

ISSUE BRIEF

Russia's Exotic Nuclear Weapons and Implications for the United States and NATO

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This report summarizes a conversation hosted by the Atlantic Council's Scowcroft Center for Strategy and Security and Los Alamos National Laboratory. The Scowcroft Center convened a workshop with leading experts on nuclear policy, Russia, and emerging technology; a list of the participants is available in the appendix. The conclusions and analysis are the authors' alone, and do not necessarily represent the opinions of the participants. Additionally, participants contributed in their individual, not institutional, capacities. Author's names are arranged alphabetically.

On March 1, 2018, Russian President Vladimir Putin delivered his State of the Nation address, in which he announced five new nuclear-capable, strategic weapons systems. These systems include: a new heavy intercontinental ballistic missile (ICBM); a nuclear-armed hypersonic glide vehicle (HGV); a nuclear-armed, air-launched hypersonic cruise missile; a nuclear-powered, nuclear-armed cruise missile; and a nuclear-powered, nuclear-armed submarine drone.¹ Many Western experts were perplexed by the Russian announcement and dismissed the idea that these weapons would have much effect on US and allied national security. After all, they argued, the United States and its allies are already vulnerable to Russian nuclear forces, so these new systems would not meaningfully change the strategic equation.

The Scowcroft Center for Strategy and Security works to develop sustainable, nonpartisan strategies to address the most important security challenges facing the United States and the world. The Center honors General Brent Scowcroft's legacy of service and embodies his ethos of nonpartisan commitment to the cause of security, support for US leadership in cooperation with allies and partners, and dedication to the mentorship of the next generation of leaders.

¹ Tony Wesolowsky, "Here's What We Know: Russia's New Generation of Nuclear-Capable Weapons," *RadioFreeEurope RadioLiberty*, February 19, 2019, <https://www.rferl.org/a/here-s-what-we-know-russia-s-new-generation-of-nuclear-capable-weapons/29778663.html>. See also: Jill Hruby, "Russia's New Nuclear Weapon Delivery Systems: An Open-Source Technical Review," Nuclear Threat Initiative, November 13, 2019, <https://www.nti.org/analysis/reports/russias-new-nuclear-weapon-delivery-systems-open-source-technical-review/>.

If this is the case, however, then why is Russia building these systems? Presumably, President Putin and Russian strategists believe that these new systems advance Russian national security. Otherwise, it is unlikely that they would have decided to invest significant resources in them. So, what are the Kremlin's possible rationales for developing these systems?

This issue brief begins from the premise that one cannot properly understand these new systems or their implications for US and allied security without a better grasp of the motivations behind Russia's decisions to develop them. While the factors behind President Putin's decision-making cannot be known for certain (indeed, US understanding of Soviet strategic intent was certainly imperfect during the Cold War), one can begin to develop and weigh possible hypotheses as to Russia's motivations. This starting point raises some obvious questions to address: What are these new systems? What is the Kremlin's rationale for developing them? And, finally, what are the implications for US and allied security?

To answer these questions, the Atlantic Council's Scowcroft Center for Strategy and Security, in collaboration with Los Alamos National Laboratory, convened a small group of leading experts in emerging technology, Russia, and nuclear affairs for a one-day workshop to brainstorm and debate possible rationales and their implications for the United States. This issue brief summarizes key insights from this conversation.

There are several key conclusions. First, after much consideration, the group of leading experts was still somewhat perplexed as to why Putin is building these systems, particularly the more exotic nuclear-powered systems. Second, the weight of opinion held that the most important motivations for these systems were a genuine paranoia about the vulnerability of Russia's nuclear deterrent and a desire to signal Russia's great-power status to foreign and domestic audiences. Third, and finally, the group proposed many other possible motivations; given the significant uncertainty as to the true motivations, this report errs on the side of inclusiveness. Additional strategic motivations could include: defeating US and allied theater missile defenses; signaling and coercion in crises or conflict; providing a backstop for conventional aggression in Russia's near abroad; and

employment in a variety of nuclear "de-escalation" strike scenarios. The systems may also have broader benefits beyond nuclear and military strategy, such as a work program for Russia's military-industrial complex and for marketing Russia's defense-related exports to a global market.

