Remixing the 'Appropriate Mix'

Reassessing NATO's Deterrence and Defense Posture in the Face of New Threats

Anthony Juarez
Master of Public Policy Candidate 2016
Richard and Rhoda Goldman School of Public Policy
University of California, Berkeley

July 2016

Prepared for: The Center for Global Security Research, Lawrence Livermore National Laboratory
LLNL- TR-699505

The author conducted this study as part of the program of professional education at the Richard and Rhoda Goldman School of Public Policy, University of California at Berkeley. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Goldman School of Public Policy, by the University of California or by any other agency.

Table of Contents

Introduction and Problem Statement

The North Atlantic Treaty Organization (NATO) and the countries of Europe face a renewed challenge from the east vis-à-vis the Putin regime in Moscow. In the face of these new challenges, NATO must reconsider its deterrence and defense posture in order to deter conflict in Europe. Unfortunately, Russian attempts to rewrite the rules of the post-Cold War international order by force have been coupled with nuclear saber rattling and overt nuclear threats.[1] Russia's nuclear threats, in addition to provocative changes to Russia's nuclear posture in its Military Doctrine, are methods to make up for Russia's conventional military inferiority relative to NATO and the United States.[2] Some have described Moscow's actions as laying the groundwork for a nuclear coercion strategy.[3]

While the decrease in the nuclear arsenals of Russia and the United States has reduced the likelihood of nuclear annihilation to an all-time low since the height of the Cold War, Russia's nuclear coercion strategy is increasing the probability of nuclear employment in Europe. The probability of nuclear use is compounded by Russia's tremendous local military advantage around its periphery in spite of U.S. global military primacy.[4] This military advantage increases the incentive to use military force if Russian decision-makers conclude that a quick military victory is possible, or if Russian leaders miscalculate based on an incorrect assessment of military force balance or resolve of their adversary.

The integration of Lithuania, Latvia, and Estonia (referred to as the Baltics in this paper) into the NATO alliance in 2004 makes Russia's military advantage in its periphery increasingly relevant. Each NATO state is required to assist any NATO state that comes under attack per Article V of the North Atlantic Treaty. The Baltic states' proximity to Russia, their weak indigenous militaries, their former status as Soviet Republics, large population of ethnic Russians, and Russian President Vladimir V. Putin's claim that he will protect Russians wherever they are makes the Baltics the most likely flashpoint for conflict between NATO and Russia.[5]

This analysis will tackle the problem of reshaping NATO's deterrence and defense posture in light of the new Russian threat and its obligation to defend its most vulnerable members. Specifically, it will assess the suitability of NATO's "appropriate mix" of nuclear, conventional, and missile defense capabilities to deterring conventional conflict with Russia and, if conventional deterrence fails, preventing Russian nuclear escalation. It will use a scenario-based approach informed by a deterrence model to explore how changes to NATO's posture and policy could impact the deterrence of Russian aggression.

The Renewed Nuclear Threat in Europe: A Scenario and Model-Based Approach

The Worst-Case Baltic Scenario and its Analytic Utility

Though the potential for nuclear conflict in Europe was a serious concern for the greater part of the Cold War, this concern faded after the fall of the USSR in 1991. Today a resurgent Russia has brought these concerns to the forefront of Western military and political leaders' minds.

In the aftermath of the Russian annexation of Crimea and the frozen conflict in Eastern Ukraine, the likelihood of nuclear conflict in Europe has returned. The threat posed by Russia's military aggression is intensified by Russia's nuclear rhetoric. Its leaders engage in nuclear saber-rattling by making overt nuclear threats to NATO and non-NATO states and implicit threats by integrating nuclear use into their military exercises.[6] Russia's strategic nuclear modernization, opacity in regards to its non-strategic nuclear forces, which potentially number in the high thousands, and provocative changes to Russia's military doctrine signal the importance of nuclear weapons in the minds of Russian military and political leaders.[7]

There are several reasons analysts have focused on the Baltics as the most likely nuclear flashpoint in Europe: First, Russian President Vladimir V. Putin's statements lamenting the fall of the Soviet Union, along with the foreign policy decisions he has made, have raised questions regarding whether Russia intends to restore (or influence) some of the territory it controlled during the Cold War, of which Estonia, Latvia, and Lithuania were a part.

Second, these Baltic countries have significant ethnic Russian and Russian-speaking people living within them, some of whom are allegedly experiencing discrimination at the hands of the non-Russian majority.[8] This demographic consideration, along with President Putin's claims that he will protect Russian people, wherever they may be, raises concerns that Russia might intervene in the event of political upheaval.[9] Worse, the status of ethnic Russians and Russian-speakers provide Russia with the conditions to foment the upheaval necessary to achieve a geopolitical objective using covert, subversive, and information operations.

Third, because of the geography of this region, Russia enjoys a tremendous local military advantage. Estonia, Latvia, and Lithuania have modest military resources, largely depending upon other NATO states as their security guarantors. Since these states are surrounded by the Baltic Sea, the Russian enclave of Kaliningrad, and Russia and Belarus, the reinforcement of NATO forces in the Baltics is a complex and precarious undertaking due to the position of Russian defenses.

Though a Russian incursion into the Baltics remains the most likely scenario in which Russia and NATO could engage in military conflict, few would argue it is a likely scenario. While Russia sees NATO as its number one military threat, Russian leaders should understand the potential risks of engaging in conflict with NATO—not least of which includes a potential nuclear exchange.[10] Despite being a low-probability event, there is analytic utility in thinking through this worst-case scenario.

Worst-case scenario analysis remains a key part of defense planning and happens in the defense ministries of almost every country. The groundwork for conflict is laid over many years, but the onset of hostilities often comes as a strategic surprise. Planning for worst-case scenarios give military leaders the insights that make it possible to plan for the capabilities, tactics, and doctrine that can help win future unforeseen conflicts.

Using scenario-based analysis allows for the injection of additional creativity to analytic models. For example, Figure 1 (below) represents a model of how different component parts influence credibility in assurance and deterrence relationships. Though it is possible to assess how changes to any single or set of components could affect credibility, by utilizing a scenario-based approach the final analysis will be enriched by thinking through how an ally or adversary would respond to a change in one or more components of the model, or how the changes affect decisions at different times in the conflict.

By thinking at the precipice of possibility, but remaining in the realm of plausibility, it is possible to "walk back" to more probable situations and assess how to implement measures to mitigate the risk and consequence of certain events. For example, thinking through how various changes might impact different actors in a scenario allows analysts to walk back from an ideal solution and develop solutions that could serve to overcome political and resource limitations. In an organization with many independent actors like NATO, this is particularly useful since a collective action problem is present. To overcome the barrier to action, a better understanding of how different issues affect stakeholders will allow policy advocates to better negotiate action or convince stakeholders of the need to act.

There are limitations to worst-case scenario thinking, however. Worst-case scenario analysis can lead to solutions that do not adequately consider resource limitations or political constraints since not all stakeholders will share a worst-case viewpoint (which is a problem in NATO). Worst-case analysis often leads to inflating the real threat and implementing excessive measures in an effort to try to eliminate rather than minimize risk. An excessive response in a defense context can actually serve to increase the threat by leading to military brinksmanship and one-upmanship. Despite these risks, it is imperative to think through these scenarios in order to adequately plan for any potential contingency.

Credible Deterrence and Assurance

The scenario-based approach of this analysis will be reinforced with the deterrence model in Figure 1 below. Figure 1 models the relationship between components of credibility that will be used to assess potential changes to NATO's deterrence and defense posture.

