Norris, 2016; Pifer, 2016; Schneider, 2016).

Russia's confidence in their military is growing and is visible in their new readiness to use military power (Conca, 2014; Pifer, 2016). It appears that Russia is planning for a major conflict with the U.S. and or Europe over sanctions that have been implemented (Schneider, 2016). The government has spent time articulating to the public the

imminence of nuclear war with the west and has conducted exercises to ensure they are ready (CSIS, 2017; Schneider, 2016).

Additionally, Russia and the U.S. view the New START treaty differently. Russia is not interested in seeking further reductions (Kristensen & Norris, 2016). Russia felt that the U.S. wanted to reduce because they could then dominate the world with their superior conventional forces. They agreed to New START under the current conditions because they viewed their land based silos as a vulnerability. New START allowed them to get rid of them while the U.S. had to reduce their capability. This single act was viewed in Russia as gaining parity with the U.S. Secondly, New START allowed Russia to buy time for their nuclear modernization (Shuster, 2016). There is concern whether Russia will meet the required reductions for the New START treaty date in 2018. While the U.S. has been downsizing their strategic numbers Russia has been increasing (Schneider, 2016). Figure 2 from the Arms Control Association shows the disparity in U.S. and Russia nuclear weapons after the crisis in Ukraine. Russia meeting the New START requirements seems bleak and they have additionally violated the INF treaty with their ground-launched cruise missile (GLCM) (Kristensen & Norris, 2016; Schneider, 2016). Some view the deployment of GLCM as a way to seek concessions from the west and as a way to gauge the U.S. reaction for not meeting New START requirements (Schneider, 2016).

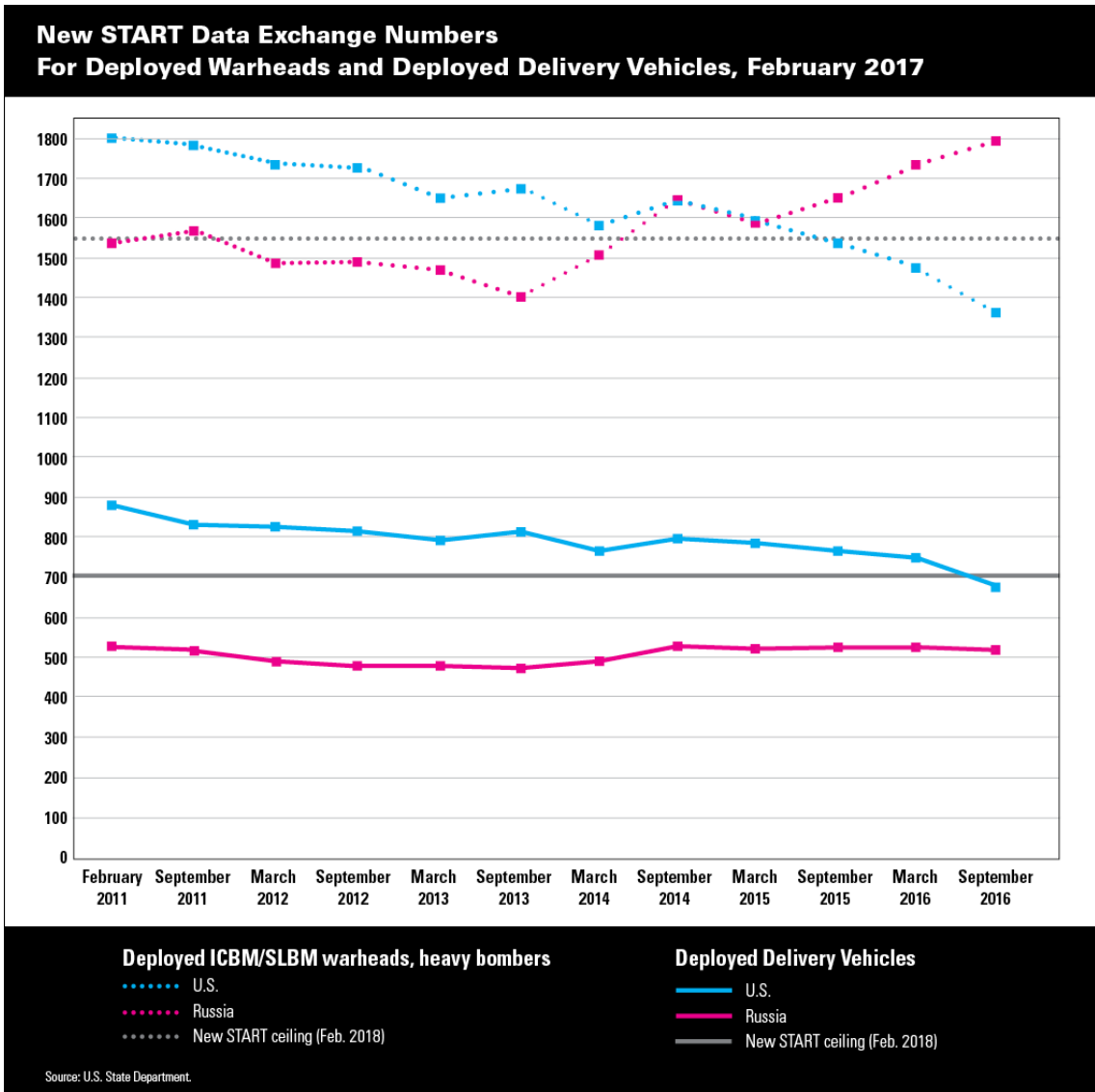


Figure 2: Deployed Strategic Nuclear Weapons for New START (ACA, 2017)

In closing, Russia views their nuclear weapons as a way to gain parity with the U.S. A way to coerce other governments to their will by lowering the threshold of nuclear use and to make the use of their forces confusing by integrating nuclear and non-nuclear forces. Russia views nuclear weapons as a source of their superpower position around the globe and a necessary component for the countries prosperity. Therefore, nuclear weapons are used to achieve national objectives.

The U.S.'s policy for nuclear weapons differs from Russia. First, the U.S. and NATO are committed to Article VI of the Nuclear Non-Proliferation Treaty (NPT) (CSIS, 2017). Article VI of the NPT assures non-nuclear members that the nuclear states will work towards nuclear disarmament at the earliest time. The U.S. also believe that there is no winner in a nuclear conflict and all parties involved will suffer tremendous consequences.

The policy for the U.S. is clear, reduce the role of nuclear weapons and seek nuclear disarmament. The fundamental role of nuclear weapons for NATO is to preserve peace, prevent coercion, and deter aggression. Both the U.S. and NATO see the use of nuclear weapons as extremely remote and almost non-existent (CSIS, 2017; Davis, 2017). The U.S. has reduced all of their strategic nuclear weapons and non-strategic nuclear weapons except for the B-61 bomb (Pifer, 2016). According to Department of State and as shown in Figure 2, the U.S. is well below the New START requirements (Schneider, 2016). According to Shuster, the focus of New START was originally to reduce to the lowest numbers as possible for strategic nuclear weapons; however, after the Russian's scoffed at the idea of reducing, the goal shifted to cooperation. The U.S. specifically looked to gain Russia's assistance with Iran (Shuster, 2016). A deal with Iran was eventually reached in 2015. President Obama viewed disarmament as a distant lifetime goal but one that should be consistently and continually cultivated to stop the spread of lose nuclear materials and strengthen the nonproliferation regime (Ewing, 2016).

