



# INFORMATION SERIES

Issue No. 566

November 2, 2023

## How Many Nuclear Weapons Does Russia Have? The Size and Characteristics of the Russian Nuclear Stockpile

### **Dr. Mark B. Schneider**

*Dr. Mark B. Schneider is a Senior Analyst with the National Institute for Public Policy. Before his retirement from the Department of Defense Senior Executive Service, Dr. Schneider served as Principal Director for Forces Policy, Principal Director for Strategic Defense, Space and Verification Policy, Director for Strategic Arms Control Policy and Representative of the Secretary of Defense to the Nuclear Arms Control Implementation Commission. He also served in the senior Foreign Service as a Member of the State Department Policy Planning Staff.*

### **Introduction**

Putin's war of aggression against Ukraine, backed by frequent nuclear threats, has focused attention on the scope of Russia's nuclear capabilities and the possibility that it will initiate the first use of nuclear weapons. Non-Governmental Organizations (NGOs) such as the left-of-center Federation of American Scientists (FAS) estimate the size and composition of the Russian nuclear force, but those estimates may consistently undercount the delivery capability of the new and modernized Russian strategic missiles. Nevertheless, FAS estimates are cited globally as if authoritative and definitive; they clearly are not. They may not provide a realistic portrayal of Russia's strategic and non-strategic nuclear capabilities, potentially hampering an informed understanding of the size and scope of the Russian nuclear threat. It is impossible to

This Information Series is adapted from, Mark B. Schneider, *How Many Nuclear Weapons Does Russia Have? The Size and Characteristics of the Russian Nuclear Stockpile*, Occasional Paper, Vol. 3, No. 8 (August 2023), available at <https://nipp.org/papers/how-many-nuclear-weapons-does-russia-have-the-size-and-characteristics-of-the-russian-nuclear-stockpile/>.



determine if what appear to be systematic low estimates of Russian nuclear capabilities are deliberate, but they seem to lean consistently in that direction.

The potential for underestimating Russian nuclear capabilities, particularly if doing so suggests that Russia is in compliance with arms control agreements, is extremely troubling. Doing so would essentially misinform the U.S. public and, potentially, members of Congress regarding the true value of treaties intended to control the number of Russian arms. Perhaps more importantly, undercounting Russian nuclear capabilities could misinform the U.S. public and congressional leadership regarding the adequacy of U.S. forces to meet deterrence requirements because the adequacy of the U.S. deterrence posture must be shaped by a realistic understanding of Russian nuclear capabilities. In short, an undercounting of Russian nuclear capabilities could misinform the formulation of U.S. nuclear policies for both deterrence and arms control. This study details what may be a systematic undercounting of Russian strategic and non-strategic nuclear forces and addresses why these issues should be a matter of great concern to the American people and U.S. policy makers.

To understand why possibly erroneous depictions of Russian nuclear doctrine and quantitative and qualitative errors in the presentations of Russia's nuclear capabilities are important, it is necessary to examine Russian nuclear doctrine and policy, the size and scope of Moscow's strategic and non-strategic modernization programs, as well as the failure of arms control agreements to provide a reliable basis for measuring Russian nuclear forces or to constrain the growing nuclear threat.

## **Russian Nuclear Doctrine and Threats**

Putin's nuclear strategy entails the lowest threshold for the first use of nuclear weapons in the world today. Under Putin's June 2020 decree, nuclear first use could occur in response to: 1) a ballistic missile attack on Russia (launch before it is known whether the attack was nuclear); 2) WMD use (an expansion of the previous formulation of chemical or biological weapons attack); 3) kinetic or cyberattacks on "critical governmental or military sites," the "disruption of which would undermine nuclear forces response actions"; and, 4) aggression against Russia which threatens the "very existence of the state." In addition, the former Chief of the Russian General Staff has said, "...conditions for pre-emptive nuclear strikes...is contained in classified policy documents."<sup>1</sup> Russian nuclear war threats made at the most senior level since February 2022 are clear attempts to deter Western assistance to Ukraine, the victim of Russian aggression.