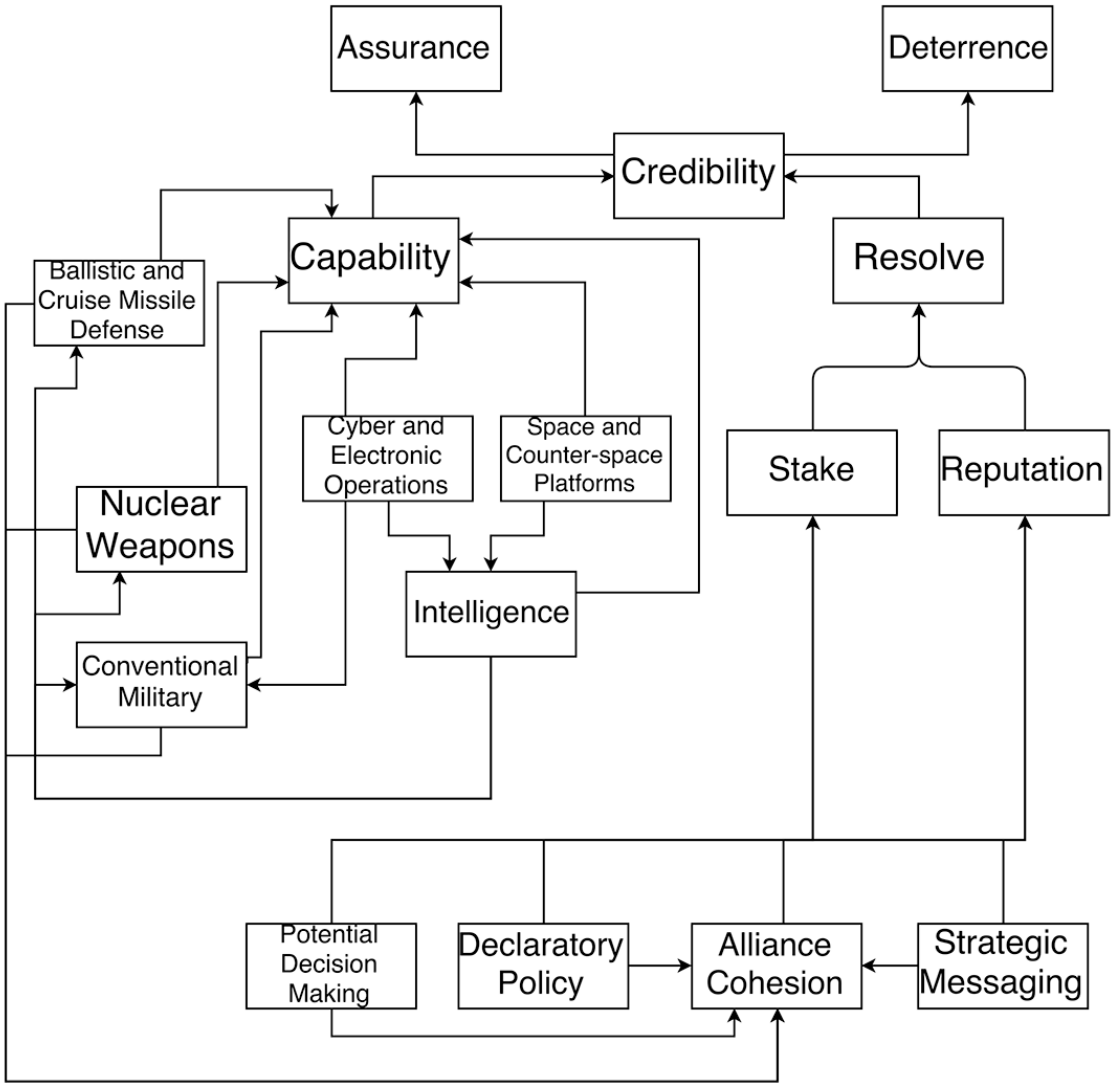

Figure 1—The components of credible assurance and deterrence[11]

Despite the complex interrelationships outlined in Figure 1, the components of deterrence and assurance can be thought of as those that contribute to a visible capability to deny or punish certain adversary actions and those that reinforce an actor's resolve to act if deterrence fails, or in the event an ally requires some type of assuring action.

By using the framework in Figure 1, however, a more methodical approach to considerations of deterrence and assurance is possible. Using this framework, simplifies the identification of multiplier components that not only contribute to capability or resolve on their own, but strengthen other components that contribute to capability or resolve (e.g. intelligence and strategic messaging). Additionally, using this framework helps to identify dual-purpose components of deterrence and assurance that contribute to both objectives (e.g. ballistic missile defense).

Any potential changes to NATO's deterrence and defense posture will be assessed on their ability to contribute to both deterrence and assurance, and further assessed within the context of the hypothetical scenario developed in the following section.[12]

Rethinking the Unthinkable: Nuclear Escalation in Europe

The following hypothetical scenario envisions a worst-case scenario in which Russia invades Estonia and threatens nuclear use to prevent the United States and NATO from intervening and reestablishing the territorial integrity of Estonia. This scenario assumes that the status quo, in terms of the conventional and nuclear capabilities of Russia and NATO, is maintained.

On 26 December 2017, the Ukrainian conflict remains frozen with Ukrainian military forces and Russian-backed rebels engaged in a fragile cease-fire. In Moscow, President Vladimir Putin's high approval ratings begin to fall after long-standing efforts to suppress information about Russian casualties among "Little Green Men" in Ukraine begin to fail.[13] With the first round of presidential elections taking place in March 2018, President Putin is looking for a way to improve his favorability ratings with the Russian people.

Recalling how Russia's 2015 intervention in Syria improved Putin's domestic approval ratings, the Putin regime sets its sights on the Baltics where the ethnic Russian minority populations in the Baltics have been protesting in Tallinn and Riga over perceived discrimination. President Putin directs the Russian Foreign Intelligence Services (FIS) to use covert and information operations by state-sponsored media and internet activists to foment political upheaval in Estonia by inflaming the already high tensions between protestors and police in Tallinn.

In a matter of days, protests by ethnic Russians in Estonia become violent, leading to the deaths of many pro-Russian protesters. Conflicting reports come from Tallinn regarding which side fired the first shots. Much like it did in the aftermath of the Ukrainian Maidan Revolution, Russia readies its forces in its Western Military District and prepares to execute military operations to protect ethnic Russians in Estonia.

On 2 January 2018, Russia invades Estonia under the guise of a snap exercise. At the beginning of the snap exercise, the Russian Baltic Fleet and Strategic Aviation forces launch cruise and anti-ship missiles strikes against NATO command, control, communications, intelligence, and

surveillance (C3ISR) assets in Eastern Europe and surface ships in the Baltic Sea after NATO forces refuse a Russian demand to allow them free-movement in Estonia as peacekeepers. In the aftermath of these strikes, many lines of communication between NATO forces in Europe are severed along with newly installed surveillance and early warning radars in Poland. The U.S. Navy 6th Fleet's Aegis-capable ships operating in the Baltic Sea are forced to abandon their theater air defense role and focus primarily on self-defense as they move to join the carrier taskforce in route to the North Sea at the U.S. president's orders. Despite their tactical retreat, U.S. surface ships in the Baltic lose 25% of their Aegis capable ships when the USS Ross is incapacitated by Russian special operations forces.

Russian artillery forces utilize traditional artillery and tactical ballistic missiles to attack NATO infrastructure and forces on the ground, crippling the Ämari airfield where half of NATO's Air Policing aircraft are based, clearing the way for Russian tactical aviation to support advancing ground forces under the protective umbrella of S-400 integrated air defense systems (IADs). Capitalizing upon its significant local military advantage, Russian forces reach Tallinn in less than 60 hours.

The U.S. armored brigade combat team (ABCT) rotationally based in Estonia, NATO air policing aircraft, and local Estonian forces are quickly overwhelmed by Russian heavy ground forces supported by artillery, ballistic missiles, cruise missiles and aircraft. In short order, many U.S. and NATO soldiers are forced to surrender after taking high casualties. While the Russian military engages with the remaining U.S. and NATO forces in Estonia, Russian military leaders force Belarusian President Yushchenko to allow the Russian military to deploy S-400 IADs, Iskander short-range ballistic missiles (SRBMs), and other artillery systems in Belarus. These systems, in concert with those deployed in Kaliningrad and Russian Naval task forces in the Baltic Sea, provide a formidable anti-access area denial (A2/AD) and IAD network covering all of the Baltics and most of Poland. Notably, Russia's air defense, artillery, and naval forces make NATO reinforcement on land through the narrow corridor between Kaliningrad and Belarus—from the air or by the sea—extremely difficult without extensive suppression of enemy air defense (SEAD) and strike missions within Russia.

Subsequently, Russia quickly begins to move more of its forces into Estonia and within its Western Military District. These troop movements suggest Russia may also move to invade Latvia, where pro-Russian Latvians are protesting Estonia's treatment of protestors and where provocateurs are increasing tensions between protestors and Latvian police.

At the same time, the United States has called up part of its military reserves, placed Marine Expeditionary Units and the Army 82nd Airborne on alert in the continental United States (CONUS). The U.S. Navy has moved a carrier task force to the North Sea where it was joined by the remnants of the 6th Fleet's surface vessels. Along with some of its NATO allies, the U.S. military readies the 173rd Airborne Brigade Combat Team in Italy and other Army and Air Force units in Germany to prepare for a counterattack to repel Russian forces from NATO territory. NATO begins to ready its nuclear forces, but this could take weeks and the U.S. President has not yet released the weapons into NATO custody. To make up for the lack of readiness in NATO's forces and concerns that NATO DCA will not be able to penetrate Russian IADs, especially with new systems in place in Belarus, the U.S. President puts B-52 bombers

armed with air-launched cruise missiles (ALCMs) on alert at Whiteman and Barksdale Air Force bases in Missouri and Louisiana.