Following New START, the Department of State verified that Russia, for the first time in 40 years past the U.S. in nuclear capability (Conca, 2014). President Trump views the New START treaty as one-sided and calls for a rejuvenation of the nuclear forces (ACA, 2017). This position is ambiguous because the U.S. is already on the path to nuclear

modernization. For the U.S. Senate's ratification of New START, President Obama promised increased spending to facilitate nuclear modernization. There are difference within the U.S. government on the belief that modernization should happen. During the presidential campaign questions arose to candidates, in essence, republicans agreed with modernization while democrats disapproved (Emmons, 2016).

Russian aggression appears to have made nuclear modernization for the U.S. easier. Their behavior of nuclear threats and conducting military exercises with simulated nuclear strikes resembles behavior from the Cold War and was mentioned in the budget request for nuclear modernization (CSIS, 2017; Emmons, 2016). The budget request stated, "We are countering Russia's aggressive policies through investment in a broad range of capabilities" (Emmons, 2016). However, proponents of nuclear modernization argue that modernization is not about bulking up but responding to neglect of nuclear weapons that has compromised the U.S.'s ability to respond to actual threats (Conca, 2014; Emmons, 2016). However, Brian McKeon, principle deputy undersecretary of defense for policy, testified before congress, "We are investing in the technologies that are most relevant to Russia's provocations...to both deter nuclear attacks and reassure our allies" (Emmons, 2016).

Russia's behavior in their nuclear aspirations is viewed in the U.S. as deeply immoral (Lockie, 2016). The U.S. views Russia acting in an irresponsible way for a nuclear power (CSIS, 2017). The response is to ensure our nuclear deterrent is relevant for possible controversies and ensure the U.S. is not susceptible to coercion from the Russian government. Another approach is to ensure our conventional forces are built to provide a better deterrent (CSIS, 2017; Davis, 2017). However, the U.S. does not appreciate

Russia's concern over the U.S. already superior conventional force which provides Russia with motivation to continually update their nuclear arsenal (Shuster, 2016).

Russia and U.S. Citizens Perspective on Nuclear Weapons Use

The overall perspective from public citizens in Russia and the U.S. sees the role of nuclear weapons can be reduced and believe nuclear weapons chief purpose is to deter nuclear attack (Steinbruner and Gallagher, 2008). However, the most recent study found for Russia's perspective was conducted in 2007. More recently, Russia has been stoking the tension between the U.S. and Russia. Some believe this is to protect budget cuts (Schneider, 2016). Nevertheless, the Russian Ministry of Defense has been conducting nationwide defense training exercises to ensure the public is prepared for a nuclear attack (Mortimer, 2016). This type of behavior is believed used to de-sensitize the public. In fact, a Russian led news agency has warned "schizophrenia from America are sharpening nuclear weapons for Moscow" (Mortimer, 2016).

While the government is working on swaying the public, others like a former Russian Deputy Defense Minister has advocated for more effective non-nuclear deterrent capabilities (Rinna, 2015). Additionally, journalist Alexander Golts sarcastically said, "We have just one need now, dear fellow citizens – how to prepare in the best possible way for the war that, if we analyze the actions of our own chiefs, is on point of breaking out" (Schneider, 2016). This position agrees with the 2007 study the University of Maryland's, Center for International and Security Studies and the Program in

International Policy Attitudes where they found a disparity between what U.S. and Russian leaders are doing and what their respective publics want (Steinbruner and Gallagher, 2008).

In three studies from 2004 and two in 2007, a large majority from the U.S. and Russia found pursuing the elimination of nuclear weapons favorably and most were unaware that their countries already agreed to pursuing elimination in the NPT (Kull, 2004; Steinbruner and Gallagher, 2008; and Kull, 2007). Both countries agree with deep cuts in the amount of nuclear weapons and that nuclear weapons have limited military utility. Additionally, both countries believe in controlling nuclear materials and to achieve the deep cuts in inventory require intrusive multilateral verification by the international body (Steinbruner and Gallagher, 2008; and Kull, 2007). Steinbruner and Gallagher posit the public would be supportive to goals for nuclear cooperation and reenergizing the arms control process (Steinbruner and Gallagher, 2007).

Specifically for the U.S., the majority of public supports arms control but there is division on how to get there. Some support the modernization and believe nuclear weapons are used daily and nuclear weapons have kept the world from fighting another world war (Ewing, 2016). Conversely, critics call the modernization wasteful, unsustainable, unaffordable, and a fantasy. They believe Russia aggression is the impetus for modernization and not a sustainable deterrent force (Emmons, 2016). Former Secretary of Defense William Perry, retired General Eugene Habiger, and multiple religious groups disagree with the modernization. Perry and Habiger believe that the strategic force can be reduced drastically (Emmons, 2016). Some argue for complete disarmament and the Union of Concerned Scientists insist that nuclear weapons need to

be taken off “hair-trigger” alert (Ewing, 2016). A thought that is validated by the majority of both Russians and U.S. citizens (Kull, 2007). The Bulletin of the Atomic Scientists moved the “Doomsday Clock” from 5 minutes to midnight to 3 minutes to midnight because they believe American policies along with nuclear modernization are bringing the world closer to nuclear weapons use (Ewing, 2016). The relationship between the U.S. and Russia has declined and is at its worst since the Cold War which causes countries to work in isolation that breed miscalculations (Conca, 2014).

Summary

This chapter outlined the nuclear policy decisions from the genesis of nuclear weapons under President Truman to President Obama. We currently wait new nuclear policy from President Trump but the most recent nuclear policy is to deter nuclear attack, reassure our allies, and reduce the role of nuclear weapons in the national security strategy. With the resurgence of a Cold War Russia, will the U.S. continue to pursue a reduced nuclear role or broaden the reigns? Both Russia and the U.S. are modernizing their forces and both are spending a substantial amount of money to accomplish it. The U.S. has sought to reduce the role of nuclear weapons while Russian continues to find ways to make nuclear weapons more useful. Finally, the chapter closes with a look at public opinion from both the U.S. and Russia. The goal of this research is to close the gap in how the U.S. and Russia view the use of nuclear weapons.

III. Methodology

Chapter Overview

The research for this paper that has been conducted is qualitative in nature. Qualitative research is used in this research to explore the perceived apprehension of how Russia and the U.S. view nuclear weapons and how they are used during peace and conflict. The qualitative research methods used in this paper consisted of content analysis through structured queries of public source data. The chapter concludes with the identification of possible biases given the researchers role in this study.

Qualitative Analysis

This research used a structured query of public source documents to explore the perceived apprehension of how Russia and the U.S. view nuclear weapons and how they are used during peace and conflict. Little research exists on the attitudes of Russia and U.S. citizens and their thoughts on the others nuclear weapon policies. Therefore, Leedy and Ormrod discuss qualitative analysis as an approach to explore and identify potential problems. To frame the research, content analysis was implemented to guide the research to identify patterns, themes, or biases. Content analysis is accomplished through the examination of communication: books, newspaper article, journals, internet, and more (Leedy and Ormrod, 2016). Content analysis is “the longest established method of text analysis among the set of empirical methods of social investigation” (Titscher, Meyer, Wodak, & Vetter, 2000: 55).

This research followed an outline introduced by Gläser and Laudel to organize and collect data to answer the research question, Figure 3. Using a deductive process, the

research question was already developed along with the investigative questions. The investigative questions served as the basic categories. The data collection consisted of structured queries on the Google search engine. This provided information that would be available to the general public and would not bias the data if it would only come from government sources. There was a total of 16 queries that are discussed further in Chapter 4.

