

Evaluating the Effectiveness of Assurance and Deterrence Missions: AY17 Strategic Deterrence Research Papers

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AND DETERRENCE MISSIONS**

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Preface

During the Academic Year 2017, the U.S. Air Force Center for Unconventional Weapons Studies (CUWS) provided a Deterrence Research Group elective for the Air War College and Air Command and Staff College. Thirteen students (six from the Air War College, seven from the Air Command and Staff College) with broad and diverse backgrounds participated in this course, engaging in critical thinking about the nature of strategic deterrence and the role of nuclear weapons under strategic deterrence policy. The class took two field trips: one to Washington, DC, to engage with the Office of the Secretary of Defense policy-makers, Joint Staff and Air Staff offices, the State Department, and the Central Intelligence Agency. The other field trip was to Los Alamos National Laboratory and Sandia National Laboratory to discuss the technical side of nuclear weapons.

Dr. Mel Deaile, Dr. Todd Robinson, Col. Glen Hillis, and Mr. Brad Hammitt were the instructors of this elective and faculty advisors for student research, in particular the Air War College professional study papers. The research questions came from the commander, U.S. Air Force Global Strike Command, and the Deputy Chief of Staff for Nuclear Integration and Strategic Stability (HAF/A10). General Robin Rand asked the Deterrence Research Task Force to investigate how one might measure the effectiveness of bomber assurance and deterrence missions, given the long reliance on these military missions to achieve deterrence goals and the relative unknowns as to how political and cultural measures change based on the completion of such efforts. The results of the best student research papers addressing this question are presented in this book.

CHAPTER 1

Introduction

Deterrence, as Thomas Schelling (1956) famously argued, is achieved by credibly signaling the ability to enforce deterrent threats and the willingness to do so. Throughout much of the history of its nuclear weapons program, the use of strategic airpower has been an integral component of the United States' signaling strategy. The first recorded instance of such an endeavor occurred in 1946 when the United States, in response to the forcing down of two transport planes carrying American personnel by the government of Premier Marshal Tito of Yugoslavia, flew nuclear weapons-capable aircraft near the Yugoslav border. This show of force, at least in part, led to the release of the passengers and crew and prevented further action on the part of the Yugoslavian government.

The most recent incarnations of the use of airpower to achieve strategic deterrence are termed Bomber Assurance and Deterrence (BAAD) missions. Begun in 2012, these missions led by U.S. Strategic Command (USSTRATCOM) are designed to both demonstrate the credibility of what is generally considered the most flexible leg of the U.S. strategic nuclear triad and provide essential training opportunities for its personnel.

For AY 2018, the Deterrence Research Task Force at the Air University was tasked with assessing the effectiveness of these missions and deterrence missions more generally. Through the course of our investigation, it was found that neither USSTRATCOM nor the U.S. Air Force have publicly articulated a set of expectations for these missions such that an analysis of their effectiveness using internally designed metrics was possible. One reason for this is that many of the details of these missions are classified. Another has to do with roles and responsibilities. As a force provider, the sponsoring organization of this research project, Air Force Global Strike Command (AFGSC), is principally concerned with whether a mission is conducted according to its operational design rather than if it had a specific effect on an adversary or ally. Whether these missions have psychological impacts on the intended targets and how such an effect could be assessed is outside the scope of AFGSC.

In such instances, it is a common practice to turn to the extant literature to determine what kind of effects, in theory, we might expect from the conduct of such missions. Unfortunately, with few exceptions, deterrence and assurance literature is similarly lacking with respect to the articulation of specific effects that these missions should have.

The members of the Deterrence Research Task Force were thus tasked with determining both what observable effect(s) such missions should have, if deterrence and assurance were their ultimate goals, and whether it is possible to determine whether they seem to be having said effect(s).

The analysis thus begins with an investigation of the relationship between deterrence and assurance presented by Col. Christopher King. He explores the significance, or lack thereof, of NATO's change in policy from one focusing on assurance to one focusing on deterrence in Fall 2016. He argues that the focus on assurance by NATO members of the past few decades has left its deterrent capability deficient. He suggests that this deficiency can be overcome if the members of the alliance fulfill their pledge to spend two percent of their gross domestic product (GDP) on defense spending by 2024.

In Chapter 3, Maj. Erik Saks explores the role of public affairs messaging in the conduct of effective deterrence and assurance missions. Using content analysis on a sample of BAAD missions, three targeting Russia, three targeting China and three targeting North Korea, he finds that a correlation exists between the coverage of the BAAD activity in the target nation's state-run media and two factors: the level of PA engagement and the target state's perceived threat by the BAAD activity.

Col. Eric Paulson investigates the various forms of BAAD missions in Chapter 4 to determine what might provide the most effective assurance. Using survey research of students at the Baltic Defense College, he finds that, at least for those missions conducted in Eastern Europe in support of NATO, missions with a physical, in-theatre component are the ones that seem to achieve assurance success.

Lt. Col. Richard Carver presents research on the role of NATO dual-capable aircraft (DCA) in Chapter 5. He traces the historical roots of the fighter DCA mission and assesses its continued relevance given the changing geopolitical environment witnessed over the last decade. He finds that tactical nuclear forces today lack the technical and political credibility to be an effective deterrent.

In Chapter 6, Maj. Kenneth Howell investigates the effectiveness of the assurance component of the BAAD mission. Focusing on the Republic of Korea, he analyzes public sentiment towards the missions using qualitative analysis. He

finds that, while they do seem to be viewed positively by both military elites and the general public, this perception may be waning in light of recent aggressive behavior by North Korea.

In the concluding chapter, Maj. Jonathan King uses statistical analysis to analyze the effect on both anti-US and anti-South Korean sentiment in North Korean state-run media after BAAD missions have been flown. He finds that BAAD missions cause an increase in such rhetoric. This may suggest, he argues, that deterrence has been achieved, or at least that the government of Kim Jong Un is affected by the conduct of these missions.

CHAPTER 2

NATO Is Changing Its Posture Against Russia From Assurance to Deterrence: Does It Matter?

Christopher J. King, Lieutenant Colonel, United States Air Force

“We are prepared to fight and win if we have to ... our focus will expand from assurance to deterrence, including measures that vastly improve our overall readiness.”

- General Phillip M. Breedlove, former
Supreme Allied Commander Europe¹

Russia’s seizure of Crimea in Ukraine rang alarm bells in the West, raising fears of a resurgent Russia intent on regaining its former dominance in Eastern Europe. Over the last two years, the North Atlantic Treaty Organization (NATO) has renewed its focus on defending its member nations from an aggressive and resurgent Russia. This focus encompasses a switch from assurance, which the United States and NATO have relied on during the post-Cold War era, to deterrence, which is more in line with its posture against the former Soviet Union. A deterrence posture brings with it a reliance on many tools from the Cold War that are needed to overcome the failure of assurance in Russia’s recent aggressions.

NATO was created in 1949 as part of a broader effort to serve three purposes: deterring Soviet expansionism, forbidding the revival of nationalist militarism in Europe through a strong North American presence on the continent, and encouraging European political integration.² During the Cold War, NATO pursued deterrence by both punishment and denial.³ Deterrence by punishment sent a message based on “unactable damages,” which included a threat of massive nuclear retaliation for any Soviet attack – conventional or nuclear.⁴ Through deterrence by denial, NATO deployed a forward defense at its eastern border with the Soviet

Union in order to make it physically difficult for the communist nation to achieve its expansionist objective.⁵

After the fall of the Soviet Union, NATO's deterrence posture deteriorated as the worldview shifted. Its forces, conventional and nuclear, were dramatically downsized and member nations consistently reduced their defense spending contributions.⁶ Additionally, NATO experienced an atrophy of deterrence know-how, including planning, exercises, messaging and decision-making.⁷ This is because NATO's post-Cold War security environment changed. NATO became more involved in crises like the western Balkans and Afghanistan.⁸

Following the Cold War, NATO no longer considered Russia an adversary and some of the former states have since become members of the alliance. As a result, the size of NATO's military presence has been significantly reduced over the years. There may also be a question of the commitment of some of its members when it comes to monetary contributions. Each nation is expected to spend the equivalent of two percent of its gross domestic product (GDP) in support of NATO.⁹ However, many nations fall very short of that number. In fact, of the 28 countries in the alliance, only five — the United States, Greece, Poland, Estonia and the UK—meet the target.¹⁰

However, Russia's aggression against Ukraine beginning in 2014 and the rise of the Islamic State has been a turning point in NATO's focus on defense.¹¹ In response, NATO has boosted its political and military responsiveness as well as made efforts to increase the readiness of its force.¹² A good example is its Readiness Action Plan (RAP) measures—on land, at sea, and in the air—which have been taken to reassure Allies in Eastern Europe.¹³

The United States has done its part to demonstrate its commitment to NATO over the past two years. On June 3, 2014, President Barack Obama announced the European Reassurance Initiative (ERI) in order to counter Russia's provocative military actions.¹⁴ Congress provided nearly a billion dollars to fund the initiative.¹⁵ ERI consists of three key pillars: (1) Operation ATLANTIC RESOLVE, which includes a persistent, rotational presence of U.S. forces in Central Europe deployed from bases in the United States and Western Europe; (2) Provision of security assistance to Georgia, Moldova and Ukraine to help them better defend themselves against Russia and be able to work more effectively with U.S. and NATO forces; and (3) a commitment to improving responsiveness of U.S. forces to contingencies in Central Europe including “exploring initiatives such as prepositioning of equipment and improving reception facilities in Europe.”¹⁶

The Russian threat has certainly garnered the attention of other NATO members. Western European defense spending cuts that have endured for the past two decades have come to an end. Norway is planning to purchase 52 F-35 fighters,

replace its submarine fleet, purchase new surveillance aircraft, upgrade tank units, and acquire new anti-aircraft systems.¹⁷ The Czech Republic, Estonia, Latvia and Lithuania have also decided to increase their defense spending.¹⁸ Even neutral Sweden is planning for an additional \$2 billion to purchase armored personnel carriers, artillery, anti-tank weapons and air defense systems.¹⁹

NATO's posture change from assurance to deterrence at the 2016 Warsaw Summit is most notable in NATO's intent to deploy four battalions to Poland and the Baltic States; with three of those battalions provided by the UK, Germany, and Canada. This is clear evidence that members of the alliance are doing more to share the burden. It also reflects the seriousness of their perception of Russia's recent aggressions.

Responding to NATO's shift from assurance to deterrence, the United States is increasing 2017 ERI funding levels to \$3.4 billion.²⁰ This will permit more rotational U.S. forces in Europe, more training and exercises with NATO allies, more prepositioning and warfighting gear.²¹ It will also provide infrastructure improvements to facilitate a more credible defense posture for the United States and its NATO allies.²² The additional funding ensures that all US military services will augment their presence and enhance deterrence in Europe through stepped-up rotations and potential deferral of previously planned force reductions.²³ Additionally, ERI will expand the scope of 28 joint and multi-national exercises, which annually train more than 18,000 U.S. personnel alongside 45,000 NATO allies and Partnership for Peace personnel from 40 countries.²⁴ However, it does not fund an increase in the number of U.S. troops permanently stationed in Europe, but it will support the presence of additional rotational forces that help us meet our collective defense obligations to our NATO allies.²⁵

In addition, since the end of the Cold War, NATO has consciously and conspicuously de-emphasized nuclear weapons in its defense policy.²⁶ Consequently, NATO no longer possesses the policies and capabilities needed to deter, much less respond to, a limited Russian nuclear strike.²⁷ Russia, on the other hand, has increasingly emphasized nuclear weapons in its national security planning since the end of the Cold War.²⁸

During the Ukraine crisis in August 2014, Vladimir Putin said, "I want to remind you that Russia is one of the leading nuclear powers. ... It's best not to mess with us."²⁹ Russia has also indicated that, if necessary, it might deploy nuclear weapons in Crimea, Kaliningrad, and Syria.³⁰ Putin considered alerting Russian nuclear weapons during the Crimean crisis, stating, "We were ready to [put nuclear forces on alert] ... It was a frank and open position. And that is why I think no one was in the mood to start a world war."³¹

As NATO again faces a real nuclear threat from Moscow, it must once again, like during the Cold War, cultivate a serious policy of and capability for nuclear deterrence.³² To deter the Russian nuclear threat, NATO needs to realign its priorities by increasing the importance of its nuclear deterrence mission and considering possible modifications to its conventional and nuclear posture.³³

Deterrence and Assurance

Keith Payne defines deterrence as “a strategy of issuing threats to cause another to decide against an unwanted behavior.”³⁴ Rationality, the use of threats and messaging all play a role in effective deterrence.

Rationality is important in that it must be understood that not all states in a particular contest have the same values or the common misperception that all states agree on what is or is not rational. In fact, a rational actor takes actions to maximize its utility based on what it values. Knowing and understanding what your adversary values goes a long way in helping decision makers make predictions about what an adversary will do in various scenarios to advance its national interests.

As mentioned above, deterrence is a strategy of using threats. According to Payne, the recipient of those threats “must have the will and capability to comply with the issued demand, and it must understand, believe, and fear the deterrent threat to the extent that it chooses to comply.”³⁵ A prime example of the successful use of threats in deterrence was the explicit threat of nuclear retaliation by the United States against the Soviet Union during the Cold War.

The enemy must know which actions are proscribed in order to be deterred. Therefore, a state must clearly “message” to the adversary that it intends to deter what the actions are, what the consequences will be to the adversary if it doesn’t comply, and what the reward will be if it does comply. The “reward” may simply be the absence of punishment, or it may be a tangible reward.

Assurance involves convincing an ally of the United States’ commitment to, and capability for, extended deterrence for the purpose of dissuading the ally for the purpose of dissuading the ally from developing its own nuclear arsenal.³⁶

It is difficult to characterize a framework or theory for assurance. However, achieving assurance can be complex and demanding. In fact, the task of building and sustaining trust and confidence among people, organizations, and countries proves to be more difficult than deterrence.³⁷ Another thing to consider is that the United States and its allies do not necessarily assess credibility in a similar fashion. The United States’ reason usually revolves around shared interests, its own capability, formal agreements, policy, and intent.³⁸ Affected allies, on the other hand, pay close attention to how the United States’ commitments might falter when

fulfilling them becomes too risky or costly.³⁹ As a result, a strong credibility of extended deterrence is vital to achieve necessary assurance to allies.⁴⁰

Also, efforts taken in the name of assurance can potentially have negative side effects.⁴¹ That is, these efforts might cause allies to conduct activities that are not in the best interests of the United States despite possibly being in the ultimate interests of the ally.⁴² The ambiguous assurances of the United States on matters relating to China and Taiwan are prime examples of avoiding these negative side effects.⁴³

In order to be successful in its assurance efforts, the United States must use all forms of national power. Success depends on coercive diplomacy as much as deterrence capability.⁴⁴ Deterring certain actions and the ability to influence events more generally, sometimes coercively, is vital to the strength of security relationships.⁴⁵ Finally, to be successful at assurance, the United States must be seen as capable of adapting to shifting power alignments in ways acceptable to its security partners.⁴⁶

NATO's Response to Russia's Resurgence

The resurgence of Russia has spurred NATO into action. Since 2015, 16 NATO members have increased spending on defense.⁴⁷ Overall, European defense spending increased by 8.3 percent in 2016⁴⁸. Additionally, the United States has quadrupled its military spending for European operations from \$789 million to \$3.4 billion.⁴⁹ Gen. Philip M. Breedlove, before departing his post as Supreme Allied Commander Europe, said that NATO is “moving from assurance to deterrence.”⁵⁰

Unfortunately, this shift from assurance to deterrence follows years of underfunding by NATO members that has led to “alarming deficiencies in the state of NATO preparedness” according to the British government.⁵¹ This is especially evident among its four largest members—the United Kingdom, Germany, France and the United States. For example, as of the summer of 2016, spending cuts have reduced the Royal Navy from 89 ships to 65.⁵² Great Britain's combat aircraft fleet shrank to 149 warplanes from 189; and its helicopter fleet had been reduced to 164 from its 2008 levels of 257.⁵³ Of Germany's 109 Eurofighters, only 42 are in flying condition.⁵⁴ Additionally, Germany only had 225 Leopard II tanks, compared to more than 2,000 during the Cold War.⁵⁵ Also, France has eliminated 8,000 personnel from its military in the past two years while recently decreasing its air fleet by 30 percent and its warship inventory to 19.⁵⁶ The United States, for its part, only had 26,000 troops stationed in Europe in 2016 compared to 40,000 in 2012 and 300,000 during the Cold War.⁵⁷

Now, NATO began planning to deploy battalions in Poland, Latvia, Estonia, and Lithuania to deter Russia from conducting activities similar to those carried out

in Ukraine.⁵⁸ It is hoped that this will deter Putin from the ambiguous, anonymous warfare he has waged in Ukraine.⁵⁹ The United States, for its part, is increasing its deterrent strength by permanently basing fully manned brigades in Europe.⁶⁰

Where Is NATO Headed?

Since the end of the Cold War, and especially after the turn of the century, the United States and NATO have backed away from the strong deterrence efforts demonstrated against the former Soviet Union, allowing a resurgent Russia to strike fear into many of NATO's newest, easternmost nations. The actions taken by the United States and NATO since Russia's annexation of Crimea and intervention in Ukraine are only a starting point for a much more significant policy approach switching from assurance to deterrence. The following are ways that NATO is headed toward achieving this significant policy change.

A push for each NATO member to meet the goal of contributing two percent of its GDP toward military spending in support of the alliance.

To address the security vacuum created in Europe by the reduction of the U.S. security footprint in Europe and Europeans' loss of military capability, NATO members pledged in 2014 to increase their defense spending to two percent of their GDP by 2024.⁶¹ Following in the footsteps of previous administrations, President Trump is calling on NATO members to contribute more to its own security.⁶² Concerned with these members' commitment to the alliance, President Trump has been more forceful than his predecessors, calling the alliance "obsolete" and accusing some members of not spending their fair share.⁶³ In his inaugural address, the president said the United States has for too long "subsidized the armies of other countries while allowing for the very sad depletion of our military."⁶⁴

Defense Secretary Jim Mattis backed up President Trump's stance at his first meeting with NATO officials in Brussels by warning that U.S. support could depend on whether other NATO member met their spending commitments.⁶⁵ He said, "Americans cannot care more for your children's future security than you do. I owe it to you to give you clarity on the political reality in the United States and to state the fair demand from my country's people in concrete terms."⁶⁶ He made it clear that America will meet its responsibilities, but that there are limits to American support.⁶⁷

In fact, only five of NATO's 28 members are meeting the alliance's target of spending at least two percent of GDP on defense.⁶⁸ These include the United States, Estonia, Poland, Greece, and the United Kingdom.⁶⁹ The United States spends the highest proportion of its GDP on defense at 3.61 percent.⁷⁰ Meanwhile, Germany only spent 1.19 percent and France contributed 1.78 percent.⁷¹ On the much lower end, Canada, Slovenia, Spain and Luxembourg all spent less than one percent.⁷² It

should be noted that defense spending is increasing since members agreed to aggressively pursue the two percent spending target in response to Russia's resurgence.⁷³ However, this spending must continue in an upward trajectory and delinquent NATO members must hasten their attainment of the stated military spending goal.

Permanent basing of a deterrent force in Eastern Europe.

Despite the rhetoric from then-candidate Donald Trump and the current Trump Administration, NATO is a key component of American security and global balance. The very existence of the alliance reduces the likelihood of another European conflict resulting in the United States engaging in war with another large power. The alliance itself provides an invaluable security guarantee underwritten by the United States. Proponents believe the stationing of American troops on an ally's soil (think Baltics and Poland) sends a clear message to potential adversaries that the United States and NATO is willing to go to war if that tripwire is broken.⁷⁴

However, there is disagreement among NATO member states regarding the 1997 Founding Act on Mutual Relations, Cooperation and Security between NATO and the Russian Federation (NATO—Russia Founding Act) as to whether permanent basing of NATO soldiers in Central and European countries is a violation of the agreement.⁷⁵ As to the question of permanent bases, the act states:

“NATO reiterates that *in the current and foreseeable environment*, the Alliance will carry out its collective defence and other missions by ensuring the necessary interoperability, integration, and capability for reinforcement rather than by additional permanent stationing of substantial combat forces. Accordingly, it will have to rely on adequate infrastructure commensurate with the above tasks. In this context, reinforcement may take place, when necessary, in the event of defence against a threat of aggression and missions in support of peace consistent with the United Nations Charter and the OSCE [Organization for Security and Co-operation in Europe] governing principles, as well as for exercises consistent with the adapted CFE [Conventional Armed Forces in Europe] Treaty, the provisions of the Vienna Document 1994 and mutually agreed transparency measures. Russia will exercise similar restraint in its conventional force deployments in Europe.”⁷⁶

Proponents claim the key phrase in the act “in the current and foreseeable security environment” clearly gives the United States and NATO the green light to permanently base NATO in Central and Eastern European countries.⁷⁷

Why? Because the act was agreed upon nearly 20 years ago.⁷⁸ Since then, Russia has engaged in a series of actions that have altered the “current and foreseeable security environment” quite significantly since the early years of the post-Cold War period when Russia was not considered a threat but a potential partner across a wide range of activities.⁷⁹ In today's security environment,

proponents argue the United States should publicly proclaim that the act does not prohibit the establishment of permanent bases in Central and Eastern Europe.⁸⁰

Review NATO nuclear deterrent

As mentioned before, nuclear weapons have become a predominant element of Russia's national security strategy and military doctrine over the past few years.⁸¹ In its switch to a deterrence posture, NATO must strengthen its existing nuclear deterrence strategy and capabilities to deter a Russian nuclear attack, counter the nuclear coercion of Russia's hybrid warfare strategy, and provide assurance to member nations.⁸² But, while Moscow is currently modernizing all three legs of its nuclear triad—intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and long-range bombers, the provider of extended to deterrence to the member nations of NATO (the United States), is only currently discussing these upgrades which are projected to cost nearly \$400 billion over the next 10 years alone.^{83 84}

Deployment of nuclear weapons is a sticky subject in NATO. Changes to NATO's nuclear posture will be a difficult and controversial undertaking within the Alliance.⁸⁵ Some members believe that bolstering NATO's nuclear posture destabilizes the region. However, a strong nuclear posture is necessary to deter Russia.

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CHAPTER 3

Assured Deterrence: An Analysis of U.S. Bomber Mission Messaging

Erick Saks, Major, United States Air Force

“With any strategic, operational or tactical planning or execution, we will think first and foremost about perception. Everything we do – or often do not do – sends a message to multiple audiences.”¹

– General James N. Mattis as
Commander, U.S. Central Command

Facing multiple, simultaneous challenges, U.S. military leadership expressed in the 2015 National Military Strategy the assessment that America is facing the most unpredictable global security environment in more than 40 years.² The collapse of the Soviet Union resulted in U.S. military efforts – and consequently its funding – to focus principally upon counterterrorism and counterinsurgency operations. Yet in subsequent years, state actors such as Russia, China and North Korea have invested tremendous resources to the advancement of their conventional and nuclear forces, wearing away at the comparative military advantage held by the United States.³ The increasing capability and murky intent of these nuclear-capable actors has put America’s leadership in a position where action is needed to demonstrate its capability and resolve in defending itself, its treaty allies and its partners. Now, perhaps more than ever before, the United States is relying on the stabilizing influence of its strategic deterrent. Serving to help meet this requirement, Air Force Global Strike Command provides its strategic bombers – the B-1B Lancer, the B-2 Spirit and the B-52H Stratofortress – to combatant commanders in order to fly Bomber Assurance and Deterrence (BAAD) missions. These signaling missions range from single sorties to exercises comprised of multiple missions to long-term power projection deployments. While BAAD missions are the deterrence staple of the bomber leg of the triad,

little is known about the effectiveness of these missions. Short of the complete failure of assurance or deterrence efforts resulting in nuclear proliferation or war, it is nearly impossible to accurately measure the effectiveness of these sentiments among allies, partners and potential adversaries. As the premise behind BAAD missions is signaling capability and resolve, this study will focus on the associated public messaging efforts. In general, BAAD missions are accompanied by a communication campaign led by Public Affairs (PA), the Air Force organization tasked with advancing priorities and achieving mission objectives through integrated planning, execution, and assessment of communication capabilities.⁴

The purpose of this research study is to examine PA communication efforts in order to answer the question how effective are BAAD messaging efforts at reaching targeted potential adversaries. The paper is divided into three parts: 1) a methods section will explain the specific research design used for the analysis of the data, 2) a findings/discussion section will describe the results of the analysis and offer the implications of those findings, and 3) a recommendations section provides suggestions for future practice and analysis based on the study.