In an attempt to showcase its resolve and maintain its hold on to its captured territory in light of U.S. and NATO preparations, Russian policy makers begin to consider a "deescalatory" nuclear strike to repel any potential NATO counterattack.[14] These closed-door discussions are coupled with public messaging from President Putin reminding NATO that Russia reserves the right to use nuclear weapons if the existence of the Russian state is threatened.[15] President Putin does not specify what will constitute a threat to the Russian state, but stresses that any attack on the Russian homeland will be met in kind. In reality, however, since there are no longer many legitimate threats on the ground in the Baltics, the only military targets of value to use a nuclear weapon against are naval forces or those within the borders of NATO states. Alternatively, President Putin could use a demonstrative nuclear strike at sea or in the atmosphere to show resolve and encourage NATO military restraint.

Russian FIS officers inform the Russian National Security Council that satellite imagery, along with human intelligence sources, confirm that the U.S. President has put nuclear weapons in the United States and at sea on alert in case of a Russian nuclear strike, but that NATO's nuclear forces remain unready and have not been released by the U.S. President to NATO custody.

President Putin's advisors in the General Staff surmise that a nuclear strike against NATO forces is unlikely to conclude with a NATO nuclear strike against Russia due to readiness and issues relating to survivability against air defenses, but could result in retaliation by U.S. heavy bombers or nuclear submarines carrying ALCMs or submarine launched ballistic missiles (SLBMS). For this reason, President Putin broadcasts a message to the American people urging them to stay out of European peacekeeping operations that do not concern them. He asks them if they are ready to trade their cities for Tallinn, explicitly mentioning that Russia has the nuclear capabilities to destroy any American city and reminding Americans that Russia will defend itself using "every means available to the Russian armed forces." He explicitly urges U.S. strategic aviation to remain in the United States in order to avoid "Armageddon."

This scenario leaves both sides in quite precarious situations. NATO is left with three choices: to engage in a bloody counter-offensive with significant escalatory risk, to escalate military operations (much like it threatened at the height of the Cold War), or to admit at least temporary defeat and call into question the worth of the NATO alliance.[16] For Russia, all of its choices, save for the most escalatory, end with equally bad outcomes. It could order its forces to engage in a conventional fight with the United States and NATO, a situation with highly uncertain outcomes given the full capabilities of the U.S. military and the escalation risks inherent to conflicts between nuclear-armed states. It also could give up its territorial gains and withdraw its forces back to Russia, though this would be politically suicidal to the Putin regime since it would look like a defeat. Finally, Russia could escalate to limited nuclear use to attempt to deescalate the conflict on terms favorable to Russian interests.

Potential NATO Courses of Action and their Impact

To avoid a scenario like the one described in the previous section, NATO could engage in a number of actions to deter the initial military operations that Russia engaged in. If Russia still decided to engage in military conflict, NATO could take further actions to deter the use of nuclear weapons and deescalate the conflict.

I have chosen the following three changes because of their ability to improve deterrence and assurance on their own, but also because they mutually reinforce the capabilities of the others.

Improving NATO's Conventional Deterrence Posture

Deterrence is not dependent upon nuclear weapons alone, even if nuclear weapons are the ultimate guarantor of deterrence. Conventional forces play an important role in credibly deterring and, if deterrence fails, defending against lower levels of conflict. Currently, the members of NATO have committed to dedicating 2% of their gross domestic products on defense spending, but few have met that goal.[17] Since the end of the Cold War, NATO's conventional force structure and posture has deteriorated due in part to the belief that having a large force on alert was an anachronism of the Cold War. Today, however, NATO must address the unfavorable conventional correlation of forces between it and its de facto adversary, Russia.

Potential Changes to NATO's Conventional Force Structure and Posture

It is beyond the scope of this analysis to conduct an in-depth analysis of NATO's current conventional posture in relation to Russia's, but fortunately the RAND Corporation's researchers have conducted extensive wargames and simulations on the NATO-Russia Baltic scenario.[18] Their analysis concludes that even with one week of warning, NATO forces in the Baltics—even if light infantry forces can be airlifted into the theater of operations before the beginning of hostilities—will not sufficiently slow Russian forces to prevent a fait accompli. This is precisely the scenario that is outlined in the section above where Russia reaches Tallinn in less than 60 hours.

Shlapak, Johnson, and other RAND analysts recommend adjusting NATO's force structure in the following ways to prevent a fait accompli in the Baltics:

- Purchasing and prepositioning three heavy armored brigade combat teams (ABCTs) in the Baltics at an upfront cost of up to $13 billion (if equipment is purchased new) and annual operating cost of up to $2.7 billion[19]
- Having the ability to move an additional three multinational heavy ABCTs into the Baltics on D-day+2
- Procurement of long-range anti-radiation missiles, a replacement to the MGM-140 Army Tactical Missile System, and long range anti-surface missiles to be used in a suppression of enemy air defenses (SEAD) role
- Short-range air defense systems (SHORADS) for U.S. maneuver forces and base defense
- New standoff-range sensor fused weapons and anti-personnel area munitions for area anti-tank and personnel operations
- Fire support brigades and other support units for counter-battery fires
- Heavy equipment transports pre-positioned in Europe to move military equipment more rapidly

These types of force structure and posture changes would not occur in a vacuum. Russia would adapt in any situation and change the number of motorized rifle and armored battalions and air squadrons in the fight, assuming it chose to fight NATO.

Additional changes that the Baltic countries could explore to help deter and defend against Russian aggression, which are within their limited military capabilities, include taking a page out of the asymmetric and unconventional defense strategy that Switzerland used during the Cold War. A recent RAND report explored this idea and outlined three components of an unconventional defense strategy:

- Preparing for infrastructure denial operations to prevent Russia from benefiting from Baltic rail, roads, and other infrastructure
- Preparing for unconventional military resistance operations
- Preparing for civilian resistance activities[20]

These changes place a large share of the burden for the defense of the Baltics on the United States and other more capable military forces, rather than on the indigenous military forces of the Baltics. Despite this, some of these actions are already being undertaken multilaterally and unilaterally. In its fiscal year 2017 budget request, the Obama Administration requested $3.4 billion to enhance its European Reassurance Initiative (a quadrupling of previously allocated funds). $1.9 billion of these funds are being requested for increased prepositioning of heavy weapons and equipment, $217 million for improving infrastructure (to allow for improved mobility to and around the Baltics), $163 million for improving bilateral and multilateral exercises, and $1 billion for an increased presence of at least one ABCT with supporting units in the Baltics at all times.[21]

Impacts on Credibility

Utilizing Figure 1 as an analytical model, changing NATO's conventional deterrence posture in a way that comports with RAND's analyses would improve NATO's intelligence and conventional military capabilities. In turn, improving intelligence surveillance and reconnaissance (ISR) will also improve ballistic and cruise missile defense and nuclear weapon capabilities by providing ISR capabilities that can improve targeting and early warning. All of these improvements enhance NATO's overall perceived capability and credibility (assuming they are properly showcased to Russia).

The increased exercise tempo that the ERI budget request funds accomplishes three important things to improve NATO's perceived credibility: First, they improve alliance cohesion by making NATO militaries more interoperable and improve military-to-military relationships. Second, they improve conventional capabilities by allowing NATO forces to train by practicing realistic conventional and nuclear warfighting scenarios. Finally, increasing the amount of exercises by NATO militaries sends a clear strategic message to Russia that NATO has the capabilities to deter and defend against Russian aggression, and is practicing the execution of these capabilities. Furthermore, improving conventional capabilities by putting multinational forces in and around the Baltics improves both allies' and adversaries' perceptions of alliance cohesion.

The improvements made to alliance cohesion and strategic messaging to Russia showcase NATO's collective stake and determination in honoring its security commitments—clearly demonstrating its resolve. This increased perception of resolve is the second component of credibility in the assurance and deterrence relationship model used in this analysis.

Projecting the Outcome

Taking these measures and improving NATO's credibility would have several impacts: First, the posture that Shlapak, Johnson, and other RAND analysts recommend above is not sufficient to win an all-out conflict with the Russian military, which can bring more land forces to bear more quickly in the conflict given the proximity to its homeland. Instead, this defensive-oriented force diminishes the potential for conflict with Moscow. Instead of seeing nothing but open road between Moscow, Tallinn, and Riga, Russian leaders will have to confront the possibility of a complex, bloody, and protracted conflict with the United States and NATO.[22]

Instead of having Russian forces in Tallinn (or even Riga) within 60 hours, a worst-case scenario would play out differently. If Russia chose to invade the Baltics, it would immediately face three multinational NATO ABCTs. These ABCTs would be supported by air and naval forces with an improved ability to safely engage Russian IADs from standoff ranges (though it is likely that these strikes would have to take place on Russian territory, increasing the escalatory risk). By suppressing Russian

IADs, NATO's qualitatively superior air forces would be able to act as a force multiplier for defensive ground operations. Within two days, three additional multinational ABCTs would reinforce the Baltics by land and air.

