

Deterring Russian Nuclear Threats with Low-Yield Nukes May Encourage Limited Nuclear War

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Abstract: Tensions between the North Atlantic Treaty Organization (NATO) and Russia have sustained a precarious security environment in Eastern Europe that could quickly escalate to nuclear war. To deter possible Russian nuclear aggression, the United States recently published nuclear policies that called for the deployment of new submarine-launched, low-yield nuclear weapons around Europe. This article highlights how these new U.S. nuclear policies may be reinforcing Russian perceptions and fears of Western aggression. The article suggests that common U.S. characterizations of Russian low-yield nuclear doctrine miss important escalation considerations prominent in Russian military discourse. The article also argues that misalignment between U.S. and Russian officials regarding nuclear intent may increase the likelihood that a miscalculation would escalate to nuclear war.

Keywords: strategic culture, deterrence, low-yield nuclear weapons, Russia, North Atlantic Treaty Organization, NATO, escalation, U.S. nuclear policy

Introduction

Amid increasing tensions between the North Atlantic Treaty Organization (NATO) and Russia in Eastern Europe, recent U.S. nuclear policy changes aimed at curbing Russian nuclear aggression with low-yield nuclear weapons may be unintentionally contributing to a deteriorating securi-

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ty environment and increasing the risk of nuclear escalation. Since the fall of the Soviet Union, Russia has felt increasingly threatened by the westward expansion of NATO into Eastern Europe. In recent years, tensions have flared over Russia's annexation of Crimea and advance into Eastern Ukraine, the installation of NATO troops in the Baltic states, and many additional ongoing political and national security challenges between Russia and the West. The breakdown of arms control agreements between the United States and Russia in recent years has challenged U.S./Russian strategic communication, increasing fears of a potential renewed build up of nuclear weapons in Europe and a heightened possibility of nuclear escalation. In 2016, former Russian foreign minister Igor Ivanov warned that "the risk of confrontation with the use of nuclear weapons in Europe is higher than in the 1980s."¹ A similar assessment was made the same year by former U.S. secretary of defense William J. Perry.²

In response to these fears, in 2018, the United States modified its nuclear doctrine and called for the renewed development of flexible, low-yield nuclear weapons to deter the possibility of Russian nuclear aggression. While this policy change may have merit from the U.S. perspective, it appears that it may also be prompting serious concern in Moscow. This article details the ways in which current American nuclear policies intended to deter Russian nuclear aggression may be introducing new threats that increase the likelihood that a conventional conflict, caused either by aggression or miscalculation, may escalate to limited nuclear war. The article outlines some of the threat perceptions, military debates, nuclear policies, and potential misunderstandings in both Russia and the United States that may be fueling these threats. The article concludes by identifying several opportunities to build resilience in U.S. deterrence policies and nuclear strategy vis-à-vis Russia to prevent escalation to nuclear war.

In assessing how U.S. deterrence efforts are interpreted in Russia, it is critical to understand the cultural factors that may affect Russia's worldview and decision-making processes. As noted by Colin S. Gray, the choice to be deterred rests solely on the party to be deterred and is subject to that party's thought processes.³ Therefore, this article draws from the body of literature focused on Russian strategic culture—or the "set of shared beliefs, assumptions, and models of behavior derived from common experiences and accepted narratives" that "determine appropriate ends and means of achieving national security objectives."⁴ Particular emphasis is given to the cultural factors that shape Russia's perceptual lens, or the lens through which Russian officials view and interpret U.S. policies and actions.⁵ Observations are drawn from both Western and Russian scholars and commentators, including Fritz W. Ermarth, Dima Adamsky, Olga Oliker, and Alexei G. Arbatov among others.⁶

This article focuses on Russian attitudes and perceptions of low-yield nuclear weapons. However, as Russia scholar Dima Adamsky notes, Russia appears to lack any coherent stance on the role and threats posed by low-yield nuclear weapons in official doctrine or political discourse.⁷ Therefore, this article often relies on nonofficial sources, primarily from military literature, to highlight sa-

lient concepts that may influence official decision making. It should be noted, however, that military literature does not always reflect official attitudes. Still, some concepts introduced in military literature have, at various times, played a considerable role in influencing official Russian policy. Where possible, this article connects concepts from military literature with elements of official doctrine to give some indication of their alignment with, or potential bearing on, official policy. At the very least, the analysis presented in this article reveals important differences between Russian and U.S. military thinking.

As a final note, this article uses the term *low yield* generally to describe nuclear weapons with yields in the tens of kilotons or fewer, well below 100 kilotons. The reason for using the term low yield over tactical or nonstrategic is twofold: one, because the terms tactical and nonstrategic are often used interchangeably in Russian nuclear discourse to refer to short- or intermediate-range weapons with relatively low yield, and two, because, in the context of deterrence, low-yield nuclear weapons—sometimes referred to as tactical or nonstrategic—play a clear strategic role. Therefore, this article favors the use of low yield over tactical or nonstrategic.⁸

Mutually Reinforcing U.S./Russian Threat Perceptions Exacerbate the Security Dilemma in Eastern Europe