Russian warhead numbers and technical characteristics are the central components of Russian nuclear deterrence policy. Moscow's perceived qualitative and quantitative advantages matter because: 1) Putin and his senior staff appear to believe these factors are crucial for intimidation and, ultimately, they may be required to achieve military victory against Russia's enemies; 2) Russia's leaders appear to believe numbers and technical superiority are meaningful; 3) the more nuclear weapons Russia has, the greater the number and types of targets it can attack, increasing options for nuclear targeting strategies; and, 4) a large Russian numerical advantage, particularly when combined with thousands of low-yield



## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

and low-collateral damage nuclear weapons, could encourage the belief that nuclear weapons can be substituted for precision conventional weapons, increasing the risk that Moscow will introduce nuclear weapons into a conflict. Russia sees its numerical superiority and apparent monopoly on advanced nuclear weapons and delivery systems such as hypersonic missiles as a major element of leverage against the West, and a potential critical component of war-fighting that would *support* a Russian victory. Moreover, Moscow sees itself in a long war with Western civilization that includes military hostilities. The Biden Administration's warning that, "Heavy losses to its ground forces and the large-scale expenditures of precision-guided munitions during the [Ukraine] conflict have degraded Moscow's ground and air-based conventional capabilities and increased its reliance on nuclear weapons," should be taken seriously. At some point, Russia may introduce nuclear weapons into its long war with the West if it deems that to be necessary and is undeterred.

### Counting Russian Nuclear Forces

Since the end of the Cold War, the U.S. government has provided the American people with very limited information on the Russian nuclear threat to the United States and its allies. Until Putin's war of aggression against Ukraine, the national press largely ceased any form of investigative journalism into Russian nuclear capabilities. Instead, there has been endless repetition of supposed Russian nuclear weapons numbers from the FAS that are largely undocumented and for which little documentation apparently exists. The annual FAS report creates the illusion that it is possible to know from open sources the exact number of Russian nuclear weapons (5,977, according to the February 2022 edition, and 5,889 in the May 2023 version). Yet, the decline in warhead numbers recorded in the May 2023 edition is implausible given current events and is directly contrary to the repeated statements by the Biden Administration that the number of Russian nuclear weapons is increasing. The FAS numbers are *not* an estimate of total Russian nuclear warhead numbers the way the United States defines them, i.e., active and inactive weapons and weapons awaiting dismantlement, although they often are repeated as such. In fact, there is an enormous upward uncertainty with regard to Russia's actual nuclear warhead stockpile size.

The FAS studies are referenced globally as being authoritative and definitive regarding the size of Russia's nuclear inventory, but they clearly are not. The 2022 and 2023 FAS Russian nuclear forces charts appear to depict an estimate of the total Russian nuclear weapons inventory, but this is not the case; rather they present: 1) a likely low estimate of the maximum nuclear warhead upload potential of Russian strategic offensive forces; 2) either an estimate of the total inventory or the number of "assigned" Russian non-strategic (or tactical) nuclear warheads (it is unclear which it is and there is a significant difference between the two); and, 3) the estimated number of Russian nuclear weapons awaiting dismantlement. The maximum upload capability of Russian ballistic missiles *is not necessarily the same* as the size of the Russian strategic nuclear inventory as readers may take from the FAS estimates. The many journalists who uncritically cite the FAS numbers are apparently unaware of this difference.





## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

The FAS assessment of Russia's maximum nuclear warhead upload potential (about 400 ballistic missile warheads) is unlikely to be close to the real number. In fact, the Russian upload potential is growing. The warhead numbers presented by the FAS reports for each type of Russian ICBM and SLBM are mainly taken from the 1990 START Treaty Memorandum of Understanding (MOU) on strategic forces, or, in the case of the new Bulava-30 SLBM, a more than 15-year-old Russian data update to the START Treaty MOU. Yet, START Treaty MOU numbers do *not* always reflect the maximum number of warheads a Russian missile type can carry. Moreover, Russian strategic nuclear systems have been almost completely modernized and replaced since 1997. In most cases, Russian press reporting indicates that the new or improved Russian missiles have a warhead potential two or three times larger than START Treaty MOU numbers.