Given the above analysis, there are multiple implications for US and allied policy. The precise course of action should depend, to a large degree, on one's estimate of Russian motivations. If the new systems are intended to support, bolster, or enhance Russia's "new generation warfare" strategy, for example, a different response would be called for than if these are part of a domestic jobs program. Still, there are a range of policy-response options the United States could consider, including: ignoring, or even ridiculing, Russia's new systems; pushing to include a wider range of systems in negotiations over New Strategic Arms Reduction Treaty (New START) renewal; and strengthening US and NATO deterrence posture, including by continuing to introduce low-yield warheads to the US nuclear arsenal (as articulated in the 2018 Nuclear Posture Review [NPR]).²

The remainder of this issue brief will proceed in three parts. First, it will describe Russia's new nuclear systems and place them within the broader context of Russian nuclear strategy and modernization programs. Second, it will discuss possible Russian motivations for pursuing these weapons systems. It will conclude by considering the implications of this analysis for the security of the United States and its allies and partners, as well as policy options.

Russia's New Nuclear Systems

Over the past decade, Russia has come to rely more on nuclear weapons in its military and national security strategy.³ In the Cold War, the Soviet Union maintained a "no first use" policy, in which Moscow vowed that it would only use nuclear weapons in response to a nuclear attack. Most analysts doubted the credibility of this pledge, but it was nevertheless reflected in official doctrine. In the early 2000s, however, Russia abandoned this policy and, according to the US Department of Defense, Russian nuclear strategy now allows for nuclear "de-escalation" strikes in the early

2 "Nuclear Posture Review," United States Department of Defense, February 2018, <https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF>.

3 For more on Russian nuclear strategy, see: Matthew Kroenig, *A Strategy for Deterring Russian De-escalation Strikes*, Atlantic Council, April 24, 2018, <https://www.atlanticcouncil.org/in-depth-research-reports/report/a-strategy-for-deterring-russian-de-escalation-strikes/>; Matthew Kroenig, "Facing Reality: Getting NATO Ready for a New Cold War," *Survival* 57, 1 (2015), 49-70.

stages of a conflict with the West.⁴ While the military significance of this change in policy has been the subject of some debate, it has focused attention on evolving Russian military strategy and planning.

During the Cold War, Russia enjoyed a conventional military advantage in Europe, but, as Russian power declined relative to that of the United States and NATO in the post-Cold War era, it began to rely on nuclear weapons to offset NATO's conventional advantage. Western planners did not worry about this policy shift for many years, because the risk of nuclear conflict with Russia seemed extremely remote. With the Russian invasion of Ukraine in 2014, however, US and NATO defense strategists once again recognized that there is a nonzero risk of nuclear conflict with Russia. Indeed, some experts believe the risk of nuclear war between the United States and Russia is as great now as in the most dangerous periods of the Cold War.

Even if Russia never conducts nuclear “de-escalation” strikes, their potential contributes to the day-to-day coercion of NATO. Fearing the possibility of nuclear escalation, Western leaders may behave more cautiously in confrontations with Russia, as was evident in debates over Western responses to Russian military actions in Ukraine and Syria. Moreover, Russia deliberately stokes these fears. In recent years, it has: made explicit military threats; signaled with nuclear-capable platforms at a level not seen since the Cold War; and conducted military exercises that ended with simulated nuclear strikes on European targets. For example, the Russian invasion of Ukraine was very much a nuclear crisis. At the height of the crisis, Russia placed its nuclear forces on alert, and President Putin ominously declared, “Russia is one of the leading nuclear powers” and that “it is best not to mess with us.”⁵

Russia is building the nuclear force posture necessary to back up this ambitious strategy. It is modernizing all three legs of its strategic triad, including new nuclear ICBMs, submarines, and bombers. Russia remains in compliance with its New START treaty obligations and deploys no more than 1,550 warheads across these various platforms. In addition to its strategic forces, Russia maintains thousands of non-strategic nuclear weapons, including nuclear-capable torpedoes, depth charges, air- and missile-defense interceptors,

artillery, and short-range missiles. In addition, Russia has for years violated its commitments under the now-defunct Intermediate Range Nuclear Forces Treaty (INF Treaty) by developing and deploying multiple batteries of nuclear-capable, intermediate-range, ground-launched cruise missiles.

It is within this context that Putin announced Russia's new nuclear systems in March 2018. In this speech, he mentioned six novel strategic capabilities, five of which are nuclear or nuclear-capable in nature: *Sarmat*, *Avangard*, *Kinzhal*, *Burevestnik*, and *Poseidon*.⁶

“[I]n March 2018... [Putin] mentioned six novel strategic capabilities, five of which are nuclear or nuclear-capable in nature: *Sarmat*, *Avangard*, *Kinzhal*, *Burevestnik*, and *Poseidon*.”