Linking the raw data to the research question was accomplished through the queries that allowed for specific searches applicable to the research question. However, winnowing of data is allowed to ensure only relevant information was used in the analysis (Creswell, 2014). Data that was collected consisted of newspapers, news, articles, government reports, and opinion based articles. The focus on the research was to collect opinion on nuclear weapons from a policy makers and citizen's perspective. These outlets may be biased but provide key inputs on how the general population thinks and feels overall. The data from the queries identified patterns that would be used as codes for later examination. Patterns consisted of anything identified more than once in the review of raw data. The final step will be to integrate the patterns in answering the investigative questions and eventually answer the research question.

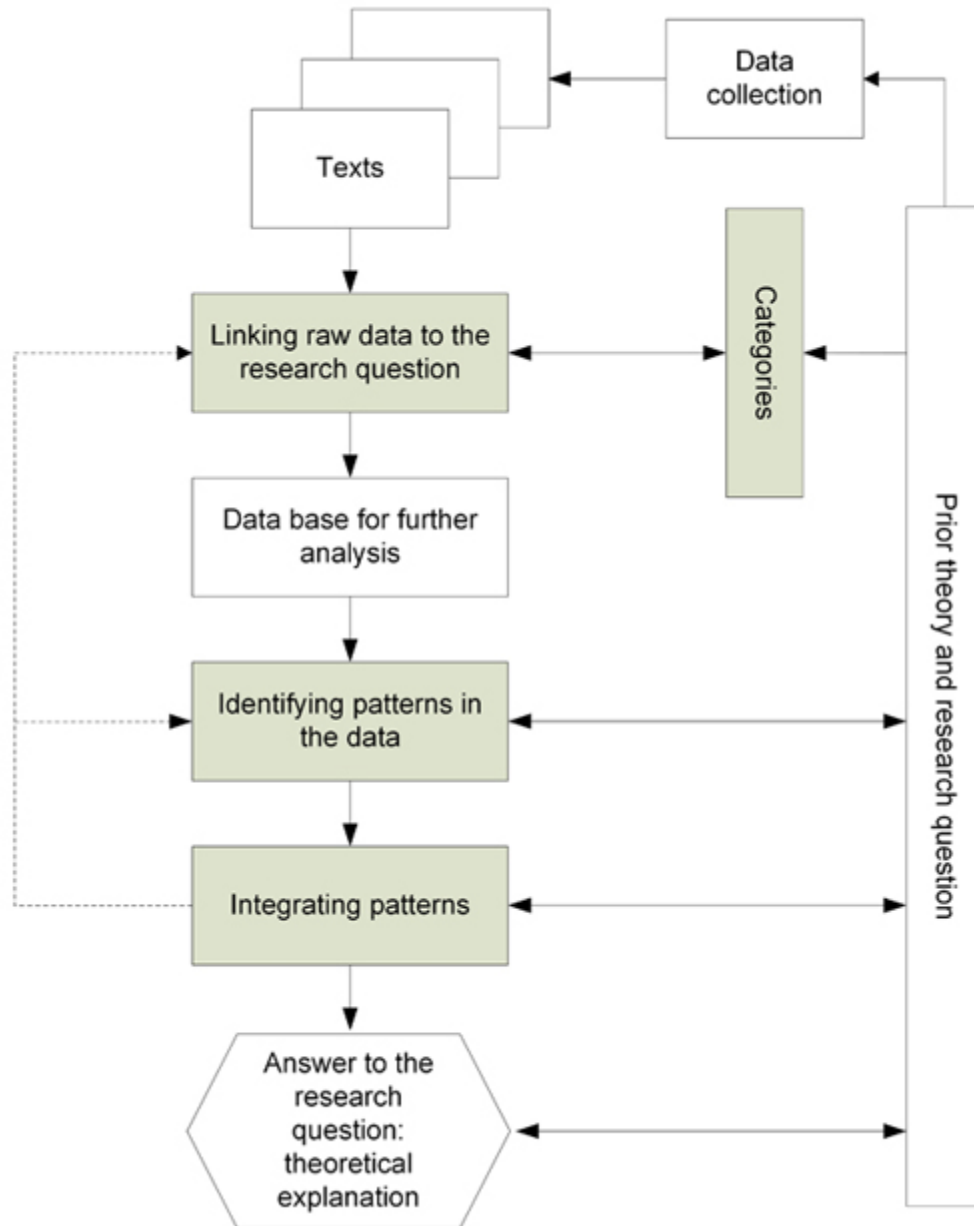


Figure 3: Research Process (Gläser &, Laudel, 2013)

Validity and reliability means that the data is accurate and it can be replicated by another researcher. This concept in relation to qualitative analysis can be controversial because of subjectivity that can be applied (Creswell, 2014). However, consistent themes or codes from the convergence of data provides triangulation and trustworthiness of the data.

Researchers Role in Research

In qualitative research and particularly content analysis, the researcher assumes the role of the primary data collection instrument. Content analysis requires interpretive research and therefore requires the researcher to identify personal values, assumptions, and biases at the start of the research. The researchers perception of nuclear weapons and nuclear weapons policy have been shaped from past experiences in the U.S. Air Force working as a nuclear ICBM launch officer from 2003 to 2008 and 2014 to 2016. Between 2008 and 2014, the researcher was assigned as an instructor for the ICBM career field and then worked at the Defense Threat Reduction Agency where he gained experience in arms control verification procedures. Due to these past experience, certain biases are brought to the research. Objectivity will be at the forefront of this research; however, these biases through reflexivity may shape the way data is interpreted.

Summary

Content analysis through public sourced documents was the research method used in this qualitative research. Public source document are imperative to identifying possible trends in how populations think and feel. Consistent appearance of specific topics provide the reliability and validity for the research. Chapter 4 will discuss the analysis of the public source documents and the codes used to examine the data.

IV. Analysis and Results

Chapter Overview

This chapter combines the research from Chapter 2 with the data collected through structured queries of public source documents. The intent of this chapter is identify plausible disconnects between how Russia and the U.S. view nuclear weapons and their use. The final chapter will summarize the results and provide recommendations for U.S. Air Force leadership to address any uncertainties.

Data Analysis

Data was collected through a structured query of public source documents and a detailed literature review. Data collection from public source documents contain dense material that requires “winnowing” of the data, disregarding irrelevant information while focusing on the pertinent (Creswell, 2014). Specifically, this research focused only on the information directly applicable to the research and investigative questions. Three investigative questions were developed to answer the research question. The investigative questions were used as the base for developing queries for data and a deductive process was used where the three investigative questions were identified as the predetermined themes. All data was aggregated into one of those focus areas and further divided using an inductive approach with code selection. Codes are areas that were routinely seen through the literature review and analysis. The routine codes provided validity for the study through triangulation of material (Creswell, 2014). The data analysis coding structure with themes are outlined in Figure 4.