Within three days, instead of being able to present NATO with a fait accompli, President Putin would face a situation in which the conflict he started has expanded to include targets in Kaliningrad and mainland Russia. Even if he made conventional threats against the U.S. homeland, U.S. and NATO policy makers would be forced to accept the risk because the cost of not holding Russian IADs at risk to defend multinational NATO ground forces from the air would be too great.

This is a stark contrast to a scenario in which NATO did not have a formidable force in the Baltics. Without a strong NATO presence in the Baltics, President Putin would not need to engage NATO in a conventional conflict with high escalatory risk because the balance of forces would favor Russia. In the latter scenario, the decision to engage in military operations with high escalation potential is forced upon Russia's president, assuming he chooses to fight NATO, due to NATO's formidable deterrence force.

Putin's remaining options include suing for peace and moving his forces out of the Baltics or escalating to nuclear use to demonstrate his resolve. He has four potential targets for nuclear use: NATO naval forces at sea, battlefield NATO targets in the Baltics, non-battlefield NATO targets within the borders of NATO countries, or a nuclear demonstration strike at sea or in the atmosphere. Targeting naval forces would prove highly escalatory, especially if a U.S. carrier battle group is targeted given the large number of sailors operating on the battle group's ships. Similarly, nuclear strikes on NATO territory, where significant numbers of forces or civilians reside, would likely serve to reinforce NATO's resolve or lead to nuclear exchange. A demonstrative strike could serve Russia's purposes, but it would not change the military situation on the ground where Russia's forces face a significant challenge vis-à-vis NATO's three ABCT's and the three in route to the fight.

If Russia escalated to nuclear use, NATO would still face significant challenges in this scenario if it elected to symmetrically respond to a Russian nuclear strike. At present, NATO DCA and nuclear weapons' readiness is measured in weeks.[23] Since this analysis' scenario envisions a one-week warning period and improvements to intelligence, surveillance, and reconnaissance (ISR), NATO's nuclear weapons may still not be ready for use against Russian targets. The improved conventional capabilities NATO could rapidly employ, however, means that Russian IADs would already have suffered attrition given NATO SEAD missions to support conventional forces, making their employment less complex and the DCA less vulnerable—assuming they are ready to undertake their mission.

In this scenario, Russian policy makers might know that NATO DCA are ready and credibly capable of striking Russian targets, but that information could also be lost in the fog of war. U.S., French, and British independent nuclear forces would likely

be on heightened states of alert, meaning that the United States could quickly bring its heavy bombers to bear from the continental U.S. if they were needed to employ ALCMs. This would open up the U.S. bases from which B-2 and B-52 bombers operate up to conventional and, potentially, nuclear attack.

The readiness from NATO and the independent nuclear forces of the United States, U.K., and France could signal to Russian leaders that any nuclear strike against NATO forces in the Baltics (since they are multinational) or NATO territory would be met with nuclear retaliation. There is not absolute certainty, however, that the U.S. President would authorize the use of NATO's nuclear weapons or that France and the U.K. would be willing to use nuclear weapons in NATO's defense since Russia would still have the capability to hold their capitals hostage with Russian strategic nuclear forces.

Even though Russia could hold Paris, London, or Washington at risk and utilize them as hostages to coerce NATO, the improved capabilities and resolve of NATO envisioned by this change lends additional credibility to the prospect that nuclear retaliation, if any P3 capital was struck, would be devastating. This additional perceived resolve from the interests and reputation at stake given the presence of multinational forces in the Baltics would make any Russian nuclear escalation akin to a game of Russian roulette played with five bullets instead of one.

Improving NATO's Ballistic and Cruise Missile Defenses

In the previous section, proposed changes included those that would improve NATO's ability to protect its ground forces from Russian military aviation. This capability will not be considered in this section. Instead, this section will look strictly at defending NATO ground forces and infrastructure from ballistic and cruise missiles. These missiles can create similar effects on the battlefield, both nuclear and conventional. The key difference between these missiles is that cruise missiles are powered throughout their entire flight and fly on low-altitude flight paths, while ballistic missiles are only powered for the first part of their flight and then depend on ballistic trajectories to reach their targets (though some have maneuvering capabilities).

Each type of missile presents a variety of challenges to NATO defense planners. Ballistic missiles typically reach their targets at supersonic to hypersonic speeds, making their detection and interception difficult without advanced radar sensors and interceptor missiles. The geographic placement of these anti-ballistic missile systems is also important. Systems must be placed and oriented in very specific locations and directions to defend against attacks coming from certain areas because of the constraints on interceptors and radar systems imposed by the laws of physics. Though cruise missiles travel at much slower speeds, they can travel along the ground at low altitudes allowing them to potentially avoid detection by even advanced radar systems if they are not oriented properly. In the Russian case, both

types of missiles present additional dangers because they can be used in both conventional and nuclear roles, with the same launch and delivery systems being used to deliver missiles with either type of warhead.

Ballistic and cruise missile defensive systems are not a panacea to the problem posed by Russian missile systems. Effective limited missile defense is an expensive undertaking relative to the costs of employing missiles in an offensive capacity.[24] Furthermore, missile defense interceptors are not 100% effective and the speed at which missiles approach often means that defenders only get one opportunity to intercept the missile (especially in the case of ballistic missiles which are often targeted in the final, terminal stage of their descent).

Despite the challenges associated with missile defenses, they have the potential to play an important role in denying an adversary the ability to engage in limited escalation. By compromising, but not denying, the ability of an adversary to confidently launch a limited nuclear strike via ballistic or cruise missiles, the adversary must take into consideration the additional cost of the counter-escalation that is likely to follow from a substantial missile strike.

Unfortunately, because of the dual nuclear and conventional capability of Russian ballistic and cruise missiles, it will be difficult or impossible to differentiate between the two until it is too late—especially since conventional missile strikes are a likely component of the opening salvo conflict. In spite of the financial and defensive challenges associated with missile defense in Europe, it is worth assessing the ability of ballistic and cruise missile defense to contribute to NATO's deterrence and defense posture.

At present, NATO operates integrated air and missile defense systems in Europe that defend against the full range of aerial military threats, but are limited in the areas they can defend. There are four components to the NATO integrated air and missile defense (NIAMD) system: surveillance, active air defense, passive air defense, and battlefield management command, control, communications, and intelligence (BMC3I).[25] The surveillance component is comprised of aerial and land-based sensors that contribute to situational awareness and continuous information flow. Active air defense measures include air-based interdiction methods and surface-based air and missile defense (SBAMD) platforms, including ballistic missile defense (BMD). Passive measures include any other measures taken to improve survivability and mitigate the effects of air and missile attacks. Finally, the BMC3I component integrates the information conveyed by surveillance systems and leverages battlefield resources to eliminate threats.

Currently, Aegis-capable ships operate in European waters and an Aegis Ashore system is in place in Romania, with a second planned in Poland by 2018 providing limited ballistic missile defense capabilities oriented toward NATO's southern flank.[26] As of 2015, PAC-2 and PAC-3 anti-ballistic missile and air defense Patriot batteries were also deployed by NATO in support of Turkey's defense against Syrian

ballistic missiles along with THAAD in Europe supporting its defense.[27] Patriot batteries and similar air defense systems are also deployed as part of the integrated air defenses of various European countries in NATO (the characteristics of these systems is described in the next section).

An important consideration in assessing this topic is that NATO missile defenses are already a source of tension between Russia and NATO. The Aegis Ashore radar and interception systems that NATO has constructed in Turkey (Turkey hosts an AN/TPY-2 radar), Romania, and the planned site in Poland have been alleged as attempts to compromise the strategic deterrent of Russia. Russia policy makers and diplomats continue to make this claim despite NATO's attempts to reassure Russia that these systems are not oriented toward Russia. NATO has repeatedly stated that its BMD architecture is intended to defend against missile attacks from NATO's southern flank and is physically incapable of intercepting Russian ballistic missiles travelling over the poles to North America or travelling over Eastern Europe to Western Europe.[28] Even though NATO has not developed a missile defense capability aimed at Russia, the Russians believe it has. Despite these assurances from technical experts in NATO countries, Russian leaders have continued to attribute outlandish, physically impossible capabilities to NATO's missile defense.[29] These Russian concerns will make any implementation of missile defenses in Europe a fractious and difficult undertaking.

