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RUSSIAN NUCLEAR WEAPONS: CAPABILITIES, MODERNISATION AND STRATEGY

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INTRODUCTION

During the Cold War, the Soviet Union enjoyed conventional superiority over the North Atlantic Treaty Organisation (NATO) military forces. The inferior NATO forces adopted a flexible response strategy to deter large-scale Soviet attacks.[1] However, with the end of the Cold War, the balance of forces shifted. The dissolution of the Soviet Union adversely impacted the Russian economy, military-industrial complex, and force structure. The imminent American unipolarity and advancement in missile technologies further pipped the balance of forces in NATO's favour. In the face of military imbalance, Moscow was forced to rely on the nuclear cushion to deter conventional attacks on the Russian Federation and its allies.

The nuclear cushion was intended to be a transitory response to a complex problem. In the long term, Russia planned to redress its military forces. In the late 2000s, as the Russian economy recovered and the military coffers were replenished, Russia launched a comprehensive military modernisation programme to rectify military structural asymmetries. In the following years,

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1. The flexible response strategy threatens nuclear retaliation for an array of attacks from conventional war to strategic nuclear breakout.

In the last three decades, the Russian nuclear strategy has evolved with the changing structural environment and shifting balance of conventional military capabilities.

Russia undertook military modernisation, developing precision strike weapons and non-nuclear capabilities. The introduction of diverse response options and escalation management tools reduced Moscow's dependence on nuclear weapons.

The ebbs and flows of the Russian conventional forces underlie the continuity and change in the Russian nuclear strategy. In the last three decades, the Russian nuclear strategy has evolved with the changing structural environment and shifting balance of conventional military capabilities. Moscow's military and security White Papers reflect the changes in the nuclear posture due to the structural constraints and material pressures.

This article seeks to understand and explain the evolution of the Russian nuclear strategy by sequentially studying and analysing the Russian White Papers. It is divided into four sections. The first section undertakes a detailed account of Russia's nuclear forces and modernisation initiatives. The second section examines the evolution of the Russian nuclear strategy by studying Russian military doctrines published in 1993, 2000, 2010, 2014, and 2020.[2] The third section deals with some theoretical and practical concerns about the Russian nuclear strategy, such as the functional relationship between the Russian nuclear strategy and the conventional forces, the dynamics of escalation control, and strategic deterrence. The final section unpacks the Russian "escalate-to-de-escalate" strategy.

RUSSIAN NUCLEAR FORCES

The Russian strategic forces comprise a nuclear triad. Indeed, Moscow has the largest nuclear arsenal in the world. According to the *Bulletin of the*

2. This paper only considers the developments in Russian nuclear strategy until 2020, e.g. release of the *Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence.* While the subsequent events, such as the Russian special military operation in Ukraine, are highly pertinent to the Russian nuclear strategy, this paper does not delve into those aspects.

Atomic Scientists, Russia has an inventory of about 5,977 nuclear warheads; approximately 4,477 of the total inventory are operationally available, to be delivered from land, air, and sea-based platforms.[3] The remaining approximately 1,500 nuclear warheads have been retired from operational duty but are yet to be dismantled. The operational nuclear warheads further consist of 1,588 strategic warheads, assigned to be delivered by Intercontinental Ballistic Missiles (ICBMs), Submarine Launched Ballistic Missiles (SLBMs), heavy bombers and approximately 1,912 Non-Strategic Nuclear Warheads (NSNWs).[4] Among the strategic warheads, around 812 are deployed on ICBMs, 576 on submarines, and around 200 are assigned for heavy bombers.

The second-largest subscriber of non-strategic nuclear warheads is the Russian Air Force, with roughly around 500 such warheads available for delivery by intermediate-range bombers, fighter aircraft, and interceptors. An estimated 380 NSNWs have been assigned the role of air and missile defence.

The inventory of NSNWs is believed to be in central storage, unavailable for the operational nuclear forces. The Russian Navy has the largest share of low-yield atomic warheads, according to open-source estimations. It has around 935 tactical warheads, which can be launched from multiple platforms such as submarines, corvettes, frigates, cruisers, destroyers and aircraft carriers. The second-largest subscriber of non-strategic nuclear warheads is the Russian Air Force, with roughly around 500 such warheads available for delivery by intermediate-range bombers, fighter aircraft, and interceptors. An estimated 380 NSNWs have been assigned the role of air and missile defence. The remaining few, less than 100, warheads are assigned to the army missile brigades to be launched from ground-based dual-capable systems.