The most prosaic of these capabilities is the *Sarmat* heavy ICBM. The *Sarmat* possesses a greater throw-weight, faster speeds, and improved survivability compared to its predecessor. It is slated to replace the *Voevoda*, known more commonly by its NATO reporting name, SS-18 Satan. Critically, *Sarmat* can support either ten standard reentry vehicles or at least one hypersonic glide vehicle (HGV). Russian media report that serial production of the *Sarmat* will begin in 2020. The Uzhursk missile regiment in Krasnoyarsk, central Siberia, will receive the first installment of *Sarmat* missiles in 2021. When fully deployed, there will be sufficient *Sarmat* ICBMs to outfit up to six Russian missile regiments.

Beyond traditional delivery systems, Russia, China, and the United States are currently developing HGVs. HGVs travel at more than five times the speed of sound and are maneuverable. They are carried into space by an ICBM launcher, at

4 “Nuclear Posture Review,” United States Department of Defense, 8, 30.

5 Paul Sonne, “As Tensions with West Rise, Russia Increasingly Rattles Nuclear Saber,” *Wall Street Journal*, April 5, 2015, <https://www.wsj.com/articles/as-tensions-with-west-rise-russia-increasingly-rattles-nuclear-saber-1428249620>.

6 An additional Russian system, the *Tsirkon*, a hypersonic cruise missile, was announced in Putin's February 20, 2019 address but was not addressed in this assessment.

which point the glide vehicle separates and glides across the Earth's atmosphere before re-entering and hurtling toward its target. Due to their maneuverability, HGVs are less vulnerable to enemy missile defenses. Russia's entry into this competition is the *Avangard* system. Eventually, *Avangard* will be carried to the edge of space by the *Sarmat* ICBM. But, until *Sarmat* is ready, the *Avangard* will be made compatible with the UR-110N ICBM, known to NATO reporters as the SS-19 Stiletto. Hypersonic missiles require the use of materials that can withstand hypersonic speeds and atmospheric re-entry, and President Putin claims that Russian scientists have solved this materials-science problem.

“Still, it is clear that the announced systems are not merely design studies. Russia is ‘spending money and bending metal’”

While the *Avangard* requires an ICBM to boost it to hypersonic speed, the *Kinzhal* (which also appears in translation as the “Dagger”) is a hypersonic missile launched from a warplane. This weapon is perhaps the furthest advanced of any of the weapons systems discussed by President Putin in his speech. Indeed, Russian defense experts boast that they have effectively deployed a hypersonic missile before the United States or China. The *Kinzhal* can be mounted to fighter-jet external hardpoints, or held in bomber bays so as to minimize radar signatures.

A more exotic nuclear system is the *Burevestnik* nuclear-powered, nuclear-armed cruise missile. In translation, it is named “Storm Bird,” while designated by NATO as the SSC-X-9 Skyfall. The *Burevestnik* is powered by a nuclear ramjet—meaning the missile uses a small nuclear reactor to heat the surrounding air as a working fluid, just as a standard aircraft engine does with jet fuel. As a result of its nuclear power, President Putin has claimed that the *Burevestnik* has unlimited range. In his announcement, Putin showed a video with

the missile traveling across Europe, south down the Atlantic Ocean, turning back north to overfly South America, weaving between US missile-defense sensors along the way, and finally hitting a target in Florida. The enduring power source means that the missile could loiter aloft for extended periods of time. Russian media also claim that the missile has a small radar cross-section and, thus, is somewhat stealthy.

The Poseidon, a nuclear-armed underwater drone, is the final exotic Russian strategic system. Eight Poseidon drones would be carried by, and launched from the torpedo tubes of, a nuclear-powered, guided-missile submarine (SSGN). While the Poseidon can be armed with conventional or nuclear payloads, its ability to carry a large-yield nuclear warhead has attracted much attention. Indeed, there is even speculation that the Poseidon would be laden with a multi-megaton warhead seeded with cobalt—which would result in particularly deadly nuclear fallout. Given that the Poseidon operates deeply underwater, it is unlikely that it could be guided by satellite navigation; therefore, its delivery would probably be inaccurate. Accordingly, when targeted at the US eastern seaboard, for example, it could be expected to hit “somewhere between Charleston, SC and Charlestown, MA,” as one participant claimed. Like the *Burevestnik*, this system may possess a loitering capability. The weapon could also be used at closer ranges in a counterforce capability against large fleet formations. Notably, some Russian commentators, including former Russian military officers, have criticized this weapon for being too noisy and slow, and, thus, vulnerable to interception.