Potential Changes to NATO's Ballistic and Cruise Missile Defense Capability

Ballistic Missile Defense

The United States has five anti-ballistic missile-capable systems available and one in development to integrate into NATO's missile defense architecture:

- Phased Array Tracking Radar to Intercept on Target (Patriot)
- Terminal High Altitude Area Defense System (THAAD)
- Aegis surface ships
- Aegis Ashore
- Medium Extended Air Defense System (MEADS)—in development

The MIM-104 Patriot system, using the PAC-2 and PAC-3 family of missiles, is an air defense system capable of engaging ballistic missiles in the terminal stage of their flight within the atmosphere. Patriot utilizes the AN/MPQ-53 and AN/MPQ-65 radars for PAC-2 and PAC-3 systems, respectively, to track targets and guide missiles to intercept them.

The Terminal High Altitude Area Defense (THAAD) system is a high-altitude endo-atmospheric and exo-atmospheric anti-ballistic missile system that tracks and engages ballistic missiles in their terminal stage. THAAD utilizes two AN/TPY-2 radars for tracking and fire control.

Aegis sea and land-based systems have the ability to engage ballistic missile targets in their mid-course flight stage using the SM-3 missile which is fired from vertical launch system cells on surface ships or Aegis Ashore land emplacements. It will eventually have an endo-atmospheric anti-ballistic missile capability according to the U.S. Missile Defense Agency and currently has the capability to engage endo-atmospheric air-breathing targets like cruise missiles and aircraft.[30] Both systems use the AN/SPY-1 family of radars.

Though the future of U.S. involvement in the joint effort with Italy and Germany on the MEADS project is uncertain, MEADS' agility could be useful as a theater air and ballistic missile defense system for mobile troops in the field against endo-atmospheric ballistic missiles in their terminal stage. It uses an interceptor based on the PAC-3 missile, a 360-degree active electronic scanned array for fire control, and ultra-high frequency radars for surveillance.

Cruise Missile Defense

Russia's military leaders have made statements claiming the military utility of precision guided munitions like cruise missiles is approaching that of nuclear weapons considering modern improvements to conventional explosives and guidance mechanisms. Given the perceived utility of these weapon systems, Russia's military is devoting significant resources to developing these capabilities. Russian cruise missiles can carry both conventional and nuclear warheads, which adds an additional layer of risk because they cannot be readily distinguished until their warheads detonate. Due to the risk both precision guided conventional and nuclear-armed cruise missiles pose to NATO military and civilian targets, NATO must reinvigorate the atrophied air defenses that protect Europe from Russian cruise missiles launched from bombers and surface ships.

Some of the ballistic missile defense systems discussed above also have the ability to contribute to cruise missile defense. The sensors utilized by THAAD and Aegis Ashore (AN/TPY-2 and AN/SPY-1 systems) can contribute to NATO's air defense situational awareness against both ballistic and cruise missiles even if their missiles are not meant to intercept cruise missiles. Aegis ships, Patriot, and MEADS systems can contribute their sensors' surveillance capabilities and have the ability to use their interceptors to neutralize cruise missile threats.

Since most cruise missiles use low-altitude terrain-hugging flight paths, most ballistic missile defense sensors will not be physically oriented in ways to detect these missiles until it is too late to engage them (this depends heavily upon the geography of the defended area). Aegis ships, however, can orient their search and fire control radars closer to sea level to protect coastal areas from cruise missiles emanating from surface ships off the coast or bombers flying over the ocean, assuming they are positioned between the launch platform and their targets.

The geographical and technical challenges of defending against cruise missiles and ballistic missiles from land-based platforms are not insurmountable. By using airborne sensors many of these problems can be alleviated. NATO airborne warning and control system aircraft (AWACS) use powerful downward looking sensors to detect cruise missiles and redirect NATO tactical aviation assets to intercept cruise missiles using AIM-9 and AMRAAM (and foreign equivalent) missiles aboard the aircraft. Currently, the defense of the Baltic airspace is conducted by non-Baltic NATO states on a rotational basis as part of the Baltic Air Policing mission. This strategy requires that sufficient AWACS and tactical aviation forces exist in the defended area and are airborne at the time of attack.

Airborne sensors, like those aboard the Boeing E-3A AWACS aircraft NATO operates, are not without their pitfalls. It is expensive to continuously operate airborne systems and their ability to loiter is limited by on-board fuel (though they can be refueled in the air) and crew fatigue. A high operations tempo will require additional aircraft and crews because of the strain the pace of operations will put on AWACS airframes and crews.

A more cost-effective solution might be NATO adoption of the Joint Land Attack Cruise Missile Elevated Netted Sensor System (JLENS) once its development is complete. JLENS is an aerostat balloon tethered to the ground by two cables that also provide power to the sensor suite onboard the aerostat. Using the information provided by the sensors onboard JLENS, NATO battlefield commanders can relay targeting information to networked interception systems on the ground like Patriot or Norwegian Advanced Surface-to-Air Missile Systems (NASAMS). JLENS provides many of the same benefits as NATO E-3A AWACS aircraft, but operates at a lower cost since it does not require aviation fuel to stay aloft or an aircrew on board the aerostat. Their static positioning, however, makes them more attractive and easy targets for sabotage and direct attack.

Potential changes to NATO's missile defense posture could include changes in six areas:

1. Increasing the presence of Aegis cruisers and destroyers in the Baltic Sea to provide both terminal and midcourse ballistic and cruise missile defense capabilities in the Baltic Sea.
2. Increase the numbers of Patriot missile batteries in Eastern, Central, and Western Europe to act as point defenses for high-value targets (such as where NATO DCA and nuclear weapons are based) against low-altitude ballistic missiles in their terminal stage and couple this with THAAD AN/TPY-2 sensors and interceptors to protect against higher-altitude ballistic missiles in their terminal stage, providing a layered atmospheric defense for high-value targets.
3. Recommit to the development of MEADS to provide forward deployed NATO troops in the Baltics mobile air defenses against ballistic missiles for ABCTs and other support forces in the future.

4. Place additional forward-deployed AN/TPY-2 sensors (also referred to as FBX for forward-based x-band radar) in Poland where they can be defended with existing Patriot systems to provide surveillance capabilities against ballistic missiles launched from Kaliningrad and mainland Russia.
5. Increase NATO's AWACS and Air Policing presence in Eastern Europe to protect against cruise missiles.
6. Adopt JLENS to provide warning and tracking of cruise missiles to augment other NATO AWACS and Air Policing Missions

Impacts on Credibility

In theory, improvements to NATO's ballistic and cruise missile defense achieve two objectives: First, they improve the capabilities of NATO to actively defend critical military and civilian equipment, personnel, and infrastructure from the kinetic effects of ballistic missiles. Second, the improvement of these capabilities and their deployment to the NATO theater of operations strengthens alliance cohesion. The physical presence of U.S. systems in Eastern Europe means that the soldiers, sailors, marines, and airmen that operate them will also be present—increasing the stake and reputation of the United States in Europe, thereby increasing the credibility of NATO's overall deterrence and defense posture.

In practice, these improvements only improve credibility if they increase NATO's capability over a range of critical time points in any conflict. For example, to defend against a limited nuclear ballistic missile strike to deescalate conflict, NATO's land, sea, and air-based missile defense assets must survive through to the point in conflict that escalation to nuclear use occurs, probably after significant conventional military operations have taken place. The military conflict that precedes nuclear escalation could be low-intensity, but it could also be high intensity conflict that eliminates missile defense capabilities. For this reason, missile defense capabilities are an important, but not sufficient component to a credible deterrence architecture.

Projecting the Outcomes

Assuming that no other changes were made to NATO's deterrence and defense posture, it is unlikely that additional missile defense systems would impact the course of a conflict in the Baltics unless defense dominance is pursued and achieved.

To make a decisive impact in preventing a conflict from escalating to nuclear use, terminal defenses would need to protect NATO forces in the Baltics from significant numbers of tactical ballistic and cruise missiles in order to keep Russian forces at bay. This would mean the deployment of THAAD, Patriot, re-orientation of Aegis Ashore in Poland against exo-atmospheric threats from Kaliningrad and Russia, and the rapid development and adoption of MEADS to protect mobile forces. Furthermore, these systems would need active and passive defensive measures to protect the systems themselves against missile attacks and sabotage.