3. Hans Kristensen and Matt Korda, "Russian Nuclear Forces 2022", *Bulletin of the Atomic Scientists*, vol. 78, issue 2, 2022, at https://www.tandfonline.com/doi/full/10.1080/00963402.2022.2038907. Accessed on February 26, 2022.
4. Ibid.

Over the past two decades, Russian nuclear forces have undergone extensive modernisation to maintain parity with the United States and replace Soviet legacy systems.[5] The comprehensive modernisation of military forces started in 2008. Against the backdrop of modernisation efforts, the renovation of the strategic triad was given priority. The intention was to replace Soviet-era weapons with technologically advanced weapon systems. Over the decades, Moscow has continued refurbishing its nuclear forces, achieving exceptional results. During the December 2021 meeting of the Defence Ministry Board, Russian President Vladimir Putin reported that the share of modern weapons in the strategic nuclear forces has increased to 89 per cent.[6]

GROUND-BASED CAPABILITIES

The ground-based Russian strategic nuclear forces are operated and maintained by the Strategic Rocket Force of the Russian Federation (RVSN). The RVSN is divided into three missile armies: the 27th Guards Missile Army (headquartered in Vladimir), the 31st Missile Army (Orenburg), and the 33rd Guards Missile Army (Omsk). The three missile armies are further divided into 12 missile divisions. All except the missile division based in Yurya, which serves as a "back-up ICBM launch code transmitter", are armed with nuclear warheads.[7] Overall, the 12 missile divisions consist of 40 regiments armed with 315 ICBMs.

The Russian land-based strategic forces currently operate seven types of missile systems. These include four silo-based and three road-mobile strategic systems. The silo-based ICBMs include two Soviet-era ICBMs:

5. Anya Loukianova Fink and Olga Oliker, "Russia's Nuclear Weapons in a Multipolar World: Guarantors of Sovereignty, Great Power Status & More", *Daedalus,* 2020, 149 (2), pp. 37–55, at https://direct.mit.edu/daed/article/149/2/37/27311/Russia-s-Nuclear-Weapons-in-a-Multipolar-World. Accessed on December 2, 2021.
6. Ministry of Defence of the Russian Federation, "Expanded Meeting of the Defence Ministry Board", December 21, 2021, at http://en.kremlin.ru/events/president/news/67402. Accessed on December 24, 2021.
7. Hans M. Kristensen and Matt Korda, "Russian Nuclear Weapons, 2019", *Bulletin of the Atomic Scientists*, vol. 75, issue 2, 2019, p. 77, at https://www.tandfonline.com/doi/full/10.1080/00963402.2019.1580891. Accessed on November 2, 2021.

Heavy R-36M2 (NATO: SS-18 M6 'Satan') and RS-18 (NATO: SS-19 M3 'Stiletto'). They are being gradually retired and replaced by modern systems. Relatively modern silo-based ICBMs include the RS-12M2 Topol-M (NATO: SS-27 Mod-1 [silo]) and RS-24 'Yars' (NATO: SS-27 Mod-2 [silo]). Mobile ICBMs in the Russian arsenal include the RS-12M Topol (NATO: SS-25 'Sickle'), RS-12M1 Topol-M [NATO: SS-27 Mod-1 (mobile)], and RS-24 'Yars' [NATO: SS-27 Mod-2 (mobile)]. According to *the Bulletin of the Atomic Scientists*, the RVSN has about 306 nuclear-armed ICBMs, which can carry up to 1,185 warheads.[8] In addition to the existing ICBM systems, Russia is developing a range of modern delivery platforms such as the Sarmat, Osina-RV, and Kedr. The following few paragraphs offer a brief overview of the existing and upcoming ICBM systems.