Some have questioned whether these are real capabilities, and whether Russia is making genuine progress on their development and deployment. Indeed, there is clear evidence that Russia is having difficulties with at least some of these systems. It was widely reported, for example, that Russia experienced an accident while testing the Skyfall system.⁷ Further, the estimated deployment times listed above are those claimed in the Russian press, and have not been verified by Western sources.

Still, it is clear that the announced systems are not merely design studies. Russia is “spending money and bending metal,” as one participant stated, demonstrating that it is actively working toward these capabilities. Moreover, Russia has always been more comfortable rushing weapons systems into the field at a pace that would not be possible in the United States, given the current state of its

7 David E. Sanger and Andrew E. Kramer, “U.S. Officials Suspect New Nuclear Missile in Explosion That Killed 7 Russians,” *New York Times*, August 12, 2019, <https://www.nytimes.com/2019/08/12/world/europe/russia-nuclear-accident-putin.html>.

nuclear complex, acquisition process, and other issues. It is likely, therefore, that most, if not all, of these systems will be deployed in the coming years.

To some degree, it might make sense that Russia is building more nuclear weapons, given its reliance on nuclear weapons in its strategy. On the other hand, Russia already possesses a large and diverse arsenal with many thousands of strategic and nonstrategic nuclear weapons. To many Western experts, these new systems—especially the more exotic submarine drone and nuclear-powered cruise missile—seem like overkill, and arguably do not provide any new or meaningful capabilities beyond current Russian strategic systems. These developments raise the obvious questions of why Russia is building these systems and how it might use them.

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Potential Russian Motivations and Applications

This section will review possible answers to the above questions in two broad categories: those related to nuclear and military strategy, and those having to do with broader geopolitical and political concerns. It should be noted that the answer to the first question (why is Russia building these systems?) and the second question (how will these systems

be used or threatened to be used?) might be different. It is possible that Putin was motivated to develop these systems for one purpose, such as defeating US missile defenses, but that once Russia possesses these systems, military planners or others will find creative uses for their employment. In addition, these motivations are not mutually exclusive, and the Kremlin may have multiple reasons for pursuing these capabilities. For this reason, this issue brief has erred on the side of inclusiveness in considering a wide range of feasible motivations and applications for these systems.

Strategic Motivations

Ensure the Survivability of Russia's Nuclear Deterrent

The assembled experts believed that the most likely motivation for these systems is that President Putin sees them as a means of ensuring Russia's nuclear deterrent in the face of advancing US capabilities, including missile defenses. The Russians have long protested that US nuclear forces and missile defenses are designed to undermine Russia's second-strike capability.

It is important to note that Russian fears rest on a misunderstanding of US policy, which accepts nuclear mutual vulnerability with Russia, and does not have a policy or capabilities designed to undermine Russia's nuclear deterrent. US homeland and regional missile-defense capabilities are limited and meant to deal with threats from rogue states like Iran and North Korea. They are not intended to, nor could they, blunt a strategic attack from Russia.⁸

Nevertheless, Russian experts exaggerate the capabilities of US systems, and seem genuinely paranoid about what they see as the US pursuit of a first-strike capability. They spin fanciful scenarios about how the United States could conduct a successful first strike with conventional missiles and then mop up Russia's ragged retaliatory strikes with advanced missile defenses. Even when Russian experts recognize that US systems are not currently capable of carrying out a splendid first strike, they fear that these systems could become capable of doing so in the future.

8 “Missile Defense Review,” United States Department of Defense, 2019, https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf.

Therefore, the new nuclear systems may be designed to ensure that Russia possesses an assured retaliation capability against the United States. For example, maneuverable capabilities such as the *Avangard* and the *Burevestnik* may be able to evade and penetrate US missile defenses. An underwater drone that is not GPS-guided, like the Poseidon, would be hard to track, and invulnerable to US cyberattacks.

Indeed, both the content and timing of President Putin's 2018 announcement suggest an underlying concern with US missile defenses and strategic capabilities. During the speech, Putin explicitly referenced the US withdrawal from the Anti-Ballistic Missile (ABM) Treaty in 2002.⁹ Moreover, this announcement came shortly after the release of the 2018 NPR and its promises to modernize US nuclear forces and build new "supplemental" nuclear capabilities.¹⁰

On the other hand, Russia signed two major arms-reduction treaties following the demise of the ABM Treaty—including, most recently, New START in 2010—raising questions about the degree to which this is a true cause of Russian behavior.