Exact calculations of warhead upload numbers are not credible because the necessary information is simply not available in open sources. However, available information allows reasoned estimates of the upload number—which could be up to 2,000 more warheads than the FAS assessment portrays, even without the assumption of Russian cheating involving mobile ICBMs or circumvention through launcher reloads. The Russian upload potential is about to grow substantially due to the deployment of new Sarmat heavy ICBMs, which the Russian Defense Ministry says “...will be able to carry up to 20 warheads of small, medium, high power classes.”<sup>2</sup> This warhead load is expensive and suggests that Russia has no plans for an arms control restricted force.

In the emerging, unprecedented multipolar nuclear threat environment that the United States and its allies face, sustaining an effective U.S. nuclear deterrence is challenging. The existing U.S. nuclear force posture is increasingly obsolescent and badly needs modernization given the expanding nuclear threats. Yet, FAS numbers may undercount Russian nuclear capabilities and thereby misrepresent the severity of the nuclear threat. This may well have the effect of reducing public and congressional support for a defense budget needed to sustain a credible U.S. deterrence posture.

The minimum deterrence advocacy that appears to underlie minimalist presentations of Russian nuclear weapons and strategy usually discounts the potential significance of a Russian advantage in nuclear force numbers by presuming that: 1) nuclear weapons are targeted against highly vulnerable cities for deterrence purposes; 2) few are needed to engage in a “city-busting” strategy; and thus, 3) a minimal number of nuclear weapons is needed for mutual deterrence. Yet, for decades, every U.S. Democratic and Republican administration has said that the United States would not purposefully attack opponents' populations and has instead validated that deterrence requires the capability to threaten legitimate military targets—a deterrence strategy for which nuclear force numbers and diverse types are clearly needed, especially as the number of Russian and Chinese military facilities expand.

The FAS reports appear to assume Russian compliance with the New START Treaty warhead limits despite: 1) the absence of on-site inspections for over three years and, thus, the impossibility of confirming Russian compliance; 2) clear Russian violation of the New START Treaty by denying the United States its Treaty-mandated, on-site inspection rights and data



## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

notifications; 3) reports in Russian state media of activities that, if accurate, clearly violate the New START Treaty; and, 4) Putin's illegal "suspension" of the Treaty.

Virtually everything that Russia has done in regard to New START in 2022-2023 suggests that Moscow intends to exploit the opportunities that its effective termination of the Treaty generates to expand its nuclear potential. Indeed, Deputy Foreign Minister Sergey Ryabkov hinted at this when he said, "We have gained additional opportunities to ensure our security."<sup>3</sup> It is not possible to acquire "additional opportunities" without exceeding the New START warhead limits.

Verification of the New START Treaty warhead limits literally depended on the modest on-site inspection regime that the Russians have now terminated. New START chief negotiator and former Under Secretary of State Rose Gottemoeller has pointed out, "...we discarded the counting rules in favor of confirming declared warheads on the front of missiles *through reciprocal inspections*; in fact, we did not need telemetry measures to confirm compliance with the warhead limits in the new treaty."<sup>4</sup> Without on-site inspections, the assumption of Russian Treaty compliance is little more than wishful thinking.

Numbers matter. Indeed, in December 2019, Rose Gottemoeller cautioned that the United States may lose nuclear parity because, if freed from the New START warhead limit, "...without deploying a single additional missile,"<sup>5</sup> Russia, "could readily add several hundred - by some accounts, one thousand - more warheads, to their ICBMs..."<sup>6</sup> Russian "suspension" of the New START Treaty has placed Moscow in a position where it can have, and perhaps already has, this number of extra warheads or even more.