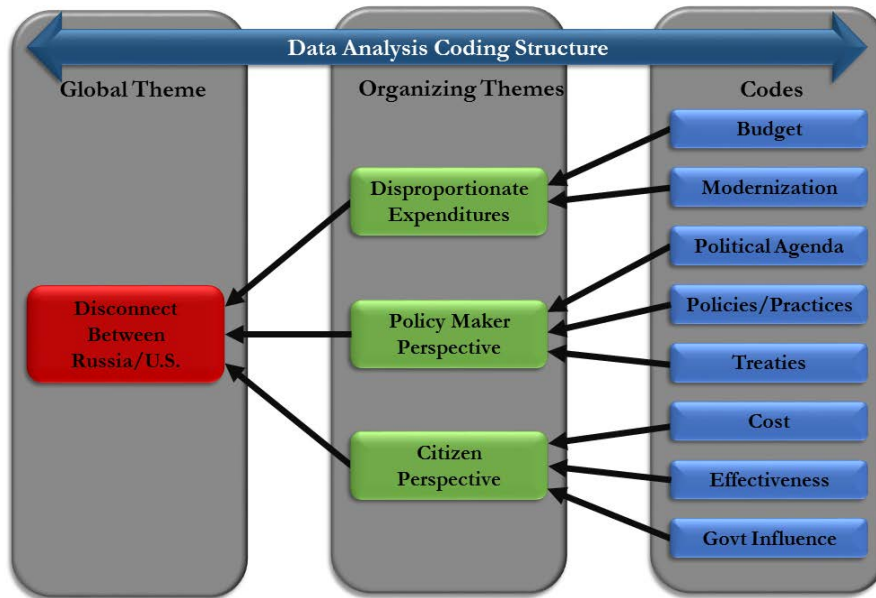


Figure 4: Coding Structure

The research literature and public source documents provided the data to answer the investigative questions: nuclear weapon expenditures, policy maker perspective, and a citizen perspective. Data was collected using a structured query of public source documents. There were a total of 16 queries, Tables 2 through 8. The queries were conducted for Russia and the U.S. and each table accounts for two queries. The conducted queries consisted of: Russia/U.S. nuclear weapons investment; news release of Russia/U.S. nuclear weapon; Russia/U.S. nuclear weapon modernization; Russia/U.S. nuclear treaty violations; Russia/U.S. nuclear weapons policy; Russia/U.S. escalation policy; Russia/U.S. national objectives or security strategy; and Russia/U.S. public opinion on nuclear weapons. Tables 2 through 8 provide the data from the queries with key conclusions from each article. However, the query on escalation policy provided zero results that were not already previously covered from other queries.

Table 2: Russia/US Nuclear Weapons Investment

Author/YR	Conclusions
Axe, 2016	<ol style="list-style-type: none">a. Russia's development of RS-28 with expanded capability represents Russia's unwillingness to pursue further strategic reductionsb. Tension between Russia and West have grown while Kremlin officials emphasize nuclear capacity...staged a mock nuclear attack on Sweden in 2013c. Both countries are updated their nuclear infrastructure. U.S. seeks ensuring survival of capability while Russia is pursuing increased capabilityd. Russia and U.S. are dealing with fiscal constraints that will most likely extend to decrease in nuclear forces
ICAN, 2011	<ol style="list-style-type: none">a. In 2010, U.S. spent \$55.6 billion; Russia spent \$9.7 billion. In 2011, U.S. spent \$61.3 billion; Russian spent \$14.8 billion.
Gertz, 2016	<ol style="list-style-type: none">a. Russia has increased deployed weapons while U.S. has decreased. U.S. 429 deployed weapons below Russiab. State Department expects Russia will meet New START deadline and treaty provides insight on modernization plans. Others believe Russian will abandon treatyc. Russian has adopted new strategy that lowers the threshold for nuclear use in conflict "escalate to de-escalate"
Thompson, 2015	<ol style="list-style-type: none">a. Obama administration has back investment in modernizing the triad and nuclear infrastructure that will cost \$348 billion between 2015 and 2024b. Russian behavior changed U.S. from seeking further disarmament to modernization has systems decayc. Goal is to dissuade any enemy from nuclear aggression by fielding a resilient retaliatory force that can survive a surprise attack, and then destroy the assets that matter most to the aggressor
Wilczek & Tegmark, 2016	<ol style="list-style-type: none">a. Is nuclear modernization aimed to deter nuclear war or initiate it? Current plans lean towards initiation because deterring only requires a few as France, UKb. Emergence of modern threats render nuclear compellance useless
Dyer, 2016	<ol style="list-style-type: none">a. U.S. views Russian comments about "escalate to de-escalate" irresponsible and destabilizing vital reason for U.S. modernization planb. U.S. modernization estimated \$1 trillion needed to update old systemsc. LRSO and B-61 upgrade viewed by critics as destabilizing and increasing likelihood of use. LRSO mixes nuclear and non-nuclear capabilities.

Table 3: News Release of Russian/U.S. Nuclear Weapon

Author/YR	Conclusions
Mortimer, 2017	<ol style="list-style-type: none">Russia unveiled the RS-28, a missile capable of carried 16 MIRVs and destroying an area the size of New York. New bomb will make Hiroshima and Nagasaki look like popguns. Unveiling when Russia and West tension roseRussia preparing population for nuclear attack through exercises and broadcasts
Lockie, 2016	<ol style="list-style-type: none">Russian modernization is a planned occurrence as their weapons are designed to be updated every decade or so.U.S. loves accuracy in weapons while Russian will would prefer to put more warheads on a bomb to level a cityRussia leaked Status-6 submarine drone and other nuclear ambitions viewed as deeply immoral.U.S. intent on keeping a triad because they believe that Russian cannot neutralize all three legs the U.S.
Batchelor, 2016	<ol style="list-style-type: none">Russia unveils largest atomic weapon ever produced that could erase a state the size of Texas. Release comes when relationship between Russia and West plungeRussian TV new weapon will "determine in which direction nuclear deterrence in the world will develop
Aljazeera, 2017	<ol style="list-style-type: none">Trump calls for reduction in nuclear weapons and will dismiss sanctions to seek commitment. This comes after messages of strengthening nuclear forces from both Russia and U.S.Two members of Russian government differ on sanctions and strategic reductions. One, not worth making security concessions and the other, ready to discuss nuclear reductions
Lieu, 2017	<ol style="list-style-type: none">Legislation introduced to prohibit the President from launching a nuclear strike without a declaration of warMany are frightened by the President's ignorance of the triad and unpredictability
Tierney, 2017	<ol style="list-style-type: none">SecDef James Mattis has been a unifier in Washington D.C. with bipartisan praise. Role of our nuclear weapons must be establishedDeclaring nuclear weapons solely for deterrence established "no-first use" policyConventional capabilities have advanced to a point where nuclear weapons are obsolete except for deterring adversaries from striking first
Beres, 2017	<ol style="list-style-type: none">Under National Command Authority, there are no safeguards at high decisional authority levels to obstruct an irrational President from using nuclear weaponsPresident Trump utilizes the idea of pretended irrationality, similar to President KennedyPresident Trump must understand escalatory pitfalls to keep U.S. from complete capitulation or nuclear war

Table 4: Russia/U.S. Nuclear Weapon Modernization

Author/YR	Conclusions
Kristense & Norris, 2016	<ol style="list-style-type: none">a. Russia nuclear modernization not concerning, military exercises, nuclear threats are brings question to intentions and stokes modernization in U.S.b. New arms reductions must be met quickly or will come to an endc. Nuclear weapons are indispensable for security and status as a world powerd. Deliberately lowering the threshold for nuclear use in conventional ware. Russia nuclear armed self-propelled underwater craft to deliver indiscriminate damage rendering territory unsuitable for long periods of time
Davis, 2017	<ol style="list-style-type: none">a. Military doctrine emphasizes primacy of nuclear weaponsb. Three developments that suggest willing to use nuclear weapon: escalate to de-escalate, integration of nuclear and non-nuclear forces, and nuclear signaling used to coerce
Pifer, 2016	<ol style="list-style-type: none">a. Putin's goal to restore power to Russia is seen through modernization and readiness to use military forceb. Russia is upgrading all three legs of their triad as all their systems are agingc. Russia de-escalation strategy emphasizes use of nuclear weapons
Blechman, 2016	<ol style="list-style-type: none">a. Conventional forces are required for security landscape that the U.S. has been engaged in except when deterring nuclear attacksb. The nuclear modernization is unnecessary and nuclear weapons should be reduced drastically. Funds should be redirected to maintaining U.S. conventional forces
Dodge, 2016	<ol style="list-style-type: none">a. The world has changed and has gotten more dangerous which requires a ready and competent nuclear force and new nuclear policies for the U.S.b. U.S. Nuclear modernization is a must as all legs of the triad are oldc. The U.S.'s goal to reduce role of nuclear weapons has failed in the overall picture. New nuclear powers emerged and new arms races have started. New nuclear policy is required and it may require more weapons
Torbati, 2016	<ol style="list-style-type: none">a. Systems are old and need to be replaced otherwise they will be lost for good and in the meantime they become unsafe, unreliable, and ineffectiveb. Big increase in defense budget but it is seen to have bipartisan support and at the highest point, modernization and sustainment of nuclear forces will account for 5% of the defense budgetc. There is a call to cut the LRSO program and some view ICBMs as no essential