Moreover, if the Russians were truly concerned with the survivability of their nuclear deterrent, they could have built a greater number of more mundane systems, such as ICBMs. Why would they need this broader range of exotic systems? One answer may be that this represents a "belt and suspenders" approach, providing redundancy and diverse capabilities to ensure survivability.

Another explanation may involve nuclear arms-control agreements. The Russians may believe that their current strategic arsenal is insufficient for deterrence, but they are unable to increase ICBM deployments due to New START limitations. Developing exotic systems allows them to build a more robust nuclear deterrent while maintaining compliance with New START. The new *Sarmat* ICBM, as well as systems launched from ICBMs like the *Avangard*, should be covered according to any reasonable interpretation of the New START text. But, the other systems are not explicitly covered within the treaty, and Russia may believe that it can pursue these weapons programs free from international constraints.

Strategic Superiority within New START

Russia may be pursuing these systems as a means of obtaining a real or perceived strategic superiority over the United States within the New START framework. Deterrence theorists debate the meaning and consequences of strategic superiority and, while it is unlikely that a nuclear advantage against a major nuclear-armed rival provides a useable military option at an acceptable cost, there is much evidence that the nuclear balance of power can affect states' willingness to run risks in the event of crisis and conflict.¹¹ Moreover, US and Russian officials have often behaved as if superiority matters, and have made "essential equivalence" a principle of arms-control negotiations for decades. By locking the United States in place with New START and building new systems not covered by the treaty, Moscow may be seeking to gain a favorable nuclear balance to bolster its ability to deter and coerce NATO.

Backstop to Coercion and Aggression

The new nuclear weapons may be intended as a backstop to Russian aggression and coercion against NATO. Russia's "new generation warfare" military strategy calls for the integration of all elements of national power, from information operations to thermonuclear war, into a coherent whole.¹² The strategy also allows for the possibility of nuclear "de-escalation" strikes to force a less resolved opponent to back down.¹³ By providing many options for nuclear escalation in wartime, these new weapons could embody a vehicle for peacetime coercion. The systems would serve as a backstop for conventional and hybrid aggression in Russia's near abroad, a region in which it has repeatedly demonstrated its willingness to intervene. Accordingly, the novel systems may provide the Kremlin with an increased range of options up the escalation ladder in any crisis, and even in warfighting. In addition to these more exotic systems, Russia is completing a modernization cycle of its entire nuclear arsenal. Combined, the modernized and exotic systems may facilitate its pursuit of revisionist objectives in the region, while deterring a US and NATO response.

9 James J. Cameron, "Putin Just bragged About Russia's Nuclear Weapons. Here's the Real Story," *Washington Post*, March 5, 2018, <https://www.washingtonpost.com/news/monkey-cage/wp/2018/03/05/putin-claims-russia-has-invincible-nuclear-weapons-heres-the-story-behind-this/>.

10 "Nuclear Posture Review," United States Department of Defense.

11 Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (New York: Oxford University Press, 2018).

12 Phillip Karber and Joshua Thibeault, "Russia's New-Generation Warfare," *Army Magazine* 66, 6 (2016), 60–64, <https://www.ausa.org/articles/russia%E2%80%99s-new-generation-warfare>.

13 Kroenig, *A Strategy for Deterring De-Escalation Strikes*.

On the other hand, one must again ask whether these new capabilities are necessary to pursue such a strategy. After all, Russia already has a wide range of flexible strategic and nonstrategic nuclear options. Indeed, this is the central puzzle that motivates this study. These new weapons do not appear to provide obvious military utility above and beyond Russia's existing capabilities, so why is Russia building them?

One possible answer may be that these new weapons are more psychological than military in nature. They are intended to raise nuclear fears in the West. Repeated reporting about new and exotic Russian nuclear weapons increases the perception of nuclear risks among Western elites and publics, making them less willing to escalate a crisis with Russia, thereby providing a more potent nuclear backstop to Russia's military strategy.

Signaling

These weapons may also be used for nuclear signaling in a crisis. With its near-inexhaustible power source, the nuclear-powered, nuclear-armed cruise missile would have the ability to loiter over and around targets in Western Europe or the United States. Imagine in a crisis, for example, a nuclear-powered cruise missile overflying Europe and back. The Poseidon submarine drone could lie in wait in or near a major US or allied harbor. Upon their detection, or after Russia announced their presence, these loitering systems could provide a tangible and proximate reminder of escalation risks. They may also blur the lines between crisis and war, as the United States and its allies would debate whether attacking a loitering system constituted an act of war. Moreover, given that several of these systems are dual-capable, their deployment, even in conventional conflicts, could contribute to uncertainty and perceptions of nuclear escalation risks.