SS-18 M6 'Satan'

The R-36M2 or SS-18 is a heavy, two-stage liquid propellant, silo-based ICBM codenamed 'Satan' by NATO.[9] The missile development started in September 1964 and it entered service in December 1974. The currently operational missile version—the Mod-6 version of the ICBM—was put into combat duty in 1988. It can carry up to 10 independently targetable reentry vehicles. Presently, around 40 SS-18s are estimated to be operationally deployed at the 13th Missile Division based in Dombarovsky and the 62nd Missile Division at Uzhur. The SS-18 ICBMs are scheduled to start retiring in 2022. They will be replaced by the RS-28' Sarmat' ICBMs at the 302nd Regiment of the 62nd Missile Division based in Uzhur. Recent satellite activity reveals that the silos at Uzhur have already been disarmed and are undergoing Sarmat-related upgrades to accommodate the new ICBMs.[10]

8. Kristensen and Korda, n. 3, p. 102.
9. Missile Defense Project, "R-36 (SS-18 'Satan')", *Missile Threat*, Centre for Strategic and International Studies, August 10, 2016, last modified on August 2, 2021, at https://missilethreat.csis.org/missile/ss-18/. Accessed on October 9, 2021.
10. Kristensen and Korda, n. 3, p. 105.

SS-19 M3 'Stiletto'

The SS-19 'Stiletto' is a silo-based, two-stage liquid-propelled ICBM.[11] Its development started in the late 1960s and it entered service in 1980. Along with the SS-18, the SS-19 was the first Soviet missile equipped to carry Multiple Independently Targetable Reentry Vehicle (MIRV) warheads. In 2019, no more than 10 and as few as 20 SS-19 missiles were estimated to be in service at one of the regiments at the 60th Missile Division, Tatishchevo.[12] Stiletto missiles appear to have been retired from combat duty and replaced by the Yars ICBMs. Moreover, several SS-19 boosters—SS-19 Mod-4—are being modified to house the new nuclear-capable Avangard Hypersonic boost-Glide Vehicles (HGVs).[13] The deployment of the Avangard HGVs on the SS-19 is a short-term solution; eventually, Sarmat ICBMs will replace the SS-19 for the boost phase of the Avangard.[14]

SS-25/ 'Topol'

The RS-12M 'Topol' or SS-25 'Sickle' is a three-stage, solid-propellent, road-mobile ICBM.[15] Its development started in 1977 and it was put into service in 1988. The missiles are undergoing phased retirement at the rate of one or two regiments per year. The SS-27 Mod-1 (mobile) ICBMs are replacing the Topol missiles. It is estimated that around nine SS-25s remain in service at the seventh Guards Missile Division (GMD) based in Vypolsovo.[16] The SS-25 missiles are expected to be phased out by the end of 2024.

11. Missile Defense Project, "UR-100 (SS-19)", *Missile Threat*, Centre for Strategic and International Studies, August 10, 2016, last modified on August 2, 2021, at https://missilethreat.csis.org/missile/ss-19/. Accessed on October 9, 2021.
12. Kristensen and Korda, n. 7, p. 76.
13. Missile Defense Project, "Avangard", *Missile Threat*, Centre for Strategic and International Studies, January 3, 2019, last modified on July 31, 2021, at https://missilethreat.csis.org/missile/avangard/. Accessed on October 9, 2021.
14. "At Blistering Speed of 'Mach 20', Russia Says Its Avangard Hypersonic Missile To Team-Up With Sarmat ICMB To Boost Strike Capability", *The Eurasian Times*, April 25, 2022, at https://eurasiantimes.com/deadly-combo-sarmat-icmb-to-team-up-avangard-hypersonic-missile/. Accessed on April 25, 2022.
15. Missile Defense Project, "RT-2PM Topol (SS-25)", *Missile Threat*, Centre for Strategic and International Studies, August 10, 2016, last modified on August 2, 2021, at https://missilethreat.csis.org/missile/ss-25/. Accessed on October 9, 2021.
16. Kristensen and Korda, n. 3, p. 103.

SS-27 Mod-1/ 'Topol-M'

The Topol-M or SS-27 Mod-1 is a solid-fuelled ICBM with a range of 11,000 km.[17] It is available in road-mobile (RS-12M1) and silo-based (RS-12M2) versions. The development of Topol-M ICBMs began in the 1980s and they entered service in 1997. The SS-27s can carry a single warhead capable of executing terminal evasive manoeuvres. Presently, 78 Topol-M missiles are on combat duty: 18 road-mobile missiles at the 54th GMD at Teykovo and 60 silo-based missiles at the 60th Missile Division based in Tatishchevo.[18] Topol-M ICBMs will eventually be upgraded to RS-24 Yars ICBMs.