Table 5: Russian/U.S. Nuclear Weapons Policy

Author/YR	Conclusions
Spring, 2013	<ul style="list-style-type: none">a. New START reductions have been controversial and further reductions introduced by the Obama administration was a decision made before evidence was provided that support arms control and disarmamentb. President Obama was focused on achieving his goal of zero nuclear weapons, even unilaterally, without thought of how it would impact deterrencec. When a review on U.S. nuclear forces are driven by arms control and disarmament goals it weakens the IS deterrence posture for the U.S. and its allies
NPR, 2010	<ul style="list-style-type: none">a. Identifies five objectives for nuclear policy: preventing nuclear proliferation and nuclear terrorism; reducing the role of U.S. nuclear weapons in U.S. national security strategy; maintaining strategic deterrence and stability at reduced nuclear force levels; strengthening regional deterrence and reassuring US allies and partners; and sustaining a safe secure, and effective nuclear arsenal
Conway, 2016	<ul style="list-style-type: none">a. Future nuclear policy from President Trump is unknown as statements from an arms race to seeking reductions with Russia and Japan and South Korea developing their own nuclear weapon programs to finding ways to stop nuclear proliferation contradict
Durkalec, 2016	<ul style="list-style-type: none">a. Russia places high value on nuclear weapons in achieving national objectives by lowering the threshold for use, developing low-yield weapons, and integrating non-nuclear and nuclear forcesb. Putin has praised Khrushchev's nuclear brinkmanship, a message to the U.S. and NATO to leave Russia alone. Demonstrated in Crimea, increased nuclear bomber flights, and increase in military exercisesc. Nuclear threats indicate nuclear weapons are integral to political messagingd. Cannot isolate nuclear weapons and Russia in using them as psychological influence in early stages on confrontatione. Nuclear weapons not just for deterrence but a tool for coercion and intimidation "escalate to de-escalate" to terminate on Russian termsd. Creating perception that political leaders are ready to use nuclear weapons
Thomas-Noone, 2015	<ul style="list-style-type: none">a. Destabilizing strategic thinking has returned to Russia. Many in Russia fear the U.S. and West and are willing to use any military means for defenseb. Russia has developing short and medium range missiles along with low-yield weapons to compensate for their disadvantage in conventional military forcesc. "Escalate to de-escalate" to end war with low yield tactical weapon to end a conflict or risk further nuclear destruction is a dangerous strategy
Sokov, 2014	<ul style="list-style-type: none">a. De-escalation strategy was developed to answer the challenge of matching U.S. conventional capability. It is used to deter U.S. and Allies from seeking conflicts with Russia and to provide further its foreign policy

Table 6: Russian/U.S. Treaty Violations

Author/YR	Conclusions
Alexander & Holland, 2017	<ol style="list-style-type: none">a. Russia has violated the INF treaty which helped bring about the end of the Cold War by deploying the ground-launched SSC-8 cruise missileb. State Department in 2014 and 2015 reported the violation which Moscow denied and has deployed 2 battalions of cruise missiles
Kheel, 2017	<ol style="list-style-type: none">a. Russia violates INF treaty which requires President Trump to respond to Russia after expressing interest in resolving ties with Russia
Gordon, 2017	<ol style="list-style-type: none">a. Future strategic reduction limits seem unlikely the U.S. Senate would approve until Russia's violations of the INF treaty are resolvedb. Russia has developed new ground-launch missile because of threats on its periphery and that their neighbors are developing similar weaponsc. Clearly important to Russian as they decide to break the treatyd. General Breedlove, former NATO commander, has argues that cruise missile is a significant development that must be answered will expanded missile defense in Europe along with sea-based and air-based missiles
Browne, Sciutto, & Starr, 2017	<ol style="list-style-type: none">a. Russia has violated the INF with new cruise missiles, positioned a spy ship of the coast of Delaware, and has conducted close flybys on U.S. warshipsb. President Trump would like to open communications with Russia and seek further arms control initiativesc. Ignoring provocation similar to the Obama administration invites proliferation
Welna, 2017	<ol style="list-style-type: none">a. New Russian cruise missile deliberately deployed as a threat to most U.S. facilities in Europeb. Russia will not comply with INF treaty without pressure from the U.S. and international communityc. Typical Russian behavior is to accomplish the cruise missile by cheating and denying the existence instead of withdrawing from the treaty

Table 7: Russian/U.S. National Objectives

Author/YR	Conclusions
Oliker, 2016	<ol style="list-style-type: none">a. Russia's security strategy emphasizes the need to prestige and leadership across the globe which Russia believes has taken an increased role in solving international problemsb. Russia aims to increase GDP to one of the largest in the world to increase competitiveness and international prestige.c. Russia will use regional relationship and bilateral relations to further goals but does not see cooperation with U.S. as a requirement but will work with U.S. and Europe if both respect Russia's interestsd. Russia the views the U.S. and west as part of the reasons that make the world a dangerous place but recognizes the need to work with them to fight terrorism, proliferation, and instability but only if U.S. and west accept Russia's leadership role
Pakhomov, 2016	<ol style="list-style-type: none">a. Russia's actions in Syria unveil their foreign policyb. Russia got involved because they were following procedures of international and domestic law and abiding by law increases effectiveness in the regionc. Military power is essential to have a say in world politicsd. Russia acts in matter of national interest
Trenin, 2016	<ol style="list-style-type: none">a. Russia's biggest goal is to reduce political isolation and sanctions imposed by the U.S. but will not agree to concessions or improved behavior at the expense of national interestsb. Russia wants to be seen as a great power and recognized globally with a seat at the UN security Council as part of being a decision makerc. Russia will engage with U.S. when U.S. recognizes them as being equald. Russia is replacing global order with regional arrangements
Lucas & McInnis, 2016	<ol style="list-style-type: none">a. 2015 National Security Strategy calls for: strengthening national defense, reinforce homeland security, combat persistent threat of terrorism, build capacity to prevent conflict, prevent the spread and use of WMD, confront climate change, ensure access to shared spaces, increase global health securityb. The 2015 NSS represents a more turbulent and challenging worldc. U.S. needs to be a significant leader across the globed. Congress is finding it hard to link specific goals of the NSS to resources and activities
Davidson, 2015	<ol style="list-style-type: none">a. The NSS is about providing leadership and America must lead o the world stage otherwise no one willb. Strategic patience to assess total impact on global trends. Critics have labeled it strategic weaknessc. NSS represents a belief in peaceful, rule-based international order