On the other hand, there are practical hurdles to such employment, and it may be difficult to imagine Russia conducting its nuclear command and control in this way. Autocratic systems in general, and Russia in particular, tend to prefer strict, top-down control of nuclear weapons. Russia may not be willing to run the risks associated with losing control of loitering weapons or of having them shot down.

Coerce NATO Allies in Europe

These new nuclear capabilities may be aimed less at the United States and more at European allies in NATO. Putin may understand that US strategic thinkers will not be impressed by these largely redundant nuclear systems, but he understands that nuclear weapons are controversial within Europe and the NATO alliance, and anything he can do to get the West talking about nuclear weapons will stir controversy and weaken the Western alliance. Debates over nuclear weapons have always been heated within and across democratic societies. The decision to deploy Pershing missiles and ground-launched cruise missiles (GLCMs) in Europe in the 1980s, for example, nearly tore the Alliance apart. One of the United States' greatest strengths in this new era of great-power competition is its large and effective alliance network. By forcing the West to focus on nuclear weapons, Putin may hope to divide NATO against itself, helping him to achieve one of his foremost strategic goals of dividing and weakening the US-led alliance.

Deter US "Hybrid" Threats

Russian officials appear to believe that the United States presents a range of "hybrid" threats to Russia, including the possibility that Washington is attempting to orchestrate non-state actors to launch a "color revolution" against the Russian government and overthrow the Russian regime short of armed conflict.¹⁴ To be clear, this is not US policy. Granted, the United States would welcome a more democratic government in Russia that respected the human rights of its people, but the United States does not have a stated policy goal or specific government programs aimed at regime change in Russia. Still, Russian officials and experts appear to be genuinely fearful of the possible spread of democracy to Russia with US backing.

From this perspective, Moscow may believe the new nuclear systems contribute to Russian state survival by serving as a deterrent to non-kinetic threats of regime change. New systems that allow Russia to more reliably hold the US homeland at risk could help to deter possible US intervention in Russia's domestic politics. Once again, the deep roots of paranoia in the Kremlin's strategic mindset may contribute to this assessment of these weapons' utility.

14 Valery Gerasimov, "The Value of Science Is in the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying out Combat Operations," Robert Coalson, trans., *Military Review: The Professional Journal of the U.S. Army*, January–February 2016, 23–29.

Decapitation Strike against Washington, DC

A final, and perhaps most speculative, strategic motivation is that these new nuclear systems may be designed to conduct a decapitation strike against Washington, DC, and/or other decision-making centers. Maneuverable missiles or nuclear submarine drones may be able to strike US leadership and command-and-control targets in the US capital with little or no warning. Such a capability may be valuable in the event of a full-scale war with NATO.

To be sure, this would be an extreme scenario, but military plans and postures are sometimes developed to deal with remote, but important, contingencies. Russia certainly develops contingency plans for major conflict, including nuclear war, with the United States and NATO.

One could question, however, whether new systems would succeed in this task or are necessary for this purpose. Placing a nuclear cruise missile on a commercial vessel, for example, may be able to provide a similar capability. It is unclear, therefore, what advantages these new systems provide for this purpose compared to preexisting Russian capabilities.

Broader Geopolitical and Political Motivations

There are a number of possible uses for these new systems that go beyond the realm of nuclear and military strategy, including: geopolitical posturing, diplomatic bargaining, domestic politics, supporting the military-industrial complex, and defense-industry exports.

Geopolitical Posturing

The Kremlin may be using these new systems as a means of geopolitical posturing. The assembled experts believed that this may be the most important geopolitical motivation for these systems. A major strategic goal of President Putin is to ensure that Russia is seen as a great power on the world stage. The possession of large and advanced nuclear arsenal is one of Putin's few remaining cards to ensure Russia has a seat at the table.

This interpretation is bolstered by the timing of Putin's announcement, weeks after the publication of the US NPR. In the NPR, the United States introduced new low-yield capabilities designed to offset Russia's "escalate-to-deescalate" strategy. Therefore, in accordance with its self-image as a great power, the Kremlin felt the need to respond by announcing new capabilities of its own. It appears that Russia has been working on some of these systems for some time before Putin's speech; therefore, it is possible that the public announcement was solely motivated by a desire to publicly counter the NPR. Most believe that Russia may be hard-pressed to keep pace with the United States and China in other emerging technological areas, such as artificial intelligence (AI). Russia may have, therefore, doubled down in the nuclear domain, where it maintains significant expertise and capabilities—even pursuing concepts previously rejected during the Cold War, such as the nuclear-powered cruise missile.