The developing security dilemma in Eastern Europe is, in part, being fueled by actions that provoke several long-standing Russian and U.S. threat perceptions that mutually reinforce the fear of adversarial aggression. Moscow's worldview is often characterized as a "siege mentality," which Russia scholar Dima Adamsky notes combines a sense of Russian superiority with an acute perception of vulnerability and oppression.⁹ Russian officials view recent expansions of NATO and the European Union as unlawful and specifically targeted at Russia, with the intent of containing Russian interests.¹⁰ Contributing to Russia's sense of vulnerability is a history of costly foreign invasions, especially from the West.¹¹ As a buffer against Western aggression, Russia has sought to maintain influence, sometimes by force, over its western neighbors, as evidenced by the annexation of Crimea and invasion of Eastern Ukraine in 2014.¹²

The 2014 Ukraine incident prompted the United States and NATO to reconsider Russia as a serious aggressive threat and strengthen their force posture in Eastern Europe. Recent U.S. defense and foreign policy documents name Russia as a top priority and warn that Russia seeks to divide NATO, undermine global stability, and challenge American interests.¹³ In an effort to address new Russian threats and deter future aggression, NATO agreed in 2016 to deploy a small number of troops to the Baltic states as an enhanced forward presence (EFP) in Eastern Europe.¹⁴

However effective EFP may be at deterring aggression, it appears to have sparked serious concerns of a sort that may prove counterproductive in Russia. In 2014, long before EFP was agreed on, Russian military doctrine listed the "build-up of the power potential" of NATO, and "military infrastructure of

NATO member countries near the borders of the Russian Federation” as the first external risk to Russia.¹⁵ Russian political scientist Alexei Arbatov notes that even modest NATO troop deployments in the Baltic states are likely seen as a precursor of more broad NATO military efforts to contain Russia.¹⁶ In response, Russia has fortified Kaliningrad (an exclave of Russia), strengthened its force posture along its western border, and engaged in actions that test NATO resolve, including regular Russian incursions in NATO airspace and increased nuclear signaling.¹⁷ Both NATO and Russia have engaged in military exercises near the Russian border that are seen as provocative, including the recent Russian military buildup near the Ukrainian border in April 2021.¹⁸

Meanwhile, concerns over the possibility of nuclear escalation are growing in both Russia and the United States, and both countries are upgrading their nuclear arsenals.¹⁹ A belief that any armed conflict with the United States or NATO will inevitably escalate to nuclear war appears to be common among Russian military analysts and commentators.²⁰ Whereas previous Russian doctrinal publications mentioned nuclear concerns in the West, Asia, and the Middle East, the most recent 2020 document on Russian state policy in the nuclear sphere appears to be exclusively focused on the United States and NATO.²¹ As evidenced in regular remarks by Russian president Vladimir Putin, and in both the 2014 *Military Doctrine of the Russian Federation* and the 2015 *On the Russian Federation's National Security Strategy*, officials seem to believe that the United States is actively working to undermine strategic stability by threatening the survivability of Russia's nuclear arsenal and reducing barriers to nuclear first use with missile defense, strategic precision-guided conventional munitions, and space weapons.²² U.S. withdrawals from the Anti-Ballistic Missile (ABM) Treaty in 2002 and the Intermediate-Range Nuclear Forces (INF) Treaty in 2019, along with recent U.S. calls for new nuclear delivery platforms and yield capabilities, have only strengthened this belief.

For many U.S. defense planners and policy makers, ongoing tensions and increased nuclear signaling from Russia have reinforced fears of possible Russian nuclear aggression. In particular, U.S. officials have grown increasingly concerned about the United States' ability to deter a Russian low-yield nuclear strike, which presumably is more likely than a full-scale nuclear attack. To prevent the possibility of Russian nuclear aggression, the United States recently made a call for the development and deployment of new, low-yield nuclear weapons near Europe. The following three sections describe the reasoning behind the United States' proposed new weapons and their accompanying policies, aspects of Russian nuclear doctrine surrounding low-yield nuclear weapons that the policies appear to miss, and possible ways in which misalignment in U.S. deterrence efforts and Russian perceptions may unintentionally increase the likelihood of limited nuclear escalation.

United States Intends Low-Yield Nukes to Deter Russian Nuclear Aggression

New American nuclear policies calling for additional low-yield nuclear weapons are primarily intended to fill a perceived gap in the United States' ability to deter a Russian attempt to escalate out of a failed conflict using the threat of a limited nuclear strike. This concept, colloquially known as *escalate to de-escalate*, holds that early in a regional conflict, Russia would threaten a limited nuclear strike to coerce the United States or NATO to either surrender or risk uncontrolled nuclear escalation.²³ This characterization of Russian doctrine appears in the Department of Defense's 2018 *Nuclear Posture Review* (NPR), and it has been accepted by many Western analysts, policy makers, and defense planners.²⁴

The extent to which the escalate to de-escalate concept has or has not been accepted in official Russian strategy remains unclear. Russia scholar Kristin ven Bruusgaard notes that, to compensate for conventional inferiority, Russian military strategists devised ideas similar to escalate to de-escalate that were prominent in Russian military literature around 2000 and were supported by open-ended wording in the 2000 Russian military doctrine.²⁵ However, at the time, Russian analysts stressed that such provisions should be temporary.²⁶ Some analysts have since argued that Russia's recent military modernization has rendered escalate to de-escalate obsolete.²⁷ However, Arbatov argues that the concept may still be under debate.²⁸ Although Russian officials deny that escalate to de-escalate exists in Russian nuclear policy, Russia's most recent nuclear doctrine remains strategically ambiguous, leaving open the possibility for nuclear strategies to "prevent the escalation of military actions and end them under conditions acceptable" to Russia and/or its allies.²⁹