Table 8: Russian/U.S. Public Opinion on Nuclear Weapons

Author/YR	Conclusions
Orlov, Safranchuk, & Moore, 2000	<ol style="list-style-type: none">a. 76% of Russians believe nonproliferation increases global security and 55% support the SART II ratificationb. 72% see the U.S. implementing treaty provisions where it benefits themselves
Sokov, 2016	<ol style="list-style-type: none">a. Russia leadership and public view nuclear weapons as a way to deter conventional militaries from attacking them and neither seem disarmament in the near futureb. Majority of Russian public supports nuclear retention and views weapons as securityc. 76% of Russians viewed nuclear weapons as a central role to ensure security in 2000 and in 2006 that number rose to 83%d. In 2000 more than half of Russians supported disarmament and in 2006, 60% said they should refrain from disarmament for the next 5 to 7 yearse. In 2005, 23% thought U.S. was unfriendly and in 2014 after Crimea invasion, 69% thought U.S. was unfriendlyf. Between January 2013 and January 2015 number of those who feared nuclear war went from 7% to 13%g. In March 2015, 54% of Russians believed there was a threat of war with NATO
Gallagher, 2008	<ol style="list-style-type: none">a. Opinion polls showed that populations do not always agree with their respective governmentsb. Support from both Russia and U.S. to support legally binding, verifiable arms control agreements to include elimination effortsc. Countries security policies are disconnected to the preferences of the public
Brown, 2014	<ol style="list-style-type: none">a. Two decades after the first atomic bomb, 70% of Americans felt the U.S. did the right thing. In 1982, that number dropped to 63% and dropped again in 1998 to 47%.b. In 2002 22% of Americans said the U.S. should never use them while 55% said only in response to a nuclear attack and 21% said only under certain circumstances. Those numbers were exactly the same in 2010c. Major attacks like Pearl Harbor and 9/11 swings the pendulum towards vengeance and makes nuclear use more plausibled. Majority of Americans do not want the U.S. to use nuclear weapons
Stokes, 2015	<ol style="list-style-type: none">a. In 1945, two-thirds of Americans would have dropped a nuclear bomb on a urban area; 50 years later in 1995, support for dropping the bombs has declined to 44% with half trying to find another way that the nuclear bomb

Summary

The intent of this chapter was to specifically identify data from the 16 queries concerning a disconnect between how Russian and the U.S. view nuclear weapons. As a result, three themes were predetermined through the investigative questions and other codes were inductively added and served as a point of validity for the study. The next chapter provides the conclusions from this chapter's analysis and provides recommendations for Air Force leadership.

V. Conclusions and Recommendations

Chapter Overview

The literature review provided a short but solid review of past U.S. nuclear policy and perspectives on how the U.S. and Russia view nuclear weapons and their use. The following chapter will provide conclusions from both the literature review and data analysis. The results of this research has the ability to help in understanding our adversary to develop future nuclear deterrence policy.

Russia and U.S. Nuclear Weapon Expenditures

The first investigative question was: is there a disproportionate amount of spend between the U.S. and Russia concerning nuclear weapons? Multiple queries were accomplished to ascertain the data and the same query was completed for each country with the results in Tables 2 through 8.

Russia and the U.S. are in the midst of massive nuclear modernization that has been well documented in both countries. The Russian ICBM systems SS-18, SS-19, and SS-25 were all introduced in the 1980's and are slowly being retired with the last system set for retirement in 2021 (Axe, 2016; Lockie, 2016; Kristensen & Norris, 2016; Torbati, 2016). Many of their land-based ICBM silos are being retired and replaced with mobile ICBM systems. Russia believes their land-based silos are extremely vulnerable and using this time of modernization as a way to gain an advantage with newer mobile systems. A concern over their modernization effort is the new RS-28 'Sarmat' ICBM. The Russians are drastically increasing the capability of the Sarmat with the ability to fly over either North or South Pole to reach its target (Batchelor, 2016).

Russia is well ahead in their modernization efforts and have already started deploying updated ICBMs while the U.S. is still in the design phase for their Ground Based Strategic Deterrent (GBSD). The current Minuteman III missile was first deployed in 1970 and has been through multiple service life extension and continuous enhancement programs for the last 40 years. Previously mentioned, the Air Force is currently assessing on how and what to replace the ICBM system with but have made known that it will remain silo based (Reif, 2017). The total update is estimated to cost \$85 billion over 30 years and a \$43 billion over the next 10 years (CBO, 2017; Reif, 2017).

Both countries are modernizing their bomber fleet. Russia and the U.S. have contracted companies to design and build a new bomber. Little information could be found on the cost of the Russian bomber but the U.S. bomber is estimated to cost \$511 million per plane (Reif, 2017). Additionally, both countries are upgrading their existing fleet and Russia has opened up the Tu-160 Blackjack production line, insinuating that the new PAK-DA plane may be having issues; however, slated to be operational in 2025 (Davis, 2017).

The final triad leg is submarine. Again, Russia is leading the way in their modernization efforts with three new Borei-class submarines already complete (Kristensen & Norris, 2016). The U.S. Navy announced a two year delay in 2012, pushing the first deployment date to 2031 (Reif, 2017). Russia's Delta III's were deployed in the 1970's while their Delta IV's were deployed between 1985 and 1992. The U.S.'s Ohio-class submarine was first deployed in 1981. Both countries submarine

are reaching the end of their service and need to be replaced (Kristensen & Norris, 2016; Rief, 2017). The development and acquisition cost for the U.S.'s new sub is estimated to be \$128 billion.

All of these systems need some type of repair, enhancement, or replacement in order to maintain a secure and effective deterrent on both sides (Dodge, 2016). The cost for Russian nuclear systems was difficult to ascertain and therefore, each country's defense budget in share of GDP was used to analyze the amount of money each country was expending on their military programs. The Stockholm International Peace Research Institute (SIPRI) released a military expenditure trends report from 2015 in April of 2016. Using the data from the report, the total U.S. defense spending was \$596 billion and Russia was \$66.4 billion. This looks like a huge difference but when viewed as a share of GDP, which provides a more accurate way to determine defense expenditures between the two countries; the U.S. was at 3.3% while Russia was at 5.4% (Perlo-Freeman, Fleurant, Wezeman, and Wezeman, 2016). During this time, Russia had already started many of their modernization programs while the U.S., except for the new Columbia-class submarine have been developing requirements for the new systems. Additionally, the nuclear budget numbers from The International Campaign to Abolish Nuclear Weapons shows Russia's budget almost doubling from 2010 to 2011 and represents the start of their nuclear modernization efforts (ICAN, 2011). The U.S. and Russia percentage should draw closer as U.S. modernization programs are implemented. The nuclear modernization in the U.S. is seen to have bipartisan support and should see funding through employment (Torbati, 2016). Both countries are upgrading their current nuclear infrastructure due to aging and relatively expending similar resources in share to the size

of their economy. Conclusive evidence was not found that Russia or the U.S. was spending more or less than the other.

Russia and U.S. Policy Maker Perspective

Russia's main goal is to restore the power of Russia and nuclear weapons are viewed as indispensable in maintaining their status across the globe (Kristensen & Norris, 2016). Russia's quest to be seen as a great power has cultivated their reliance upon nuclear weapons as a way to be heard. Russia wants to be a decision maker at the table for the rest of the world but views themselves as someone on the outside. Constantly told what to do but have no authority in the decision that affects Russia or the region. Russia wants to be recognized as an equal but will not agree to concessions or promises on their behavior at the expense of national interests (Trenin, 2016).

Russia views the world as changing and that global order is being replaced by regional partnerships and arrangement. Russia is pursuing arrangements around their political isolation and sanctions through partnerships with countries in Asia and to increase their prestige have taken an increased role in solving international problems (Oliker, 2016; Trenin, 2016). Russia sees the U.S. and the West as reasons for a dangerous and changing world but also recognize the need to work with the U.S. to fight terrorism and instability (Dodge, 2016; Oliker, 2016). However, Russia will only work with the U.S. when the U.S. recognizes Russia's leadership.