SS-27 Mod-2/ 'Yars'

The RS-24 'Yars' or SS-27 Mod-2 is a three-stage, four-MIRVed, solid-fuelled, road-mobile and silo-based ICBM.[19] These are modified versions of the Topol-M missiles. The development of the Yars ICBMs started in 2004. They are the focus of Russia's missile modernisation efforts and the future of the strategic forces. The first regiment armed with the Yars road-mobile ICBMs assumed combat duty at the 54th GMD based in Teykovo in central Russia in 2011. Five Russian Missile Divisions (MDs)—35th MD at Barnaul, 29th GMD at Irkutsk, 39th GMD at Novosibirsk, 42nd MD at Nizhny Tagil, and 14th MD at Yoshkar-Ola—have been completely re-armed with the Yars ICBMs.[20] The 28th Missile Division at Kozelsk is the only division hosting silo-based Yars missiles.[21] Yars upgrades at two of the three regiments based in Kozelsk have been completed.[22] The 7th Missile

17. Missile Defense Project, "RT-2PM2 Topol-M (SS-27 Mod-1 'Sickle B')", *Missile Threat*, Centre for Strategic and International Studies, August 10, 2016, last modified on August 2, 2021, at https://missilethreat.csis.org/missile/ss-27/. Accessed on October 9, 2021.
18. Kristensen and Korda, n. 3, p. 104.
19. Missile Defense Project, "RS-24 Yars (SS-27 Mod 2)", *Missile Threat*, Centre for Strategic and International Studies, August 10, 2016, last modified on August 12, 2021, at https://missilethreat.csis.org/missile/rs-24/. Accessed on October 9, 2021.
20. Kristensen and Korda, n. 3, p. 103.
21. Hans Kristensen, "Russian ICBM Upgrade at Kozelsk", Federation of American Scientists, September 5, 2018, at https://fas.org/blogs/security/2018/09/kozelsk-icbm-upgrade/. Accessed on November 8, 2021.
22. "Two Regiments of the Strategic Missile Forces in 2021 will be Re-equipped with Yars Missile Systems", *TASS*, December 21, 2020, at https://tass.ru/armiya-i-opk/10312921. Accessed on November 8, 2021.

The Sarmat is believed to have a range of about 18,000 km, making it capable of hitting virtually any target in the world from within Russia. The Sarmat is capable of carrying both MIRVs and glide vehicles.

Division based in Vypolsovo is undergoing necessary infrastructure upgrades to house the Yars missiles.[23] One of the two missile regiments at Vypolsovo was expected to be armed with the Yars ICBMs in 2022. Around 173 mobile and silo-based Yars missiles are currently deployed at eight divisions.[24] Russia plans to complete the rearmament of the strategic missile force with advanced mobile and silo-based Yars ICBMs by 2024.

SS-X-29/ 'Sarmat'

Russia is developing the three-stage liquid-fuelled silo-based heavy RS-28 'Sarmat'—NATO designation SS-X-29—which will replace the heavy R-36M or Satan missiles. Since the Sarmat is a follow-up to the Satan ICBM, the media has dubbed it the "son of Satan".[25] The rocket is named after Sarmatians, a nomadic tribe that roamed the steppes of present-day southern Russia, Ukraine, and Kazakhstan in the early medieval period.[26] The nomenclature of the monstrous 'Sarmat' after the Sarmatians honours their horsemanship and warfare capabilities. The Sarmat is believed to have a range of about 18,000 km, making it capable of hitting virtually any target in the world from within Russia. The Sarmat is capable of carrying both MIRVs and glide vehicles. There are rumours that the Sarmat could carry 15 or more MIRV warheads; however, Hans Kristensen and Matt

23. Kristensen and Korda, n. 3, p. 104.
24. Ibid., p. 103.
25. Rebecca Cohen, "Russia Test-Fired its New 'Son of Satan' ICBM to Threaten the West During its Ukraine War", *Business Insider*, April 21, 2022, at https://www.businessinsider.in/international/news/russia-test-fired-its-new-son-of-satan-icbm-to-threaten-the-west-during-its-ukraine-war/articleshow/90965899.cms. Accessed on April 25, 2022.
26. "Key Facts about Russia's Advanced Sarmat ICBM System", *TASS*, March 1, 2018, at https://tass.com/defense/992360. Accessed on April 22, 2022.