Method

In 2015 during his confirmation hearing to be the chairman of the Joint Chiefs of Staff, Gen. Joseph F. Dunford Jr., prioritized the United States' national security dangers as Russia, China and then North Korea.⁵ Consequently, the methodology for this research relies upon an analysis of nine case studies identified by the researcher in cooperation with the PA offices for the theater air component headquarters for the two regions where these greatest challenges reside – Europe and the Pacific. Relying on communication efforts and media response for effectiveness of messaging is unlikely to provide an accurate measure of sentiment, especially among states with high-controlled media. Therefore, this research focuses simply on message penetration effectiveness. The hypothesis guiding this research is that if BAAD PA messaging is being received by target audiences, it will result in media coverage and/or public statements that reflect or challenge the messages. Thus, the analysis includes distilment of applicable PAG and released PA products into basic messages, which are sought in corresponding media coverage by targeted potential adversaries. In order to maintain consistency across the two Air Force major commands (MAJCOMs) responsible for these three targeted states, this research examines only the PA products released on the applicable MAJCOM websites. The nine case studies examined include three BAAD missions targeting each of the three above-mentioned states. These missions were selected based upon the following criteria: 1) they needed to occur within the 2016 calendar year, 2) unclassified Public

Affairs Guidance (PAG) needed to be available for the mission, 3) they needed to involve the presence of a U.S. strategic bomber, and 4) they preferably needed to represent a variety of BAAD mission types, such as single flights, exercises, and deployments.

The three BAAD missions intended to deter Russia are also meant to assure NATO member states and the United States' European partners. The first case study in this series is the 44th occurrence of the annual Baltic Operations (BALTOPS) exercise. Held from June 3 to 19, 2016 in Estonia, Finland, Germany, Sweden, Poland, and throughout the Baltic Sea, BALTOPS was a joint, multinational, maritime-focused exercise designed to enhance flexibility and interoperability.⁶ Among maritime, ground, and air forces participation, the exercise also featured B-52 involvement.

The second case study is an exercise known as Polar Roar, which involved three nonstop, simultaneous strategic bomber flights utilizing B-52s and B-2s. The exercise began on July 31, 2016 and consisted of three sorties: from the United States to the North and Baltic Seas, from the United States around the North Pole and over Alaska, and from the United States over the Pacific Ocean to Alaska's Aleutian Islands. During the operation, the bomber crews strengthened their interoperability with key allies and partners, demonstrating the ability of the U.S. bomber force to provide a flexible and vigilant long-range global-strike capability.⁷

The final case study in the European theater is Exercise Ample Strike, a Czech Republic-led, multi-national live exercise that ran from Sept. 5 to 16, 2016. The exercise included participation from a B-52 and two B-1s with the aim of increasing proficiency of forward air controllers (FACs) and joint terminal attack controllers (JTACs) and improving standardization and interoperability across NATO allies and partners.⁸ The bomber aircraft participated in the Slovak International Air Fest (SIAF) 2016 in conjunction with the exercise.

For the examination of targeted state's media, this research examined coverage by the state-run agency Russia Today (RT). RT's first international news channel launched in December 2005. The television network currently consists of "three round-the-clock news channels broadcasting in English, Arabic and Spanish, a documentary channel airing in both English and Russian, a video news agency, as well as online news platforms in Russian, German, and French."⁹ Conceived as a soft-power tool to improve Russia's image abroad, RT is now available to 700 million people in more than 100 countries and is widely thought of as "an extension of former President Vladimir Putin's confrontational foreign policy."^{10,11}

The three BAAD missions intended to deter China are meant to assure Pacific allies and partners. The first case study among this grouping is the participation of a B-52 in the Singapore Air Show on Feb. 21, 2016. The Air Show provided an opportunity for the United States to demonstrate its commitment to the security of the Indo-Asia-Pacific region, promote equipment interoperability, display the flexible combat capabilities of its military, and create relationships that support partnership building throughout the region.¹² Along its way to the air show, the B-52 flew above the much-contested South China Sea.

The second case study in this series is a bomber assurance and deterrence deployment of three B-2s from Whiteman Air Force Base, Mo., to Diego Garcia, British Indian Ocean Territory. During the deployment, which began on Mar. 8, 2016, the B-2s conducted training with the Royal Australian Air Force. The deployment was intended to ensure the bomber crews maintained a high state of readiness and proficiency, to provide opportunities to integrate capabilities with key regional partners, and to demonstrate the United States' commitment to regional security.¹³

The final case study focused on deterring China with a sortie that involved the first single formation of all three American strategic bomber types in the vicinity of the disputed Pacific waters. The B-1, B-2 and B-52 flew in a formation near Anderson Air Force Base, Guam, in a demonstration of the continuing American commitment to stability and security in the Indo-Asia-Pacific region.¹⁴

The analysis of Chinese response to American BAAD missions is limited to coverage in Xinhuanet. Sponsored by Xinhua News Agency –China's official press agency – the state sees Xinhuanet as “an important information organ of the central government, and an important platform for building up China's online international communication capacity.” Xinhuanet operates 24 hours a day in numerous languages including Chinese, English, French, Spanish, Russian, Arabic, Japanese, Korean, Tibetan, and Uygur. The Xinhuanet mission is to “publicize China and report the world,” and it works toward this goal by releasing approximately 15,000 news stories each day, about 12,000 of which are about China.¹⁵ A *Reporters Without Borders* report identifies Xinhua as an “organ of propaganda in the service of the interests of the Chinese Communist Party,” and claims that no news in China, “especially on sensitive issues, should reach the media without the say-so of the all-powerful Xinhua.”¹⁶

The three BAAD missions intended to deter North Korea were meant primarily to assure South Korea and Japan. The first case study in this series was a BAAD mission the United States flew in response to North Korea's fourth nuclear test. On Jan. 10, 2016, a B-52 flanked by American F-16C and South

Korean F-15K fighter jets performed a low flyby near the South Korean city of Osan, less than 50 miles from the peninsula's Demilitarized Zone (DMZ).

Similar to the first case study, the second study is the United States response to North Korea's fifth nuclear test. Two B-1s from Andersen conducted training with fighter aircraft from the Japan Air Self Defense Force (JASDF) before joining U.S. and South Korean fighters for a low-level flight in the vicinity of Osan on Sept. 13, 2016. The mission was intended to "demonstrate the solidarity between South Korea, the United States, and Japan to defend against North Korea's provocative and destabilizing actions."¹⁷

The final case study involves another unique BAAD mission by the B-1 strategic bomber. On Sept. 21, 2016, the aircraft performed a low-level flight near the DMZ, the closest a B-1 has ever flown to the border. As part of the mission, the bomber also landed at Osan Air Base, South Korea, marking the first time a B-1 has landed on the Korean peninsula since 1996.¹⁸

The media analysis for North Korea is based upon coverage by Korean Central News Agency (KCNA). Founded in December 1946, KCNA is North Korea's only news agency, speaking for the Workers' Party of Korea and the North Korean government. Managed in Pyongyang, it has branches in provincial seats and in some foreign countries, transmitting news in English, Russian and Spanish. The agency serves as the primary mouthpiece for the North Korean authoritarian government.¹⁹ According to analysts and defectors, "any message published by the agency is part of an elaborately coordinated effort that requires much the same work as a screenplay," resulting from a "slow-grinding process involving dozens of meetings and thousands of people — strategists, storytellers, ideological advisers and journalists."²⁰

Findings/Discussion

The results of the BAAD-related communication efforts in influencing target nation media coverage represented a diverse range of message penetration, yet the cause for the disparity is difficult to discern. The factors that appear to play the largest role in message effectiveness are a combination of the level of PA engagement and target state's level of perceived threat by the BAAD activity. The following case studies demonstrate that target nation message penetration appears to be highest when the both PA engagement and perceived threat are highest. The remainder of this section will examine each of the countries and BAAD missions individually, gauging the responses for each operation. The section will also identify limitations inherent in this style of qualitative research.

Russia-Focused BAAD Activities

Of all of the BAAD activities examined in this research, BALTOPS 2016 appears to have had the most significant response in target nation media. Like many such operations, the PA posture for this exercise was response to query (RTQ) only during the planning stages and shifted to an active posture following the passage of its critical cancellation date (CCD) and the initial announcement of the event by the headquarters element.²¹ The PAG provided an emphasis on messages including the following six themes: collective defense and cooperative security, credible force, trusted relationships, strategic access, interoperability and two carrier strike groups in theater.²² The U.S. Air Forces in Europe and Air Forces Africa (USAFE-AFAFRICA) website included nine articles or stand-alone photos highlighting the exercise. All except two referenced the participation of a strategic bomber platform. The themes were clearly articulated throughout the publications, including quotes reflecting the same sentiment as the following statement from a participating U.S. commander: “The ability to integrate strategic bomber forces in a variety of missions is key to ensuring the United States is able to honor our security commitments.”²³ In addition to this robust PA effort, the exercise included factors ensuring raising the perception of threat by the target state. Despite the fact that BALTOPS had been held for 44 years, it still represented a threat based upon its size and scope and the proximity NATO forces operating in the Baltic region to Russia’s border. The resulting Russian coverage in RT included seven articles referencing the operation by name. Two included references to the participation of the strategic bomber. One of these articles was basically a restatement of the news releases issued by U.S. Strategic Command and U.S. Naval Forces Europe-Africa with no added commentary, and it even included links to the releases.²⁴ The second article was an editorial with a clearly unreceptive perspective of the exercise, referring to it as a “two-week gang bang” and claiming that “if you think Russia is comfortable with these annual war dances, you’re probably watching too much Western television.”²⁵

While far from a conclusive relation, the lacking PA messaging for the other two BAAD case studies focused on Russia and the substantially limited target nation media coverage provides a notable observation. Following mission completion, the PAG directed an active PA posture for Polar Roar. However, USAFE-AFAFRICA released only one publication on its website, which simply mirrored the public statement included in the PAG.²⁶ Unfortunately, the themes of interoperability and readiness, assurance and deterrence were only superficially included in this statement. Despite the assurance in the article that “more information will be available closer to mission completion,” no further releases were issued on the USAFE-AFAFRICA website.²⁷ In addition to the lackluster PA effort, the mission included limited factors to increase the perception of threat.

The duration and scope of the mission were limited, although the introduction of U.S. strategic bombers near Russia certainly added to the equation. The Russian media coverage resulting from the exercise included only one article that specifically identified the exercise and the strategic bombers. The article closely reflects a release issued on the NATO website about the exercise and even includes a link to the original. The only additional material in the Russian article that was not included in the original NATO release is a statement claiming that “the route chosen for the drill is not incidental. After leaving the Baltic, the planes will fly over the North Pole, an area of increasingly substantial territorial claims, to which Russia is dedicating unprecedented military resources.”²⁸ The NATO release did not reference Russia.

Finally, Ample Strike demonstrates the most notably absent use of PA messaging to achieve strategic impact. The PAG sets the stage for a robust engagement effort calling for an active PA posture with opportunities to highlight U.S. units at the Slovak International Air Fest prior to Ample Strike, the exercise itself in the Czech Republic, and a NATO Days event that included a substantial community engagement event following the exercise.²⁹ Additionally, the PAG delegated USAFE-AFAFRICA PA as the lead agency for messaging following the initial public announcement. Yet, the coverage of the Ample Strike-related activities on the USAFE-AFAFRICA website was limited to three short publications: a stand-alone photo, and two three-paragraph news releases. Ample Strike represented a potentially highly newsworthy event with the distinctiveness of JTACs and FACs controlling strikes from U.S. strategic bombers in a nation already experiencing strained relations with Russia. Additionally, the visuals and accompanying narrative would likely have been stimulating enough to generate interest. Yet, the Russian media failed to acknowledge the exercise at all.

China-Focused BAAD Activities

The Pacific Air Forces (PACAF) approach to BAAD differs from the model in Europe in the sense that they contend that the strategic bombers deployed to and transiting through the theater are part of their continuous bomber presence (CBP). Based upon this approach, PACAF generally does not issue PAG for each planned BAAD event, but rather use a set of standard CBP guidance, which they update as needed.

The first China-focused BAAD activity analyzed in this study was the 2016 Singapore International Airshow. A specific set of PAG was issued for this event, emphasizing an active PA posture and four themes: building partner capacity and interoperability, allies and partners, power projection and safety.³⁰ The PACAF website highlighted the event with a news release, a commentary and more than 30 stand-alone photos (one featuring the strategic bomber) from the air show. The

release included the presence of the strategic bomber, and the commentary, which was written by Gen. Lori Robinson, the PACAF commander about a week after the event, focused heavily on power projection, highlighting the bombers. The U.S. Pacific Command air component commander wrote, “as tensions escalate across this vast region, due in large part to China’s continued militarization of the South China Sea, the need to demonstrate credible combat power while leveraging our network of like-minded partner nations has only increased.” This represents a case where moderate PA efforts were paired with a relatively low-threat event with little success. The general’s commentary accompanied by a B-52 flight through the South China Sea may have increased the threat perception, but the Chinese media showed no interest. While the Chinese media covered the airshow, neither the presence of the American strategic bomber, nor General Robinson’s commentary were referenced.

Analyzing the target nation coverage of B-2 deployment to Diego Garcia is challenging due to the timing of this BAAD event. Upon their arrival at the British Indian Ocean Territory, the PAG called for an active posture, highlighting themes of interoperability and readiness, assurance and deterrence.³¹ PACAF released five stand-alone photos and an article highlighting the deployment on its website. This moderate PA effort accompanied a deployment that few would consider threatening since these deployments have been commonplace for the Pacific theater under the umbrella of CBP operations. None of these actions was noted in the Chinese media at the time of the deployment. However, that does not mean they go unnoticed. Within a couple weeks of this deployment, Admiral Harry B. Harris Jr., U.S. Pacific Command commander, participated in a press conference at the Pentagon. During the event, he said U.S. forces would ignore an Air Defense Identification Zone (ADIZ) in the South China Sea if they were to declare one.³² This statement resulted in a spike of articles in the Chinese media in which officials expressed their outrage. Among these articles, two specifically referenced the U.S. strategic bomber flights and joint drills between the United States and its allies.³³

The final Chinese-targeted BAAD effort analyzed appears to be the most successful. The flight of the three strategic bombers in a single formation was a highly publicized event for PACAF. While employing its standard CBP PA guidance, PACAF utilized a non-standard approach of garnering mainstream media attention due to the historic nature of the flight and its photographic appeal. On its website, PACAF released two articles and seven stand-alone photos highlighting the historic integrated bomber operation. The articles included the standard CBP themes including that the deployments are a routine and normal part of U.S. military operations; they provide opportunities to advance and strengthen alliances as well as strengthen long-standing military-to-military

partnerships; they enhance and maintain U.S. combat capability, and they routinely transit international airspace throughout the Pacific, including the area China included in its recent ADIZ declaration.³⁴ In addition to the robust PA effort, the flight included factors increasing the level of threat to China. The uniqueness and accompanying visuals of this historic flight elevated it as a newsworthy event, and the international coverage of America's three strategic bombers flying near the disputed South China Sea would have been difficult to ignore. The resulting coverage in the Chinese media included substantial coverage, ranging from simple repostings of the U.S. Air Force imagery to full articles highlighting the capabilities of the three aircraft.³⁵ One article even included quotes from the Secretary of the Air Force's Facebook account.³⁶

North Korea-Focused BAAD Activities

The North Korean publications represent the most tightly controlled media organizations in this study. In a sense, this lack of journalistic freedom presents the best opportunity to hear the government's unfiltered response to U.S. BAAD efforts. Each of the three case studies targeting North Korea share the same PAG with regard to PA posture and messaging. Under the umbrella CBP guidance, the overall posture is RTQ. However, it does recognize that select CBP missions may be identified for an active posture in order to meet distinct strategic communication objectives.³⁷

In the case of these three case studies and active posture was taken. The six themes which provide the basis for CBP messaging are: 1) the United States conducts CBP operations as part of a routine, forward deployed, global strike capability supporting regional security and our allies in the Indo-Asia-Pacific region; 2) CBP deployments provide opportunities to advance and strengthen alliances as well as strengthen long-standing military-to-military partnerships; 3) the CBP program enhances and maintains U.S. combat capability; 4) CBP is a key component to improving both joint service and ally interoperability; 5) the U.S. Pacific Command is committed to the military rebalance to the Indo-Asia-Pacific region, expanding engagements with allies and building partnerships with the international community; and 6) CBP flights routinely transit international airspace throughout the Pacific, including the area China included in its recent ADIZ declaration.

While the previous case studies analyzed demonstrate the subtle messaging surrounding BAAD missions targeting Russia and China, the examples targeting North Korea demonstrate the other end of the spectrum. This unambiguity was present in the first case study, which featured a media event on the flight line prior to the BAAD mission. Reporters gathered at Osan Air Base, South Korea, heard from the United Nations Command, U.S. Forces Korea deputy commander, the

U.S. Seventh Air Force commander, and the South Korean Air Force Operations Command commander, who highlighted the capabilities and readiness of the alliance.³⁸ The coverage on the PACAF website included two news articles highlighting the event and eight photos. This robust PA effort accompanied an event, which, based upon the North Korean media response, clearly represented a direct threat. The resulting North Korean coverage was swift and robust with five articles condemning the “military pressure and nuclear threat of the United States and other hostile forces,” although none of the articles specifically identify the B-52 flight nor the statements by the alliance military commanders.³⁹

The second case study demonstrated a similarly direct approach in stated intent. During a press conference following the low-level sortie, Gen. Vincent Brooks, the American who holds command of United Nations Command, Combined Forces Command, U.S. Forces Korea, made clear that North Korea’s actions were the catalyst for the BAAD mission. Quotes from his statement supporting the CBP PAG were included in one of the two articles posted on the PACAF website following the event along with 23 supporting photos. As Brooks described, the day’s demonstration was “not the limit of our capability and there should be no mistake about the full array of capabilities we have at our disposal” and his forces remain “ready to meet mutual defense obligations against threats to the security of the Korean peninsula and the region.” This event, yet again, demonstrated a robust PA effort accompanying an event, which was perceived as a direct threat by North Korea. The BAAD mission was received by North Korea through a flurry of articles condemning South Korea, the United States and their allies. Six articles in various sources scorned actions of the “U.S. and the south Korean puppet regime” as a prelude to a preemptive attack on the north.⁴⁰ Two of these articles directly referenced the B-1 mission, with one mistakenly identifying the aircraft as a nuclear strategic bomber.⁴¹ These articles demonstrate that the coalition message is penetrating into North Korea as they work to directly repudiate their role as provocateur with claims that the state is simply “taking measures for bolstering the state nuclear force in quality and in quantity to defend its dignity and vital rights and safeguard genuine peace from the U.S. ever-increasing nuclear war threat.”⁴²

The final case study analyzed occurred within two weeks of the previous example, and it included a very similar communication strategy from the allies. Billed as the closest a B-1 has ever flown to the border between the Republic of Korea and North Korea, the messages demonstrated the partnership between the United States and South Korea, both in action and in message. The single article on the PACAF website included 22 supporting images, including several aerial photos shot by a South Korean airman. Like each of the previous case studies on the Korean peninsula, the article featured quotes by America military leaders and

their South Korean counterparts issuing complimentary statements. “The bond between the United States and the Republic of Korea is ironclad and the strength of that commitment will not be shaken by North Korea’s aggressive behavior,” said Lt. Gen. Thomas W. Bergeson, 7th Air Force Commander.⁴³ Lt. Gen. Lee Wang-Kuen, South Korean Air Force Operational Commander, followed up by stating that the two countries’ air forces maintain a “close information sharing and a robust combined operational capability,” and he provided the caution that should “the enemy provoke us once again, the Combined Air Forces will respond and eliminate their will and capability to fight.”⁴⁴

This final case study, while similar to the previous two, represented an increasingly threatening event for North Korea – based upon the proximity of the flight to the border and the fact that the strategic bomber landed in South Korea. In response, the North Korean media released nine articles damning the alliance and justifying its own nuclear actions. The articles continue to insist that the north’s nuclear program is necessary to provide a “sure guarantee for reliably deterring the United States moves for a nuclear war and firmly defending the peace and security of the country.”⁴⁵ Only one of the articles directly references the B-1 flight – again as a nuclear-capable platform. Nearly all of the articles highlight American provocative, nuclear action on the peninsula. One article goes as far as accusing the United States of hypocrisy claiming it has deployed nuclear weapons to the Korean peninsula and citing the American response to the Soviets deploying nuclear weapons to Cuba in the 1960s.⁴⁶

Limitations

While this study offers an initial insight into effectiveness of communication efforts related to BAAD missions, it is important to note that there are numerous limitations that could have affected its outcome, and further study is necessary. First, the research was limited to only three case studies per targeted nation, and each of these examples took place during a single calendar year. There are a number of factors – such as other events in the news cycle, related statements by key leaders and political climate – which may have impacted the amount of media coverage each case study attracted. Additionally, the evaluation was limited only to the related PAG and releases issued on the MAJCOM websites. Clearly, there were additional PA efforts invested in each of the cases studied. However, these were not included in order to ensure continuity within research. Also, the analysis of target state media was limited to a single media organization each. While the most prominent organization was selected for each country, they do not represent the totality of coverage. Additionally, the search tools and search terms for each of the sites may not reflect the full coverage invested by the organization the related BAAD mission. Finally, the assessment of the threat perceived by the

target state of the BAAD missions is subjective and may reflect cultural bias. Regardless of the limitations, these results offer a starting point for further studies into the impact of these communication efforts to determine their utility and modifications, which may improve their effectiveness.

Recommendations

The results of this study have implications for several audiences including the military public affairs and operations communities planning BAAD missions and other deterrence-related activities. The most glaring recommendation is that the operations and PA communities need to interface early and often through the planning and execution phases of BAAD operations. Among Air Force PA's core competencies is global influence and deterrence. PA officers are trained in methods to affect "adversary operational environments by engaging on the information front while defending our own informational centers of gravity."⁴⁷ This is a key skillset to offer those planning strategic bomber flights intended to deter potential adversaries. Yet, PA representation is often absent from initial planning – where its input could be most valued – and is instead brought in toward the tail end of the planning to work around the operational plan. As demonstrated, perceived threat is a key factor in the effectiveness of message penetration. Often, minor adjustments to the operational plan could provide the factors needed to adjust how the BAAD activity is received by the target state. Additionally, MAJCOM PA offices should consider designating a primary and secondary representative responsible for PA coordination for BAAD planning. This individual would attend all relevant headquarters operational planning sessions as an advocate for PA, and they would be the primary contact for the installation PA offices. In this role, this representative would ensure effective PA input in the planning process, and they would ensure communication continuity throughout the various MAJCOM BAAD activities.