Diplomatic Bargaining

The new nuclear systems may be viewed as diplomatic bargaining chips for arms control. Given Russia's longstanding interest in renewing New START, the timing of its new nuclear systems may be designed to build diplomatic leverage. With signs that the United States may decide not to renew New START, the announcement of these systems may be intended to frighten the United States about fears of a runaway arms race. Or, it may be intended to give Russia an area in which it can agree to make concessions short of cutting into its large stockpile of nonstrategic nuclear weapons, which has been listed as a US objective in future arms-control negotiations.

Domestic Politics and the Military-Industrial Complex

Given the complexity of presiding over an authoritarian system, it is certainly probable that the Kremlin's foreign policy decisions are designed to have some effect on the Russian populace. By building exotic nuclear capabilities, Putin may be trying to portray himself as a strong leader confronting a hostile United States, in order to increase his popularity at home. Additionally, Putin may be building these systems to funnel resources to Russia's military-industrial complex, in order to ensure their continued support. After all, Putin's

popularity is at its lowest point in years, and he has faced persistent public protests in Moscow.¹⁵

On the other hand, Putin must also be careful not to be seen as wasting resources on nuclear overkill capabilities. Already, the Russian media have criticized the Poseidon submarine, and such criticism could increase if Russia's economy worsens.¹⁶

Advertising to the International Defense Market

Lastly, the new nuclear weapons may be motivated, to some degree, by business interests. Perhaps these systems are intended to send a message to potential customers of Russian military and industrial technology. With regard to its conventional forces, Russia has touted its successful deployment of military systems in Syria in an effort to grow its defense exports.¹⁷ By announcing these new exotic systems, Russia can advertise itself as a cutting-edge producer of nuclear and military technology and aim to increase its market share for defense and industrial exports in the developing world.

“The United States could also insist that New START limits be extended to include all deployed strategic nuclear weapons, even those on new and exotic systems. If Russia refuses, then this would presumably complicate any US decision to extend New START.”

Implications for the United States and its Allies

What are the implications of the above analysis for the United States and its allies? Ultimately, the answer depends, in large part, on one's assessment of the motivation and purpose of these systems. Given that it cannot presently be determined with any certainty which, if any, of the above motivations is guiding the Kremlin's decisions, this section will provide a range of policy options that correspond to possible motivations.

Intelligence Priority

Given the substantial uncertainty about Russian motivations among the Washington-based expert community and the potential significance of this development, the United States could make gathering better information about Russian motivations behind these systems an intelligence-collection priority. The US intelligence community could devote resources to seeking more detailed information about the origins of these programs, and what prompted Putin to unveil them in a major public address in March 2018.

Expand the New START Negotiating Space

The development of new systems that may not be covered by New START means that Russia may be able to increase its strategic arsenal even while New START remains in place. There is an existing mechanism for capturing newly developed strategic systems under New START, but some would clearly fall outside these provisions. To prevent Russia from exploiting New START in search of a strategic advantage, the United States should include a discussion of Russia's new systems in negotiations over New START extension. *Sarmat* and *Avangard* are already included in New START limits, according to any reasonable reading of the treaty. Indeed, Russian Foreign Minister Sergey Lavrov has acknowledged that these systems are strategic and ought to be included in any extension to New START.¹⁸ The United States could also insist that New START limits be extended to include all de-

15 Amie Ferris-Rotman, “With Falling Popularity, Russia's Putin has Tried Softer Touch. But Will it Last?” *Washington Post*, June 19, 2019, https://www.washingtonpost.com/world/europe/with-falling-popularity-russias-putin-has-tried-softer-touch-but-will-it-last/2019/06/19/5cabd13a-8e04-11e9-b6f4-033356502dce_story.html.

16 Ivan Safronov, “Whale and Sleep: NATO Defense Spending Versus Russia's Defense Budget,” *Vedomosti*, December 5, 2019, <https://www.vedomosti.ru/opinion/articles/2019/12/06/818022-son-oboronnie>.

17 Daniel Brown, “Russia is Using Syria as a Testing Ground for Some of Its Most Advanced Weapons,” *Business Insider*, May 24, 2017, <https://www.businessinsider.com/russia-is-using-syria-testing-ground-some-advanced-weapons-2017-5>.