Korda estimate that it will have about the same number of warheads as the SS-18 ICBMs or 10 MIRVs.[27]

Russia has planned to incorporate the Sarmat missiles in two missile divisions—Dombarovsky and Uzhur—in a total of seven missile regiments containing 46 silo launchers.

The development of the Sarmat ICBM started in the early 2000s. Its first silo ejection test was conducted in December 2017, the second in March 2018, and the third in May 2018 at the Plesetsk Space Centre, Arkhangelsk Oblast.[28] On April 20, 2022, Russia successfully conducted the first launch of the Sarmat ICBM from the Plesetsk launch station.[29] Confirming the successful test of the Sarmat ICBM, President Putin stated, "The new complex has the highest tactical and technical characteristics and is capable of overcoming all modern means of anti-missile defence. It has no analogues in the world and won't have for a long time to come".[30]

Russia has planned to incorporate the Sarmat missiles in two missile divisions—Dombarovsky and Uzhur—in a total of seven missile regiments containing 46 silo launchers.[31] Commercial satellite images reveal that the 302nd Missile Regiment based in Uzhur is undergoing upgrades to host the Sarmat missiles and would be the first regiment to receive these missiles. Russia plans to deploy the recently tested Sarmat missiles by autumn this year.[32]

27. Kristensen and Korda, n. 3, p. 106.
28. Missile Defense Project, "RS-28 Sarmat", *Missile Threat*, Centre for Strategic and International Studies, May 17, 2017, last modified July 31, 2021, at https://missilethreat.csis.org/missile/rs-28-sarmat/. Accessed on October 9, 2021.
29. "Russia Successfully Test-Launches Sarmat ICBM from Plesetsk Spaceport—Top Brass", TASS, April 20, 2022, at https://tass.com/defense/1440631. Accessed on April 21, 2022.
30. "More Than Just Nukes? Russia's Sarmat Missile has Hypersonic Link", *The Week*, April 21, 2022, at https://www.theweek.in/news/sci-tech/2022/04/21/more-than-just-nukes-russia-sarmat-missile-has-hypersonic-link.html. Accessed on April 26, 2022.
31. Kristensen and Korda, n. 3, p. 106.
32. "Russia to Deploy New Intercontinental Nuclear Missiles by Autumn", *Al Jazeera*, April 23, 2022, at https://www.aljazeera.com/news/2022/4/23/russia-to-deploy-sarmat-missiles-in-major-nuclear-upgrade. Accessed on April 24, 2022.

SS-19 Mod-4/ 'Avangard'

Russia has developed a new Avangard hypersonic missile capable of evading US missile defence systems. For the past couple of years, Russia has been deploying the Avangard glide vehicle—installed on the SS-19 Mod-4 boosters—at the rate of two per year. The first two missiles went on combat duty in December 2019[33], and another two in December 2020.[34] The regiment received the last two missiles in December 2021, achieving the full strength of six missiles.[35] The state armament programme provides for deploying two missile regiments with the Avangard complexes by 2027.[36]

Osina-RV

According to Russian media reports, Russia is developing a new variant of the Yars ICBM. Last year, the Russian news agency *TASS* reported, "The latest unique ballistic missile developed by MIT [Moscow Institute of Thermal Engineering] was successfully launched from the Plesetsk cosmodrome."[37] Little official information is available about the unique ballistic missile; however, experts have speculated that the launch might be related to a new ground-based system known as the Osina-RV, a follow-on modernised variant of the Yars ICBMs.[38]