Changing the political landscape, Russia has developed military doctrine that revolves around nuclear weapons and creating a perception that Russian leaders are ready to use nuclear weapons. Russia has lowered the threshold of nuclear use through their de-escalation policy, integrated their nuclear and non-nuclear forces, and have instituted the

practice of nuclear signaling to coerce other governments (Davis, 2017; Durkalec, 2016). The resurgence of these Cold-War practices are destabilizing; however, Russia uses these tactics as a way to ward off the superior conventional forces of the U.S. (Thomas-Noone, 2015). Russia is fearful of the U.S.'s conventional forces and sees nuclear weapons as the only way to maintain parity with the U.S. Additionally, Russia leaked an image of a self-propelled nuclear drone that would deliver indiscriminate damage to an adversary. These type of new nuclear developments is seen as immoral (Lockie, 2016; Kristensen & Norris, 2016).

The U.S. is in the process of addressing policy for nuclear weapons. President Trump has requested a new Nuclear Posture Review but until then, the current NPR from 2010 provides the background to the U.S.'s nuclear policy. The NPR in 2010 highlights five key objectives to nuclear weapons: preventing nuclear proliferation and nuclear terrorism; reducing the role of U.S. nuclear weapons in U.S. national security strategy; maintaining a strategic deterrence and stability at reduced nuclear force levels; strengthening regional deterrence and reassuring U.S. allies and partners; and sustaining safe, secure, and effective nuclear arsenal (NPR, 2010).

The future NPR has to address the new Secretary of Defense's question: what is the role of our nuclear weapons (Tierny, 2017)? The message from the President is ambiguous as he calls for an arms reductions with Russia after calling for strengthening of nuclear forces (Aljazeera, 2017). President Trump has suggested programs to stop nuclear proliferation but gave Japan and South Korea the option to start their own nuclear weapons program (Conway, 2016). The future nuclear policy is unknown but past policy from the Obama administration has been criticized. President Obama was focused on

achieving nuclear elimination and was willing to decrease nuclear weapons without focusing on deterrence and security first. Reviews of nuclear forces focused on arms control weakens the U.S. deterrence policy (Spring, 2013). However, Russian behavior with the annexation of Crimea put nuclear reductions on hold and changed direction to modernization (Thompson, 2015).

The U.S., using past guidance and excerpts from President Trump, aim to decrease the reliance on nuclear weapons but to also have a credible nuclear force to dissuade any nuclear aggression or nuclear coercion (Wilczek & Tegmark, 2016). The U.S. nuclear modernization is aimed at achieving a credible nuclear force. Russia, also in need of modernization, views nuclear weapons as a way to achieve national objective. Russia wants to be a leader in global issues and views the conventional U.S. force as alarming. Nuclear weapons allows Russian to maintain parity with the U.S. There is evidence to suggest a disconnect on how each country views their policy on the use of nuclear weapons. Russia seeks ways to use nuclear weapons to achieve national objectives while the U.S. seeks ways to reduce the role of nuclear weapons.

Russia and U.S. Citizen Perspective

The data from the literature review and from the queries, demonstrate that the population does not always agree with their respective governments and policies (Gallagher, 2008). The majority of data on public opinion speculates that the public is for nuclear disarmament and using verifiable arms control agreements through international partners. In the U.S., data shows that Americans during World War II were supportive of using the atomic bomb. Two decades later, 70% of American still felt it

was the right thing and in 1998, 47% still felt the same way (Brown, 2014). As time from World War II passes, more and more Americans view nuclear weapons negatively. However, major attacks like Pearl Harbor and 9/11 swings the pendulum towards vengeance (Brown, 2014). But, the majority of American do not want to use nuclear weapons.

Critics to nuclear weapons in the U.S. believe nuclear weapons and nuclear modernization is unnecessary and unattainable with fiscal constraints. They argue that conventional force are necessary for the new security landscape of fighting terrorism and that ICBMs and LRSO are not essential (Dyer, 2016; Torbati, 2016). The U.S. should drastically cut their nuclear weapons and modernization plans and direct the appropriated money to conventional forces (Blechman, 2016). There are others that believe the current Commander in Chief is unreliable and should not be able to direct use of nuclear weapons without a congressional declaration of war (Lieu, 2017; Beres, 2017).

In 2000, a study in Russia showed that 76% of Russian believe nonproliferation increases global security and 72% saw the U.S. only implementing provisions that benefited the U.S. (Orlov, Safranchuk, & Moore, 2000). However, the Russian public sees nuclear weapons as a way to deter conventional militaries and neither the leadership nor public believe disarmament will happen in the near future. In fact, the majority of Russians support nuclear retention as a mean for security. Additionally, after the Crimea invasion, 69% of Russians thought the U.S. was unfriendly and in 2015, 54% believed there was a threat of nuclear war (Sokov, 2016). This could be the result of the Russian government running exercises and TV broadcasts to ensure the population is prepared for a nuclear attack (Mortimer, 2017).

Public perspective is difficult to ascertain. Each public is swayed by the media within their borders. Within the U.S., nuclear disarmament and limited use aligns with the policy makers. Although, the public in general would move to disarmament more quickly than the policy maker. In Russia, a study from 2007 showed the public also agreeing with reduction and decrease in reliance upon nuclear weapons (Kull, 2007). The data does not provide conclusive evidence that there is a difference between populations; however, the latest data suggests the Russian public views nuclear weapons as playing a central role in their security.

Recommendations for Action

The focus of this research is on understanding your adversary to properly introduce effective nuclear deterrence strategy. The Air Force, as implementers of the nuclear deterrent has a role in broadcasting the message of the nuclear force. It has been well documented that the U.S., Department of Defense, and the Air Force forgot about the nuclear infrastructure. After the Cold-War, the message of nuclear deterrence ceased. An Air Force and Defense Department campaign to ensure one, the force as a whole understands the role of nuclear deterrence and two, providing a clear message to the general public of what their nuclear deterrent is accomplishing and why it is needed.

Secondly, Russia has been shown multiple sources of data to be extremely frightful of the U.S. conventional force and the U.S. nuclear force. Russia's fear is the driving factor behind nuclear weapons being placed at the front. The Air Force, should focus on areas that could alleviate the apprehension and fear through transparency of operations where feasible.