Whatever this means for the escalate to de-escalate concept, U.S. defense planners and policy makers, who tend to see capability as the driver of policy, perceive that Russia seeks to leverage a supposed gap in low-yield capability in the U.S. nuclear arsenal. Russia is estimated to have more than 2,000 nonstrategic nuclear warheads, many of which are thought to be stationed in western Russia within range of critical NATO targets.³⁰ The United States has only around 200 low-yield nuclear weapons in Europe. The majority of these are gravity bombs that must be carried to their targets by air platforms that are susceptible to Russia's sophisticated air defense systems.³¹ From a purely capability-based standpoint, this appears to leave the United States without a credible proportionate response option to a Russian low-yield nuclear threat. U.S. officials and defense planners worry that Russia may seek to leverage this asymmetry in capability to gain a nuclear advantage.³²

These fears are exacerbated by concerns that NATO's collective defense structure and policy of unanimous consent may challenge the organization's ability to adequately respond to an imminent Russian nuclear threat or possible limited nuclear strike. After a 2016 series of war games involving military and civilian experts, Rand Corporation reported that in the absence of EFP troops,

a Russian offensive in the Baltics could reach any Baltic capital in less than 60 hours.³³ After such a rapid advance, Russia could attempt a *fait accompli* by threatening or precipitating a limited nuclear strike before NATO could organize a coordinated response. This scenario often appears in Western literature in connection with discussions around possible nuclear escalation.³⁴ Based on Article 5 of its founding treaty, NATO would presumably be forced to either respond with nuclear weapons and risk nuclear escalation, respond with conventional forces and risk unacceptable losses, or surrender and lose the Baltics.³⁵ Considering the diversity in member states' views on nuclear issues, obtaining unanimous consent for a coordinated response may meet significant barriers or introduce delays that could deal a fatal blow to the alliance's credibility.

The United States' new W76-2 variable-yield submarine-launched warhead is tailored to meet these perceived challenges and fill the call in the 2018 *Nuclear Posture Review* for a variety of new nuclear weapons with diverse yields and delivery methods to deter the possibility of Russian aggression with nuclear or non-nuclear strategic weapons.³⁶ Dr. Kerry Kartchner, a State Department veteran with more than 30 years' experience advising U.S. government agencies on nuclear proliferation and escalation, calls the W76-2 a "token deterrent" against Russian low-yield nuclear threats in Europe.³⁷ It fills the gap in U.S. low-yield nuclear weapons with a highly survivable and flexible option to deter Russian limited nuclear aggression.³⁸ Because it is deployed on U.S. submarines, the W76-2 is not subject to NATO approval and therefore sidesteps cumbersome NATO decision making and many of the political challenges associated with nuclear weapons buildup on the European continent.³⁹

Escalate to De-Escalate Characterization of Russian Nuclear Doctrine Neglects Important Escalation Considerations

An analysis of current Russian military and nuclear doctrine suggests that the Western idea of escalate to de-escalate, against which U.S. policies are targeted, is, at best, an incomplete representation of Russian low-yield nuclear strategy that misses important considerations likely to influence escalation. Because official Russian doctrine appears to lack clear, codified strategies for low-yield nuclear weapons, this section reviews salient concepts from discussions in Russian military literature surrounding low-yield nuclear weapons to highlight some key factors that may influence Russia's strategies for limited nuclear use and escalation.⁴⁰

Russian Strategic Deterrence

Most discussions on low-yield nuclear weapons in Russian military literature consider their value for strategic deterrence—or *sderzhivanie*—which encompasses both prevention and containment of conventional and nuclear aggression. In fact, the root of *sderzhivanie* means to hold back or to contain.⁴¹ Consistent with Russia's military tradition of holistic strategy, Russian doctrine describes

strategic deterrence as a task involving a variety of military and nonmilitary means.⁴² Deterrence in the military sphere is achieved through a combination of informational, conventional, and nuclear means.⁴³ Therefore, nuclear weapons are just one of many measures meant for deterrence. The use of nuclear weapons for deterrence purposes is generally reserved exclusively for regional or global wars.⁴⁴ Low-yield nuclear weapons specifically are most often described in Russian military literature as operating in a regional deterrence role.⁴⁵

In keeping with the Russian Ministry of Defense's definition of military power—or the ability to influence other states indirectly through demonstration and directly through force—nuclear strategies discussed in Russian military literature involve both deterrence by fear inducement and deterrence by limited use of force.⁴⁶ Deterrence by fear inducement is envisioned as a continual process, taking place in peacetime and war, while deterrence by limited use of force is primarily meant for military conflict scenarios. Adamsky notes that low-yield nuclear weapons are seen in Russia both as a “peacetime deterrent and as a wartime operational countermeasure.”⁴⁷

Deterrence by fear inducement involves extensive nuclear signaling to dissuade an enemy from pursuing conflict with Russia.⁴⁸ Russian nuclear signaling frequently involves indirect threats, large-scale nuclear exercises, and nuclear weapons development. Moscow often uses nuclear threats to project global power and influence, which has led many Western observers to perceive Russian nuclear thinking as reckless and aggressive, even when official nuclear doctrine often portrays a far more conservative strategy than rhetoric suggests.⁴⁹