33. "First Regiment of Avangard Hypersonic Missile Systems goes on Combat Duty in Russia", *TASS*, December 27, 2019, at https://tass.com/defense/1104297. Accessed on October 19, 2021.
34. "Установка межконтинентальной баллистической ракеты «Авангард» в шахтную пусковую установку", YouTube Video, 1:26, December 16, 2020, Posted by Russian Federation Ministry of Defence, at https://www.youtube.com/watch?v=64C8YBXU1SQ. Accessed on October 27, 2021.
35. "Russia's 1st Regiment of Avangard Hypersonic Missiles to go on Combat Alert by Yearend", *TASS*, August 10, 2021, at https://tass.com/defense/1324415. Accessed on December 28, 2021.
36. Kristensen and Korda, n. 3, p. 106.
37. "Russia has Successfully Launched the Latest ICBM from Plesetsk", *TASS*, June 28, 2021, at https://tass.ru/armiya-i-opk/11767013. Accessed on February 18, 2022.
38. Timothy Wright and Fabian Hoffmann, "Testing Times for Russia's Strategic Forces", International Institute for Strategic Studies, July 9, 2021, at https://www.iiss.org/blogs/military-balance/2021/07/russia-strategic-forces. Accessed on February 18, 2022.

Kedr

The Russian state news agency *TASS* revealed in April 2021 that Russia plans to develop a mysterious solid-fuelled ICBM, the 'Kedr'.[39] It reported that "research work on Kedr has been financed under the current state arms procurement program, which is in effect until 2027. Technological development will begin in 2023-2024."[40] The Kedr ICBMs are slated to replace the Yars missiles in 2030.[41] The Kedr will be rolled out in the mobile and silo-based variants like its predecessor.

SEA-BASED DETERRENCE

The Russian Navy is divided into four fleets—the Northern Fleet, Pacific Fleet, Baltic Fleet, and Black Sea Fleet, plus the Caspian Sea Flotilla. Strategic submarines are deployed with the Northern Fleet and Pacific Fleet.[42] The Northern and Pacific Fleets operate ten nuclear-powered, nuclear-armed ballistic missile submarines (SSBNs). The Russian SSBN fleet operates two submarine classes: five Delta IV (Project 667BDRM) and five Borei (Project 955), including two improved Borei-A submarines. Each submarine is equipped to carry 16 missile launchers. Until recently, Russia had Delta III (Project 667BDR) submarines in service.[43] They used to be armed with the RSM-50' Vyosta' (NATO: SS-N-18 M1 'Stingray') and deployed with the Pacific Fleet on the Kamchatka Peninsula. However, as of 2022, all the Delta-III SSBNs have been withdrawn from strategic service.[44] The last of the Delta-III SSBN—the *Ryazan* (K-44)—has been converted into a general-

39. "Development of Russia's New-Generation ICBM to begin in 2023-2024—Source", *TASS*, April 3, 2021, at https://tass.com/defense/1273711. Accessed on February 20, 2022.
40. Ibid.
41. Mark Episkopos, "Kedr: Russia is Building a New and Quite Mysterious ICBM", *The National Interest*, April 6, 2021, at https://nationalinterest.org/blog/buzz/kedr-russia-building-new-and-quite-mysterious-icbm-182068. Accessed on February 20, 2022.
42. Pavel Podvig, "Russian Nuclear Forces: Strategic Fleet", Russian Forces, August 7, 2021, at https://russianforces.org/navy/. Accessed on November 19, 2021.
43. Hans Kristensen and Matt Korda, "Russian Nuclear Forces, 2021", *Bulletin of the Atomic Forces*, vol. 77, issue 2, 2021, at https://www.tandfonline.com/doi/pdf/10.1080/00963402.2021.1885869. Accessed on September 29, 2021.
44. Kristensen and Korda, n. 3, p. 108.

purpose attack submarine. The next few subsections offer a brief outline of Russian ballistic missile submarines.

Delta Class IV (Project 667BRDM)

Delta IV submarines were built between 1985 and 1992 and continue to be the backbone of the Russian underwater strategic force. The design of the Delta IV submarines is similar to that of the Delta III, constituting a double-hulled configuration, with missile silos housed in the inner hull.[45] All Delta IV submarines are part of the Northern Fleet based at Yagelnaya Bay on the Kola Peninsula. They are equipped with the RSM-54 'Sineva/ Layner' or modified SS-N-23 SLBMs. Each Sineva can carry up to 4 MIRV warheads.