Spectrum of Conflict with Nuclear Adversary

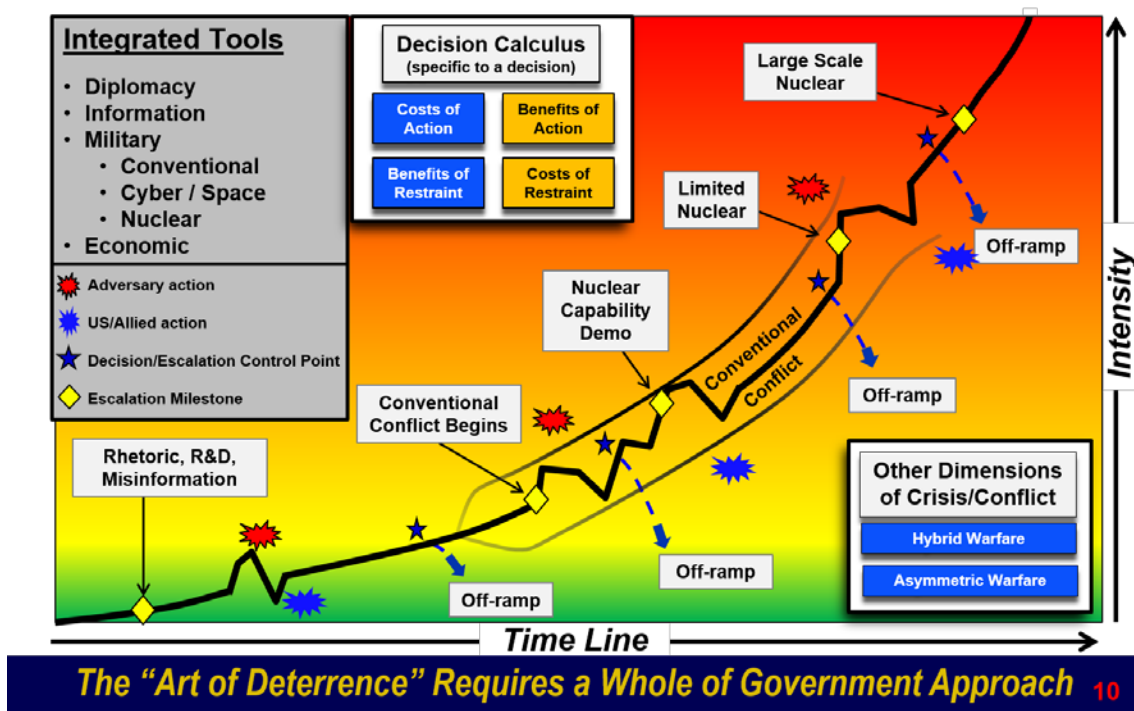


Figure 5: Spectrum of Conflict (Haney, 2016)

As a final point, Russia as seen throughout the literature seeks to lower the threshold of nuclear use by implementing an escalate to de-escalate strategy. This strategy rests on no one countering Russia's nuclear use with a nuclear use. Russia assumes that a relatively small tactical nuclear weapon can be used to end a conflict before the U.S. can mobilize their conventional forces. In accordance with United States Strategic Command's Spectrum of Conflict, Figure 5, Russia is offering an off ramp by using a nuclear weapon to an adversary or risk further nuclear escalation. U.S. Air Force and the U.S. should evaluate the decision calculus of a guaranteed nuclear response by the U.S. This position

does not hinder “no first-use” discussions but only a guarantee of a nuclear strike if a nuclear weapon is used. If Russia understands that a nuclear weapon will always be the response, would their decision calculus to escalate change?

Recommendations for Future Research

This research only scratched the surface of understanding the attitudes and feelings towards nuclear weapons and their use. More could be learned from an in-depth longitudinal studies of both countries. Recent opinion poll data was lacking and would be beneficial is understanding how the population thinks today after Russia’s military effort in Syria and their annexation of Crimea.

Summary

Nuclear deterrence policy and nuclear modernization has flooded the news cycles recently and will continue into the future as modernization moves forward and the new administration writes their Nuclear Posture Review. The first nuclear strategy we had was labeled a “containment” policy in a way to contain imperial communism from spreading. Our policies have evolved since the genesis years to a tailored response, provided the President with options. What will be President Trump’s nuclear policy?

President Trump’s policy will surely be influenced by the behavior of Russia and other nuclear and non-nuclear states. Modernization will happen or the capability will be lost. The American public does not see the primacy of nuclear weapons that the Russian government and public see. The data supports that there is a disconnect between how the U.S. policy makers and the U.S. public views nuclear weapons and how the Russian leadership and public view nuclear weapons. The disconnect comes from the belief in

how and why nuclear weapons are used. The U.S. sees the use and deterring nuclear attack while Russia views nuclear weapons a way to achieve national objectives.

UNITED STATES NUCLEAR DETERRENCE POLICY: PAST, PRESENT, and FUTURE



Abstract

This study focuses on the misconception between how the U.S. and Russia views their nuclear weapons and their use. During the transition of President's in the U.S., new nuclear policy is developed and implemented as the new administration responds to conflict and controversy. The U.S. views nuclear weapons as only a deterrent to nuclear weapon use and to discourage nuclear proliferation. The U.S. has reduced the role of nuclear weapons in their security strategy and placed greater emphasis on conventional capability. Conversely, this increased conventional capability is a primary motivator for Russian nuclear modernization and the increased role in their security strategy. Russia views nuclear weapons as a way to achieve national objectives. Using a structured query of public source documents, evidence was shown that a disconnect may exist with the policy makers view of nuclear weapons use and how the public views nuclear weapons use. There was not sufficient evidence showing one country is spending more than the other on their nuclear programs.

Recommendations

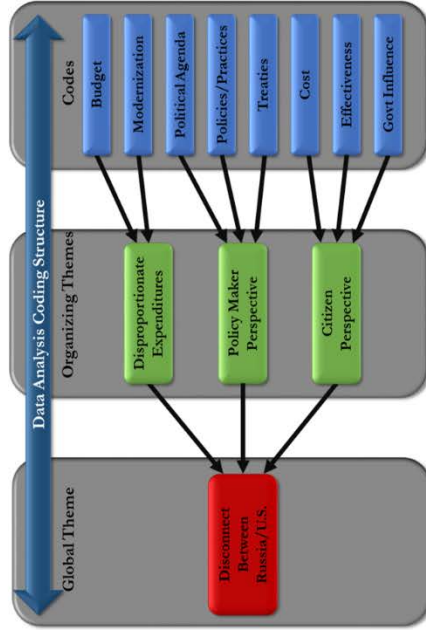
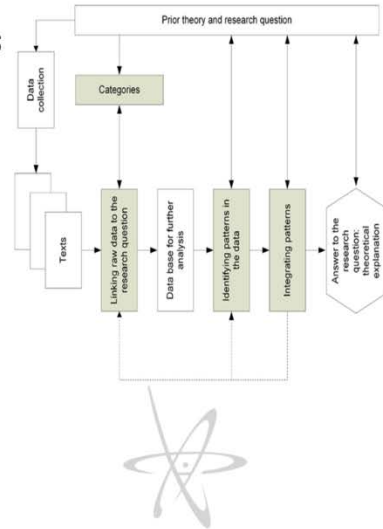
1. The general public and many in the military do not understand the role nuclear weapons play in their lives. The DoD and USAF must continue the campaign that recently started in educating the public.
2. Russia is rightful of the U.S. conventional capability and pushes them towards nuclear advancement. If nuclear arms control in the overall goal, the U.S. must eliminate Russia's fear using diplomacy.
3. Russia employs a escalate to de-escalate strategy in hopes the U.S. will not respond. Would Russia change its current use strategy if the U.S. implements a automatic in-kind retaliation strike with nuclear weapons if one is used?

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Research Goals

This study is an attempt to elaborate on and clarify the attitudes of the general public and policy maker between U.S. and Russia on nuclear weapon use through the examination of public source documents. While waiting for new guidance from President Trump, past policy decision shows that the U.S. seeks multilateral arms control while reducing the reliance and role of nuclear weapons (DoD, 2010). The goal of this research is to identify policies and public opinion concerning nuclear weapons between the U.S. and Russia.

As a result, the following research question has been developed: With the new geopolitical nuclear landscape, is there a disconnect between how the U.S. and Russia view the use of nuclear weapons?

The following are additional investigative questions that this research will answer:

IQ 1: Is there a disproportionate amount of spend between the U.S. and Russia concerning nuclear weapons?

IQ 2: Are there clear evidences of different public perspectives concerning nuclear weapons between U.S. and Russian policy makers?

IQ 3: Are there clear evidences of different public perspectives concerning nuclear weapons between U.S. and Russian citizens?

Methodology

This research used a structured query of public source documents as the primary data regarding opinions of U.S. and Russian nuclear weapons use. The public source documents were collected from the internet and represents data from government agencies of Russia and the U.S. Additionally, data used from news agencies represents a sampling of the different philosophies to capture the ideas and sentiments of public opinion. Finally, the data was identified, appraised, and synthesized using a strict protocol to ensure the reliability of data through triangulation.

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