Deterrence by limited use of force involves the threat of progressive levels of damage during a regional or large-scale conflict to convince an opponent that the costs of continued conflict will outweigh any perceived benefits. The goal is to achieve a level of “deterrent damage”—or the minimum level of damage required to deter further aggression—by targeting critical enemy infrastructure. This may be what is meant by the phrase “deterrence of a forceful nature” found in Russian military doctrine.⁵⁰

Escalation Management

In addition to preventing conflict, Russian deterrence strategies seek to manage escalation should conflict occur through the threat and infliction of tailored and dosed damage to critical enemy targets. The goal is to contain the spread or scope of an existing conflict, provide opportunities for de-escalation, and leverage an asymmetry of stakes to alter an enemy's cost-benefit analysis.⁵¹ This could be accomplished using conventional or limited nuclear strikes, depending on the scale and stage of the conflict. Deterrence is achieved by leveraging a difference in resolve between Russia, presumably acting in self-defense, and an opponent, presumably acting in aggression. The idea is that a foreign aggressor faced with a Russian limited nuclear strike would consider the cost of continuing nuclear engagement with Russia to be much greater than any possible

benefit that could be achieved by additional aggression, regardless of their own nuclear capabilities.⁵²

The fundamental assumption of escalation management is that by inflicting tailored damage in a dosed manner, the risk of uncontrolled escalation can be reduced. To avoid escalation, strikes should target critical civil and military infrastructure and minimize civilian casualties. Potential targets could include power infrastructure, intelligence and command and control infrastructure, and possible space assets.⁵³ In local wars, or at early phases of regional wars, strikes are to be carried out using precision-guided conventional weapons. This strategy is supported by the 2014 Russian military doctrine, which calls for the use of conventional, high-precision weapons for forceful deterrence.⁵⁴ Conventional weapons add rungs on the escalation ladder below the nuclear threshold, which some Russian military analysts claim gives deterrence measures added flexibility.⁵⁵ However, conventional strikes are not a replacement for limited nuclear strikes. In fact, some Russian military writers suggest that conventional strikes should be used to increase the credibility of nuclear threats and convey a final warning before nuclear use.⁵⁶ Many also emphasize that conventional weapons will not replace nuclear weapons for regional and global deterrence.⁵⁷

The concept of escalation management makes the Russian idea of deterrence by limited use of force different from Western theories of escalation and the escalate to de-escalate concept. The primary elements of escalate to de-escalate, as described in U.S. doctrine, align well with Western concepts of escalation. For example, the idea that Russia would threaten to use low-yield nuclear weapons to escalate out of failed military aggression or secure military victory is an example of instrumental escalation, which seeks to improve a state's military position in a war or avoid defeat using an increase in violence.⁵⁸ The idea that the threat of a low-yield nuclear strike would force the West to choose between surrender and uncontrolled escalation is an example of coercive escalation, which is meant to prevent further action or force a change in strategy by convincing an opponent that the costs of potential escalation outweigh any benefits from continued action.⁵⁹ This more closely resembles Russian discussions on nuclear strategy. However, the primary feature of coercive escalation is the risk of uncontrolled escalation. This idea was presumably the foundation for the United States' Cold War flexible response strategy, which relied on the threat of tactical nuclear strikes to deter Soviet aggression. However, the Russian concept of deterrence by limited use of force does not rely on the risk of uncontrolled escalation. Instead, through escalation management, Russia seeks to impact the adversary's cost-benefit analysis while actively working to reduce the risk of uncontrolled escalation. Thus, it is not risk, but cost, that deters the enemy.

Through the lens of escalation management, if officially adopted, Russian officials may be more willing to engage in deliberate nuclear escalation than their Western counterparts in the face of a perceived imminent threat. Western analysts note that the risk of uncontrolled escalation to deter a would-be opponent may also be a powerful deterrent for the initiating state.⁶⁰ However,

Russian escalation management fundamentally challenges this idea and arguably reduces the barrier to escalation. This does not necessarily mean, however, that Russian political and military leaders believe that nuclear war can be won.⁶¹ Instead, if employed, the goal of escalation management would be to prevent the spread of a conflict, provide opportunities for an opponent to de-escalate, and reestablish deterrence.

Escalation Thresholds

Although Russia's precise threshold for nuclear use is not known and is likely to shift during a military conflict, Russian doctrine and military writings reveal several important considerations that may influence Russia's decision to escalate in a conventional conflict or transition to nuclear use. In general, Russia has little incentive to start a nuclear war in peacetime.⁶² However, shifting threat perceptions during a conflict may quickly create an incentive.

In addition to responding to the use of a nuclear weapon or other weapon of mass destruction against Russia, it seems that the two scenarios most likely to trigger escalation, including nuclear escalation, are a large-scale conventional military threat and a massed aerospace attack.⁶³ Russian military experts and government officials have, with some justification, expressed the fear that, early in a conflict, the United States would seek to weaken Russia's deterrence capabilities with strikes on nuclear command and control and weapons infrastructure using long-range, precision-guided weapons and massed aerospace attacks.⁶⁴ According to Russian doctrine, such an attack would entail a high probability of nuclear response.⁶⁵ Some Russian military experts have suggested that, rather than attempt a difficult defense against a technologically superior adversary, Russia could both deter aerospace attacks and prevent escalation by operationalizing a limited nuclear deterrence strategy, which during a regional conflict, could include destruction of aerospace assets.⁶⁶