18 “Russia Ready to Include Avangard, Sarmat Systems in New START after Its Extension – Lavrov,” TASS, December 22, 2019, <https://tass.com/defense/1102179>.

ployed strategic nuclear weapons, even those on new and exotic systems. If Russia refuses, then this would presumably complicate any US decision to extend New START.

Ignore or Belittle the New Weapons

If Putin is building these systems to frighten the West and boost his standing at home and abroad, then overreacting may only play into Putin's hand. Therefore, one option is for the United States to do nothing. Moreover, if Washington believes that these systems have little effect on the strategic balance, perhaps it is desirable to allow Russia to waste resources on futile systems.

Alternatively, the United States and its allies could lampoon the Kremlin for developing these systems, thereby demonstrating that the West will not be intimidated or overawed. Dismissing them as irrelevant could be just one element of a broader strategy, which also includes various defense efforts.

The potential risk of this approach is that it may encourage Putin to develop even more exotic and dangerous systems in order to get the United States'—and the world's—attention.

“Perhaps the most important
takeaway from this
development, however, is the
most prosaic: there is a renewed
nuclear threat from Russia.”

Offer Strategic Reassurance

To the degree that Russia is genuinely concerned about the survivability of its nuclear forces, the United States and its allies can continue to reassure Russia that they do not have, nor are they developing, a nuclear first-strike capability. They can continue to communicate that they rely on deterrence, not escalation dominance, to address the Russian

nuclear threat. They can also continue to offer technical briefings (which have now spanned several administrations) about how their missile defenses would not be able to handle a Russian nuclear attack.

Strengthen US and Allied Deterrent and Defenses

If Russia's new systems are meant to intimidate the United States and its allies, or to find a warfighting advantage, then Washington and its allies may need to strengthen their deterrent and defensive measures.

To deter Russian nuclear “de-escalation strikes,” the United States should continue with its plans, called for in the NPR, to develop low-yield capabilities. In addition, in accordance with the 2019 Missile Defense Review (MDR), the United States and its allies can strengthen regional missile defenses in Europe.¹⁹

To keep pace with Russian developments in hypersonics, the United States and its allies should continue to develop their own offensive hypersonic capabilities, in the form of both HGV and cruise missiles. The United States could also invest in counter-hypersonic and cruise-missile defenses as part of a deterrence-by-denial strategy against Russia's new hypersonic and cruise missiles. Finally, Washington should explore a full range of countermeasures to hold Russia's nuclear submarine drone at risk.

Some analysts may be concerned that such measures may cause an arms race or threaten strategic stability. Moreover, adding new nuclear systems on top of existing modernization plans may stretch the existing national nuclear enterprise too thin. Certainly, a strategy of simply mirroring Russia's nuclear behavior does not make sense, and a wide range of effective actions is available outside the nuclear domain. But, allowing a revisionist state to achieve meaningful military advantages could be highly destabilizing to regional and global security.

Conclusion

Why is Russia building exotic nuclear weapons, like a nuclear-powered, nuclear-armed cruise missile and a nuclear submarine drone? The honest answer is that analysts do not

¹⁹ “Missile Defense Review,” United States Department of Defense, 2019, https://www.defense.gov/Portals/1/Interactive/2018/11-2019-Missile-Defense-Review/The%202019%20MDR_Executive%20Summary.pdf.

know. Even leading experts, after much reflection, are somewhat puzzled by these developments. The body of opinion holds, however, that these weapons are being developed to ensure the survivability of Russia's nuclear deterrent in the face of US technological advancements, and to broadcast Russia's great-power status to foreign and domestic audiences. The answer to this question has important implications for the appropriate US and NATO response, which could range from ignoring these developments to continuing to strengthen US and NATO deterrent posture.

Perhaps the most important takeaway from this development, however, is the most prosaic: there is a renewed nu-

clear threat from Russia. Nuclear weapons were central to the Cold War struggle between East and West, but, following the collapse of the Berlin Wall, many thoughtful observers believed that nuclear weapons were nothing more than relics. Those fond hopes have not been borne out by the facts. Great-power competition has returned—and, with it, the importance of nuclear weapons to international politics. Nuclear weapons remain the ultimate instrument of military force, and Russia is emphasizing nuclear use as a central pillar of its military strategy. Whether or not these new systems meaningfully shift the strategic balance, Western leaders must once again prioritize effective nuclear deterrence as a foremost priority of the NATO alliance.

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