There may be a linkage between the FAS analyses of Russian nuclear weapons numbers and capabilities and the apparent FAS arms control objectives - which have been rejected by Russia and China. The main author of the FAS analyses, Hans Kristensen, has described his own position as favoring a "minimal" nuclear deterrence posture. He has advocated reducing the U.S. nuclear deterrent to 500 weapons, completely eliminating the U.S. submarine-launched ballistic missile force, and reducing the yield of residual U.S. nuclear weapons to three-to-10 kilotons in order to eliminate any U.S. capability against military targets. He presented this agenda as a step toward eliminating all nuclear weapons.

Repetition in the Western press of the FAS February 2022 analysis has had substantial impact on domestic political commentary and can shape congressional considerations of both arms control and deterrence - which appears to rely largely on unclassified public information. A realistic presentation of likely Russian numbers, doctrine and capabilities demonstrates expanding capabilities in conformity with Russian nuclear strategy and, correspondingly, that arms control has been mainly a failure at restricting Russian nuclear warheads and constraining a dangerous Russian strategy.

The original START Treaty gave the U.S. government 15 years of technical data, missile telemetry, and cooperative measures to enhance National Technical Means of verification and a much more extensive and effective on-site inspection regime. This makes it possible for government officials to have a reasonably good understanding of the *maximum* possible number of nuclear warheads that can be deployed on the *Russian strategic nuclear missiles that*



## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

*are known to exist.* However, there is a serious concern about the U.S. government's ability to monitor mobile ICBM deployment because of the New START Treaty's loss of almost the entire original START Treaty's mobile ICBM verification regime, including the vital mobile ICBM production monitoring. The United States has not monitored Russian mobile ICBM production since 2009. And, after *more than three years without on-site inspections*, the United States likely cannot effectively monitor whether Russian ballistic missiles downloaded to comply with the New START Treaty remain downloaded or how many warheads the newly deployed missiles are carrying. Washington can have even less confidence in the size of the total Russian inventory of nuclear weapons. Despite frequent assertions to the contrary, the United States historically has dramatically *underestimated* the number of Soviet nuclear weapons.

There is simply no doubt that Russia has an arsenal of non-strategic (tactical) nuclear weapons that is much larger, much more diverse and much more capable than that of the United States. Russia has even increased the diversity of the arsenal it inherited from the Soviet Union. Both the FAS and the U.S. government's estimates of about 2,000 Russian non-strategic nuclear warheads are likely to be much too low. Those estimates are inconsistent with the claimed Russian post-Cold War reductions, which translate into a residual force of at least 5,000 tactical nuclear weapons. They are also inconsistent with many other Russian and Western assessments of Russian non-strategic nuclear weapons numbers, which range from 3,000 to over 10,000 weapons. Russia has thousands of low-yield nuclear weapons, including advanced types of low-collateral damage nuclear weapons. Again, numbers are quite important, including because all sensor and defense systems have limits on the number of warheads they can track and engage. Numbers also are clearly relevant to target coverage, damage expectancy and the survivability of nuclear forces – all factors pertinent to U.S. deterrence considerations. For example, a vastly outnumbered U.S. non-strategic nuclear deterrent based entirely on a relatively small number of fighter aircraft is likely vulnerable to even a small preemptive Russian nuclear strike using a fraction of the likely Russian force.

It is unclear how the United States can successfully deter Russian nuclear escalation under *plausible circumstances* if Russia has such a large quantitative and qualitative advantage in non-strategic nuclear weapons. Moscow's military failures in the Ukraine war could result in Russia substituting a precision nuclear strike for conventional strikes.

Under all credible estimates, Putin's Russia is ahead of the United States in nuclear weapons numbers and in new technologies such as hypersonic missiles. In 2021, Pavel Felgenhauer wrote, "Indeed, taking into account non-strategic (tactical) nuclear weapons, which no one has ever verifiably counted, Russia may have more (maybe twice as many overall) than all the other official or unofficial nuclear powers taken together."<sup>7</sup> If the high estimates of its nuclear capability are true, Russia would have an advantage of 25-to-one or more in non-strategic nuclear weapons. The uncritical repetition of the FAS claims about Russia's nuclear warhead numbers could create a false sense of comfort that is particularly dangerous under current circumstances.