Finally, the MAJCOM PA offices should identify more effective means to track BAAD effectiveness so that future planning can benefit from past operations. The Air Force at large appears to undervalue the need to conduct post-mission media analysis to determine the effectiveness of the communication efforts. In the European theater, a theater analyst for U.S. Air Forces in Europe acknowledged that many of their assessments focus primarily on "task completion" rather than effects-based evaluations, and she admitted that the BAAD mission contributions are a very small piece of their command's overall assessment.⁴⁸ As for the Pacific theater, a public affairs officer for Pacific Air Forces stated the effectiveness of their messaging can be gauged in corresponding media coverage, but it appears the media response monitored is limited to allies and partners, and it is unclear how this data factors into future planning.⁴⁹

Notes

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CHAPTER 4

Strategic Assurance and Signaling In the Baltics

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“The defense of Tallinn and Riga and Vilnius is just as important as the defense of Berlin and Paris and London.”¹

- President Barack Obama, Sept. 3, 2015

By analyzing recent military modernization and maneuvers along the border with Eastern Europe, it seems Russia is on a quest to return to the great power status it enjoyed in the past. This resurgence has Europe, especially the formerly occupied Baltic states of Estonia, Latvia, and Lithuania, concerned. Recent Russian military actions and President Vladimir Putin’s tough-stance rhetoric demonstrate the former Soviet Union is attempting to reassert its influence along its periphery aiming to end American influence in the region by weakening the North Atlantic Treaty Organization (NATO) alliance.² President Putin is increasing Russia’s presence along the borders of the Baltic republics by conducting numerous exercises, increasing aircraft activity, deploying short range ballistic missiles (SRBM) to the Russian enclave of Kaliningrad, and conducting aggressive maneuvers against U.S. and NATO assets in the Baltic Sea. Following Russia’s 2014 annexation of Crimea, concern continues in Europe over President Putin’s intentions.³ Currently there are nearly 100,000 Russian troops stationed along the border of Eastern Europe made up of forces comprising the same units that annexed Crimea.⁴ According to David Shlapak in a recent RAND study, should Russia look to reoccupy the Baltics, there is not much that can be done to initially defend against an invasion, creating concern in the Baltics requiring effective assurance from the United States.⁵

Assuring the Baltics is imperative given the threat perceptions in the region. NATO is currently under-equipped to defend against a Russian grab for territory in Eastern Europe.⁶ According to Loren Thompson, “Simply stated, the United States seeks to deter aggression or blackmail against NATO allies from a nuclear armed Russia.”⁷ Several American assurance methods such as joint exercises, flying nuclear capable bombers in the region, and deployments of U.S. troops to Eastern Europe are currently being employed to assure the Baltic states. The challenge lies in determining how to measure the effects of assurance and to ask what show of force methods, such as Bomber Assurance and Deterrence missions, joint exercises, U.S. forces deployments, and joint operations, provide the most strategic security assurance in the Baltic region.

Of the various methods used by the United States to assure the Baltics, physical presence of U.S. forces stationed or deployed to Estonia, Latvia, or Lithuania have the greatest assurance effect by creating solidarity. The thesis will be addressed by interviewing various stakeholders in U.S. deterrence and assurance and by surveying various Baltic military leaders, military and civilian students and faculty attending the Baltic Defence College in Tartu, Estonia. Prior to using the results to measure what assurance method works best in the Baltics, an analysis of the current threat and current U.S. assurance methods will lay the foundation toward answering the research question and supporting the thesis.

Assuring Baltic Partners

Current U.S. assurance policy is addressed in government-issued policy documents such as the National Security Strategy (NSS), National Military Strategy (NMS), and Deterrence and Defense Posture review. These policy documents lay a foundation from which an assurance campaign can be developed. Today’s deterrence and assurance is moving away from being nuclear-centric and instead encompasses conventional, space, and cyberspace to create a more holistic strategic deterrence and assurance approach. The February 2015 NSS makes it very clear the United States’ policy toward assuring Europe by stating, “We will steadfastly support the aspirations of countries in the Balkans and Eastern Europe toward European and Euro-Atlantic integration. Our Article 5⁸ commitment to the collective defense of all NATO Members is ironclad.”⁹ Additionally, “Russia’s aggression in Ukraine makes it clear that European security and the international rules and norms against territorial aggression cannot be taken for granted.”¹⁰ The 2015 NMS aligns with the NSS by asserting “in Europe, we remain steadfast in our commitment to our NATO allies. NATO provides vital collective security guarantees and is strategically important for deterring conflict, particularly in light of recent Russian aggression on its periphery.”¹¹

Another important document that articulates the importance of assuring our allies is the 2010 Deterrence and Defense Posture review, especially with regard to messaging and signaling. Messages can be interpreted as aimed at Russia by asserting assurance and “deterrence, based on an appropriate mix of nuclear and conventional capabilities, remains a core element of our overall strategy” and “as long as nuclear weapons exist, NATO will remain a nuclear alliance.”¹² The review articulates the capabilities of nuclear allies stating, “The independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the allies.”¹³

The 2010 Nuclear Posture Review (NPR) and the European Reassurance Initiative (ERI) demonstrate a renewed United States commitment to assuring European allies. The peace dividend (the drawing down of forces after major conflict) after the Cold War saw the retirement of many nuclear weapons stationed in Europe and a refocus on other contested regions that allowed policies towards Europe to atrophy.¹⁴ In this case, it left an opening for a resurgent Russia to be aggressive toward Eastern Europe and produced security concerns. As Brad Roberts surmises, Russia’s resurgence, including the annexation of Crimea from Ukraine, extensive modernization of Russian strategic forces and threat-laced rhetoric against NATO has sparked a renewed assurance initiative.¹⁵ The NPR and ERI attempt to reassure Europe by including them under the United States’ strategic umbrella to increase deterrence in the region.¹⁶

Originally proposed in Warsaw, Poland on June 3, 2014, four months after Russia annexed Crimea, ERI aims to reassure NATO allies and European partners that the United States is committed to security in the region and assistance with increasing military capability and readiness against threats to the continent. The initiative is built on five lines of effort, according to the Department of Defense (DoD): “(1) Continued increased U.S. military presence in Europe; (2) additional bilateral and multilateral exercises and training with allies and partners; (3) improved infrastructure to allow for greater responsiveness; (4) enhanced repositioning of U.S. equipment in Europe; and (5) intensified efforts to build partner capacity for newer NATO members and other partners.”¹⁷

More specifically, ERI funds several initiatives such as an increased presence from all services, additional exercises, improving infrastructure, increasing Baltic air policing missions, increasing intelligence, surveillance, and reconnaissance (ISR) including remotely piloted aircraft capability, and increasing intelligence and warning capability. ERI is becoming well funded by the United States. In total, ERI was funded at \$985 million in fiscal year 2015 and \$789.3 million in fiscal year 2016.¹⁸ For 2017, the White House has promised to quadruple funding

to more than \$3 billion providing the funding with which to execute effective assurance in Europe.¹⁹ The NPR and ERI renewed U.S. efforts to assure the region, but the effects of assurance methods should be measured to ensure efficiency and effectiveness by studying the threat, analyzing current signaling methods and determining the effect in order to improve methods, if necessary.

The Threat - Russia's Resurging Military Machine

Since the Baltics joined NATO in 2004, Russia has taken aim at the three countries and signaled an effort to destabilize the region. Indeed, Russia has been very active militarily on land, sea, and in the airspace surrounding the Baltics. In 2013, NATO scrambled about 200 combat aircraft to intercept Russian aircraft that were approaching their airspace. That number increased to 400 the next year and has held steady ever since. At the same time, Russian has intercepted NATO and U.S. aircraft and ships in international waters and airspace in and over the Baltic Sea with fighters launched from modernized bases near the NATO border. On the ground, Russia has been holding countless drills involving large numbers of troops and vehicles just to the east of the region that NATO could interpret as being aimed at the Baltics. United States European Command considers Russian aggression in the east one of its three primary security concerns. In a RAND Corporation wargame study, it was determined that Russian forces could arrive at two of the three Baltic capitals (Riga and Tallinn) within 60 hours.²⁰ If allowed to travel through Belarus or launch an invasion from Kaliningrad, the time to reach Vilnius, the capital of Lithuania, is significantly shorter.

To complicate a comprehensive defense of the Baltics, Russian Anti-Access/Area Denial (A2/AD) capabilities have improved in the region complicating assistance during conflict. Aside from refurbishing airfields, Russia has deployed systems to the region capable of denying access in the air, sea and land. For example, Russia has deployed surface-to-air missiles, nuclear capable Iskander-M surface-to-surface missiles to the Kaliningrad enclave, and continues to modernize Saint Petersburg-based Baltic Fleet surface ships and submarines.²¹ This posture poses a growing threat to allied naval forces and the capability to blockade the Baltic states from approach by sea. Also worth noting, Russia's military resurgence has re-introduced around 100,000 ground forces along its border with Estonia, Latvia, Lithuania, and Poland. Within these forces are included the same units that invaded Georgia in 2008 and annexed Crimea in 2014.²²

Though it should not be ruled out entirely, the likelihood of an attack into the Baltics from Russia is arguably low. To support the opposing view, according to a student at the Baltic Defence College, most of NATO and the European Union (EU) do not see Russia as a threat, however, the Baltic nations see it differently

which creates a gap in perception.²³ Additionally, a recent article in the Economist surmised it is in Russia's calculus that an invasion of the Baltics would bring a large multinational force in defense of the region that would include nations possessing nuclear weapons including the United States, United Kingdom, and perhaps France.²⁴ President Putin is a rational actor so it would be difficult to believe he would risk a large-scale conflict with the West by moving into Eastern Europe. The killing of a NATO soldier, including those deployed to the region from the United States, could act as a tripwire bringing total war to the region, an unappetizing scenario for Russia.²⁵

The issues faced by the Baltics by being somewhat isolated from the rest of NATO is similarly faced by Kaliningrad. Being surrounded by Lithuania, Poland, and the Baltic Sea, makes the enclave difficult for Russia to defend, especially if Belarus was unwilling to join into a conflict on the side of Russia.²⁶ This scenario should be a deterrent for Russia. In the end, however, an invasion should still be considered a possibility and effective assurance and deterrence should be deliberate.

Current U.S. and NATO Assurance and Signaling Efforts

Sending the Right Message

Proper signaling is key, but according to Daniel Wasserbly, there are "complications in the current information and communication environment because the United States strategic message is too often muddled, the speed and availability of information reduces decision making times, and properly reading an adversary's intent is increasingly difficult."²⁷ Another challenge lies in the difficulty of measuring effects of deterrence. As Adam Lowther puts it: "understanding the culture, interests, and objectives of adversaries has the potential to decrease the number that cannot be deterred" and perhaps increase the number that can be assured.²⁸

During the Wales Summit in 2014, the United States committed to assuring its allies in Europe and promised to defend every NATO country. The current signaling policy has shifted from assurance to deterrence, but assurance should remain an important aspect of an overall policy. Though assurance can, in itself, send a message of deterrence, the United States and NATO need to know the difference to ensure the right signals are being sent. Executing a deterrence campaign is complex and challenging. The overall effort of a campaign of this type is to alter the adversary's decision calculus, in other words, forcing the adversary to weigh the cost versus benefit of action and cost versus benefits of restraint. Today's deterrence is required to be adversary, objective, and scenario specific with a continuous whole of government approach using both hard and

soft power. Once engaged in an assurance and deterrence campaign it is also imperative that the effort is adjusted to an ever-changing environment.²⁹

A strategy for the Baltics includes understanding Russia's behavior, goals, values and intentions and should include a team made up of intelligence analysts and subject experts.³⁰ The Deterrence Operations Joint Operating Concept (DO JOC) is commonly used as a source document for employing deterrence and assurance. With regard to the difficulty of measuring deterrence, the DO JOC provides several key mitigation concepts including making "explicit...assumptions and logic in both assessing adversary perceptions and develop plans to affect them, identify specific conditions and U.S. actions (or inaction) that may deleteriously affect specific deterrence strategies and operations," and "analyze the potential impacts on an adversary's deterrence calculations of both planned and unplanned changes in the strategic context and operational situation."³¹ American and NATO leadership have been careful to not send a message that would escalate tensions. Not signaling correctly may send a weak signal allowing Russia to further test the resolve of the alliance, but sending too strong a signal may be seen as escalatory and invite conflict.³² This dilemma requires the United States and its European allies to remain careful to stay in the safe zone in between and constantly monitor Moscow's reactions to movements in Europe to avoid Russia taking advantage of either extreme.

Signaling Methods and Intentions in Eastern Europe

Below are several assurance methods currently employed by the United States and NATO. Understanding these methods will lead to asking the right questions as to whether or not these methods have an impact in assuring the Baltic republics.

Conventional U.S. Forces and Actions

During the Cold War, the United States stationed large numbers of military forces in Europe to protect countries that could not protect themselves in the face of a powerful Soviet Union.³³ Driven by Russia's military resurgence, strategic modernization, and re-assertiveness into the world stage, the security environment has changed significantly since the relatively stable Cold War Europe. Russia's behavior with regard to Europe requires deliberate messaging that combines several methods. According to United States Army Europe, the U.S. Army is increasing its presence in NATO from two to three brigades, increasing aviation deployments, supporting the ongoing Operation Atlantic Resolve, designed to assure U.S. allies in Europe after Russia's takeover of Crimea and to demonstrate commitment in the region.³⁴ Additionally, NATO agreed to the deployment of a battalion of British, German, and Canadian troops to each of the Baltic states. Articulated by Judy Dempsey, this is clearly aimed at countering Russia's recent

aggression and can act as a “trip wire” “that should give President Putin pause for thought.”³⁵ The Baltic states are providing signals of their own. Since NATO prescribed a defense spending level of two percent of gross domestic product (GDP) many countries have not committed. The story is different in the Baltics where Estonia has met the two percent level for quite some time and Latvia and Lithuania are on track to meet the two percent level by 2020.³⁶

Besides deploying forces, the U.S. Army is positioning equipment along the eastern border, enough to support company and battalion sized units, to shorten response times. Called Army Prepositioning Stocks (APS), the equipment is being stored at locations formerly used by the United States before pulling out of many locations in the early 1990s. This is an expensive option and is vulnerable to a preemptive strike, but the effort undoubtedly increases defense posture and signaling in the region. In addition to the Aegis Ashore Missile Defense System (AAMDS) deployed to Romania and the four Aegis ballistic missile defense systems stationed at Rota, Spain, the United States plans to have a second AAMDS site constructed in Redzikowo, Poland by 2018. Finally, as part of the Readiness Action Plan (RAP) to bolster defense in Europe, the Very High Readiness Joint Task Force (VJTF) is a spearhead capability of the NATO Response Force (NRF) made up of various NATO members that can deploy within 48 hours in response to a crisis.³⁷ For proper signaling, it is not just deploying assets, but how they are utilized once in theater through exercises.

Joint Exercises in Europe

Exercises Ample Strike and Baltic Operations (BALTOPS) are exercises involving U.S. and NATO forces conducted to prove interoperability and demonstrate a collective resolve for security in Europe.³⁸ Exercise Ample Strike deployed two B-1 conventional bombers and a non-nuclear configured B-52 to Europe to support the air exercise. The exercise was aimed at addressing concerns of an increasingly aggressive Russia in the region.³⁹ In total, Exercise Ample Strike involved air assets and joint terminal attack controllers (JTAC) from 24 allied and partner countries including Estonia, Latvia, and Lithuania to signal U.S. and NATO capabilities in the theater.⁴⁰ Exercise BALTOPS is another major signaling effort for both assurance and deterrence in the region. Held annually for two weeks, the 2015 exercise included military forces from 17 countries and included an amphibious assault landed in Poland near Kaliningrad. The 2016 BALTOPS also included around 6,100 troops, including participants from the Partnership for Peace nations of Finland and Sweden, and focused on maritime interdiction, anti-submarine warfare, amphibious operations, and air defense operations.⁴¹ This year the exercise combined U.S. bombers concurrently

conducting Bomber Assurance and Deterrence (BAAD) missions adding to assurance in the region.

Bomber Assurance and Deterrence Missions

BAAD missions have become a key component to signal steadfast support to allies and deterring with a show of force to demonstrate American resolve, capability and credibility. BAAD missions are planned and executed by United States Strategic Command's Joint Force Component Command – Global Strike (JFCC-GS) to assure audiences in each of the Geographic Combatant Commands' (GCC) Area of Responsibility (AOR). Since USSTRATCOM owns these missions, the command retains operational control (OPCON) while relinquishing tactical control (TACON) once the asset arrives in the GCC AOR. The advantage of this authority relationship is USSTRATCOM is able to secure tankers where if the bombers were assigned to the GCC, they would unlikely receive tanker support for this type of mission due to higher priorities within theater. Requests for BAAD missions may be made by GCCs or other states or USSTRATCOM may push the asset to theater as part of its own planning cycle or assurance requirements decided on by the command.⁴²

The drawback to BAAD missions is that they are difficult to assess in terms of effectiveness. BAAD missions are typically stand-alone and not integrated with other signaling methods or part of a larger coordinated messaging campaign. There is no lead integrator that combines the objectives with other diplomatic, informational, military, and economic (DIME) tools of power. In fact, many times Public Affairs is not brought into the process until the mission is under way. The unintentional risk with this approach is that it could be seen as provocative to states other than those the United States is attempting to assure. Additionally, through the research there was little to no evidence that mission analysis is done after mission completion to determine whether or not objectives were met.⁴³

Public Messaging

The United States political message needs to be clear, consistent, coordinated, and support the physical actions taken in Eastern Europe by asserting U.S. national security interests are at stake. The messages, according to Damon Wilson, "should be tied to the U.S. standing as a global superpower, able to bring all elements of national power and relationships to bear to deter and defeat aggressions ... there must be no doubt among those in the Kremlin that the United States and its NATO allies will defend their Baltic allies in any scenario"⁴⁴ At the Combatant Command and NATO headquarters level, Gen. Philip Breedlove wrote, thereby signaling to Russia, that "EUCOM⁴⁵ ensures that United States nuclear weapons and the means to support and deploy those weapons are fully ready to support national and Alliance nuclear directives."⁴⁶ Adding to the signal

is the public relationship United States European Command (USEUCOM) has made with USSTRATCOM in which the two combine messages with actions such as BAAD missions to create a combined signaling effort. Measuring the effectiveness of these methods will ensure efficiency of the overall assurance campaign.

Measuring Effectiveness

While deterrence effectiveness proves difficult to determine, assurance levels can be measured to a large extent by simply asking those the United States is trying to assure. With regard to deterrence and state-run media in Russia, it is difficult for the United States and NATO to influence the government or population. Russia controls the print, broadcast, and on-line media to where the only way to assess the effectiveness of deterrence signaling on Russia would be to ask the Russian leadership. Since that is not feasible or even possible, it is required to look elsewhere to try to determine or at least assume effectiveness by applying educated assumptions. According to Stephen Blank, what can be done is “NATO must continue to provide security, deter Russia, reassure, and lead the non-NATO states and Europe’s other security organizations – the European Union (EU) and the Organization for Security and Cooperation in Europe (OSCE) – toward regional and European military-political integration.”⁴⁷ Though Russia desires to expand its influence, it cannot do so in Eastern Europe militarily. Instead, it will take advantage diplomatic, politics economic and, of course, rhetoric associated with each to try to expand its hegemony. Therefore, a U.S./NATO assurance approach should include counter elements in messaging and signaling.

The formula for creating an assurance and deterrence scheme starts off straight forward – deter adversary X from doing Y in situation Z. From this formula, a set of values can be created where the value of an adversary action can be applied to cost versus benefit to arrive at a probability an adversary might take action such as the very low to very high range on the Likert scale.⁴⁸ Deterrence and assurance have separate formulas, but should be applied concurrently because of the inherent overlap of deterrence and assurance effects (see Fig 2). With C1 being capability and C2 being credibility then $C1a + C2a = D$ (deterrence) and $C1b + C2b = A$ (assurance).⁴⁹ Studied together, the formula could read $C1 + C2 = A(x)D(x)$ where x is a level of effectiveness applied to deterrence or assurance. The amount of x with assurance can be measured and given value such as zero, meaning no assurance to 10 for fully assured. Gaining confidence that assurance is having the desired effect starts with the signaling effort and discovering new ways to employ and coordinate messaging. The DO JOC recognizes the difficulty of assessing deterrence and therefore states “...analysts must develop innovative

methods to objectively assess strategic deterrence operations.”⁵⁰ Assurance can provide deterrence as a by-product so it benefits planners to understand deterrence and apply assurance methods and improve techniques to take full advantage of assurance. To start, it needs to be determined what assurance methods work best.

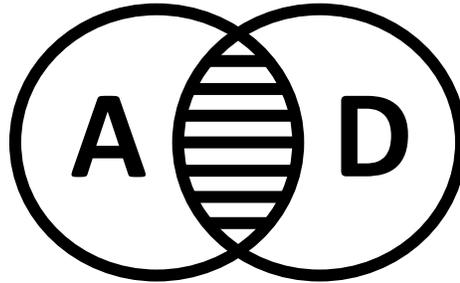


Figure 2. Model demonstrating the overlap of assurance and deterrence. Dr. Todd Robinson.

Measuring Assurance in the Baltics

To measure the United States assurance effectiveness in the countries of Estonia, Latvia, and Lithuania, a survey was forwarded to the Baltic Defence College in Tartu, Estonia and distributed the faculty and students from the Baltic states. The survey requested the following assurance methods be ranked from one to six with one providing the most assurance to six providing the least assurance:

1. Bomber Assurance and Deterrence Missions
2. U.S. forces deployed to the Baltics
3. U.S. forces stationed in the Baltics
4. U.S. participation in regional exercises
5. United States conducting integrated operations in the region
6. Public statements by U.S. civilian and military leadership

Thirteen individuals ranking from O-4 to O-6 responded. All are from the Baltic states except for two, one from Poland and one from Ukraine. Seventy percent responded with U.S. forces stationed at or deployed to the Baltics as making them feel the most assured and 23 percent felt that BAAD missions provided the most assurance. Of the remaining seven percent, (two respondents) one felt most assured by exercises in the region and the other from combined operations. Though sending forces to the region is more costly than BAAD

missions, the data suggests that the United States should continue investing in assuring the region by staying involved on the ground in Eastern Europe. Backing up this data are statements made by several members of the Estonian and Latvian Ministries of Defence. Both nations agreed that U.S. and other NATO forces deployed to or stationed in the Baltics create the greatest level of assurance (and deterrence) and create a solidarity for which they are grateful.⁵¹

Baltic Assurance Survey Results

<u>Respondents</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>	<u>13</u>
BAAD	6	1	4	5	1	5	6	6	4	6	6	1	5
Deployed	2	2	2	3	2	2	1	2	1	1	2	5	1
Stationed	1	4	1	6	6	1	5	3	1	5	1	6	2
Exercise	4	6	3	1	5	4	2	5	3	2	5	3	4
Operations	3	3	6	2	4	3	3	4	2	3	4	4	3
Statements	5	5	5	4	3	6	4	1	2	4	3	2	6

*Table 1 – Results from survey delivered to the Baltic Defence College.
1 = most assured, 6 = least assured*

Improving Signaling in the Baltics

Signaling Without Provoking

In determining where to start with an effective signaling campaign, it is required to analyze the adversary’s signaling to properly counter-signal. In this case, why does President Putin view the United States and NATO as a threat to Russia’s security? Has United States and NATO signaling, or lack of, driven President Putin to reach this conclusion? According to Fiona Hill, Russia is trying to reach an end-state that advances Russia’s preferred geo-political arrangements and President Putin has made it clear his preference “would be one without NATO and without any other strategic alliances that are embedded in the European Union’s security concepts.”⁵² The challenge is determining where deterrence and assurance become escalatory and provocative. Once Russia’s decision calculus is determined, the United States and NATO can send tailored assurance messages signaling the resolve of the alliance and message with clarity and precision to avoid misunderstanding or miscalculation by Moscow that could actually provoke conflict.