Borei Class Submarine (Project 955)

Borei submarines are fourth-generation Russian SSBNs that are replacing the ageing Delta submarines.[46] Each Borei class submarine is armed with 16 RSM-56' Bulava' or SS-N-32 SLBMs. Each Bulava can carry up to six MIRVed warheads. Russia plans to deploy a fleet of 10 Borei SSBNs; five are currently in service, and another five are in various stages of construction. The project to manufacture the first Borei submarine—the *Yury Dolgoruky*–started in 1996.[47] The ship was formally commissioned in the Russian Navy in January 2013.[48] The follow-on ships, the *Alexander Nevsky* and *Vladimir Monomakh* were commissioned in December 2013 and December 2014, respectively.[49]

45. "SSBN Delta Class IV (Project 667. BDRM)", *Naval Technology*, June 24, 1999, at https://www.naval-technology.com/projects/delta-class-submarine/. Accessed on February 11, 2022.
46. "SSBN Borei Class Nuclear-Powered Submarines", *Naval Technology*, December 24, 2020, at https://www.naval-technology.com/projects/borei-class/. Accessed on February 13, 2022.
47. "*Yuri Dolgoruky* Submarine to Join Russian Navy in mid-September", *TASS*, August 17, 2012, at https://tass.com/archive/680520. Accessed on February 13, 2022.
48. "Russia: Navy Commissions SSBN *Yury Dolgoruky*", *Naval Today*, January 2, 2013, at https://www.navaltoday.com/2013/01/02/russia-navy-commissions-ssbn-yury-dolgoruky/. Accessed on February 13, 2022.
49. "Strategic Nuclear Sub-*Vladimir Monomakh* to go into Service with Russian Navy December 19", *TASS*, November 21, 2014, at https://tass.com/russia/760935. Accessed on February 13, 2022.

Borei-A Class (Project 955A)

Under Project 955A or Borei-A class, Russia is developing improved Borei submarines with better acoustic, stealth, manoeuvring and deep-sea running capabilities.[50] The development of the first Borei-A class submarine and the fourth overall—the *Knyaz Vladimir*—started in 2012 and it entered service in June 2020.[51] The fifth Borei SSBN, the *Knyaz Oleg*, was commissioned on December 21, 2021.[52] The construction of the follow-up sixth and seventh submarines—the *Generalissimus Suvorov* and *Emperor Alexander III*—started in 2014 and 2015, respectively, and they are expected to join the Russian Navy in 2023.[53] The keel for the eighth Borei submarine—the *Knyaz Pozharskiy*—was laid in December 2016.[54] The ninth and tenth Borei SSBNs keels—the *Dmitry Donskoi* and *Knyaz Potemkin*—were laid in August 2021.[55] The last two SSBNs are scheduled to be delivered before the completion of the state armaments programme in 2027.

STRATEGIC BOMBERS

The Russian Air Force operates two strategic bombers: the Tu-160 Blackjack and the Tu-95MS Bear-H. Overall, there are about 68 strategic bombers in the inventory (55 Tu-95 and 13 Tu-160), of which only 50 bombers are thought to be deployed and counted under the New START

50. "Russia to Build 6 more Borei-A Strategic Nuclear-Powered Submarines—Source", *TASS*, May 21, 2018, at https://tass.com/defense/1005356. Accessed on October 27, 2021.
51. Ministry of Defense of the Russian Federation, "On the Day of Russia, the Newest Strategic Missile Submarine of the Borey-A Project Knyaz Vladimir was Solemnly Accepted into the Navy", June 12, 2022, at https://function.mil.ru/news_page/country/more.htm?id=12296989@egNews. Accessed on December 27, 2021.
52. "Putin to Join Induction of *Knyaz Oleg*, Novosibirsk Nuclear Submarines via Video Linkup", *TASS*, December 21, 2021, at https://tass.com/defense/1378497. Accessed on December 22, 2021.
53. "Shipbuilders to Deliver Project 955A Next Nuclear-Powered Sub to Russian Navy in 2023", *TASS*, December 9, 2021, at https://tass.com/defense/1373065. Accessed on December 10, 2021; "Shipbuilders to Deliver Strategic Nuclear-Powered Sub to Russian Navy in 2023", *TASS*, December 28, 2021, at https://tass.com/defense/1381841. Accessed on December 30, 2021.
54. "Russia will Start Construction of Eighth Borei-Class Submarine on December 23—Source", *TASS*, November 2, 2016, at https://tass.com/defense/910145. Accessed on February 12, 2021.
55. Martin Manaranche, "Russia Lays Keel Of Four Submarines and Two Corvettes at Once", *Naval News*, August 23, 2021, at https://www.navalnews.com/naval-news/2021/08/russia-lays-keel-of-four-submarines-and-two-corvettes-at-once/. Accessed on August 29, 2021.