The likely low and largely undocumented FAS estimates of Russian nuclear capabilities seem to coincide with its arms control agenda – even as Russia is in the process of discarding



## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

arms control treaties (e.g., New START and Conventional Forces Europe). Yet, the FAS analyses seem to promote the idea that more arms control enhances national security, irrespective of the realities of the Russian nuclear expansion and violations of existing agreements. The apparent FAS undercounting of Russian capabilities suggests a misleading picture of the actual effectiveness of agreements and obscures the long history of Soviet/Russian arms control non-compliance. Russian arms control treaty circumventions and violations do not fit into the FAS arms control advocacy – which appears to largely ignore how Russia’s substantive violations likely impact force numbers. Russian arms control violations reflect the fact that it regards numbers and technical capabilities as important, but Moscow does not regard compliance with treaties to limit those capabilities and numbers as important.

<sup>1</sup> “Russia Classifies Information on Pre-emptive Nuclear Strikes – Military,” *BBC Monitoring Former Soviet Union*, September 5, 2014, available at <http://search.proquest.com/professional/login>.

<sup>2</sup> “Guaranteed defeat of enemy infrastructure: how the Sarmat ballistic missile will enhance the combat potential of the Strategic Missile Forces,” *RT*, December 16, 2019, available at <https://russian.rt.com/russia/article/698699-sarmat-raketa-rvsn-perevooruzhenie>.

<sup>3</sup> “Russia says leaving New START has given it new security options,” *Reuters*, April 4, 2023, available at <https://www.reuters.com/world/europe/russia-says-leaving-new-start-has-given-it-new-security-options-2023-04-04/>.

<sup>4</sup> Rose Gottemoeller, “The New START Verification Regime: How Good Is It?,” *Bulletin of the Atomic Scientists*, May 21, 2020. (Emphasis added.) Available at <https://thebulletin.org/2020/05/the-new-start-verification-regime-how-good-is-it/>.

<sup>5</sup> Rose Gottemoeller, as quoted in, U.S. Congress, House of Representatives, *The Importance of the New START Treaty* (Washington, D.C.: Committee on Foreign Affairs, December 4, 2019), p. 61, available at <https://www.congress.gov/116/meeting/house/110302/documents/CHRG-116hhrg38543.pdf>.

<sup>6</sup> Rose Gottemoeller, *The Importance of the New START Treaty* (Washington, D.C.: House of Representatives, Committee on Foreign Affairs, December 4, 2019), p. 2, available at <https://www.congress.gov/116/meeting/house/110302/witnesses/HMTG-116-FA00-Wstate-GottemoellerR-20191204.pdf>.

<sup>7</sup> Pavel Felgenhauer, “Putin Delivers More Restrained National Address as Moscow Announces Partial Troop Withdrawal,” *Eurasia Daily Monitor*, Vol. 18, Iss. 65 (April 22, 2021), available at <https://jamestown.org/program/putin-delivers-more-restrained-national-address-as-moscow-announces-partial-troop-withdrawal/>.

The National Institute for Public Policy’s *Information Series* is a periodic publication focusing on contemporary strategic issues affecting U.S. foreign and defense policy. It is a forum for promoting critical thinking on the evolving international security environment and how the dynamic geostrategic landscape affects U.S. national security. Contributors are recognized experts in the field of national security. National Institute for Public Policy would like to thank the Sarah Scaife and Smith Richardson Foundations for the generous support that made this *Information Series* possible.

The views in this *Information Series* are those of the author(s) and should not be construed as official U.S. Government policy, the official policy of the National Institute for Public Policy or any of its sponsors. For additional information





## INFORMATION SERIES

Issue No. 566 | November 2, 2023

---

about this publication or other publications by the National Institute Press, contact: Editor, National Institute Press, 9302 Lee Highway, Suite 750 | Fairfax, VA 22031 | (703) 293-9181 | [www.nipp.org](http://www.nipp.org). For access to previous issues of the National Institute Press Information Series, please visit <http://www.nipp.org/national-institute-press/information-series/>.

© National Institute Press, 2023