Without significant changes to NATO's conventional ground forces to slow or stop quantitatively superior Russian forces, these systems are unlikely to survive the first few salvos of a conflict—especially if they were deployed in the Baltic countries. Once these systems are compromised, there would be no defense against a limited Russian nuclear ballistic or cruise missile attack to attempt to deescalate and terminate conflict on terms that protect their territorial gains.

Missile defenses would also not change the difficulty of penetrating Russian IADs that NATO's DCA would have to undertake to retaliate after Russian nuclear employment or protect against other nuclear employment strategies. Without ballistic missile defenses that can operate in a contested environment well after the first few shots of a conflict, nuclear escalation by limited cruise or ballistic missile strikes cannot credibly be deterred by denial, nor is the potential retaliation by NATO DCA unquestionably credible. Additionally, the nature of Russia's nonstrategic nuclear arsenal is opaque and Russia may have many alternatives to nuclear escalation besides cruise or ballistic missiles.

Integrating a Standoff Nuclear Capability to NATO Nuclear Sharing Arrangements

Russia's advanced IADs present significant challenges to NATO's DCA in terms of penetrating the air space protected by these systems in order to employ nuclear weapons against Russian targets. There are various possible methods to mitigate the risk posed by these air defenses if NATO maintains the B-61 gravity bomb as its sole nuclear capability:

- **NATO could attempt to swarm IADs** by sending multiple nuclear-armed DCA along with conventionally-armed aircraft against Russian targets to try to ensure that a sufficient number of DCA reach their targets. This strategy assumes heavy casualties of both conventionally armed and nuclear armed aircraft. Since more nuclear-armed aircraft would ostensibly reach their targets, inflicting more damage than a survivable limited platform would, the intensity of retaliation could also be higher.
- **NATO could attempt to suppress enemy air defenses** by using anti-radiation missiles (ARMs) and electronic warfare (EW) to disrupt IADs and forge a path for NATO DCA to strike their targets. This strategy assumes NATO aircraft can get within the appropriate ranges to launch ARMs and engage in EW, something not guaranteed in the Baltic scenario with current NATO capabilities. It also assumes that these defenses would not be out of operation due to conventional operations at the time NATO made the decision to use nuclear weapons.

Potential Changes to NATO's Nuclear Sharing Arrangements

To avoid heavy casualties and sending aircraft well within the range of Russian IADs before they can employ anti-radiation missiles against the IADs, NATO could adopt a new nuclear weapon with a standoff range, meaning one that could be launched outside the range of IADs and travel to its target under its own propulsion. Examples of these types of weapons include France's ASMP and ASMP-A supersonic air-launched cruise missile, the United States' subsonic Air-Launched Cruise Missile (ALCM), and the Long-Range Stand Off missile (LRSO) currently in development by the United States. France's ASMP and ASMP-A can be launched from tactical fighter-bombers, but the U.S. ALCM can only be launched by the B-52 heavy bomber until the LRSO replaces it.

Another standoff missile with the potential to act in a nuclear role is the Joint Air-to-Surface Standoff Missile (JASSM) and the extended range version of the missile (JASSM-ER). Though JASSM and JASSM-ER are currently only armed with conventional warheads, they could hypothetically be armed with the same W-80 nuclear warhead onboard the ALCM. By placing a nuclear warhead on JASSM or JASSM-ER, the United States and NATO would gain the ability to employ a standoff nuclear weapon, based on an existing delivery vehicle, from tactical fighter-bombers like the F-15, F-16, F/A-18, and the F-35. JASSM and JASSM-ER also have the tactical advantage of having lower radar cross-sections than ALCM. Giving JASSM or JASSM-ER a nuclear capability would require time, however, as technical studies would be necessary to ensure the compatibility of the W-80 warhead, delivery aircraft, and JASSM/JASSM-ER.

Impacts on Credibility

Adding a standoff nuclear capability to NATO's nuclear sharing arrangements impacts NATO's perceived capabilities by improving the credibility behind its ability to retaliate to a Russian nuclear strike, but it also positively impacts the Alliance's cohesion and perceived commitment to its nuclear mission. By integrating a standoff nuclear capability to NATO's nuclear sharing arrangements, NATO would make a visible statement of its credibility and reputation, assuring the allies within the alliance and deterring potential adversaries. Integrating a new nuclear capability to NATO would reaffirm to the world that NATO is an enduring and modern nuclear alliance devoted to honoring the commitments of its members to NATO nuclear sharing arrangements and European security. Perhaps most importantly, a standoff nuclear capability would signal to Russia that NATO has a very credible method of retaliating against Russian forces in the event of nuclear escalation from well outside the range of Russia's IADs.

Projecting the Outcomes

By integrating a standoff nuclear capability to NATO's nuclear sharing arrangements, NATO can fundamentally change the decision-making framework for Russian leaders. A standoff nuclear missile allows NATO to more credibly retaliate to any Russian nuclear strike with weapons within the alliance rather than relying on the weapons in the independent strategic stockpiles of France, the United Kingdom, or United States.
If the U.S. president released custody of nuclear weapons to NATO in the early stages of conflict, a Russian escalation to nuclear use against multinational NATO forces would mean attacking soldiers from various NATO countries. Furthermore, by releasing custody of American nuclear weapons to NATO early in a conflict, Russia could not threaten a single NATO state to try to deter a nuclear counter-move. Nuclear weapons would already be in NATO's custody and Russia would have to threaten the entire alliance to induce its restraint. Placing more advanced nuclear capabilities in Europe under NATO control therefore helps ensure European security and makes nuclear use against the U.S. homeland less likely.

In the scenario described in the first section of this analysis, a standoff nuclear capability would eliminate most of the confidence within Russian decision-making circles about the ability of Russian IADs and tactical aviation to fend off NATO's third and fourth generation DCA force. By developing an extremely credible nuclear response capability, NATO would dramatically change the decision-making calculus in Moscow for utilizing a nuclear weapon as a deescalatory tool.

A new NATO nuclear capability would also mean that U.S. strategic aviation forces in the continental United States (CONUS) could remain there, albeit on alert, reducing the likelihood of strategic-level nuclear escalation between the strategic aviation, ICBM, or submarine forces of the United States and Russia. A U.S. decision to bring in nuclear forces from CONUS during a crisis, let alone after a nuclear strike has occurred (when it would likely be too late), would be highly likely to result in a potential Russian attack of CONUS military bases and civilian infrastructure by nuclear or conventional means. In the build-up to any potential crisis, putting NATO nuclear forces on alert is a much easier decision to make than to bring U.S. strategic forces to bear from CONUS.

Unfortunately, if a standoff nuclear capability had the same readiness level as the DCA and B-61s currently in NATO's nuclear sharing arrangements, a lack of readiness could lead Moscow's decision makers to conclude NATO was not ready to conduct a limited nuclear counterstrike with its DCA force. Fortunately, the standoff capability introduced with a new nuclear missile could reduce the time required to plan a nuclear mission and the number of strike and support aircraft needed to successfully complete the mission with a high degree of confidence, slightly mitigating the effects of NATO's current levels of readiness.

Conclusions and Recommendations

In order to deter conventional conflict in Europe, NATO cannot make changes to one capability area (conventional, missile defense, and nuclear) exclusively. An improvement to a single category provides discrete capability changes in each respective category, but, as Figure 1 shows, each capability impacts the capabilities and credibility of others in a way that makes them mutually reinforcing. NATO changes to conventional forces, nuclear forces, or missile defense forces cannot occur in a stove piped manner. Security planning in Europe can no longer include a firebreak between nuclear and conventional conflict. The increased integration of conventional and nuclear forces in Russian doctrine will force NATO to reconsider its relationship with nuclear weapons.

To improve the capabilities and the credibility necessary to deter Russia and provide assurance to the nations in the Alliance, NATO should make the following changes:

1) Improve the capabilities of NATO conventional forces and follow the RAND study's recommendation of having at least three ABCTs in the Baltics (though they should ***all*** be multinational), supplemented with the ability to rapidly deploy three more ABCTs to deny a decoupling strategy.
2) Begin the planning to integrate a standoff nuclear capability into NATO's nuclear sharing arrangements for this and the next generation of NATO DCA. This capability could come from French or U.S.-based designs.
3) Explore the creation of a missile defense architecture explicitly targeting missiles coming from Russia, but that could survive the opening salvos of conflict to help prevent certain types of limited nuclear escalation from ballistic and cruise missiles after conventional conflict has already begun. This architecture should be multi-layered, protecting against missiles in their mid-phase and terminal flight stages, within and outside of the atmosphere, and against low-flying cruise missiles.

Improving Conventional Capabilities in the Baltics

Improving NATO's conventional presence, qualitatively and quantitatively, is the most important component of preventing conflict in Europe. By having the conventional forces necessary to slow any potential Russian incursion into the Baltics and prevent a fait accompli, a worst-case scenario can be averted in the Baltics.