In *NATO Review*, a key to the successful transmission and intended receipt of a message is based on credibility and its three components of cohesion, capability, and communication. First, cohesion is the actual and displayed “unity and

solidarity” of the NATO alliance. This unity has been strengthened, not weakened as President Putin intended with his aggressive rhetoric, by recent actions by Moscow. Second is capability. NATO capability as well as the export of U.S. capability to the region adds to credibility. Making credibility stronger, this capability has been demonstrated in Operation Atlantic Resolve, numerous exercises, and deploying strategic assets such as bombers and ballistic missile submarines to Europe. Finally, credibility requires it be communicated properly. To counter Russia’s doctrine of escalate to de-escalate, modernizing and reigniting extended deterrence would increase the cost of action and force Moscow to think twice about using tactical nuclear weapons to escalate its way out of a failing conventional conflict.⁵³

Innovate to Create New Ways to Signal

Not knowing exactly what effect current American and NATO assurance signaling has on Russia requires strategists to innovate to find new ways or combine old ways effectively. One way to change signaling is to include Sweden and Finland into a messaging campaign. Though not members of NATO, they are regional partners and can be used to demonstrate Western Europe’s commitment to security in the region. Bringing these two into the campaign prevents Russia from using their non-NATO status as an assumption that they will not come to defend the Baltics because they are not NATO.⁵⁴ If invaded and if Russia has A2/AD in the air and in the Baltic Sea, the Baltics lose resupply routes. Forging strong cooperation with Sweden and Finland could ensure supplies could still reach the Baltics from Scandinavia. An article released by the five Scandinavian countries of Iceland, Denmark, Norway, Sweden and Finland “... emphasized that in view of the rising uncertainty in the Baltic Sea region, the Nordic states would act in solidarity, and also extend that solidarity to the Baltic states. This attitude by Sweden and Finland ... is immensely important because of the Russian disinformation campaigns aimed at discrediting the two states as reliable partners for NATO.”⁵⁵

Jan Osburg from the RAND Corporation offers an interesting idea to increase defense in the Baltics while adding to the signaling effort that an attack by Russia on the Baltics will not be easy. Called the “Swiss approach” because of one its proponents, Swiss Army Major Hans von Dach, it utilizes the local population to add to a resistance effort. The “Swiss approach” seeks to deny the enemy victory through infrastructure denial, such as preset charges on bridges and railroads, and military and civilian resistance activities creating a “credible and demonstrated will to resist [to] deter aggression by increasing the potential cost to the adversary.”⁵⁶

Assessing the adversary's perceived cost-benefit ratio might be determined by studying psychology. Due to its impact and severity, basic human emotions can play a large role in President Putin's decision calculus if planning to invade the Baltics. Though a move to invade the Baltics may appear irrational, President Putin is a very rational actor, therefore analysts may begin to understand his decision calculus by studying President Putin's human nature traits such as lust for power by expanding influence, fear of losing credibility on the world stage, and regime survival desires. Using these traits, and others, would assist in developing a deterrence tailored to the Baltic scenario. In employing deterrence, the United States should also keep in mind its own psychology and avoid errors such as mirror imaging where American values are erroneously transferred to how the United States predicts an adversary would act.

Other considerations to improve, change, or tailor signaling in the Baltics are various nuclear and conventional means. First, positioning a carrier battle group off the coast presents a large deterrence and assurance effect. Deploying a carrier to the Baltic Sea assures the NATO and partner nations in the region and signals to Russia resolve and diminishes their A2/AD capability. Secondly, the United Kingdom and France possess a strong signaling capability with their nuclear missile submarines and dual-capable aircraft (DCA) aircraft. Having this capability show up at ports in the Baltic Sea would be definite shift in current policy and gather much attention in Moscow. Finally, the United States and NATO could increase or change the tracks of ongoing manned ISR sorties in the region and introduce remotely piloted aircraft (RPA) to the equation. Patrolling over the Baltics near the Russian border would change the signaling variable and surely provoke a reaction from Moscow. Being strong signaling methods, the previous require great care in implementing due to the strong possibility of appearing escalatory and should therefore be used at most as part of a multi-national exercise.

Full-Spectrum Collaboration

Gen. Kevin Chilton, then commander of USSTRATCOM, stated in today's deterrence environment, it is necessary to in all the capabilities of the United States, allies, and partners with each bringing together all elements of respective national power to calculate success.⁵⁷ Signaling should combine various conventional capabilities, both United States and those of allies and partners, with economic signals such as modernization and infrastructure improvements. These signals should then be integrated into a strong information operations (IO) campaign, or set of campaigns, that is supported by consistent statements by all stakeholders. Where applicable, the same messages should be signaled by the private sector.

According to former Secretary of Defense Ashton Carter, the Department of Defense “is working to integrate conventional and nuclear deterrence strategies in Europe...to prepare for low-end conflict.”⁵⁸ A successful signaling campaign begins with getting all the right parties together. At the very least, this group should include members of Congress, USSTRATCOM commander, USEUCOM commander, NATO leaders and heads of state, Department of State, and Department of Defense. Messaging opportunities should also always include public affairs and the media. To complete the package, the signals need to be tailored by taking into account analysis conducted on the intended audience. New methods can be tried and their effectiveness determined by asking those that are to be assured. Any method will have a deterrence aspect and therefore thought should be given to whether or not the method or methods are seen as escalatory by Russia.

Conclusion and Recommendations

New and evolving security environments require new ideas with regard to deterrence and assurance. Today’s approach requires deliberate tailoring of signals and requires messaging is coordinated and supported by persistent and consistent statements by the United States, allied, and partner leadership. The next NPR must align with the NSS and NMS and any signaling with military capability should support these documents and should continue evolving from Cold War assurance methods due to an evolving geostrategic environment.⁵⁹ Equally important, statements and testimony should not deviate from the core documents mentioned and any statements should be consistent. In the case of the Baltics, assurance needs to transition to a tailored and flexible deterrence campaign that utilizes all of the United States’ and NATO’s instruments of power to achieve effective signaling against a resurgent Russia, starting with continuing a strong American presence in the three nations.

Notes

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³ David A. Shlapak and Michael W. Johnson, “Reinforcing Deterrence on NATO’s Eastern Flank,” (Santa Monica, CA: RAND Corporation, 2016), 1, http://www.rand.org/pubs/research_reports/RR1253.html

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⁷ Loren B. Thompson, “Why the Baltic States Are Where Nuclear War Is Most Likely to Begin,” *The National Interest*, July 20, 2016, <http://nationalinterest.org/blog/the-buzz/why-the-baltic-states-are-where-nuclear-war-most-likely-17044>

⁸ Article 5 of the North Atlantic Treaty states: The Parties agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defence recognised by Article 51 of the Charter of the United Nations, will assist the Party or Parties so attacked by taking forthwith, individually and in concert with the other Parties, such action as it deems necessary, including the use of armed force, to restore and maintain the security of the North Atlantic area.

Any such armed attack and all measures taken as a result thereof shall immediately be reported to the Security Council. Such measures shall be terminated when the Security Council has taken the measures necessary to restore and maintain international peace and security.

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CHAPTER 5

Signaling the End of Deterrence Afforded by Dual Capable Aircraft

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For more than 60 years, the United States and Europe relied on fighter aircraft capable of executing conventional and nuclear strike missions. Known as dual-capable aircraft (DCA), these fighters were an integral part of the United States' extended nuclear deterrence strategy in Asia and Europe. However, the collapse of the Soviet Union in 1991 changed the global security environment. Subsequent political-military decisions regarding force structure, sustainment and modernization by the United States and allied nations allowed tactical nuclear forces to atrophy. Starting in 2010, the United States and the North Atlantic Treaty Organization (NATO) sought to redefine the role of non-strategic nuclear weapons (NSNWs) and associated DCA fighters. However, combinations of neglect, fiscal constraint, and public opinion have undermined the deterrent value of these systems.

This paper outlines the historic roots of tactical fighter operations under the extended deterrence strategy in Europe. This paper articulates the current state of the United States' and NATO's tactical nuclear capabilities and political credibility. Further, it applies each variable to R.J. Overy's equation of deterrence as a function of technical capability and political credibility. Despite NATO posture statements, the analysis reveals that tactical nuclear forces today lack the technical and political credibility to be an effective deterrent.

Historical Underpinnings

In 1949, B-29 strategic bombers were withdrawn from Europe in response to the Soviet Union's first successful nuclear weapon test. Shortly thereafter, the United States and its European allies sought to counter the quantitatively superior Soviet army and prevent the spread of communist ideology throughout Europe. Unable to match the Soviet conventional force size, the United States and allied nations adopted an asymmetric counter.¹ Concurrent with the formation of the NATO, the United States entered into a series of bilateral agreements that

permitted the deployment of tactical nuclear weapons in certain Allied countries. Dual-capable fighters along with ground-based tactical nuclear assets and strategic forces served to deter the conventional forces of the Soviet Union and Warsaw Pact from invading Western Europe. Known as extended deterrence, the implicit strategy of the United States was to raise the cost of a conflict to an adversary higher than any potential benefit.

The efficacy of extended deterrence is the subject of debate among deterrence theorists. As Bernard Brodie highlighted in his 1959 book, *Strategy In The Missile Age*, the concept of credibility is key to deterrence in the nuclear age. He asserts that there is “little to no problem of credibility” if the United States is subject to direct strategic nuclear attack.² However, credibility suffers when attempting to extend deterrence beyond direct attacks against the state itself. Former French President Charles de Gaulle appeared to share Brodie’s concern and pursued the creation of France’s independent deterrent force. Between 1958 and 1966, de Gaulle removed all French forces from NATO’s integrated military command structure. French conventional forces were reintegrated in 2009, but French nuclear forces remain outside the purview of NATO.

Unlike Brodie, Thomas Schelling viewed extended deterrence as a way to keep an adversary guessing about a state’s response to various actions, “... the uncertain element of what might happen in response to a Soviet attack would make extended nuclear deterrence work.”³ Schelling advocated for the deployment of conventional and nuclear forces with the capability to gradually escalate from conventional to nuclear warfare. Schelling focused on fielding a minimum deterrent force that would hold adversary cities and industry at risk (counter-value targeting). Part of the force’s credibility relied on concealing the exact composition and location of these forces. Herman Khan diverged from Schelling’s minimum deterrent, counter-value force, advocating for U.S. strategic forces to possess an array of offensive and defensive capabilities to limit damage to the United States using an imbalance of terror argument. Khan favored Soviet political and military targets (counter-force) in lieu of counter-value targets. Khan’s approach follows his assertion that “...the most convincing way to look willing is to be willing.”⁴ However, with regard to extended deterrence, Khan believed that threats to initiate nuclear conflict on behalf of an ally were not credible unless the United States could limit Soviet retaliatory response against strategic targets in the continental United States.

Ultimately, the United States’ extended deterrence strategy in Europe during the Cold War appears to embody a conflation of Schelling’s and Khan’s theories. Refusing to acknowledge specific details, the United States and certain NATO partners developed and deployed a tactical nuclear force consisting of more than 1,000 fighter aircraft and 7,300 tactical warheads.⁵ Since then, the number of

assigned/available DCA fighters and tactical nuclear weapons (B61) has declined significantly. According to his article, “U.S. Nuclear Forces, 2015,” Hans Christensen of the Federation of American Scientists estimates that there are 180 NSNWs deployed across five NATO bases in Europe.⁶ Compiled from multiple sources, Table 1 depicts the estimated rollup of NATO DCA fighters currently deployed in Europe.

Country	#/Type of Aircraft Available	# of Aircraft Dedicated
United States	55 F-15Es 51 F-16s	Unknown, see Note 1
Belgium ⁷	54 F-16s	12
Italy ⁸	59 PA-200s (Tornado)	unknown
Netherlands ⁹	61 F-16s	16
Germany ¹⁰	65 PA-200s	44
Turkey ¹¹	~250 F-16s	None certified
Note 1: It is unlikely that all USAF fighter aircraft in Europe maintain a nuclear role based on congressional testimony in 2014 by U.S. Air Force Chief of Staff, Gen. Mark Welsh, that indicated the USAF had the capacity to increase the operational load. ¹²		

Not only has the size of DCA force decreased, so has its readiness. Previously, a small number of DCA maintained a five-minute alert posture with additional aircraft ready within hours to days.¹³ A 2004 NATO issue paper disclosed that numbers and readiness levels for DCA had reduced from minutes to weeks in 1995 and further reduced from weeks to months in 2002.¹⁴ Despite the dramatic reduction in the size and readiness NATO’s tactical nuclear forces, the alliance advertises steadfast commitment to the role of NSNWs and by extension, fighter DCA, as having “... [an] essential role in the Alliance’s overall strategy.”¹⁵

Yet, global and regional security structures have changed. Within Europe, the deployment of advanced surface-to-air missile (SAM) systems threatens to disrupt air operations throughout Central and Eastern Europe. The advanced SAM threat coupled with passive detection systems has the potential to make certain regions around Europe an anti-access and area denial (A2/AD) environment. Meanwhile, the survivability and readiness of NATO’s tactical nuclear forces has significantly declined. Given this contemporary reality, is fighter DCA still a credible deterrent?

In his article, “Air Power and the Origins of Deterrence Theory before 1939,” R.J. Overy defined deterrence as a function of technical credibility (capability) and political credibility.¹⁶ Prior to 1939, airpower theorists postulated that great-power wars could be won by aerial attack by inflicting unacceptable losses against an adversary’s population. Overy largely rejects that pre-WWII aircraft had the technical credibility, let alone the political credibility to produce a deterrent effect that would have contained Nazi Germany. However, the advent of nuclear weapons and development of strategic bombers satisfied technical credibility. Although Overy’s definition of deterrence may be overly simplified for nuclear deterrence, it provides a mechanism to evaluate the deterrent value of NATO’s tactical nuclear force in the 21st century security environment.

Capability

Per Overy’s definition, technical credibility is a function of the weapon and delivery platform pairing. The weapon must function reliably to produce the intended damage. The delivery platform (aircraft), must also have the capability to accurately and reliably deliver the weapon. Therefore, when reviewing nuclear capability, it is important to examine each system independently.

Since 1999, the B61 has been the only NSNW type remaining in Europe.¹⁷ Earmarked for tactical delivery by NATO fighters, the United States maintains control of these weapons and is responsible for sustainment and modernization of the system. While the B61 is a proven design, the current version of the B61 is more than 30 years old. Under its “3+2” modernization strategy, the National Nuclear Security Agency (NNSA) in partnership with the Department of Defense (DOD), initiated an \$8.9 billion B61 Life Extension Program (LEP).¹⁸ Dubbed the B61-12, the new variant of the B61 is intended to replace all previous variants (-3, -4, -7, and -11) as well as the B83.¹⁹ Thus, the B61 will be the only gravity nuclear bomb for strategic and tactical aircraft.

According to the NNSA and the Air Force, the B61-12 program will combine the warhead designs from previous variants of the B61 while refreshing its non-nuclear components.²⁰ The updated warhead will mate with a new tail sub-assembly (TAS) provided by the Air Force. The TAS upgrade will replace the parachute delivery system in favor of an inertial-aided guidance unit. Improved accuracy permits the system to use a smaller warhead to achieve the same effects.

The NNSA and Air Force have already conducted several test drops of the B61-12 from an F-15E. Further integration with NATO platforms will continue. While the new B61-12 displays many of the same physical characteristics of the previous variants, it is unclear what aircraft integration modifications (if any) will be required. Modifications to the aircraft’s multiplex (MUX) bus or changes to the operational flight program (OFP) will delay the weapon’s usefulness until required

aircraft modifications are completed and fielded. However, it is likely that the weapon be as reliable and effective as previous variants. Yet, the aging tactical delivery systems for the B61 present a different challenge.

The F-15E is the newest DCA fighter. First flown in 1986, the F-15E replaced the F-111s in Europe as a nuclear capable fighter in the mid-1990s. Since then, the aircraft have been widely deployed throughout Europe and the Middle East. Frequent deployments supporting Operations Enduring Freedom and Iraqi Freedom have consumed the originally planned 8,000-hour service life of the airframe. According to the Air Force, more than 75 percent of the entire F-15E fleet have exceeded 6,000 flight hours. One of the older F-15Es has flown more than 10,000 hours. Air Combat Command (ACC) has partnered with Boeing to determine how much longer the airframe service life can be extended. ACC expects to extend the airframe life well beyond the originally planned 8,000 hours.

Airframe life is not the only issue for the F-15E. The radar and electronic warfare systems on F-15Es have also reached a terminal phase in their service life. In 2008, the Air Force initiated a modernization program update the F-15E radar. According to the Air Force, the upgrade was required because the original radar (APG-70) was no longer sustainable. The Air Force started installing the new radar, APG-82, in 2014. However, the European-based F-15Es will not start their upgrade until 2018.²¹ This programmatic decision undercuts the priority of the tactical nuclear mission. In addition to the radar, the F-15E's original Tactical Electronic Warfare Suite (TEWS) has also become unsustainable.

Based on 1970s technology, the TEWS is no longer able to counter current and emerging threats. Additionally, the cost to maintain the TEWS system increased more than 259 percent in the last 10 years.²² In 2015, the Air Force (through Boeing) selected BAE Systems to upgrade 413 F-15s (C/D/E variants) with a new electronic warfare system. Dubbed the Eagle Passive Active Warning Survivability System (EPAWSS), ACC estimates the program will cost \$7.6 billion over its life cycle.²³ Per the Air Force's 2015 President's Budget item justification (PB 2015/PE 0207171F), "EPAWSS will replace the obsolete Tactical Electronic Warfare System (TEWS), which will help the aircraft [F-15C/D/E] survive in high threat environments."²⁴ There is no mention that this important upgrade could support the nuclear mission in the program justification. According to the 2017 EPAWSS budget item, the EPAWSS production contract will not be awarded until mid-Fiscal Year 2019. Thus, the F-15E will remain vulnerable to the ever increasing threat environment well into the 2020s.

Unlike the radar and electronic warfare systems, the F-15E's electro-optical (EO) and infrared (IR) targeting pod has evolved. In 2001, the Air Force selected Lockheed Martin's Sniper pod as the winner of the Advanced Targeting Pod (ATP)

competition. As the Sniper pod fielded, operations in Iraq and Afghanistan increased the requirement for EO/IR pods. ACC assumed central management of all targeting pods and redistributed them across fighter and bomber units. Fighter units, regardless of assigned mission received their allocation of pods using the following standardized formula: # of primary mission aircraft inventory * .6 + 1 spare.²⁵ That means that there are only 30 targeting pods for RAF Lakenheath's 48 primary mission aircraft. While 30 targeting pods might be enough for day-to-day training operations, the number is insufficient to meet the simultaneous commitments of a Middle East deployment, U.S. European Command and U.S. Africa Command (EUCOM and AFRICOM) combat operations, nuclear readiness, and routine training missions. In July 2015, the 492nd Fighter Squadron commander reported that only 20 percent of the unit's training sorties could be equipped with targeting pods. The EO/IR targeting pod is considered an essential sensor to precisely designate conventional and nuclear targets.

The pace and prioritization of F-15E resourcing and modernization reflects ACC's apathetic attitude toward tactical nuclear operations. Assuming that the current modernization programs remain on schedule, these systems won't be fully fielded until mid-2020. The F-15E will remain extremely vulnerable to current and future threats for the next decade. Even with extensive support aircraft, it is unlikely that the aircraft could effectively deliver a B61 in a contested environment.

The F-16 is the other U.S. Air Force DCA fighter assigned to EUCOM. Older than the F-15E, the F-16 entered service in 1978. Since then, multiple Blocks (10/15/20/30/40/50/52) have been built and fielded. Like the F-15E, the F-16 airframe has spent much of its 8,000-hour designed service life supporting operations in Europe and the Middle East. Delays in the F-35 program have forced the F-16 to remain in service. In 2012, the Air Force announced two life extension programs for the F-16, the Service Life Extension Program (SLEP) and the combat avionics program extension suite (CAPES). The SLEP was designed to extend airframe life up to 12,000 hours. The CAPES program included software and hardware modifications for a new radar, electronic warfare system, and cockpit displays.

In FY2015, the Air Force terminated the \$2 billion CAPES program in lieu of higher priorities. However, according to the 2015 budget item (PB 2015/PE 0207133F), enhancements and improvements to the aircraft's avionics are planned.²⁶ The Air Force specifically mentions integration of the B61-12 in the budget item description and justification. The F-16 SLEP was also cancelled by budget caps imposed by sequestration.²⁷ The loss of the SLEP and CAPES programs draws into question the sustainability and survivability of the F-16. Like the F-15E, it is unlikely that the F-16 could effectively deliver a B61 in anything

other than a permissive environment. Eventually, the USAF F-16s will be replaced with F-35As. However, the F-35 will not have DCA capability until Block 4B fields, around 2025.

The USAF is not alone in its challenges with its DCA fighter fleet. The Netherlands and Belgium still operate F-16s. Having entered service in 1979, these aircraft have been operating for nearly 40 years. Although the number of hours each country has logged on their airframes is not available, it can be inferred that these aircraft are in need of replacement. In 2013, the Netherlands officially selected the F-35A to replace its F-16s.²⁸ The Dutch plan to purchase 37 F-35s and decommission all of its F-16s starting in 2020. Assuming the Dutch follow this plan, their DCA capability hinges on F-35A Block 4B fielding. The Belgian government has not finalized its decision on F-35 procurement. Belgium plans to retire its F-16s in 2023. The only dual-capable fighter under consideration is the F-35A. Should the Belgian government opt for a different aircraft, it would be several years before the Belgian Air Force could resume tactical nuclear operations, if ever.

Italy and Germany still rely on their Panavia Tornado IDS (Interdictor Strike) fighter-bomber for DCA. The Tornado entered service in 1980, with an airframe service life of 4,000 hours. In 1995, a service life extension program doubled the airframe time to 8,000 hours. Since then, the Tornado fleets have undergone several software and hardware modifications. Italy expects that it will be able to operate 58 modernized Tornados until about 2025.²⁹ With its plans to procure 90 F-35s, it is likely that the Italian Air Force will maintain its DCA capability with the Tornado fleet until it can be transferred to F-35A (Block 4B).

By contrast, the German government is heavily debating the future of its Tornado fleet and the DCA mission. German Air Force (GAF) Tornado airframes seem to have more life remaining than their American counterparts. In 2011, the first GAF Tornado exceeded 5,000 flight hours.³⁰ It was decommissioned shortly thereafter. Additionally, GAF Tornados have continued modernizing their avionics. The most recent upgrade, Avionics System Software for Tornado in Ada 3 (ASSTA 3), upgraded electronic warfare, communication, and weapon delivery capabilities.³¹ The GAF expects to complete the ASSTA 3 upgrade by 2018. However, the GAF Tornado fleet viability was called into question by a 2015 German Defense Ministry report, which indicated only 29 of 66 Tornados (all variants) are operational.³² Depending on their usage, the GAF Tornado could continue flying well into the 2020s. However, the aircraft is not survivable in the modern A2/AD environment. Germany has not committed to replacing its Tornado fleet. In 2016, the Bundeswehr (German defense department) contracted Airbus Defense and Space (Airbus DS) to define future requirements and refine concepts for a future platform to field in the 2030-40 timeframe.³³ Depending on future

procurement plans, the GAF's participation in the nuclear mission will end with the Tornado's retirement.