Russia's tendency to favor preemption over defense is firmly rooted in Russian strategic culture and is likely to influence how it responds to a perceived threat scenario.⁶⁷ Whereas American doctrine gives significant attention to defensive measures to deny the benefits of aggression and thereby deter an adversary, Russian doctrine tends to focus on deterrence by the threat or infliction of damage to prevent aggression. As noted in the CNA report *Russian Strategy for Escalation Management*, Russian discourse on denial typically involves the preemptive elimination of, rather than defense against, an emerging threat.⁶⁸ To be clear, Russian president Vladimir Putin has firmly denied the existence of preemptive nuclear strategies in Russian doctrine.⁶⁹ However, Russia's attention to preemption may lend itself to mirror imaging. Russia has long feared that the United States would be the first to attempt a nuclear strike and has sought ways to prevent it, including possible conventional preemptive strikes. A landmark 1963 Rand analysis of Soviet nuclear strategy suggested a Soviet belief that whoever initiates a nuclear war will dictate the course of the ensuing conflict.⁷⁰ According to Kartchner, this attitude is still held among Russian officials.⁷¹ In a

March 2019 address, Valery Gerasimov, the Russian chief of the General Staff echoed this idea, saying “we must preempt the adversary” for “the *capture and the continued possession of strategic initiative*.”⁷² Through the lens of preemption, Russia may either be willing to execute a preemptive strike to avoid a perceived imminent threat or interpret U.S. action as preparation for a preemptive counterforce strike, which would likely elicit an escalatory, and possibly nuclear, response.

Russian military exercises also appear to indicate that their military’s organizational culture is heavily influenced by an acceptance of nuclear escalation, which could increase Russia’s willingness to engage in nuclear war. Although it appears that no first nuclear strike has been fully simulated in a Russian military exercise since 1999, preparation and mobilization for limited nuclear strikes in Russian military exercises simulating conventional war seem to be common.⁷³ Between 2011 and 2014, some form of nuclear escalation appears to have been simulated in at least eight military exercises.⁷⁴ The most recent large-scale nuclear exercise, Grom-2019, simulated escalation from a conventional war following an enemy first nuclear strike. As noted by Jeffrey W. Legro, a military’s organizational culture—honed through practice and training in peacetime—often has a larger bearing than a country’s capability or situation in driving a country to violate even robust international norms, including the norm of nuclear nonuse.⁷⁵ The prevalence of nuclear scenarios in Russian military exercises suggests a high degree of acceptance of nuclear escalation in the military’s organizational culture.

Recent U.S. efforts to fill a perceived low-yield capability gap by matching Russian yield capabilities may effectively reduce Russia’s nuclear-use threshold by reducing the risk that a Russian limited nuclear strike will lead to uncontrolled escalation. Russia has very little incentive to begin a nuclear war in Europe, especially considering that such a war would likely be conducted on or very near Russian territory. Therefore, it seems unlikely that Russia would consider nuclear use for anything other than a perceived existential threat. However, in the case that such a threat is perceived, the presence of new U.S. low-yield nuclear weapons near Europe are unlikely to prevent Russian escalation. In fact, some analysts argue that new U.S. nuclear policies involving low-yield nuclear weapons may actually stabilize Russian strategies for limited nuclear use by presenting a credible response option to a Russian limited strike short of high-yield nuclear weapons, thereby reducing the risk of high-level nuclear escalation.⁷⁶ Therefore, in scenarios most likely to elicit Russian nuclear use, deterrence using low-yield nuclear weapons is unlikely to prevent, and may encourage, limited nuclear conflict.

New U.S. Nuclear Policies Reinforce Russian Fears and Increase the Likelihood of Unintended Escalation

New U.S. nuclear policies meant to deter Russian nuclear aggression appear to be reinforcing Russia’s siege mentality and may be pushing Russia closer to its

escalation threshold. The absence of regular strategic discussions between the United States and Russia has led to significant misalignment between the two countries regarding nuclear intent and nuclear threat perceptions. This, against the backdrop of ongoing political and military tensions, may increase the likelihood that an accident or miscalculation could trigger escalation leading to nuclear war.

Russia's Response

For Russian officials, who tend to view policy rather than force posture as the main indicator of impending conflict, doctrinal changes surrounding low-yield nuclear options in the 2018 NPR, have raised concerns that the United States is seeking to lower the nuclear-use threshold.⁷⁷ Despite the United States' insistence that new low-yield nuclear weapons are intended only for deterrence, a recent article from Russian news agency Infors claims that the deployment of new low-yield nuclear weapons "fits into the military doctrine of the United States, which provides for a preventive nuclear strike" to impose "lightning-fast damage to the enemy's decision-making and control centers."⁷⁸ In combination with ongoing U.S. development of precision-guided weapons, which could support a massed aerospace attack, and the installment of NATO EFP troops in the Baltics, which are backed by NATO's strong conventional military, new U.S. low-yield nuclear weapons that are seen as lowering the threshold for nuclear warfare appear to dangerously approach Russia's thresholds for escalation. A recent Rand analysis warns that, when taken together, a series of seemingly reasonable deterrence measures such as these may be perceived by Russia as crossing a redline and trigger an aggressive response.⁷⁹