Changes to NATO's force structure in the Baltics should have the following characteristics:

NATO's conventional forces in the Baltics should be multinational. This ensures that Russia cannot employ a decoupling strategy by threatening only one NATO state and highlights the cohesion and collective resolve of NATO to protecting its allies. A multinational approach is also sensitive to the political realities that the United States cannot, or will not, play the same role it played during the Cold War in Europe.

NATO's conventional force posture and doctrine should be defensively oriented and limited. Any changes so close to the Russian homeland will solicit a Russian response and have the potential to destabilize the military balance between NATO and Russia. Some may argue that any new troop deployments in the Baltics will provoke Russia, but critics must remember the security guarantees NATO made to these states and the provocation that Russia has engaged in. This does not mean that NATO should pursue supremacy in the Baltic region, as this type of strategy would surely lead to unnecessary risk. Instead, it should have the sufficient deterrence and defense posture to defend and reinforce the Baltics to achieve the limited military objective of reinstating the status quo territorial integrity of these states. This should be coupled with messages to Russia that the Russian homeland will undoubtedly come under limited strikes if it chooses to be belligerent against the Baltic states, but that NATO will not attempt to depose the regime in Moscow, nor will it seek to redraw borders as they exist today.

NATO's conventional force structure should be visible to both Russia and to the citizens of NATO states. The need for Russia to understand the capabilities of the NATO forces it will engage with should it choose to fight NATO is clear. There are many methods to achieve this: high-level political messaging at the heads-of-government, defense ministerial, and military levels and visible military exercises of the capabilities that will be important to a conflict with Russia. These capabilities should include the rapid reinforcement of the Baltics under austere combat conditions, the protection of troops and surface vessels in the Baltic region against increasingly capable Russian precision guided munitions, and the integration of NATO's qualitatively superior air forces into defensive ground campaigns. NATO's populations must also understand what the conventional force changes are and why they are important to Euro-Atlantic security, not just for the security of the Baltics. Convincing Europe of the need to protect the Baltics is a difficult undertaking, especially given Europe's lukewarm feelings toward the defense of the Baltics and the economic difficulties some European states are facing, but it is necessary to ensure the long-term political viability of a NATO deterrence and defense posture and security in Europe.

Integrating a Standoff Nuclear Capability to NATO's Nuclear Sharing Arrangements

Though improving the conventional forces in the Baltics goes a long way to preventing conflict between NATO and Russia, it does not eliminate the risk. Miscalculation and human error are inherent characteristics of any conflict. Even if NATO could prevent a fait accompli in the Baltics, the possibility that Russia could see nuclear escalation as the only way to halt hostilities on terms favorable to it still exists. Russia does not share Western feelings regarding the taboo of nuclear use, and its nuclear modernizations, non-strategic nuclear forces, and high-level messaging reinforces this view. A credible retaliatory nuclear capability remains the premium guarantor against nuclear use by an adversary. Currently, NATO's nuclear capabilities are likely to be perceived as not credible because of readiness and survivability questions regarding NATO's DCA fleet's ability to operate in the military environment any conflict with Russia would encompass.

By integrating a standoff nuclear capability into NATO's nuclear sharing arrangements, NATO can improve how Russians perceive NATO's ability to retaliate against a nuclear strike from outside the range of Russian IADs. For the United States, integrating this capability takes a burden off of the strategic nuclear forces based in the U.S. homeland and allows those forces to retain their high-end nuclear deterrence role. By making a NATO nuclear capability the guarantor of alliance security, the United States can decrease the likelihood of nuclear and conventional attacks against its homeland in any European conflict by decreasing the role of its strategic deterrent in European security. The presence of a capability that can penetrate Russian IADs forward deployed in NATO territory also makes deterring and, if deterrence fails, the decision to respond to a Russian nuclear strike much more credible and simple.

Improving NATO's nuclear capability will inevitably be coupled with statements from Moscow that these moves impact strategic stability in Europe. These concerns can be prudently ignored because strategic stability does not exist between Russia and NATO in NATO's eastern flank. Russia's reliance upon nuclear weapons in its security strategy and its vast arsenal of weapons ensures that a relatively modest change to NATO's nuclear stockpile (relative to Russia's) will only serve to help reach strategic stability with Russia.

In addition to the concerns Russia would voice, the vocal anti-nuclear community in the United States would argue that pursuing a standoff nuclear capability in NATO would violate the "no new capabilities" policy that the Obama administration has adopted. This policy is not legally binding, however, and could easily be changed by the new administration in January 2017. Additionally, utilizing a French missile design would also eliminate this U.S. domestic political concern, assuming the French would be willing to enter NATO's nuclear sharing arrangements—admittedly a tall order.

Improving NATO's Missile Defense Capabilities

Missile defense will always remain an important component within the NATO alliance's range of capabilities to protect against the proliferation of missile technology around the world and as a symbol of alliance solidarity and cohesion. In terms of deterring and defending against Russian aggression, it remains a second order condition to conventional and nuclear capabilities.

Missile defenses come in two categories: cruise and ballistic missile defense. In both cases, they can only feasibly provide a limited defense capability. This is due to the higher cost of defensive systems versus offensive missile systems, which makes a strategy of defense dominance cost prohibitive. Since missile defense systems are limited, they can easily be saturated by an adversary sending large numbers of each type of missile against the limited numbers of interceptors that can neutralize missile threats. Relative to other countries like Iran and North Korea against which missile defense can play a decisive role in defending against limited escalation, Russia has a quantitative and qualitative advantage in its cruise and ballistic missile force and can use conventional and nuclear versions in any stage of conflict. Additionally, Russia has other nonstrategic nuclear weapons that it can employ using other delivery methods, against which missile defense is not effective. This limits the utility of ballistic and cruise missile defense in defending against limited nuclear escalation, since escalation would likely occur after conventional fighting has already begun and the missile defense systems are ostensibly targeted by Russian military forces.

The unique conditions under which missile defenses would operate in Eastern Europe require a different approach than the limited missile defense systems that operate against Iranian missiles in Europe and those that operate against North Korea in Asia. Ballistic missile defense systems defending against Russian missiles would have much broader areas to protect, and from multiple directions, since ballistic missiles could be launched from Kaliningrad or the Russian homeland. Similarly, cruise missile defense architectures would have to defend against air, ship, or submarine-launched cruise missiles that could come from many directions.

The difficulties associated with missile defenses in Europe should not be read as a wholesale indictment of the utility of missile defenses in a European context. If extensive, resilient missile defenses that could complicate Russian planning at every level of conflict existed in Europe, they would be incredibly valuable. The defensive capabilities missile defenses provide, coupled with their value as a tool for assuring allies, means they could play an important role for NATO—just not as a mirror image of the U.S. regional missile defense architecture that exists in other parts of the world.

A missile defense architecture that could protect Europe from Russian threats would be much more extensive than anything deployed in NATO's southern flank and in Asia. It would require tremendous resources and dedication to the

deterrence mission within the capitals of NATO and an expansion of NATO forces eastward toward the Russian threat.

Afterword—The 2016 NATO Warsaw Summit

This paper was submitted to the Center for Global Security Research at Lawrence Livermore National Laboratory in May 2016. Since it was submitted, NATO's heads of government met in Warsaw for the scheduled NATO Summit in early July 2016. At the Warsaw Summit, NATO's heads of government discussed an agenda heavily focused on Russia's provocative and aggressive actions and foreign policy.

In the Warsaw Summit Communiqué, NATO reiterated many of the same statements it made in the 2014 Wales Summit Declaration.[31] In addition to restating its resolve to provide for the security and defense of NATO member states and contribute to Euro-Atlantic security broadly speaking, NATO used stronger and more explicit language to characterize the Russian threat.

This analysis provided three recommendations for improving NATO's deterrence and defense posture, each of which is addressed in the NATO Summit Communiqué.

First, NATO has and is planning on taking a variety of actions to improve its conventional deterrence posture. Most notably, it has committed to have a multinational four battalion-sized forward presence in Estonia, Lithuania, Latvia, and Poland by early 2017. In addition to the Eastern European force, NATO has made additional commitments to improve standing NATO Naval Forces, improve its ability to reinforce the eastern members by investing in infrastructure projects across national territory, and improve its intelligence capabilities, among other improvements.

These changes are undoubtedly upgrades to the status quo, but are far from the type of force structure and posture necessary to stop Russian forces before reinforcements arrive in a situation like the one described in Section III of this analysis. The four battalion-sized multinational forces collectively only account for about one brigade-sized element (four multinational brigades were recommended by the RAND Corporation to stop a Russian fait accompli—see page 11).