The lack of attention by the United States and NATO allies toward tactical nuclear operations is evidenced by modernization and procurement strategies that failed to adequately address the role of DCA in the future security environment. As early as 1999, language in the NATO Strategic Concept supported reductions to NATO's conventional and nuclear forces to a minimum level with graduated readiness. The 1999 Strategic Concept stated that, "the fundamental purpose of the nuclear forces of the Allies is political: to preserve peace and prevent coercion and any kind of war."³⁴ The next paragraph, dictated the alliance nuclear force posture:

"The Alliance will therefore maintain adequate nuclear forces in Europe. These forces need to have the necessary characteristics and appropriate flexibility and survivability, to be perceived as a credible and effective element of the Allies' strategy in preventing war."³⁵

However, the phrase "adequate nuclear force" is highly subjective and has contributed to the current capability deficiency. Suffering from deferred modernization and procurement, aircraft currently tasked to the DCA mission no longer possess the characteristics to be a credible threat in the modern European security environment. The decline in technical capability has paralleled a similar trend in political credibility.

Political Credibility

Political credibility is difficult to objectively measure. By proxy, one can use public discourse, policy statements, defense spending, and procurement strategies to gauge the political willingness of a democratic state to use nuclear weapons. As early as 1991, there seems to have been recognition that NSNWs no longer served a military purpose. The 1999 NATO declaration that nuclear weapons were a political tool allowed policy makers to "rubber stamp" unilateral decisions of nuclear force structure and warhead inventory as meeting the criteria for an effective deterrence posture. Additionally, as NATO countries took advantage of the "peace dividend" following the end of the Cold War, funds were diverted from defense to other government programs. Starting in 1991, many NATO members allowed their defense expenditures to fall below two percent of their gross domestic product.

There was little public debate regarding NSNWs and DCA capabilities in Europe until 2005. In April 2005, the German Freedom Democratic Party petitioned the Bundestag (German parliament) to withdraw American tactical nuclear weapons (TNWs, also known as NSNWs) from German soil.³⁶ The petition was ultimately rejected by the Board of Foreign Affairs, but it did receive broad political

support. The following year, several German political parties criticized a draft 2006 German Defense White Paper that did not change the traditional approach to nuclear policy.³⁷ Like Germany, the Belgian parliament passed a similar resolution in 2005 calling for a debate over Belgium's continuing support for NATO's nuclear policy.³⁸ For the first time in 50 years, the existence, role, and support for tactical nuclear weapons under the extended deterrence strategy was publically debated.

In 2006, Greenpeace International commissioned a public opinion poll of NATO nuclear sharing country populations (Turkey, Belgium, Germany, the United Kingdom, Italy, and the Netherlands) to gauge their awareness and support for NSNWs based in Europe. The survey revealed that collectively, only 35.5 percent of respondents were aware that American nuclear weapons were likely positioned in their country. Further, 63.6 percent of the total respondents expressed concern about these weapons (concern varied in intensity by country) with only 24.4 percent expressing significant support for retaining nuclear weapons in Europe. There was overwhelming support (69.2 percent) for Europe to be free of nuclear weapons.³⁹

Since 2006, there has been an increasing amount of discussion and initiatives related to withdrawing NSNWs from Europe. The nuclear debate has even expanded into civilian nuclear power. In Italy, the public is so anti-nuclear that the government chose to forego civilian nuclear power.⁴⁰ The German public shares the Italian sentiment, rejecting nuclear weapons and nuclear power production. In 2011, German Prime Minister Angela Merkel announced that all German nuclear power plants would be shut down by 2022.⁴¹

The public nuclear discourse spurred NATO to re-evaluate its role in the contemporary security environment as well as the role of NSNWs remaining in Europe. Concerned about alliance cohesion, the United States advanced a plan based on five principals:⁴²

1. NATO should remain a nuclear alliance.
2. As a nuclear alliance, member states should share risks and responsibilities.
3. NATO should reduce the role and number of weapons.
4. NATO allies should pursue territorial missile defense.
5. NATO should cooperate with Russia to increase transparency on non-strategic nuclear weapons in Europe.

NATO’s 2010 Deterrence and Defense Posture Review (DDPR) captured these principals in an attempt to advance further discussions, but the 2010 DDPR fell short of addressing force structure deficiencies and warhead deployment. The 2012 DDPR emphasized the contribution of nuclear weapons as a “core component” of NATO’s overall deterrence capabilities and the “supreme guarantee of security.”⁴³ It went on to describe that, “... the Alliance’s nuclear force posture currently meets the criteria for an effective and deterrence and defence posture,” but did not preclude further disarmament.⁴⁴ Critics of the 2012 DDPR argue that it sets the conditions for a status quo arrangement between the United States and its European nuclear partners with neither side willing to confront the realities of withdrawing or reinvigorating its nuclear capabilities.

Despite NATO’s nuclear paralysis, the United States has embarked on a massive recapitalization program for its nuclear forces. After years of domestic dispute, President Barack Obama approved a strategic nuclear modernization program expected to cost \$570 billion over the next 25 years (see Figure 1).⁴⁵ Nuclear warhead types are being consolidated and modernized, the newest stealth bomber is being built with nuclear capability, procurement for the long range standoff cruise missile (LRSO) to replace the air launched cruise missile (ALCM) has commenced, and F-35 nuclear capability under the Block 4B upgrade. In addition, the Navy is preparing plans for the next generation of nuclear submarines. From a strategic perspective, this massive acquisition effort underscores the U.S. commitment to a safe, secure, effective nuclear arsenal. Further, it demonstrates political will to peer adversaries (e.g., Russia).

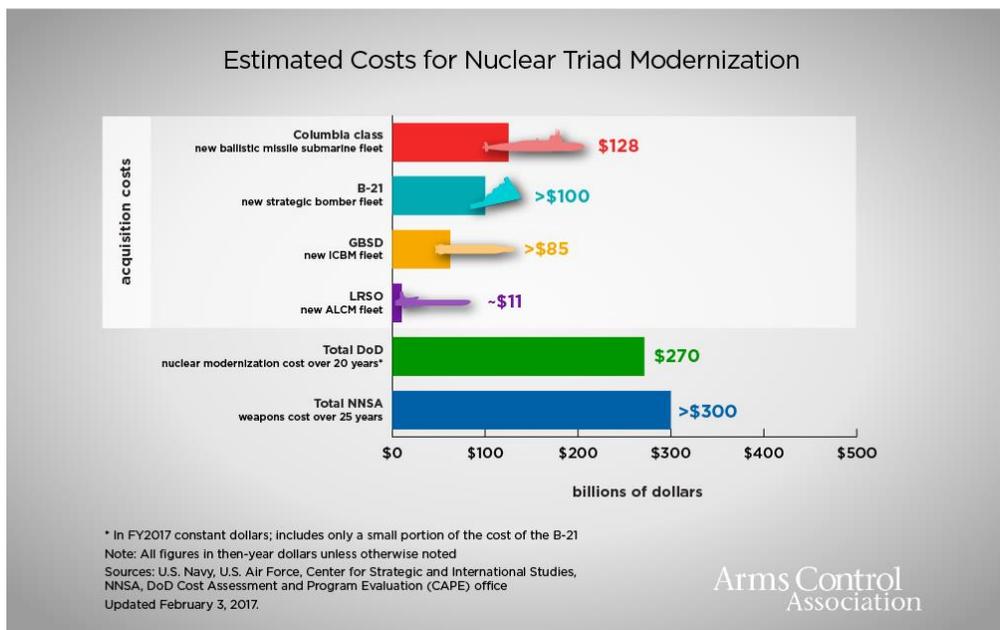


Figure 1 - Estimated Costs for Nuclear Triad Modernization⁴⁶

Allied investment in their nuclear capabilities has been much more reserved. Many Allied leaders still do not confirm or deny the presence of nuclear weapons in their country. In addition, the level of participation their air forces contribute toward nuclear sharing is purposefully obfuscated. Pressure to replace their aging fighter fleets has reopened debate in the public forum because of the nuclear weapon certification requirement tied to future fighter procurement. In 2013, the Belgian government announced it would purchase F-35s to replace their F-16s. However, the government was forced to retract that statement after the decision was subjected to additional scrutiny. According to a 2015 article in *L'Avenir*, the F-35 is the only aircraft in competition that is certified for the nuclear strike mission.⁴⁷ If the nuclear requirement is retained in the government's request for proposal (RFP), the F-35 will be the only option. The Belgian government has deferred its decision to replace their F-16s until 2018.

Italian and Dutch commitment to the F-35 program indicates their willingness to keep the technological door open to the DCA mission. However, specific debate regarding their active participation in the nuclear mission has been mute. Although these governments have not invited public debate, an increasing number of public activist groups and political figures are forcing the issue. In 2013, former Dutch Prime Minister Ruud Lubbers confirmed the presence of B61 bombs on Dutch soil. He considered this previously unacknowledged fact a "... pointless part of military thinking."⁴⁸ In 2016, the Dutch Parliament discussed a national ban on nuclear weapons as a result of a public campaign that garnered broad support across the country. Facing public and political pressure, both governments have been careful to avoid debate on dual-capability for their F-35s. As a result, their respective procurement plans do not cite specific acquisition actions required to add nuclear capability to their fighters. Overshadowing the nuclear capabilities debate is the issue of cost.

Unlike the United States, allied political will is much less resolved. Despite pledges to the contrary, it is unlikely that all NATO members will achieve spending two percent of their GDP on defense. Even Germany, despite its robust economy, is already seeking ways to redefine how the two percent GDP calculation is made. In a recent CNN article, German Defense Minister Ursula von der Leyen sought to expand the accounting of defense spending to include UN peacekeeping missions, European missions and contributions to the fight against ISIS terrorism.⁴⁹ Further, many Western Europeans do not perceive an existential threat that justifies an increase in defense spending. For example, the German populace does not perceive Russia as an existential threat. According to a 2015 Pew survey, only 38 percent of Germans consider the Russian military to be a major military threat.⁵⁰ Public opinion, in light of fiscal austerity will complicate future discussions of nuclear

burden sharing and contribute to the indecisiveness of NATO, signaling weak political will.

Tactical Nuclear Operations: No Longer a Deterrent

Per Overy's definition of deterrence, it is clear that the NATO nuclear sharing partners have significant issues with technical and political credibility underpinning the deterrence value afforded by DCA and NSNWs. While the F-35 may resolve their capability shortfall in 10 years, political credibility will continue to be undermined by public sentiment increasingly in favor of nuclear disarmament. Even the United States has demonstrated a lackluster commitment to tactical nuclear operations. With the bulk of U.S. nuclear modernization focused on the traditional strategic triad (bombers, missiles, submarines), tactical nuclear operations will continue to suffer from a lack of resourcing.

Before 1991, tactical nuclear operations were essential to securing Europe from the existential threat posed by the USSR and Warsaw Pact. Neglected for 20 years, the role of nuclear burden sharing reemerged in 2010 as a means of political assurance, not deterrence. The United States and its nuclear sharing partners seemed determined to maintain a status quo arrangement out of fear of what might happen if the extended deterrence construct is re-written. The current incarnation of extended deterrence does little to prevent adversaries, like Russia, from engaging in coercive actions against states in their traditional spheres of influence. Although the exact deterrent value of tactical nuclear forces today varies with the individual psychology of the one being deterred, the Russian annexation of Crimea in 2014 would seem to indicate that the current NATO deterrence construct is insufficient to preserve the European security status quo.

Notes

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² Ibid, 273.

³ Keith Payne. *The Great American Gamble: Deterrence Theory and Practice from the Cold War to the Twenty-First Century* (National Institute Press, 2008), p 92.

⁴ Ibid, 30.

⁵ Rebecca Grant, “Victor Alert,” *Air Force Magazine*, March 2011 cites that by the late 1970s, the United States had 1,000 [fighter] aircraft capable of carrying tactical nuclear weapons. Kristensen, Hans, “U.S. Nuclear Weapons in Europe: A Review of Post-Cold War Policy, Force Levels, and War Planning,” documents the total number of nuclear warheads in Europe from 1954-2005. The inventory reached its peak in 1971 with approximately 7,300 deployed warheads.

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⁸ Ibid.

⁹ Ibid.

¹⁰ Otfried Nassauer, “Germany’s Tornado Nuclear Weapons Carrier,” Berlin Information-centers for Transatlantic Security (BITS), January 2013, http://www.bits.de/public/unv_a/original-tornado_eng.htm#fn13

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¹⁶ R.J. Overy, “Air power and the origins of deterrence theory before 1939,” *Journal of Strategic Studies*, Volume 15, Issue 1, 1992, p. 87-92.

¹⁷ NATO, “NATO’s Nuclear Forces in the New Security Environment.”

¹⁸ US Government Accounting Office, *Nuclear Weapons: NNSA Has a New Approach to Managing the B61-12 Life Extension, but a Constrained Schedule and Other Risks Remain*, February 2016. The report documents the joint NNSA (\$7.3 billion) and DOD (\$1.6 billion) estimated program cost of \$8.9 billion.

¹⁹ Statement of Dr. Donald L. Cook, Deputy Administrator for Defense Programs NNSA, Department of Energy, *B61 Life Extension Program and Future Stockpile Strategy Before the Subcommittee on Strategic Forces House Committee on Armed Services*, October 30, 2013.

²⁰ Ibid.

²¹ The AN/APG-82 program is funded to support two simultaneous modification lines. The first line opened at Mountain Home AFB, Idaho, and the second at Seymour Johnson AFB, N.C. Once the line at Mountain Home finishes, a new one can be opened at RAF Lakenheath, UK. The modification line at Mountain Home is expected to complete their last aircraft in 2017.

²² Amy Butler, "Boeing To Select F-15 EW Upgrade Contractor in May," *Aerospace Daily*, March 10, 2015, <http://aviationweek.com/defense/boeing-select-f15-ew-upgrade-contractor-may>

²³ Ibid.

²⁴ US Air Force, *Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force; PE 0207134F / F-15E Squadrons*, March 2014.

²⁵ Allocation based on Air Combat Command internal white paper.

²⁶ US Air Force, *Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force, PE 0207133F / F-16 Squadrons*, March 2014

²⁷ Graham Warwick, "US Air Force Faces Capability Decision On Urgent F-16 AESA Upgrade," *Aerospace Daily*, March 30, 2015, <http://aviationweek.com/defense/us-air-force-faces-capability-decision-urgent-f-16-aesa-upgrade>

²⁸ Dutch Government statement issued September 17, 2013, reprinted by defense-aerospace.com, http://www.defense-aerospace.com/article-view/release/148024/dutch-government-explainsf_35-decision.html

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³² BBC News, "Syria conflict: Half of German Tornado jets not airworthy," 2 December 2015, <http://www.bbc.com/news/world-europe-349833396>

³³ Gareth Jennings, "Airbus DS defining FCAS aircraft requirements with Bundeswehr," *IHS Jane's Defense Weekly*, June 20, 2016.

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⁴⁴ Ibid.

⁴⁵ *US Nuclear Modernization Programs*, Arms Control Association, February 2017, <https://www.armscontrol.org/factsheets/USNuclearModernization>

⁴⁶ Ibid.

⁴⁷ *L’Avenir* article published April 19, 2015, reprinted by defense-aerospace.com, http://www.defense-aerospace.com/articles-view/release/3/162912/no-alternative-to-f_35-if-belgium-keeps-nuke-mission.html

⁴⁸ *US nuclear bombs 'based in Netherlands' - ex-Dutch PM Lubbers*, BBC News, June 10, 2013, <http://www.bbc.com/news/world-europe-22840880>

⁴⁹ Euan McKidy, “Germany’s defense minister to Trump: No, we don’t owe NATO money,” *CNN*, March 20, 2017, <http://www.cnn.com/2017/03/politics/nato-commitment-germany-reacts-trump/index.html>.

⁵⁰ Pew Research Center, “NATO Publics Blame Russia for Ukrainian Crisis, but Reluctant to Provide Military Aid,” June 10, 2015, 5.

CHAPTER 6

The Effectiveness of Bomber Assurance and Deterrence Missions on Assuring South Korea

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The U.S. Air Force Global Strike Command, on behalf of U.S. Pacific Command, conducts non-kinetic missions, termed Bomber Assurance and Deterrence (BAAD) missions. On the surface, these missions are largely self-explanatory. Their purpose is to assure U.S. allies and deter potential rivals, both of the United States and her allies, by showcasing the capability and intent of U.S. forces. BAAD missions are inextricably linked to U.S. strategic deterrence efforts and specifically to extended deterrence. In the Asia-Pacific Theater, BAAD missions are a specific element of the wider concept of Continuous Bomber Presence (CBP).¹ CBP and BAAD missions are based on assumptions about how nuclear deterrence works and has worked for the last 50 years. However, much to the fortunate disappointment of deterrence scholars, current theories of how nuclear deterrence works has not been, and hopefully will not be, tested by nuclear exchange.

BAAD missions, therefore, are simply one more method that policymakers assume provide an effective signal to U.S. allies and adversaries about American capability and, more importantly, credibility. To better understand the impact of these flights, this research study will examine the execution of BAAD missions in Northeast Asia, looking specifically at the assurance effects on U.S. regional ally, the Republic of Korea (ROK). The central objective of this research is to answer the following question: To what extent do U.S. BAAD missions assure the ROK government that the United States is committed to its extended deterrence promises?

Although the concept of assurance can be seen as a largely emotional reaction, the evidence collected through media and governmental behavior show that

BAAD missions do provide a moderate level of assurance, albeit temporary, to the ROK government and public. The increased frequency and depth of U.S.-ROK security cooperation, ROK's strong stance in the face of regional threats, and public affirmation of U.S. security efforts are all strong indicators of the overall effectiveness of American efforts. Additionally, and perhaps most importantly, the lack of support for an indigenous South Korean nuclear program is a positive sign that the ROK feels that the United States is sufficiently committed to upholding extended deterrence promises.

To be clear, it would be an overstatement to say that all of the ROK's "reassured" behavior is solely the result of BAAD missions. Unfortunately, due to the complex nature of international security and deterrence, it is extremely difficult to eliminate all, but one variable from the equation. This difficulty will be further addressed in the methodology section below, but it should be understood that BAAD missions are simply one part of a multi-faceted assurance effort. By focusing on known BAAD mission timing, this analysis makes every attempt to study the effect of the missions themselves, with as little influence as possible from other extraneous variables.

Understanding the role that BAAD missions play in assuring the ROK is important for several reasons. First, the ROK shares a border with the Democratic People's Republic of Korea (DPRK). The DPRK has historically been aggressive and unpredictable and now possesses nuclear weapons. Kim Jong-un and the DPRK pose a grave, if not existential, threat to the ROK. Assuring our southern ally is critical to preventing destabilizing behavior for the sake of self-defense. If the ROK feels assured that the United States will come to her aid, ROK leadership may feel less inclined to take preemptive or destabilizing action against the DPRK.

Second, during the 1960s and 1970s, the ROK had an indigenous nuclear weapons program. It was not long ago that the threat from North Korea and China was such that ROK leadership felt the need to provide their own nuclear security. In an increasingly volatile region, nuclear proliferation could be disastrous. Strong U.S. efforts at assuring the ROK could go a long way in preventing the resurgence of a South Korean nuclear program.

Finally, the rapid rise and expansion of China poses a regional security threat to U.S. and ROK interests. Although less inflammatory than the DPRK, China is still pushing aggressive policies in the region and attempting to muscle out the United States. A reassured ROK is vital to maintaining balance in the region and ensuring U.S. interests are maintained. Recent developments in the Philippines illustrate the influence that China can have on its neighbor, even those historically very close to the United States.

Gaining a better understanding of how BAAD missions affect the ROK will enable the United States to fine-tune its efforts at assurance not only in Northeast Asia, but also around the world. In an increasingly complex security environment around the globe, knowing what does and does not work may mean the difference between successful deterrence and assurance and failure. Not all deterrence failure necessarily leads to nuclear war, but the consequences, if it does, warrant diligent study and application of deterrence and assurance measures.

Methodology/Framework

Studying a phenomenon like nuclear assurance is a difficult task. While levels of assurance may be seen physically through behavior, it is essentially an emotional metric. This fact makes it necessary to draw conclusions based on qualitative evidence, rather than factual events or data. Even strong correlations between assurance activity and partner behavior may only be circumstantial. However, nearly every field of study related to international relations and security, especially nuclear deterrence, is naturally bound by this lack of absolutes and scientific law; extended deterrence and assurance is not unique in its less than concrete nature. Scientific limitations notwithstanding, the following research will utilize various open source data pools to assess the overall effectiveness of U.S. efforts at assuring the ROK via BAAD missions.

To assess the effects of BAAD missions on ROK assurance, various sources will be examined in correlation with dates of known BAAD activity on and around the Korean Peninsula. This data will predominantly be drawn from English-language media sources from both South Korea and the United States. The analysis will focus on the sentiment found within the media reports and the sentiment drawn from the remarks made by government officials. Major actions made by ROK government agencies as well as the general status of U.S.-ROK relations will also be used as indicators as to the level of assurance felt by the ROK in general. By examining the sentiment and behavior corresponding with known BAAD timelines, variance can be detected. Non-variance may also be noted, and can still provide insight into any impact that BAAD missions may have.

Due to massive breadth of deterrence and assurance, as well as the sensitive nature of BAAD missions themselves, a few assumptions and restrictions are required to focus the research contained herein. Besides narrowing the scope of the project, the assumptions will also help define what success and failure means with respect to BAAD missions.

1. The primary U.S. objective for BAAD missions, and thus the measure of success, is to reassure the ROK to the point that preemptive defensive

action is not taken, a South Korean nuclear program is not resumed, and the ROK continues to support U.S. efforts in the region.

2. Deterrence of the DPRK is not being measured. Aggressive action taken by DPRK is thus not an indicator of BAAD failure.
3. The assurance effect on other major regional partners such as Japan and Australia are key objectives of BAAD mission, but will not be measured.
4. Statements and sentiment drawn from open source documentation is assumed to accurately reflect the true position of the source. That is not to say that statements will not be carefully crafted for political purposes, but rather that the speaker is not intentionally lying to deceive the audience.
5. Research evidence will be limited to unclassified data regarding BAAD missions.

In addition to these assumptions, one further clarification is necessary. The term BAAD is not always clearly defined with respect to missions flown by U.S. bomber aircraft. At times, specific flights are considered BAAD missions and serve no other purpose than as a show of force. Other flights may be part of a larger exercise with regional partners, but also achieve BAAD objectives without specifically being classified as such. Additionally, U.S. Air Force Global Strike Command includes deployment rotations under the BAAD umbrella.

For the purposes of this study, BAAD is defined as any flight conducted by U.S. bomber aircraft above or around the Korean Peninsula, whether a singular show of force or in concert with a regional exercise. Major posture changes as part of the CBP in the Pacific will not be considered BAAD due to their more routine nature and lack of direct involvement with the Korean Peninsula. The specific activities being classified as BAAD and being analyzed for their effects are listed below:

1. March 19, 2013 – B-52 sortie over ROK in conjunction with Exercise Key Resolve/Foal Eagle
2. March 28, 2013 – B-2 sortie over ROK in conjunction with Exercise Key Resolve/Foal Eagle
3. Jan. 10, 2016 – B-52 flight over ROK
4. Sept. 13, 2016 – B-1 sortie over ROK
5. Sept. 21, 2016 – B-1 sortie over ROK

Literature Review

Compared to extended deterrence in general, the pool of literature dealing specifically with the Korean Peninsula is much smaller, and when examining the efficacy of specific assurance measures, almost non-existent. This lack of scholarly work presents both advantages and challenges in that there is more room to explore the subject as an original idea, but much less material to guide research and analysis. Literature focusing on the larger problem of deterrence and assurance are covered in detail elsewhere so the summary below will focus on scholarship that was specifically useful in this research endeavor.