Moscow has also expressed concern that the United States' new submarine-launched, low-yield warheads are a precursor to the deployment of additional U.S. and NATO nuclear weapons on the European continent.⁸⁰ Russian officials fear the possibility that NATO expansion would put nuclear weapons close to its borders and expose Russia to a no-warning strike.⁸¹ Therefore, since the end of the INF treaty, Russia has grown concerned about a possible return to Europe of intermediate-range missiles, which could once again expose Russia to no-warning nuclear attacks from the West. In a 2019 meeting with Defense Minister Sergei Shoigu and Foreign Minister Sergei Lavrov, Putin raised concerns that new U.S. low-yield nuclear weapons would be mounted on intermediate-range missiles, which he alleged were already in production.⁸² According to Putin, a return of intermediate-range nuclear forces in Europe would exacerbate the risk of nuclear confrontation and lead to uncontrolled escalation.⁸³

These concerns parallel an apparent shift in Russia's launch-on-warning nuclear policy, which is included in the 2020 nuclear doctrine.⁸⁴ In a 2018 speech, President Putin suggested that any nuclear response to an incoming missile attack on Russia would require confirmation that the attack involved nuclear weapons. However, the Kremlin's 2020 document on state policy in the nuclear sphere does not specify that an incoming missile must be identified as

nuclear to warrant a nuclear response.⁸⁵ According to Russian military political scientist Alexander Predzhivev, this means that in the event of an attack, Russia would not attempt to determine whether or not a missile is nuclear before deciding to retaliate.⁸⁶ A similar view was voiced by Russian defense ministry spokeswoman Maria Zakharova, who, in response to the U.S. development of the W76-2, stated that “any attack involving a U.S. [submarine launched ballistic missile], regardless of its specifications, will be perceived as a nuclear aggression. . . . Under the Russian military doctrine such actions are seen as warranting retaliatory use of nuclear weapons by Russia.”⁸⁷

Pathways to Nuclear Escalation

With nuclear threat perceptions high, an accident or miscalculation leading to conventional conflict could escalate quickly to the nuclear-use threshold. As noted by Arbatov, most nuclear-related crises are not based on aggression but misunderstandings that spiral out of control.⁸⁸ The reduction in strategic communication that has accompanied recent breakdowns in arms control agreements has left American and Russian defense planners and policy makers to interpret opposing nuclear doctrines from their own perspective. As shown in this article, this has led both countries to perceive each other's nuclear policies as aggressive and threatening. Former NATO deputy supreme allied commander Sir Richard Shirreff recently warned that, in the current geopolitical climate, a miscalculation between NATO or Russia would likely lead to nuclear conflict.⁸⁹

A possible catalyst for military conflict between Russia and the United States/NATO could be an accident caused by a military drill or a misinterpretation of a military exercise. Both NATO and Russia regularly engage in large-scale military drills near the Russian border in Eastern Europe.⁹⁰ Russia has characterized NATO drills as provocative.⁹¹ Citing concerns about NATO expansion, Russia recently declined to modernize the 2011 *Vienna Document*, which mandates confidence-building measures designed to prevent accidental or inadvertent escalation of military exercises.⁹² The close proximity of recent NATO and Russian military exercises has raised concerns among analysts that an accident or inadvertent collision could occur and lead to escalation.⁹³ A military exercise could also be perceived as preparation for an impending attack, as was the case for Russia's 2008 Kavkaz exercise, which preceded Russia's invasion of Georgia, or Russia's recent troop buildup on the Ukrainian border, which Russia claimed was a military exercise but was viewed in the West as a possible precursor to military aggression.⁹⁴ The potential danger of misreading military drills is highlighted by the Able Archer incident in 1983, when Soviet intelligence misinterpreted a NATO command post exercise as preparation for a nuclear strike, and Soviet nuclear forces were placed on high alert.⁹⁵

The risk of inadvertent escalation is complicated by the growing prevalence of weapons, air platforms, and command and control infrastructure that can serve in both nuclear and conventional roles. These dual-capable systems

increase the risk that a conventional attack may be perceived as nuclear.⁹⁶ The Russian nuclear arsenal includes many weapons platforms that can be armed with both conventional and nuclear warheads. These weapons are often stored at the same facilities that house strategic and tactical nuclear weapons. Moreover, the United States increasingly relies on dual-capable command and control infrastructure, including targeting satellites and early-warning satellites for both conventional and nuclear operations.

Should a conflict occur, this weapon and infrastructure ambiguity, combined with heightened nuclear threat perceptions and mutual launch on warning nuclear postures, provides a variety of potential pathways to escalation. For example, during early phases of a conflict, the United States may employ precision-guided munitions or aerospace assets to conduct strikes on Russian dual-use missile facilities to challenge Russia's conventional capability or command and control infrastructure to complicate military operations. To Russian officials, who fear that the United States is preparing for nuclear warfighting, such an attack may be perceived as a counterforce strike targeting nuclear assets, prompting a nuclear response, as provided by Russian doctrine. Alternatively, fearing an aerospace attack or large-scale military incursion backed by nuclear weapons, Russia may choose to operationalize escalation management principles with conventional strikes on critical infrastructure using dual-capable weapons. In such a scenario, the United States may misinterpret the incoming missile as nuclear and respond with a nuclear strike, or, if the strikes targeted command and control infrastructure, the United States may respond with nuclear weapons, as provided by American nuclear doctrine. Due to heightened threat perceptions and challenges due to entanglement, nearly any missile attack on U.S. or Russian infrastructure could be misinterpreted and trigger a nuclear response.

Each of the pathways to escalation described above involves a misunderstanding or miscalculation that could be alleviated by implementing proper resilience measures to strengthen the material and human governance systems involved in preserving nuclear deterrence between the United States and Russia. The remaining sections discuss a few specific areas in which action can be taken to enhance the resilience of the U.S./Russia deterrence framework to prevent and manage escalation to nuclear war.