This Eastern European NATO force is intended to act as a tripwire in the Baltic states. What NATO policy makers must further consider, however, is whether a tripwire force is sufficient in the today's Euro-Atlantic security environment. Historical analogies can be made to the tripwire force in Berlin at the height of the Cold War, but that situation was different in many ways. In Berlin, the United States and NATO used the explicit threat of nuclear retaliation to deter the Soviet Union

from steamrolling the U.S. and NATO forces stationed there. Furthermore, there were division-sized forces standing at the ready to engage in the conflict that would follow a Soviet attack on NATO forces in Berlin. Today neither of those conditions can be met. The NATO alliance does not explicitly or implicitly threaten nuclear use against conventional aggression and it does not have the forces ready to reinforce the Baltics, nor the credible ability to reinforce them under austere combat conditions.

Next, not much has changed for NATO in terms of missile defense. NATO reiterated that its missile defense capabilities complement the role of nuclear weapons in deterrence and that it is aimed at threats from outside the Euro-Atlantic region (i.e. from Iran and North Korea). NATO also emphasized that despite Russian claims, its missile defense architecture is not oriented toward Russia, does not threaten Russia's strategic deterrent, and that NATO remains open to discussions with Russia on the issue.

Given the little change that can be expected to follow from the Warsaw Summit on missile defense, it is unlikely that the recommendation to explore the creation of a multi-layered, survivable missile defense architecture oriented toward non-strategic Russian cruise and ballistic missiles will be pursued. Despite NATO mentioning Russia's new high-end deployed capabilities (like the ship-launched cruise missiles it employed against fighters in Syria), no proposed actions exists in the text of the Warsaw Summit to mitigate the threats posed by these systems.

Finally and unsurprisingly, NATO has not adjusted its nuclear posture, nor have the three states (the United Kingdom, United States, and France) whose independent strategic forces serve as the ultimate guarantee of alliance security. NATO continued to use language stating that it would remain a nuclear alliance so long as nuclear weapons exist and that nuclear weapons would remain a part of the appropriate mix of capabilities NATO employs in deterrence and defense, but did not address any specific new actions that it might take.

Though NATO mentioned Russia's irresponsible and aggressive nuclear rhetoric, military concept, and posture, NATO's members remain divided on the role of nuclear weapons in the Alliance. However unlikely, NATO's members should consider how a standoff nuclear capability integrated into the existing nuclear sharing arrangements of the Alliance would contribute both to NATO's nuclear capabilities under austere combat conditions, but also to its perceived cohesion to remain not just a nuclear alliance, but a *credible* nuclear alliance.

References

[1] Carter, Ashton. (3 May 2016). *Remarks at EUCOM Change of Command.* Stuttgart, Germany. http://www.defense.gov/News/Speeches/Speech-View/Article/750946/remarks-at-eucom-change-of-command

[2] Oliker, Olga. (15 January 2015). *Russia's New Military Doctrine: Same as the Old Doctrine, Mostly.* RAND, Corporation. http://www.rand.org/blog/2015/01/russias-new-military-doctrine-same-as-the-old-doctrine.html

[3] Adamsky, Dmitry (Dima). (November 2015). Cross-Domain Coercion: The Current Russian Art of Strategy. *IFRI Proliferation Papers #54.* http://www.ifri.org/sites/default/files/atoms/files/pp54adamsky.pdf

[4] Shlapak, David A. and Michael Johnson. (2016). *Reinforcing Deterrence on NATO's Eastern Flank: Wargaming the Defense of the Baltics*. Santa Monica, CA: RAND Corporation. http://www.rand.org/pubs/research_reports/RR1253.html.

[5] Osburg, Jan. (2016). *Unconventional Options for the Defense of the Baltic States: The Swiss Approach.* Santa Monica, CA: RAND Corporation. http://www.rand.org/pubs/perspectives/PE179.html.

[6] Herszenhorn, David M. (22 March 2015). Russian Warns Denmark on Joining NATO Missile Defense. *The New York Times.* http://www.nytimes.com/2015/03/23/world/europe/russian-warns-denmark-on-joining-nato-missile-defense.html?_r=0

[7] Woolf, Amy F. (23 March 2016). *Nonstrategic Nuclear Weapons.* Washington, DC: Congressional Research Service. https://www.fas.org/sgp/crs/nuke/RL32572.pdf

[8] Osburg, Jan. (2016).

[9] NA. (18 March 2014). Transcript: Putin says Russia will protect the rights of Russians abroad. *The Washington Post.* *https://www.washingtonpost.com/world/transcript-putin-says-russia-will-protect-the-rights-of-russians-abroad/2014/03/18/432a1e60-ae99-11e3-a49e-76adc9210f19_story.html*

[10] NA. (27 December 2014). Russia identifies NATO as its biggest threat. *Aljazeera.* http://www.aljazeera.com/news/europe/2014/12/russia-nato-biggest-threat-20141227164270399.html

[11] Wilkening, Dean and Kenneth Watman. (1995). *Nuclear Deterrence in a Regional Context.* Santa Monica, CA: RAND.

[12] As former British Defence Minister Dennis Healey put it, it only takes 5% credibility to deter the Russians and 95% credibility to reassure the Europeans. Despite the same capabilities contributing to deterrence and assurance, the capabilities are perceived differently by allies and adversaries.

[13] Gregory, Paul R. (2 September 2015). If Russian Soldiers Aren't Dying In Ukraine, Why did Putin Make Casualty Stats a State Secret? *Forbes.* http://www.forbes.com/sites/paulroderickgregory/2015/09/02/if-russian-soldiers-arent-dying-in-ukraine-why-did-putin-make-casualty-stats-a-state-secret/#76e043655190

[14] Sokov, Nikolai N. (13 March 2014). Why Russia calls a limited nuclear strike "de-escalation". *The Bulletin of Atomic Scientists.* http://thebulletin.org/why-russia-calls-limited-nuclear-strike-de-escalation

[15] Oliker. (2015).
[16] Shlapak and Johnson. (2016).
[17] Bendavid, Naftali. (22 June 2015). Just Fie of 28 NATO Members Meet Defense Spending Goal, Report Says. *The Wall Street Journal.*
http://www.wsj.com/articles/nato-calls-for-rise-in-defence-spending-by-alliance-members-1434978193#:I-D1sTBS8jw8cA
[18] Shlapak and Johnson. (2016).
[19] Ibid.
[20] Osburg. (2016).
[21]NA. *European Reassurance Initiative: Budget FY 2017.* Washington, DC: U.S. Department of Defense.
http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2017/FY2017_ERI_J-Book.pdf
[22] Shlapak and Johnson. (2016).
[23] NA. (3 December 2015). NATO's Nuclear Deterrence Policy and Forces. *NATO.*
http://www.nato.int/cps/en/natohq/topics_50068.htm
[24] Pifer, Steven. (30 March 2015). The limits of U.S. missile defense. *Brookings.*
http://www.brookings.edu/research/opinions/2015/03/30-us-missile-defense-limits-pifer
[25] NA. (9 February 2016). NATO Integrated Air and Missile Defense. *NATO.*
http://www.nato.int/cps/en/natolive/topics_8206.htm
[26] NA. (3 May 2011). United States European Phased Adaptive Approach (EPAA) and NATO Missile Defense. U.S. Department of State, Bureau of Arms Control, Verification, and Compliance.
http://www.state.gov/t/avc/rls/162447.htm
[27] Osburg. (2016).
Eckstein, Megan. (26 October 2016). NATO Hopes To Boost Collective maritime BMD Capability Through Exercises, Investments. *USNI News.*
https://news.usni.org/2015/10/26/nato-hopes-to-boost-collective-maritime-bmd-capability-through-exercises-investments
[28] Giles, Keir. (June 2015). *Russian Ballistic Missile Defense: Rhetoric and Reality.* Carlisle Barracks, PA: U.S. Army War College Strategic Studies Institute.
http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA625224
[29] Khyryapin, A. L., D. A. Kalinkin, and V. V. Matvichuk. (January 2015). Strategic Deterrence Against the U.S. Global ABM System and Prompt Global Strike Capabilities. *Military Thought (Voennia Mysl), Vol. 1.*
[30] NA. Aegis Ashore*. U.S. Department of Defense Missile Defense Agency.*
http://www.mda.mil/system/aegis_ashore.html
[31] N.A. (July 2016). Warsaw Summit Communiqué. *NATO.*
http://www.nato.int/cps/en/natohq/official_texts_13
N.A. (September 2014). Wales Summit Declaration. *NATO.*
http://www.nato.int/cps/en/natohq/official_texts_112964.htm