With respect to extended deterrence in Korea, Andrew O’Neil’s *Asia, The U.S. and Extended Nuclear Deterrence: Atomic Umbrellas in the Twenty-First Century* provides a summary of the history and current state of U.S. extended deterrence efforts in Asia. His coverage of extended deterrence in South Korea, Japan, and Australia provide context and historical understanding of how deterrence policy has evolved in the region. His analysis of South Korea is especially relevant to this paper in understanding how signaling efforts can affect South Korean behavior, particularly with respect to the South Korean nuclear program of the 60s and 70s. O’Neil shows that over the decades following the Korean War, the apparent lack of American commitment drove the ROK to pursue its own weapons program. It was not until the United States increased its overt assurances and took measures to reassure South Korea that the program was cancelled. Specifically relevant to understanding BAAD missions, O’Neil shows that the U.S.-ROK military relationship has grown in depth and scope to keep pace with Korean assurance expectations. There is little doubt in U.S. capability from the ROK perspective. What is vastly more important is U.S. credibility.²

The second scholarly piece specifically relevant to the subject is the article “Assuring Japan and South Korea in the Second Nuclear Age,” written by David Santoro and John K. Warden. Santoro and Warden’s work is valuable for several reasons. First, it was written in 2015, so it is relatively current and addresses issues specific to recent DPRK behavior rather than being rooted in Cold War examples. Second, the narrow focus on Japan and South Korea provide a tailored analysis of the situation. This narrow focus is fitting, considering that the central message of the article is that assurance measures must be carefully chosen for every partner.³

The second half of the article is prescriptive in nature, recommending the appropriate actions for U.S. policymakers to ensure that South Korea and Japan remain assured by the United States’ extended deterrence umbrella. Although they do not go into detail regarding BAAD-like missions, the authors do conclude that reassuring behavior includes overt expressions of U.S. commitment. They

specifically mention the 2013 bomber sorties as a visible marker of U.S. resolve and state generally that bomber and fighter sorties in the region are valuable tools for the United States.⁴

Perhaps most importantly, Santoro and Warden's conclusion is in line with the findings of this BAAD research. Assurance is a diverse problem that requires a multi-faceted approach. More than simply shows of force, to successfully assure the ROK "the United States must address their anxiety about low-level provocations and decoupling pressures by sustaining key conventional and nuclear capabilities, maintaining dialogue and consultations, effectively signaling U.S. interests and resolve, and deepening political and economic integration."⁵

The BAAD Missions

In order to best chart changes in sentiment or behavior and illustrate any causality, each mission will be examined in chronological order. The circumstances surrounding the flights, the immediate reaction, and subsequent behavior will all be examined to distill indicators of efficacy.

In March 2013, U.S. and ROK forces were conducting their bilateral exercises Foal Eagle and Key Resolve on the peninsula. The two exercises use a combination of field maneuvers and simulations to test the ability to respond to threats from the DPRK and defend the ROK in the event hostilities commence.⁶ As part of the exercise, on March 19, 2013 a U.S. B-52 Stratofortress flew a mission over South Korea and employed a weapon on a South Korean training range.⁷

The occurrence of the flight during a pre-planned major exercise is not in itself unusual, but the announcement of the flight from U.S. and ROK officials was an explicit signaling attempt. According to the ROK Ministry of National Defense, "the revelation of the bomber's participation in the drill is aimed at pressuring Pyongyang in response to its threats of a preemptive nuclear strike on South Korea and the United States."⁸ The fact that the B-52 participation came shortly after threats of nuclear attack from North Korea and Pyongyang's nuclear test the month prior is important to recognize.⁹

Although framed by the defense ministry as pressure on North Korea, the fact that the flights occurred after North Korean threats, and their nuclear test, proves their ineffectiveness as a deterrent. There very well may be deterrent value, but the publicity was clearly aimed at reassuring U.S. allies. Speaking on the mission, Pentagon spokesman George Little highlighted that, "These CBP missions are routine and reiterate the U.S. commitment to the security of our allies and partners."¹⁰ The point was not lost on ROK officials. Kim Min-seok, a spokesman for the defense ministry, told Yonhap News Agency that "the exercise involving

B-52 is meaningful as it shows U.S. commitment to provide its nuclear umbrella on the Korean Peninsula.”¹¹ Whether the statement reflected a sincere belief in U.S. commitment cannot be known, but it is important that the comment, as well as others made by U.S. officials were focused on the defense of South Korea rather than the capability to strike the DPRK.

Besides these few official comments, most South Korean media reports were facts-based and did not reveal public opinion. One editorial from Yonhap, however, did express more personal feelings on the matter. The editorial shows strong approval and appreciation for the show of force. The author of the piece quoted that the flight was “a show of strong alliance with South Korea,”¹² and a visual display of “U.S. commitment to providing its nuclear umbrella on the peninsula.”¹³ These comments, from a public news outlet, reveal a much less politicized opinion on the effect of U.S. assurance efforts.

The second identified BAAD mission came shortly after the first, again, in response to increased DPRK saber rattling. After the first B-52 sortie, Pyongyang ramped up its rhetoric, claiming that “the North Korean People’s Army has ordered all artillery troops including strategic rocket and long-range artillery units to be under class-A combat readiness.”¹⁴ In an escalated response, the United States publicized the first-ever B-2 stealth bomber training mission over the peninsula on March 28, 2013.¹⁵ The sensitive nature of the aircraft and its mission shows an increased level of commitment from U.S. forces. It cannot be known whether the true intention was to influence the DPRK or ROK, but effects on both sides were noted.

In response to the flight, a senior ROK military official noted that the B-2 “is the strategic weapon most feared by North Korea.”¹⁶ Public media also reported the event in positive terms. Media outlet The Chosun Ilbo’s coverage of the flights made special note of the capability of the aircraft as well as its cost. Revealing confidence in the capability and U.S. commitment, the article said that “[the B-2] would prove its real worth when striking strategic targets such as the North Korean presidential palace and nuclear and missile bases.”¹⁷ Interestingly, its March 29 article also pointed out that the public announcement of the mission was in part intended to “dampen mounting calls from South Korea to build its own nuclear weapons.”¹⁸

Although a clear objective from the U.S. perspective, this element was not covered in any other news articles. At the very least, journalists from The Chosun Ilbo recognize the assurance aspect of the BAAD missions. Additionally, a few days later The Chosun Ilbo ran an article detailing the cost of the B-2 mission. There was no commentary or additional mission details, just the fact that the mission cost \$5.56 million.¹⁹ The fact that the newspaper would publish such an

article may be a strong indicator of the appreciation of the value of the mission and what it means for U.S. commitment to South Korea. In addition to The Chosun Ilbo coverage, largely positive sentiment is seen across Korean media including Yonhap and The Korea Herald.

An interesting difference is seen in the Korea Times coverage, which did not highlight the B-2 mission, but rather the North Korean reactions and increasing tension. The main article covering the flight has the headline, “NK leader orders rocket forces to be on standby to strike U.S. and S. Korean targets.”²⁰ Within the article, the flight is explained as the stimulus for the North Korean behavior, but it is not praised as in the other articles. The article does not convey a negative tone in regards to the mission, but it is neutral at best. A similar response can be seen from the Korea Times on later missions and is detailed below. If any inference is to be drawn from this coverage it is that there is clearly some variance of opinion on the importance and positive impact of U.S. involvement in Korean matters. That is not shocking in a country of 50 million people, but does illustrate that BAAD missions are not a perfect solution to the extended deterrence problem.

Apart from media coverage, governmental behavior following the March 2013 BAAD missions is indicative of the sentiment in Seoul. Despite aggressive posturing and threats from Pyongyang, U.S. and ROK military leadership renewed their commitment to the alliance. On face value, this seems obvious, but the fact that the U.S.-ROK relationship is a major instigator of DPRK aggression, it would not be unthinkable for ROK leadership to distance themselves in hopes of appeasing Pyongyang. Instead, the two allies “reaffirmed that both countries will respond firmly to any provocation by Pyongyang.”²¹ The statement reflects both the confidence in U.S. determination from a South Korean perspective, as well as the commitment from the United States to fight alongside its ally.

Further adding to the apparent confidence in U.S. commitment, Korean media covered a thank you letter sent from South Korean President Park Geun-hye to the commander of United States Forces Korea. The letter expressed her thanks for U.S. “efforts to maintain peace on the Korean Peninsula.”²² Alone, the letter can be dismissed as nothing more than diplomatic obligation. Even if that were the case, the gesture still shows a desire to keep U.S.-ROK relations strong and sends a public message that the government stands behind U.S. efforts. This appreciation was surely not directed exclusively at the BAAD efforts, but at deterrence and assurance efforts as a whole. The considerable media coverage of the B-52 and B-2 flights, though, does indicate a strong resonance within the government and the public in general. On their own, the flights would not produce the same effect as consolidated U.S. efforts, but they are perhaps the most visible and attention-getting element of the extended deterrence posturing.

Following the March and April 2013 activity, no BAAD missions were flown until January 2016 when Pyongyang conducted its fourth nuclear test. On Jan. 10, a B-52 bomber flew from Andersen Air Base, Guam, to South Korea, including a flight over Osan AB in South Korea and conducted a simulated bomb run.²³ As with the 2013 flights, the mission occurred after a North Korean test, highlighting its greater utility as an assurance to South Korea than a deterrence to Kim Jong-un.

Media coverage of the event was largely in-line with that of the 2013 flights. The Korea Herald republished a Yonhap article quoting a Korean military official's comment that "The speedier-than-expected deployment could indicate signs of the U.S.' intention that it will retaliate severely if the North makes further provocations."²⁴ The reality of a U.S. strike is unimportant. The importance lies in a military official having at least some faith in its occurrence. As with deterrence theory in general, perceptions and beliefs are critical components of assuring allies that their needs will be met via extended deterrence.

Continuing with the importance of perception, the article also stated that the B-52 arrived in Korea "armed with nuclear missiles and 'bunker buster' bombs."²⁵ This fine detail is very important to note. First, it is extremely unlikely that a B-52 flying a sortie like this over Korea would actually be carrying nuclear weapons. Second, if it were carrying such a weapon, it would hardly be communicated to the Korean media. What is more likely is that the bomber was carrying conventional air-launched cruise missiles (CALCM), which utilize the same missile platform as the nuclear-tipped air-launched cruise missile (ALCM). The only difference between an ALCM and a CALCM is the warhead, one being conventional and the other nuclear.

The difference in the missiles may be minor in technical terms, but politically and militarily, there is a major difference when reporting what the aircraft is carrying. It cannot be known whether the Korean media intentionally glossed over the difference, but putting in public newspapers that U.S. forces flew over the peninsula with nuclear weapons is significant. If the Korean public truly believed that U.S. resolve was high enough to carry nuclear weapons over the peninsula their faith in the nuclear umbrella would strengthen immensely. The fact that the media thought it enough of a possibility to publish it shows a high level of faith in the United States will to aid South Korea.

Much like the 2013 flights, not all the coverage on the mission was perfectly positive. An editorial from the JoongAng Daily praised the flight, saying that "the movement [was] Uncle Sam's show of force to demonstrate its solid alliance with Seoul in a state of emergency."²⁶ It went on, however, to say that "such a dazzling show of force only works temporarily," and that "Realistically, the only option is

for Washington to change its policy direction from the inadequate ‘strategic patience’ to aggressive engagement.”²⁷ The engagement the editorial was referring to was diplomatic talks, not military action. The comments reveal the fact that Koreans understand that BAAD missions and other shows of force are not in and of themselves adequate to protect South Korea. They may provide temporary respite from hostilities, but in the end, a true solution requires a multi-faceted approach based on diplomacy.

The Korea Times also repeated its veiled method of covering the mission. Their coverage from Jan. 11, 2016 included the headlines, “NK’s additional, surprise provocations highly likely,” and “China urges restraint over U.S. deployment of B-52 bomber.”²⁸ Just as with the 2013 coverage, the focus is on the reactions of other regional actors, not on the BAAD missions themselves. The North Korean provocation article does not even mention the B-52 until halfway through the article and simply states that it flew the mission and that it has the capability to destroy underground facilities.²⁹

Much to the dismay of Pyongyang, the ROK government reaction to the nuclear test and BAAD mission was not to distance itself from the United States, but strengthen ties. A month after the flight, Korean Major General Kim Yong-hyun announced that South Korea would hold its “biggest-ever military drill this year,” in reference to the upcoming Foal Eagle and Key Resolve exercises.³⁰ Additionally, Defense Minister Han Min-goo ordered an “active” response to an upcoming DPRK missile launch. The response included close consultation with the United States and a combined effort to “mobilize surveillance assets ‘effectively’ to minimize any lapse in monitoring the missile launch.”³¹

This response from the ROK Ministry of National Defense is important for a few reasons. First, it shows that the government is not intimidated by Pyongyang. Were the United States not a close and reliable ally, it is unlikely that South Korea would show such determination in the face of the North Korean threat. Second, the fact that an “active” military response is essentially active surveillance speaks to a high level of restraint within the ministry of defense. If one of the main objectives of BAAD missions is to assure the ROK so as to avoid aggressive defensive behavior, in this case they were effective.

Not surprisingly, the next set of BAAD missions were flown following Pyongyang’s next major provocation, their fifth, and largest, nuclear test, which took place on Sept. 9, 2016. These two BAAD missions, flown on Sept. 13 and Sept. 22 differed in that they utilized B-1 Lancer bombers.³² During the first flight, the B-1s were also accompanied by South Korean fighter aircraft, “highlight[ing] the close cooperation between U.S. and South Korean military forces that keeps them ready to respond.”³³ Media coverage of the Sept. 13 flight

closely mirrored the coverage of the previous four missions. Beyond the media headlines, however, it seems as if sentiment had shifted and U.S. officials detected the change.

Just nine days after the mission, another was flown, but to greater effect. This second mission, comprising two B-1s “made the closest-ever flight to North Korea to warn the communist country.”³⁴ One of the bombers also landed at Osan AB, marking “the first time a Lancer landed on the Korean Peninsula in 20 years.”³⁵ After landing, the B-1 was made available for public display at an airshow being held at the base.³⁶

These ramped up efforts may likely have been the result of growing concern in South Korea. According to *The Chosun Ilbo*, the Sept. 13 flight “upset some South Koreans because it was delayed for a day and lasted only 30 minutes before the planes beat a hasty retreat to Guam.”³⁷ In response, “U.S. Forces Korea said the fresh flight was an expression of the U.S. ‘continued and firm commitment’ to the defense of South Korea.”³⁸ *Chosun Ilbo* also recognized the move, stating that, “The aim of the PR exercise was apparently to reassure the South Korean public.”³⁹

When viewed in the context of relations on the peninsula, it is no big surprise that South Koreans might be growing wary. Each North Korean nuclear test was followed by a BAAD mission, but Pyongyang continued to behave provocatively. Korean editorials from September 2016 illustrate some of the growing concern. An editorial from *JoongAng Daily* recognizes that “Every time Pyongyang tests a weapon of mass destruction, Washington sends nuclear-capable bombers,” but then goes on to say that “both experts and the Korean public have become dubious about Washington’s claimed extended deterrence capacity.”⁴⁰ Faced with rapidly advancing North Korean capability to strike the U.S. mainland, the author feels that “it remains questionable if U.S. military capabilities would still be reserved to defend South Korea.”⁴¹

This concern is also relayed in the Santoro and Warden article in their discussion of decoupling.⁴² The fear amongst South Koreans is that once North Korea develops a reliable capability to strike the United States directly, the United States will no longer be willing to extend the deterrence umbrella. This is not a concern exclusive to South Korea, but can be seen throughout extended deterrence scholarship. The solution to the concern is beyond the scope of this project, but it can be safely concluded that BAAD missions alone will not remove doubt.

As of early March 2017, there have been no further BAAD missions over the Korean Peninsula. Whether as result of a lack of necessity, loss of faith in their efficacy, or financial concerns is unknown. Only time will tell if U.S. Pacific

Command continues to fly BAAD missions or substitutes them with an alternative assurance tool.

Analysis and Conclusion

The chronological coverage of BAAD missions above paints a very cyclical picture of the BAAD response on the Korean Peninsula. Regardless of which mission is examined, a familiar pattern of North Korean provocation, U.S. bomber flight, and then increased U.S.-ROK cooperation can be seen. Sentiment and portrayal in Korean media sources is also largely repetitive. Most outlets cover the flights in a very factual way, often including at least one comment from U.S. or ROK officials praising the move. To accurately determine how effective BAAD missions are, however, the span of time covering all five flights must be examined in concert and against the stated criteria in the introduction: prevention of preemptive South Korean attacks, prevention of a South Korean nuclear weapons program, and continuing support of U.S. interests in the region.

One can first examine the objective of deterring unwanted South Korean behavior. Being that the Korean Peninsula has been in a tenuous situation for more than half a century, and that the region is growing increasingly volatile is ample reason for American leaders to want to be able to check South Korean behavior. The decades of military build-up and unpredictable behavior from Pyongyang present a truly existential threat to the people of South Korea. Few would probably agree that, if faced with the same threat, U.S. behavior would be just as restrained. Despite several nuclear tests, advances in ballistic missile capability, and overt threats, the ROK has refrained from taking preemptive military action against the DPRK.

Generally, it would be overly presumptive to say that BAAD missions have prevented South Korean military action. When examined at the specific points in time that BAAD missions occurred, however, the sentiment and government behavior seem to indicate that the show of force with U.S. bombers offered utility in defusing the situation. Their highly overt and controversial (to North Korea) nature seemed to have provided an arresting shock to the progress of events and bought time for other mechanisms to defuse the situation.

The second objective is much more likely to be achieved, but vastly more catastrophic if it fails. The prevention of proliferation within South Korea is the most pressing goal of U.S. extended deterrence efforts and the worry is not unfounded. During the 1970s, the ROK, under the leadership of President Park Chung-hee ran a covert nuclear weapons program due to his lack of confidence in U.S. credibility.⁴³ South Korea is technically and financially capable of restarting the program if a need presents itself. So far, U.S. efforts have been successful and the government continually reaffirms its commitment to a non-nuclear South

Korea. Public opinion on the matter also seems to be consistent in its disapproval of an indigenous program.

A study conducted and published by the Carnegie Endowment for International Peace in mid-2016 reveals useful data regarding nuclear weapons in South Korea. The survey compares polls conducted in 2013 and 2016 about nuclear weapons and the threat from North Korea. According to Gallup polls, there was a decrease in support for a South Korean program as well as a decrease in the perceived threat from North Korea over the three-year period.⁴⁴ Two other polls, conducted by two different Korean media outlets, however, show varying results. One poll matches closely with Gallup, while the other shows a 14 percent increase in support for nuclear weapons.⁴⁵

According to the authors, this variance shows that the topic is hotly debated in South Korean society and many citizens are undecided on the matter. This is supported by the fact that media coverage of the nuclear debate grew from 2013 to 2016.⁴⁶ Most importantly, despite the increase in media coverage, even the elevated percentage matches closely with other polls conducted in 2013. In the worst case polling, the public opinion has remained consistent, and the best results reflected a decrease in support.

As was the case with the first objective, there is no sure way to isolate the role of BAAD missions in nuclear restraint in the ROK. In this case, domestic moral, political, and security concerns may outweigh any U.S. efforts. The fact that media reports on the BAAD missions always make it clear that the bombers are nuclear capable is important. Interestingly, some articles even include the B-1 when discussing the U.S. nuclear umbrella; no distinction is made that the B-1 is no longer a nuclear platform. The nuclear capability is clearly an important aspect of the BAAD missions and perhaps provides South Korea the extra level of assurance it needs to resist acquiring its own nuclear weapons.

The final objective, to secure ROK support of U.S. interests, does not need much discussion. Since the first BAAD mission in March 2013, U.S.-ROK relations have strengthened politically and militarily. Major bi-lateral as well as regional exercises are still conducted and joint efforts such as missile defense are under way. This is unlikely to change as North Korea continues to develop its weapons capability and increases threats to Seoul. Chinese growth and expansion will also contribute to closer U.S.-ROK ties.

As for the role of BAAD missions, they likely have a sizeable impact on this final objective. ROK support of U.S. interest will continue as long as it is in the best interest of South Korea, and as long as U.S. interests align with ROK interests. The United States efforts at assuring South Korea via bomber sorties go a long way in proving to ROK leadership that the United States is invested in their

alliance. Comments from senior military officials regularly praise the flights and stress their importance to the mutual defense of South Korea. Even if those leaders realize that the missions are for show, the United States attempts to do something in the face of North Korean provocation is a valuable signal.

As it was mentioned in the methodology section, assurance is not something that can be measured in units. Even explicit words and behavior may be misinterpreted or carefully chosen for political reasons. Furthermore, when examining a phenomenon that is so deeply rooted in personal sentiment having access to individuals, or native-language media, is critical. Even the most opinionated editorials or articles can lose their intent when translated into English. The lack of access to Korean-language social media has a definitive negative impact on a study such as this.

Those limitations aside, examining these five BAAD missions through the available English-language Korean media reveals that there is utility in their execution. To say that BAAD missions can make or break extended assurance would be a gross overestimation, but they do add value. It is clear, based on the recent growth in uncertainty that a greater, multi-pronged, approach to assurance is necessary. The inclusion of BAAD mission in that approach would be an important tool in assuring South Korea. As effective as aggressive diplomacy and economic sanctions may be, they are not as comforting as seeing and hearing American bombers soar overhead. Unfortunately, such missions do bear a political and financial cost. Whether or not those costs are outweighed by gains in assurance gains is a decision for the top U.S. policymakers and military leaders.

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CHAPTER 7

Bomber Assurance and Deterrence Missions: Effect on North Korean Discourse

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Nuclear deterrence depends on the capability and credibility of nuclear forces. The credibility of those forces exists primarily in the adversary's mind. Measuring the adversary's mind presents many difficulties, especially in North Korea. There is some link between state propaganda and the mindset of a totalitarian regime. The U.S. military can measure deterrence by studying North Korea's propaganda and gaining some insight into the mindset of the Democratic People's Republic of Korea (DPRK) leadership.

Specifically, the U.S. military uses highly publicized and visible bomber flights to conduct nuclear deterrence. Because of their pointed usage over the Korean Peninsula, these Bomber Assurance and Deterrence (BAAD) missions provide a way to measure the effect of nuclear deterrence through the lens of DPRK propaganda.

U.S. military deterrence credibility derives, somewhat, from the mind of the adversary. The propaganda coming out of the DPRK gives some insight into that mindset. I propose that BAAD missions cause an increase in hostile rhetoric from the Democratic People's Republic of Korea. I will test this by measuring the change in slope of the KCNAwatch.co Threat Index before and after a BAAD event.

Literature Review

The U.S. military has a prominent role in international stability and nuclear deterrence. That deterrent power comes from capability and credibility. Without credibility, the deterrence capability of the military drops to zero. Credibility comes, to some extent, from the adversary's impression or mindset. Measuring

the adversary's mindset does not come easy. Totalitarian government propaganda provides insight to a regime's mindset. Therefore, measuring that propaganda sentiment can provide some insight to deterrence credibility of U.S. forces. This literature review helps connect this logic chain.