Effective Resilience Measures Address Both Nuclear Aggression and Inadvertent Escalation

A resilient American approach to deterrence vis-à-vis Russia requires a balance in capabilities and doctrines to prevent nuclear aggression and measures that mitigate the threat of inadvertent escalation. The main resilience goal of deterrence is to achieve *resistance*—or prevent the threat of nuclear war altogether. As discussed previously, the current U.S. approach to achieving resistance is primarily focused on deterring Russian nuclear aggression by deploying new low-yield nuclear weapons in Europe. While this tactic has a high probability

for success in deterring Russian aggression, it also comes with high risk and cost.⁹⁷ Some of this risk is tied to the growing danger of unintended escalation. To mitigate these risks, deterrence policies must include measures to prevent misunderstandings and misinterpretations by the United States or Russia that could lead to inadvertent escalation while maintaining capabilities and policies that deter Russian aggression.

The following sections present a series of measures aimed at improving resilience in the U.S./Russia deterrence framework by promoting alignment between the human governance systems charged with developing and executing American and Russian nuclear policies while increasing redundancy and diversity in material systems that are critical for accurate detection and characterization of nuclear threats. Because declaratory policy generally changes very little year to year, and nuclear weapons typically require heavy investments of time and money, the considerations presented in these sections largely focus on alternative, and arguably more accessible, avenues to build resilience in the deterrence framework and complement official U.S. doctrine and weapons capability.⁹⁸

Prevention of Inadvertent Escalation Requires Effective Communication and Understanding of Intent

Because deterrence, by definition, is primarily a psychological state, effective and resilient deterrence requires that intent be clearly communicated, understood, and acknowledged by the party to which deterrence measures are intended.⁹⁹ As indicated previously, it appears many of the factors contributing to the current threat of nuclear escalation between the United States and Russia are based on misalignment in threat perceptions and interpretations of intent. As geopolitical situations continue to evolve, it is likely that this misalignment, along with the associated threat of nuclear escalation, will continue to increase unless a consistent and reliable system of strategic communication between the two nations can be established.

In recent years, many of the primary communication channels between Russian and U.S. strategic communities have been strained or broken. In the absence of communication with Russia, American officials and defense planners are unlikely to correctly interpret Russian intent or effectively communicate U.S. intent in all scenarios. As Gray notes, “A theory of deterrence may score a ‘perfect 10’ for elegance and persuasiveness to us. But, if it rests upon false assumptions about intended deterrees, the theory will be worse than useless.”¹⁰⁰ Establishing regular opportunities for communication could provide U.S. officials with a forum to both communicate intent and better understand Russian intent to inform the development of tailored deterrence policies that anticipate and address unintended consequences that may lead to escalation. Because miscommunication is likely to lead to miscalculation and unintended escalation, both sides in such a forum would have significant incentive to communicate accurately and clearly. Reliable channels of communication can also add redun-

dancy and diversity within the deterrence framework by facilitating the establishment of diplomatic channels for conflict resolution and crisis management. Because the threat of nuclear escalation between the United States and Russia is most acute in Europe, it is prudent for the United States to engage additional NATO members in these communications with Russia.

One possible opportunity to rebuild communication avenues with Russia is to resurrect arms-control discussions. Since the Soviet era, arms-control agreements have been the backbone of efforts to reduce nuclear risk between the United States, NATO, and Russia. Arms-control discussions provided regular opportunities for realignment on issues regarding nuclear posture and strategy. However, recent breakdowns in arms-control agreements have challenged this line of communication. Currently, only the New START treaty remains in effect. As a result, Western policy makers and defense planners appear to have lost a significant amount of understanding of Russian intentions.¹⁰¹ Although efforts to resurrect formal arms-control agreements are likely to be initially met with resistance in both Russia and the United States, these efforts at least will signal American resolve to address the growing risk of nuclear escalation. Moreover, in the absence of formal arms-control discussions, the president could attempt to establish informal talks for the same purpose.

Another possible opportunity for strategic communication could come from joint conferences and fora to discuss modern strategic challenges facing both Russia and the United States/NATO. Although these venues would likely not permit in-depth talks about specific tenets of nuclear doctrine, they could provide both countries greater insight into the other's strategic and cultural thought processes and threat perceptions to facilitate the creation of defense policies that are better tailored to avoid miscalculation. Opening these meetings to both military and civilian participants could strengthen informal ties between each country's strategic communities. This model could also be expanded to include additional nuclear states.

It is possible that efforts to establish strategic communication may be met with some functional limitations. One of the primary challenges is that the idea of resurrecting arms-control agreements does not appear to be very popular in Russia today. Arbatov notes that arms-control agreements are seen by the current Russian political elite as "unilateral concessions to the West."¹⁰² In the past, efforts to resurrect arms control have also been challenged by unacceptable demands and an unwillingness to compromise. Moreover, in today's political environment, some within the United States may see efforts at establishing strategic communication channels with Russia as weakness and put domestic pressures on the president to take a tougher stance toward its government.