President Barack Obama, in his *Priorities for 21st Century Defense*, explained how U.S. military nuclear power deters potential adversaries and assures allies. He attributes relative worldwide stability to the U.S. military's ability to threaten "the prospect of unacceptable damage" under any circumstance.¹ Gen. Martin Dempsey, then Chairman of the Joint Chiefs of Staff, described an operational challenge in his 2012 Capstone Concept for Joint Operations (CCJO) – protecting "U.S. national interests against increasingly capable enemies." More recently, Gen. David Goldfein, the Air Force chief of staff, explained the foundation deterrence provides to security: "quite frankly, a safe, secure, reliable nuclear deterrent underwrites every military operation on the globe."² The foundation General Goldfein described must rise to answer the challenge that General Dempsey framed while assuring allies worldwide.

As the Cold War recedes into history, more entities require deterrence, especially North Korea. According to General Dempsey in the CCJO: "Middleweight militaries and non-state actors can now muster weaponry once available only to superpowers." The U.S. Pacific Command (USPACOM) commander, Adm. Harry Harris, listed North Korea and its advances in nuclear capability as his number one "Key Challenge."³ North Korea completed four nuclear detonation tests in the last 10 years as of this writing. The DPRK continues to test intermediate range ballistic missiles and launches craft into space "in direct violation of several United Nations Security Council Resolutions."⁴ This behavior proves that North Korea does not consider international norms. Instead, it prioritizes increasing military power and maintaining sovereignty. The U.S. military attempts to deter this behavior through credible threats of retaliation.

Credibility and capability both play a vital role in nuclear deterrence. Any reduction in either poses a magnified detrimental effect on the ability to deter aggression. In the National Military Strategy, General Dempsey explains that the U.S. military deters aggression through a credible nuclear capability that is safe, secure, and effective.⁵ Additionally, during an interview with Foreign Affairs, he emphasized: "We've got to make sure that we can sustain our military power to be able to credibly deter potential threats from state actors — Russia, China, North Korea, Iran."⁶ Credibility is difficult to measure.

Nuclear theorist Keith Payne discusses the intricacies of credibility in his article in the Summer 2011 Strategic Studies Quarterly (SSQ). He proclaims: "the importance of deterrence credibility and how threats may be made credibly have

been questions at the heart of our nuclear debates for decades.”⁷ He describes some basics of nuclear deterrence, the difference between the ideas of Schelling and Kahn on nuclear force structure, and the components of deterrence. Specifically, he talks about how nuclear deterrence consists of both capability and credibility. He notes: “the level of credibility necessary for deterrence to work can vary by opponent and context, as can the measures necessary to make threats credible.”⁸ In his article in the Spring 2009 SSQ, he gets more specific “for deterrence purposes; it is *the opponent’s belief* about U.S. threat credibility that matters.”⁹ The real challenge comes from getting the opponent or adversary to believe U.S. military deterrence is credible.

He has a lot of company in noting the complexity of credibility. Lt. Gen. Jack Weinstein takes it a step further by explaining that not only is deterrence a combination of capability and credibility, it is a product of capability and credibility. He uses the term “product” mathematically, insisting that deterrence comes from the multiplication of capability and credibility. If either credibility or capability reaches a “zero” level, the nation will have “zero” deterrence capability.¹⁰ Any deficiencies in the credibility or capability of nuclear deterrence have dire consequences on the effect of that deterrence.

Just like Keith Payne, Jennifer Bradley emphasizes the role the opponent’s mind plays in deterrence. In her article in the July 2015 Air and Space Power Journal, she describes that role, “as simple as deterrence is to define, its actual practice is far more complicated, having many potential pitfalls for failure, essentially because it is a psychological function in the mind of the adversary.”¹¹ The U.S. military can convince the mind of the adversary in many ways, and one of the most visible deterrence methods comes from BAAD missions.

BAAD missions provide a responsive and visible method to demonstrate capability and credibility of United States’ nuclear deterrence. In his 2015 address to the House Armed Services Committee, Maj. Gen. Richard M. Clark, then 8th Air Force commander, expressed the essence of the BAAD missions: “Through the Bomber Assurance and Deterrence mission, we exercise with every combatant command and every joint partner annually. These exercises take place all over the world and are an example of the versatility that B-2 and B-52 bombers provide in the conventional mission arena. Two capabilities are fundamental to the success of our bomber forces: our ability to hold heavily defended targets at risk and our ability to apply persistent combat power across the spectrum of conflict anywhere on the globe at any time.” The BAAD missions provide a tool to demonstrate deterrence credibility.

In the 2010 Nuclear Posture Review, then Secretary of Defense Robert Gates, explained the role of bombers in creating credibility: “Unlike ICBMs and SLBMs,

bombers can be visibly deployed forward, as a signal in crisis to strengthen deterrence of potential adversaries and assurance of allies and partners.”¹² As the Core Function Lead for Nuclear Deterrence Operations, the Air Force Global Strike Command (AFGSC) executes the BAAD missions. It uses BAAD missions to create “complex challenges to our adversaries’ warfighting capability while simultaneously demonstrating our nation’s commitment and resolve to our allies.”¹³ That demonstration of commitment and resolve provides the credibility portion of deterrence on the Korean Peninsula.

Dr. Bruce Cummings’ article in the Bulletin of the Atomic Scientists focuses on the history of the United States engagement with the DPRK over the last 70 years, including BAAD missions. Doctor Cummings provides a brief history of American bomber flight responses to DPRK action. In 1951, B-29s flew from Okinawa to North Korea to practice atomic bomb drops for Operation Hudson Harbor. While they deployed dummy A-bombs instead of actual nuclear weapons, the message resonated. The North Koreans have since built approximately “15,000 underground facilities related to their national security.”

Doctor Cummings asserts that the international community should deal with North Korea “not as we would like it to be, but as it is.” The author argues that the United States needs to deal directly with the Kim monarchy through diplomacy and that the Kim monarchy will not collapse through outside pressure – it has built solid internal resiliency towards sustaining the DPRK. Additionally, he finds that U.S. deterrence over the last 25 years has failed to halt DPRK development of nuclear weapons capability and nuclear warhead quantity.

The claim by Doctor Cummings that the United States is reaping the effects of “our past nuclear bullying” and that the bomber flights have no effect on North Korea’s actions provide a foundation to the hypothesis of my research. Also, Doctor Cummings insists that the United States needs to consider the DPRK mindset and paradigm when responding to their nuclear aggression, and hopefully my research will provide more data to understand that paradigm.

Jane Kim and Nat Kretchun also provide insight to the DPRK paradigm. They performed a very thorough review of all kinds of media available to North Koreans. Their report documents legal and illicit communication within North Korea. It provides insight on how DPRK citizens obtain and spread news and information. Namely, not very many of them have access to a computer and about 80 percent of them get their information from spoken word. While most citizens get their information via spoken word, the ruling class in the Worker’s Party has access to the limited internet and has significant exposure to the KCNA articles. Because of that exposure, the propaganda articles give an insight into the

mentality of discourse within North Korean government and existing power structure.

In his 2004 analysis, Major Burgess performed a study of media from the Republic of Korea (ROK) and used it to analyze South Korean sentiment towards the United States and United States Forces Korea (USFK). He compiled media sentiment collected from ROK newspapers, the Foreign Broadcast Information Service, the USFK Public Affairs office, demonstrations, and dissident websites. He compared important security events to the sentiment timeline and attempted to predict which future events will produce significant negative sentiment towards the United States. The large database his team created gave USFK the ability to understand the sentiment of ROK citizens towards USFK. This understanding allowed military leadership in the area to make more informed decisions and strengthen relations between the United States and ROK. Major Burgess's research provides a military application for connecting media sentiment with the mindset of the populace in South Korea.

Dr. Robert Entman provided an excellent example of quantitatively studying media sentiment along a timeline. His study focuses on the framing of CBS, ABC, and NBC during the 2008 U.S. presidential primary. It focuses on media content analysis, media slant, and the effects of time on media framing. It creates a time-dependent model of media discourse during the Republican Party's announcement of Sarah Palin as vice presidential nominee. Specifically, Doctor Entman's article provides two excellent figures showing the cascading effect of time and media sentiment. These figures facilitate analysis of the time effect on the DPRK media during the sequence of DPRK nuclear action/U.S. response/DPRK media response.

In 2012, Dr. Timothy Rich conducted a study of KCNA news to understand the DPRK's sentiment around nuclear issues. It uses text analysis to track rhetoric and compare it to events having to do with nuclear security. This study uses a concept called "term frequency-inverse document frequency" to determine the weight of a term based on its number of appearances in a document. It provides an interesting insight to analyzing news article sentiment. The study finds that North Korea most likely places little significance on Six Party talks and primarily desires a US-DPRK nuclear agreement. Additionally, the author asserts that DPRK propaganda is more calculated and nuanced than it is blanket propaganda. This assertion is important to my study, which predicates that the KCNA articles provide insight into the totalitarian DPRK regime.

Finally, a RAND Corporation study from 2012 by Therese Delpech summarized the crux of the problem when dealing with North Korea's nuclear

program. Namely, the U.S. military needs to measure the effect of threats towards Kim Jong-un.

“On the whole, blatant moves or threats, when credible, were more successful than uncertainty; Eisenhower and Kennedy were more effective than Nixon. Uncertainty may instill caution in the opponent’s mind and lead him to ponder decisions. Blatant threats, if calibrated and credible, oblige the opponent to take sides in a gamble known to be highly dangerous. Experience shows that retreat is likely. However, it is debatable whether such a consequence would always be the case, notably in the 21st century: Blatant threats can enrage incautious minds or leaders with no experience of major wars. It is now clear from declassified documents that Soviet leaders and the Soviet military high command both understood the devastating consequences of nuclear war and, on the whole, thought the use of nuclear weapons should be avoided. Who can be sure this belief is present in the same way in the minds of Mahmoud Ahmadinejad of Iran or Kim Jong-un.?”

Research Methodology

After reading several DPRK news articles posted online through Rodong.rep.kp and KCNA.kp, I noticed that they focus very heavily on nuclear weapons buildup and alleged “saber rattling” from the United States (and South Korea, to a lesser extent). To better understand the sentiment of the DPRK articles, I compiled all the words used in Rodong.rep.kp articles over the last year and found that the term “nuclear” was the fifth-most used word behind Kim, DPRK, Jong, and Party. It occurs even more than “Korea.” Attachment 1 depicts a visual of the weighted word representation.

I compiled articles from Rodong.rep.kp because the domain facilitates an easy collection of all articles. I used a program, HTTrack, to download all the news articles from the domain as text files. I then used a compiler program, TXTcollector, to combine all the articles into one large document. To find the frequency ranking, I pasted all the compiled articles into http://www.writewords.org.uk/word_count.asp, which produced the ranked list.

Not only does the DPRK focus many articles on nuclear weapons capability, but it also responds to BAAD flights. I noticed that the day after the United States flies a BAAD mission near Korea, the DPRK includes at least one hostile article both decrying the aggressions of the United States and describing its need for nuclear weapons to assert its sovereignty.

To measure the effect of BAAD missions on deterrence in the Korean Peninsula, I chose to compare the sentiment of DPRK propaganda as it changed before and after a BAAD flight in the region. As a first step, I gathered the dates

of BAAD missions flown near the Korean Peninsula. Then, to evaluate the sentiment of DPRK propaganda, I used articles published on the DPRK-controlled news agency, KCNA.kp, to analyze sentiment. I desired to compare the sentiment change across as many BAAD missions as I could find.

When searching for BAAD missions, I used several methods and searched for any BAAD event from Jan. 1, 2013, to Feb. 28, 2017, near the Korean Peninsula. Focusing on 2013 and later ensured I would focus only on the Kim Jong Il regime and hopefully provide analysis of the most pertinent occurrences.

I sought BAAD mission dates almost entirely from publicly available sources. The Air Force Global Strike Command planning staff provided a list of worldwide bomber deployments and locations starting in May 2014. I found two useful dates from this list: bomber squadron deployments to Andersen Air Base, Guam. All other dates included BAAD missions to other parts of the world and were non-pertinent to this research. This list did not provide specific dates of BAAD flights near the Korean Peninsula, so I sought other methods to find specific dates to study.

Next, I consulted Google Trends to find spikes in search requests for “B-52,” “B-2,” “B-1,” and “BAAD” from South Korean Internet Protocol (IP) addresses since January 2013. Google Trends lets users specify time ranges and regions to view the trends in each area. The results generated by Google Trends show search results and their popularity, by week, as a percentage: “Numbers represent search interest relative to the highest point on the chart for the given region and time. A value of 100 is the peak popularity for the term. A value of 50 means that the term is half as popular. Likewise a score of 0 means the term was less than one percent as popular as the peak.” I found 20 spikes in search requests for the four terms.

Next, I attempted to find the exact date of a BAAD event within each of the 20 week-long windows generated by Google Trends. I searched for each of the terms individually, limiting the date range of results to seven days before and after the Google Trends window. I then looked within the results for news articles that specified a BAAD mission had flown or tried to find an explanation for the spike in search requests. Attachment 2 shows the results of the Google Trends search as well as the confirmed dates and sources for each BAAD event.

Next, I needed a way to measure the sentiment of the articles before and after the BAAD flights. The independent organization of NKnews.org compiles multiple sources of North Korean data, including KCNA.kp articles. Additionally, the sister website to NKnews.org, KCNAwatch.co, provides an unedited record of DPRK propaganda from several news sites. NKnews.org also evaluates the aggression level of KCNA.kp articles each day, which they call a “Threat Index.”

The Threat Index published by KCNAwatch.co provides this research a measurable aggression level of the DPRK propaganda. The Threat Index is a ratio of aggressive words per article, each day, published by the DPRK through KCNA.kp. It does not include any Rodong.rep.kp articles or articles from any other sources. The change of the Threat Index each day shows an increase or decrease in aggression level. I use that increase or decrease in the days before and after a BAAD flight to measure the effect of the flight on the DPRK's sentiment and therefore on its deterrence effect.

Findings and Analysis

To study the DPRK response to BAAD events, I will utilize several methods to analyze the Threat Index. The dependent variable for this study will be the BAAD mission date. The independent variable will be the Threat Index slope change. I measured Threat Index slope before and after each event, and I hypothesize that an increase in the Threat Index slope by 0.01 (H_1 threshold) immediately after a BAAD event will confirm a causal relationship between the two. Once I compile the data, I will measure the Average Treatment Effect of the BAAD event on the Threat Index slope to determine the validity of the hypothesis.

After I gathered the BAAD event dates, I created two timelines, one for February and March 2013, and one for September 2016, displayed in Attachment 3. Those months cover five of the nine BAAD events I am evaluating and facilitate understanding the complexity surrounding deterrence in North Korea. BAAD missions rarely take place in times of low tension with North Korea. Measuring their effect on propaganda sentiment demands several approaches.

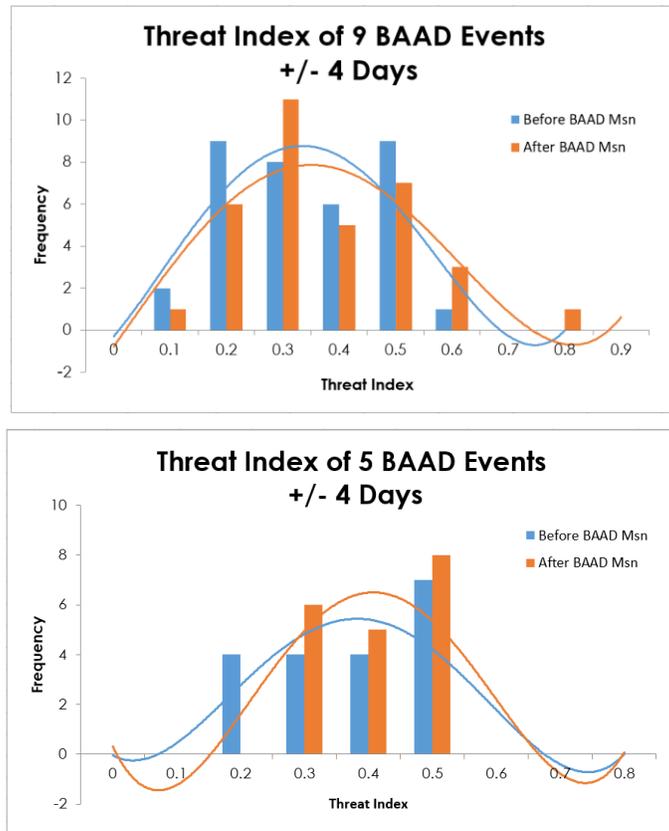
Once I gathered all the BAAD mission dates, I determined when KCNA.kp reported each of the events. To my surprise, KCNA.kp never reported two of the BAAD events – the BAAD flight over Australia on July 6, 2015, and the BAAD flight over South Korea on Jan. 10, 2016. All other BAAD flights were reported the day after the flight occurred.

To further complicate the analysis of the BAAD events, some of the nine events did not fulfill the true spirit of a BAAD flight. Only five of the analyzed events fulfill the purest definition of a BAAD flight: a U.S. Air Force B-1, B-2, or B-52 bomber flying near the Korean Peninsula on a practice bomb run. Of those five, KCNA.kp reported all but one – the January 2016 BAAD flight. I am not sure why KCNA.kp did not report that BAAD mission, but I included it in this analysis under the assumption that the DPRK government and Kim regime knew about it.

Of the four BAAD events that do not fulfill the true spirit of a BAAD mission, two include bomber squadron deployment swapouts at Andersen Air Base, Guam. AFGSC considers these swapouts a BAAD mission and KCNA.kp reports on them. The next includes a BAAD flight over Australia, which was subsequently not reported by KCNA.kp. The last of those four comes from the kickoff of Foad Eagle exercise in March 2013. I included this event in the analysis because it happened during a time of high tensions on the Korean Peninsula and two BAAD flights occurred during Foad Eagle that year. The timeline depicted in Appendix 3 depicts the proximity of Foad Eagle kickoff to the two BAAD flights in March.

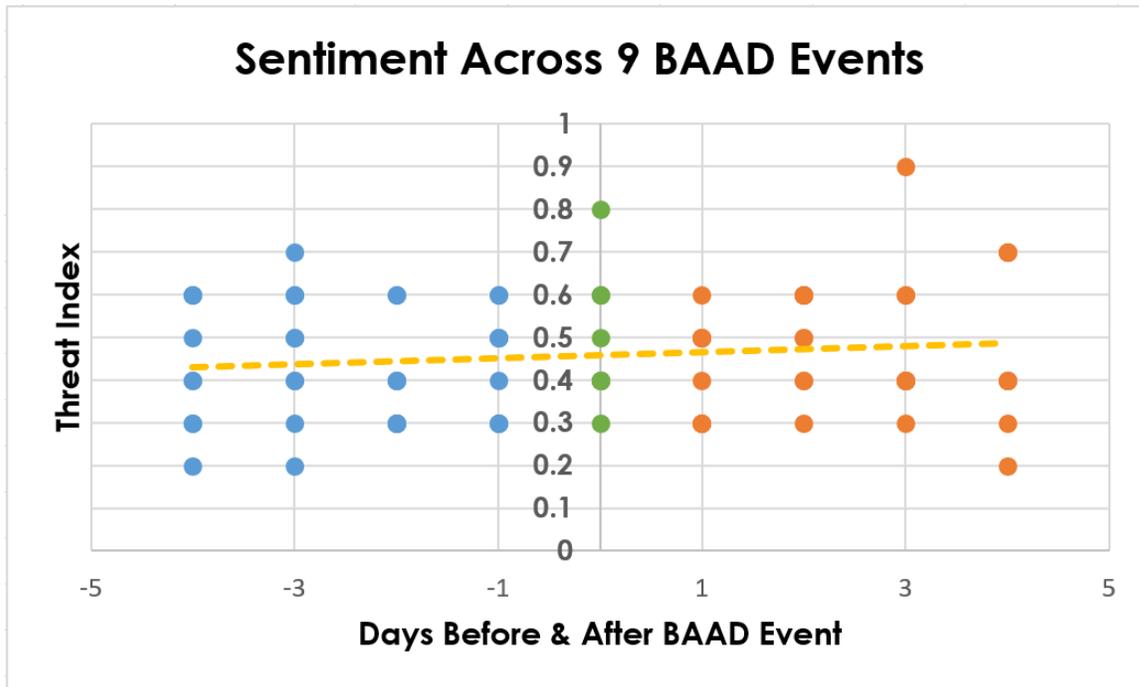
For the remainder of the study, I attempt to analyze the Threat Index using both sets of BAAD events: a set of all nine events and a set of the five “true” BAAD flights. The following histograms show how the Threat Index four days before and after a BAAD event. When only the five “true” BAAD flights are analyzed, the Threat Index increases more prominently following a BAAD mission. This also creates more pronounced deviations from the smaller sample size.

Figure 1 and 2 Histograms



When comparing all nine BAAD events, the trends tend to include smaller changes. To further understand the effect of BAAD events, I compiled the data from the histograms above into a scatterplot for trend comparison. This chart shows all Threat Index scores for four days before, the day of, and four days after the nine BAAD events in this study.

Figure 3 Scatterplot



The trendlines support the hypothesis – that BAAD events increase aggressive rhetoric in DPRK propaganda. The four days before a BAAD event, aggressive rhetoric trends downwards slightly, at a rate of 0.0033 Threat Index units per day. After a BAAD event, the aggressive rhetoric trends upwards at a rate of 0.012 Threat Index units per day. Over the span of the sampled date range (Jan. 1, 2013, to Feb. 28, 2017) the Threat Index decreased an average of 0.000025 Threat Index units per day. The increase in Threat Index after a BAAD event, although small, is a significant increase over the average over the entire sample range. This analysis does not control very well for outside factors.

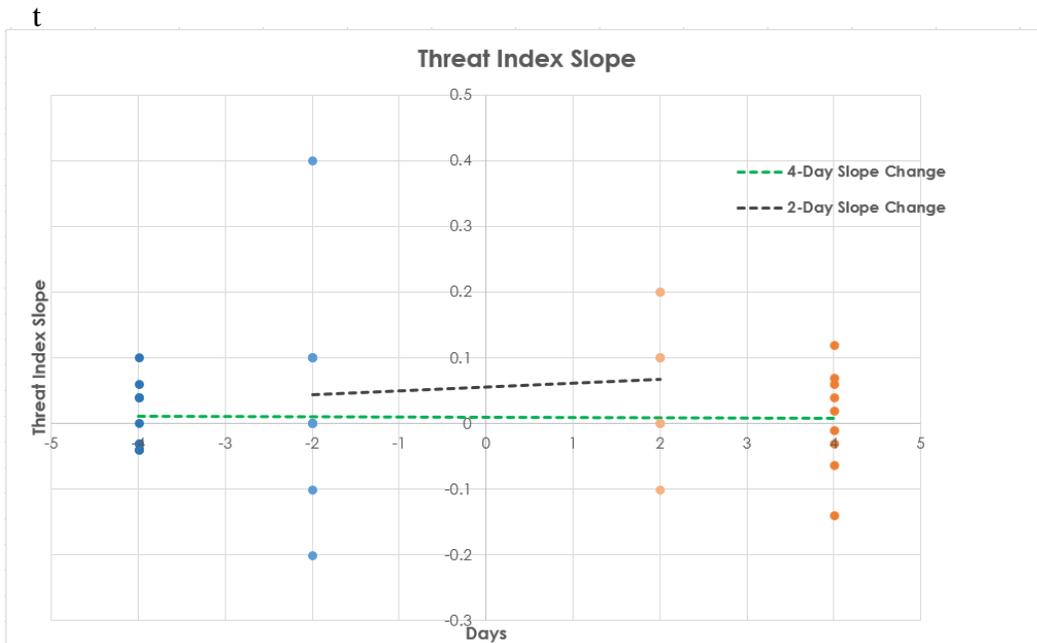
AFGSC most often flies BAAD missions near the Korean Peninsula during times of high tension, so this study needs to control for outside trends more appropriately. I need to evaluate the Threat Index data while controlling for innate trends or other forces acting on the aggression level of the propaganda. To accomplish this, I will analyze the slope of the Threat Index two (and four) days before the BAAD event and compare it to the slope two (and four) days after the BAAD event.

Across the entire date range, the average two-day slope is 0.00048 Threat Index units per day while the average four-day slope is 0.00059 Threat Index units per day. Both of these slopes indicate a very slight increase in aggressive sentiment in KCNA.kp propaganda over an average two-day or four-day span. To determine if BAAD events have any effect on propaganda sentiment, I determined the change in Threat Index slope from before a BAAD event to after a BAAD event. I analyzed the slope two days before and after the BAAD event as well as four days before and after the BAAD event. Using a two-day slope produced enough variance to render the analysis unreliable. The slope measured over a four-day span produced more consistent results over the nine BAAD events. Figure 4 shows the high standard deviation and variance of the two-day slope analysis in comparison to the four-day slope analysis. Figure 5 provides a visual representation of the four-day and two-day slope before and after the BAAD events, as well as a trend line showing the change in slope from before to after using both a two-day and four-day slope.

Figure 4 Descriptive Statistics

<i>Slope Change (+/- 2 Days)</i>		<i>Slope Change (+/- 4 Days)</i>	
Mean	0.022	Mean	-0
Standard Error	0.066	Standard Error	0.033
Median	0	Median	0.02
Mode	0	Mode	#N/A
Standard Deviation	0.199	Standard Deviation	0.098
Sample Variance	0.039	Sample Variance	0.01
Kurtosis	2.148	Kurtosis	4.843
Skewness	-1.01	Skewness	-2.03
Range	0.7	Range	0.32
Minimum	-0.4	Minimum	-0.24
Maximum	0.3	Maximum	0.08
Sum	0.2	Sum	-0.03
Count	9	Count	9

Figure 5 Scatterplot



For all nine BAAD events, the average slope of the Threat Index increased significantly when evaluating it using a two-day slope. As previously stated, this created significant variance that rendered it inconsequential. The four-day slope analysis, on the other hand, produced much less variance in slopes but showed that the BAAD events had the opposite effect on the Threat Index. When comparing four-day slopes before and after the BAAD events, the Threat Index slope decreased slightly. The average four-day slope for the sample timeline is 0.0014 Threat Index units per day. The average four-day slope for the four days before a BAAD event is 0.011 units per day. The four-day slope after a BAAD event decreased to 0.0075 units per day, decreasing the slope, on average, 0.0037 Threat Index units per day.

These small numerals indicate significant changes in the Threat Index slope. A decrease in the slope of 0.0037 Threat Index units per day represents a change 27 times larger than the average four-day slope change. In following paragraphs, I will perform an average treatment effect (ATE) on the Threat Index slope change to determine its relevance and significance on the hypothesis.

The following tables show individual BAAD events and their effect on the slope of the Threat Index. Note the variance and unreliability in the two-day slope table as well as significant reduction in Threat Index slope after the non-reported BAAD flight in January 2016. The tables also include a rank among all 1,520 instances in the sample range beginning Jan. 1, 2013. In both tables, the Threat

Index slope increased significantly in the days following the Foal Eagle 2013 kickoff. Also of note, the Threat Index slope did not change at all for three of the five “true” BAAD flights in the two-day table (the table with the most variance).

Figure 6 and 7 Rank of Threat Index Slope change

Change in Threat Index Slope, +/- 2 Days of 9 BAAD Events [1,520 Total Samples]					Change in Threat Index Slope, +/- 4 Days of 9 BAAD Events [1,520 Total Samples]				
Slope Change	Rank of Event	% Rank of Event	Event Date	Event Type	Slope Change	Rank of Event	% Rank of Event	Event Date	Event Type
0.30	129	90.2%	21-Sep-16	BAAD flight	0.08	205	85.7%	8-Mar-13	Foal Eagle begin
0.20	273	77.3%	8-Mar-13	Foal Eagle begin	0.07	236	83.1%	6-Jul-15	BAAD flight - Australia
0.10	348	70.8%	7-Aug-15	Guam Deployment	0.07	268	81.8%	28-Mar-13	BAAD flight
0.10	464	59.8%	27-Aug-14	Guam Deployment	0.02	578	61.0%	27-Aug-14	Guam Deployment
0.00	627	39.9%	28-Mar-13	BAAD flight	0.02	631	58.3%	12-Sep-16	BAAD flight
0.00	627	39.9%	19-Mar-13	BAAD flight	0.01	656	55.8%	19-Mar-13	BAAD flight
0.00	627	39.9%	12-Sep-16	BAAD flight	-0.02	970	35.8%	21-Sep-16	BAAD flight
-0.10	1089	22.4%	6-Jul-15	BAAD flight - Australia	-0.04	1087	27.5%	7-Aug-15	Guam Deployment
-0.40	1475	1.5%	10-Jan-16	BAAD flight - not reported by KCNA.kp	-0.24	1508	0.2%	10-Jan-16	BAAD flight - not reported by KCNA.kp
Positive slope change = increase in aggressive sentiment					Positive slope change = increase in aggressive sentiment				

The four-day slope comparison provided data that may validate or invalidate the hypothesis. Average treatment effect analysis will provide an observational method of determining a causal relationship between the BAAD missions and a change in the Threat Index slope. The treatment effect analysis compares the change of the Threat Index slope after the nine BAAD events and compares it to the mean outcome of the control group, the remaining 1,448 days in the sample range.

The ATE method finds the “Program Impact” of the BAAD events on the Threat Index slope. The Threat Index slope decreased by 0.00382 more, on average, after a BAAD event than on a day without a BAAD event.

$$\text{Program Impact} = \bar{y}_{T=1} - \bar{y}_{T=0}$$

$\bar{y}_{T=1}$ Average increase in Threat Index after a BAAD event, -
0.00365

$\bar{y}_{T=0}$ Average increase in TI after days without BAAD event,
0.000175

$$\text{Program Impact} = -0.00382$$

The evidence suggests that BAAD events do not increase the aggression level in DPRK propaganda. Therefore the hypothesis cannot be confirmed. In fact, this analysis suggests that BAAD events may even decrease aggressive sentiment in

DPRK propaganda. This analysis fails to confirm or reject the hypothesis because of two main factors.

First, there are more dates between Jan. 1, 2013, and Feb. 28, 2017, that probably suffice as BAAD events that I did not take into account. Secondly, the outlier of the January 2016 BAAD event changes the outcome of the ATE analysis significantly. Without the January 2016 data, the Program Impact equates to a slope increase of 0.026, which indicates a significant change in sentiment, one well above the H_1 threshold of a slope increase of 0.01. The following table shows the difference in the standard deviation and variance with and without the January 2016 BAAD event.

Figure 8 Descriptive Statistics

<i>Slope Change (+/- 4 Days) including Jan 2016</i>		<i>Slope Change (+/- 4 Days) excluding Jan 2016</i>	
Mean	-0	Mean	0.026
Standard Error	0.033	Standard Error	0.016
Median	0.02	Median	0.02
Mode	#N/A	Mode	#N/A
Standard Deviation	0.098	Standard Deviation	0.044
Sample Variance	0.01	Sample Variance	0.002
Kurtosis	4.843	Kurtosis	-1.34
Skewness	-2.03	Skewness	-0.17
Range	0.32	Range	0.12
Minimum	-0.24	Minimum	-0.04
Maximum	0.08	Maximum	0.08
Sum	-0.03	Sum	0.207
Count	9	Count	8

Lastly, constraining the analysis to only the “true” BAAD flights that were subsequently reported by KCNA.kp (four total BAAD flights), may provide additional insight. If only the four events on March 19 and March 28, 2013, and Sept. 12 and Sept. 21, 2016, the Program Impact adjusts to a slope increase of 0.019. This result also validates the hypothesis that BAAD events increase the aggressive sentiment in DPRK propaganda.

While the evidence analyzed in this study did not produce a positive confirmation of the hypothesis, it hopefully provided several interesting points to note. For research purposes, when comparing propaganda sentiment, use the slope of that sentiment measure before and after to control for unknown variables. Measuring the slope in too short of a span creates variance that undermines results. Lastly, finding pertinent events and dates is not as difficult as parsing out

which events are most relevant to the research without overly constricting the available evidence.

Recommendations for Further Analysis

Further studies on this topic can expand to a wider reach or narrower focus to gain insight on the effect of BAAD missions on DPRK discourse. Broader studies could determine if there are any diminishing deterrent effects on continued BAAD missions, or threats, without follow-through.

More narrow studies can test Keith Payne's assertion in his Spring 2009 SSQ article that nuclear weapons with more precision and lower yields may provide greater deterrent value. The KCNA.kp sentiment may change after the B61-12 becomes operational. Recently, the Terminal High Altitude Area Defense (THAAD) system deployed to the Korean Peninsula. Its presence most likely has a deterrent effect, and it may affect DPRK discourse in a measurable way. Any of these avenues can provide valuable insight into the mindset of the adversary.

Conclusion

BAAD events near the Korean Peninsula often take place during times of heightened tension, but they still have a measurable effect on propaganda sentiment. BAAD flights most likely cause some aggression in DPRK propaganda sentiment, but only a small amount. This study was not able to confirm the hypothesis nor could it disprove the hypothesis. In general, the true BAAD flights have a negligible effect on the change of aggression level within DPRK propaganda. BAAD flights have tremendous value for nuclear assurance. Employing BAAD flights purely to assure allies and disregarding their effect on the mindset of the adversary is an acceptable course of action. The DPRK sees the flights. They report on the flights through KCNA.kp and the discourse of their propaganda increases a little, but this study found no significant increase in aggressive sentiment.

I attempted to provide several examples of propaganda sentiment analysis to help inform any future deterrent shows of force. Responses vary significantly from event to event, so the best insight will come after collecting more data. Namely, Foal Eagle exercises may produce a large increase in aggressive propaganda. Hopefully, this insight to the adversary mindset provides some measurable way to evaluate deterrence effects.

Attachment 2

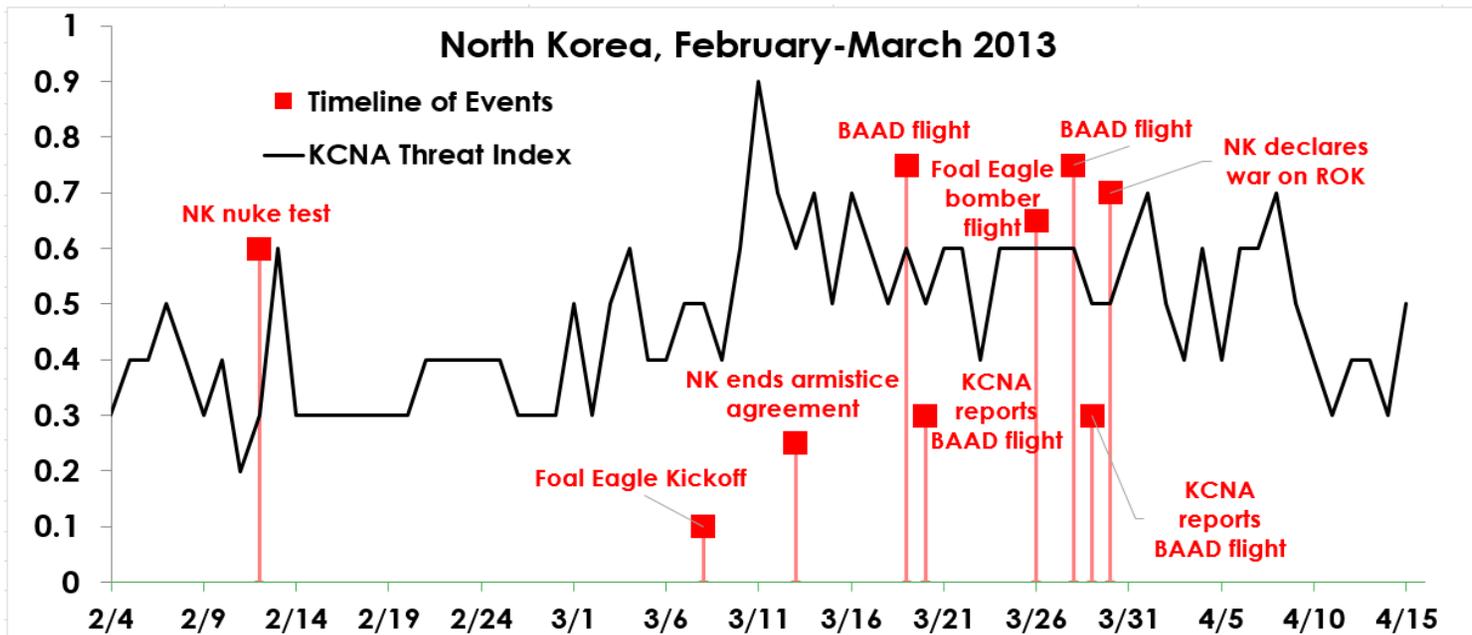
Search Term BAAD			
Trends Window	Relevant	Confirmed Date	Additional Info
Feb. 8, 2015	No	N/A	Black Artists and Designers club article
March 20, 2016	No	N/A	2 Korean children killed by train near Baad station on March 22
June 26, 2016	No	N/A	Article about Afghan custom of baad

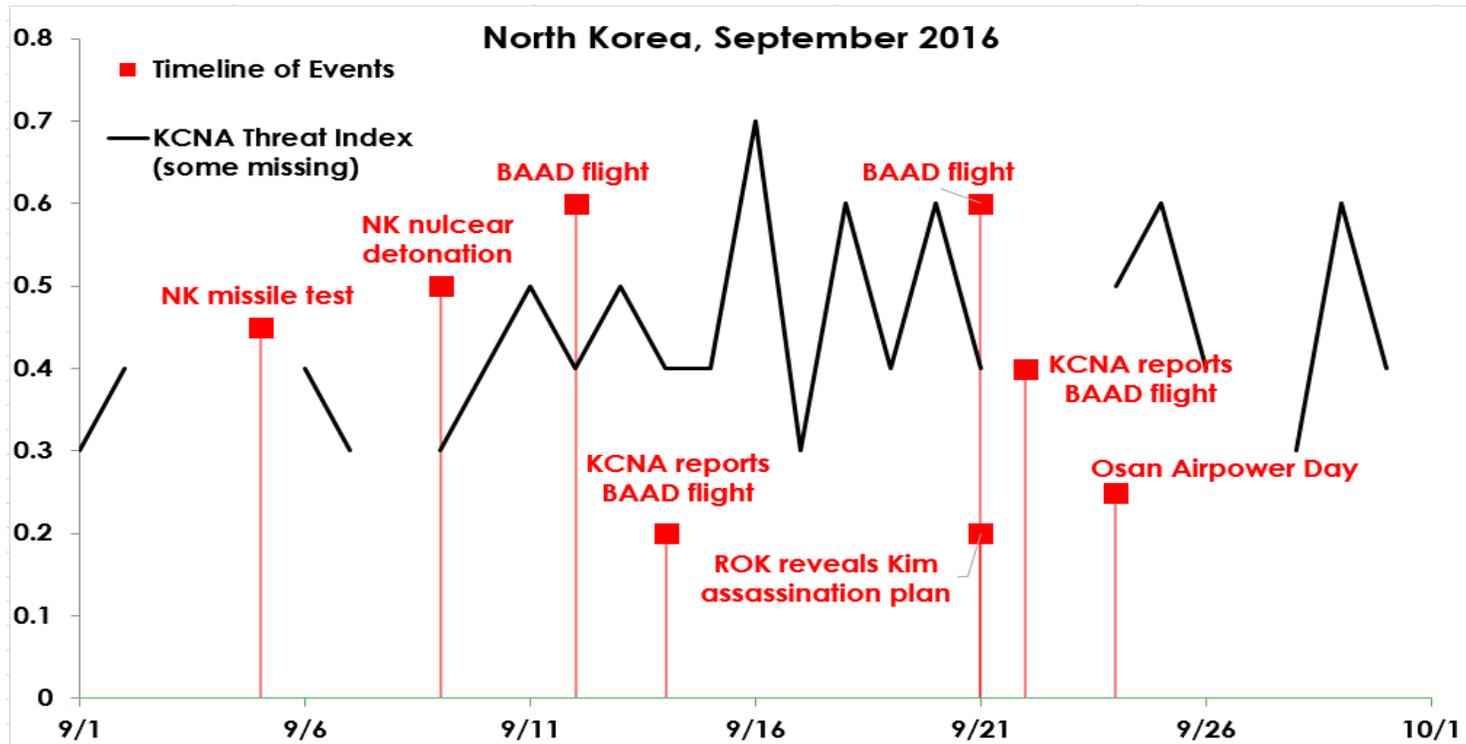
Search Term B-52			
Trends Window	Relevant	Confirmed Date	Additional Info
March 17, 2013	Yes	March 8, 2013	Foal Eagle exercise begins http://www.stripes.com/news/pacific/korea/b-52s-flying-during-joint-us-south-korea-exercises-1.212417
March 17, 2013	Yes	March 19, 2013	BAAD flight in response to Feb '13 NK nuke test, part of Foal Eagle http://guam.stripes.com/base-info/b-52-flies-mission-over-rok#sthash.MRVJRvAL.dpbs
March 30, 2014	No	April 2, 2014	B-52s and B-2s trained over Hawaii
July 2, 2015	Yes	July 6, 2015	BAAD flight over Australia http://www.upi.com/Defense-News/2015/07/06/B-52-bombers-demo-long-reach-of-US-air-power/3921436204530/
Aug. 23, 2015	Yes	Aug. 7, 2015	Guam deployment swapout. http://www.af.mil/News/ArticleDisplay/tabid/223/Article/911677/all-global-strike-bombers-deploy-to-andersen-maintain-stability-in-pacom-theater.aspx
Jan. 10, 2016	Yes	Jan. 10, 2016	BAAD flight in response to North Korean H-bomb test https://www.nytimes.com/2016/01/11/world/asia/south-korea-us-flies-b-52-bomber.html *Used in Public Affairs cross-study

Search Term B-2			
Trends Window	Relevant	Confirmed Date	Additional Info
March 23, 2013	Yes	March 28, 2013	BAAD flight in response to Feb '13 NK nuke test http://www.usatoday.com/story/news/world/2013/03/28/us-b-2-bombers-south-korea/2027607/
July 13, 2014	No	N/A	Possibly due to articles about the B-2s 25 th anniversary on 17 July
Aug. 31, 2014	Yes	Aug. 27, 2014	Guam deployment swapout
March 1, 2015	No	N/A	Possibly due to South Korean news report on U.S. military capabilities
April 19, 2015	No	N/A	Possibly due to Bloomberg article on B-2 cost
Aug. 16, 2015	Yes	Aug. 7, 2015	Guam deployment http://www.pacaf.af.mil/News/ArticleDisplay/tabid/377/Article/616816/b-2-deployment-to-guam-teamwork-sorties-success.aspx
Nov. 15, 2015	No	N/A	Possibly due to a stripes.com article or a wedding in S Korea with "B-2" in the address

Search Term B-1			
Trends Window	Relevant	Confirmed Date	Additional Info
Feb. 14, 2016	No	N/A	Possibly for B-1s leaving CENTCOM. Also, F-22s deployed to Osan on Feb. 17
June 12, 2016	No	N/A	Unsure of spike origin. Also, on June 16, a suicide bomber allegedly killed Kim Jong Un
Sept. 18, 2016	Yes	Sept. 12, 2016	BAAD flight in response to Nuclear Bomb test http://www.afgsc.af.mil/News/ArticleDisplay/tabid/2612/Article/942555/us-b-1-bombers-conduct-sequence-flights-with-south-korea-japan-in-response-to-n.aspx *Used in Public Affairs cross-study
Sept. 25, 2016	Yes	Sept. 21, 2016	BAAD flight nearest DPRK border, lands in ROK http://www.reuters.com/article/us-northkorea-nuclear-flight-idUSKCN11R0C6 *Used in Public Affairs cross-study

Attachment 3





Notes

¹ President Barack Obama, “Sustaining U.S. Global Leadership: Priorities for 21st Century Defense,” January 2012, 5.

² General David L. Goldfein (Twenty-First Chief of Staff of the U.S. Air Force) interview by Strategic Studies Quarterly, 5 January 2017, in *Strategic Studies Quarterly* Volume 11, Issue 1 (Spring 2017), 3-13, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-11_Issue-1/Goldfein.pdf.

³ Admiral Harry B. Harris Jr., Statement. U.S. Pacific Command Posture, before the U.S. Congress, House Armed Services Committee. 24 February 2016. 4.

⁴ *Ibid.*, 3.

⁵ Chairman Joint Chiefs of Staff, *The National Military Strategy of the United States of America 2015* (Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, June 2015): 7.

⁶ General Martin Dempsey (Chairman Joint Chiefs of Staff) interview by Gideon Rose, June 2016, in *Foreign Affairs*, <https://www.foreignaffairs.com/interviews/2016-08-01/notes-chairman>.

⁷ Keith Payne, “Maintaining Flexible and Resilient Capabilities for Nuclear Deterrence,” 23.

⁸ *Ibid.*, 23.

⁹ Keith Payne “On Nuclear Deterrence and Assurance,” 50.

¹⁰ Lt. Gen. Jack Weinstein, “Deterring North Korea’s Nuclear Missile Threats: No Challenge Only Opportunity,” (ICAS Fall symposium, 25 October 2016), <http://www.icasinc.org/2016/2016f/2016fjwb.html>.

¹¹ Jennifer Bradley, “Increasing Uncertainty,” 73.

¹² U.S. Department of Defense, *Nuclear Posture Review*, Washington, DC, April 6, 2010, p. 22. https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf

¹³ Air Force Global Strike Command, *Strategic Plan*, May 2016, p. 7, http://www.afgsc.af.mil/Portals/51/Docs/AFGSC%20Strategic%20Plan_2016_CC%20Signed.pdf?ver=2016-05-06-144801-403.

CHAPTER 8

Conclusion and Recommendations

The research presented herein sought to both investigate the relationship between assurance and deterrence and evaluate the effectiveness of missions designed to accomplish each objective. In general, it was found that current assurance and deterrence activities are meeting mission objectives. However, it is suggested that there be greater awareness of the desired effects of the various missions and whether different mission characteristics (timing, choice of platform, etc.) affect mission outcomes.

More specifically, as the responsibility of the deterrence of adversaries and the assurance of allies does not rest with any single command or even service, we suggest that there be a concerted, whole of government approach taken to the planning, implementation, and evaluation of these missions. We recommend the creation of a Joint Staff-level office charged with the planning and evaluation of deterrence and assurance missions that will coordinate amongst both the functional and regional combatant commands.

For the BAAD missions specifically, building on the observation that there is no publicly articulated set of expectations against which to evaluate their effectiveness, we suggest that there be developed more detailed and publicly available goals for these missions such that academic research on them may be facilitated. There is a deficiency of understanding in the academic literature about what kinds of missions are most effective. Making information about mission requirements and goals publicly available will encourage increased attention by the academic community, which may in turn lead to more rigorous analyses and a deeper understanding of whether and to what extent these missions are accomplishing their stated objectives of deterrence and assurance.

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