Even the most robust lines of communication will not enhance resilience if U.S. policy makers are not willing to come to terms with an accurate accounting of the Russian perspective. Because Russian threat perceptions are often inconsistent, sometimes contradictory, or seem unduly paranoid, many American policy makers discount them or reject them altogether.¹⁰³ However,

as Adamsky notes, “Representing reality as it is seen from Moscow is essential in order to explain the perceptions driving Russian strategic behavior, even if this analytical disposition and Russian perception may sound counterintuitive, confusing, and contradictory.”¹⁰⁴

Redundancy and Diversity in Command and Control Infrastructure Mitigates Risks of Miscalculation

A reliable system for mitigating the risk of inadvertent escalation also requires redundant infrastructure and protocols for detecting, identifying, and responding to potential nuclear threats. The United States is currently working to improve its space-based infrastructure for detecting and tracking missiles. However, the current system for detecting missile launches currently includes only five satellites, each of which carries a large suite of critical sensors.¹⁰⁵ The relatively large size and relatively small number of these satellites could make them vulnerable to attempts by Russia or other adversarial powers to disable U.S. command and control infrastructure in a conventional or nuclear conflict. This risk could be mitigated by distributing some of the sensors and functions of these systems on a larger number of smaller satellites. By distributing the function among several satellites, the loss of one satellite is less likely to cripple the entire system, and it could be more easily replaced than the existing satellites in the array. It may also preserve a sufficient level of critical nuclear command and control functions, the loss of which could trigger a nuclear response.

In addition to technical redundancy and diversity, maintaining a robust command and control infrastructure requires sustained support from policy makers. A recent study by the Center for Strategic and International Studies indicates that funding for the U.S. command and control system lacks adequate political advocacy and support.¹⁰⁶ Because it is relatively expensive and tied to other nuclear-related policies, the command and control system is often politicized, subjecting it to intense debate and sometimes fierce opposition. Maintaining adequate support to sustain functionality and ongoing upgrades of command and control infrastructure will therefore require greater alignment among policy makers and agreement as to its criticality in preventing inadvertent nuclear escalation.

Exercises Simulating Nuclear Escalation Could Enhance Efforts to Prevent Escalation and Restore Deterrence

U.S. and NATO war games and military exercises can also be leveraged to enhance resilience against inadvertent escalation. The purpose of deterrence is to prevent nuclear war and therefore must account for any number of ways in which it might start. Current American deterrence policies toward Russia are largely focused on putting barriers in place to prevent the onset of nuclear escalation by aggression. Such escalation would almost certainly have a catastrophic

global impact. However, Russia has very little incentive to start a nuclear war through aggression, making the probability of this scenario relatively low. An arguably more likely scenario is that the security situation in Eastern Europe would precipitate a conventional conflict in which U.S./NATO military actions, strategic misperception, or an accident caused by an operational error could create a crisis that provokes a nuclear response by Russia. Planning for this type of scenario is complicated by the fact that Russia's already uncertain operational threshold for nuclear use is likely to shift in a conflict. However, by building scenarios—based on an accurate assessment of Russian doctrine and threat perceptions—that simulate these types of challenges and uncertainties in military exercises, Western military and political decision makers can gain insights into what events Russia or the United States might most easily misinterpret and what actions are most likely to prompt a nuclear response. From these insights, policy makers and defense planners can craft resilient operational deterrence policies that better anticipate and mitigate the risks of unintended escalation.

In this way, military exercises and simulations can present unique opportunities to strengthen operational resistance against accidental or inadvertent escalation and to identify methods for reestablishing operational deterrence should initial deterrence fail. By regularly practicing operational procedures, nuclear support forces maintain a high level of readiness and institutional proficiency, which reduces the risk of accidents caused by human error. Moreover, regular exercises provide an opportunity to safely stress test U.S.–NATO deterrence and operational and declaratory policies against difficult scenarios that reflect the realities of current geopolitical conditions. Measures to strengthen adaptability could be easily incorporated into such exercises by changing scenarios dynamically to reflect evolving global challenges. By thinking through these scenarios and practicing them in a controlled environment, U.S. and NATO military and political decision makers can better identify weaknesses in current nuclear policy and outline opportunities for restoring deterrence and managing nuclear escalation should it begin.

In planning and conducting any nuclear-related exercises, it is important that the United States and NATO carefully work to avoid inadvertently communicating an escalatory message. Beatrice Heuser, Tormod Heier, and Guillaume Lasconjarias note that military exercises, including nuclear exercises, are often an important method of political communication. However, their intended message may easily be misinterpreted by an opponent.¹⁰⁷ Therefore, to avoid unintended messaging, it is important that the United States and NATO continually seek to improve their understanding of how Russia perceives U.S./NATO nuclear exercises. When carried out, nuclear-related exercises should adhere strictly to nonescalatory political aims and always be accompanied by clear communication and ongoing discussions between the United States/NATO and Russia. Moreover, as suggested by James A. Blackwell, careful planning of nuclear exercises to focus on broad and general nuclear training rather than

specific scenarios or specific messaging can also help to prevent or mitigate the negative effects of misinterpreted messaging.¹⁰⁸

For example, exercise planning could be coupled with analyses of how proposed exercise scenarios and operations may be interpreted by adversaries to identify particular exercise details that are likely to be viewed as escalatory or provocative. This information would allow exercise planners to tailor exercise scenarios to avoid provocative elements while preserving operational training value. This information could also inform the creation of nuclear operational doctrine by highlighting nuclear operations that may be misinterpreted by Russia and help U.S. officials focus strategic communications on critical areas of misalignment. Although these measures will not fully eliminate the possibility of misinterpretation, they may reduce the risk that a military exercise will lead to inadvertent escalation.

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