(Strategic Arms Reduction Treaty).[56] The bombers can carry Kh-55 or AS-15 air-launched cruise missiles. The upgraded versions are armed with the Kh-102 or AS-23 Air-Launched Cruise Missiles (ALCMs). Theoretically, bombers can hold around 800 nuclear weapons, but it is estimated that weapons are only allocated for deployed strategic bombers, less than 600. Under normal circumstances, weapons are not deployed on the aircraft, but hundreds of them are stored at the two bomber bases, with the remainder in central storage.[57]

Tu-95 Bear-H Bombers

The Tu-95 Bear bombers entered service in the 1950s and, till the early 1960s, were the only Soviet means of reaching the US mainland territory.[58] The Tu-95 Bear-H bomber has been built in many variants. Those in service are two versions of the Tu-95: the Tu-95 MS6/Bear-H6 and the Tu-95 MS16/Bear-H16.[59] The Bear-H6 can carry six Kh-55/AS-15A Kent air-to-surface strategic ALCMs internally. The Bear-H16 is equipped to carry weapons both internally and on wing-mounted pylons: six missiles inside the fuselage and ten missiles underneath the wings, for a total of 16 missiles.[60] The upgraded Bear-H16s are equipped to carry 8 Kh-102/AS-23B missiles externally, for a maximum of 14 missiles per aircraft.

Tu-160 'Blackjack'

The Tu-160 Blackjack is a supersonic strategic bomber which entered service in 1987.[61] It was the last strategic bomber to enter service before the collapse of the Soviet Union. A total of 36 aircraft were initially manufactured, and 13 are still in service. Each Tu-160 can carry 12 nuclear AS-15B ALCMs. The

56. Kristensen and Korda, n. 3, pp. 99-100.
57. Ibid., pp. 108-109.
58. "Tu-95 Bear Strategic Intercontinental Bomber", *Airforce Technology*, September 20, 2007, at https://www.airforce-technology.com/projects/tu95bear/. Accessed on December 26, 2021.
59. "Tu-95 Bear (Tupolev)", Federation of American Scientists, at https://programs.fas.org/ssp/nukes/nuclearweapons/russia_nukescurrent/tu95.html. Accessed on December 26, 2021.
60. Kristensen and Korda, n. 3, p. 109.
61. "Tu-160 Blackjack Strategic Bomber", *Airforce Technology*, March 11, 2022, at https://www.airforce-technology.com/projects/tu-160-blackjack/. Accessed on December 26, 2021.

upgraded versions are being modernised to carry 12 AS-23B ALCMs internally.

The Tu-160 Blackjack is a supersonic strategic bomber which entered service in 1987. Each Tu-160 can carry 12 nuclear AS-15B ALCMs. The upgraded versions are being modernised to carry 12 AS-23B ALCMs internally.

The ageing Tu-160s and most Tu-95MSs have undergone minor upgrades for several years. In addition to minor upgrades, Russia is conducting a significant modernisation programme for the Tu-160 bombers. There are two distinct modernisation programmes for the Tu-160s, taking place simultaneously.[62] Under the "deep modernisation" programme, the existing Tu-160 airframes are being modified to incorporate next-generation engines, new avionics, navigation, and radar systems.[63] In January 2018, Russia signed a $2.13 billion contract with Gorbunov Aviation Factory in Kazan to deeply modernise 10 Tu-160M aircraft using the existing airframes by 2027.[64] The first aircraft with a new engine—the NK-32-02—conducted its first flight in November 2020.[65] A month later, another Tu-160M1, converted from an older Tu-160 airframe, started flight testing at the Kazan factory. In December 2021, Defence Minister Sergei Shoigu announced that the Russian Air Force would receive two Tu-160M1 bombers in 2022.[66]

Under the second modernisation programme or Tu-160M2 project, Russia is incorporating similar cutting-edge hardware onto completely new airframes. The Russian Defence Ministry has plans to procure 50 such

62.. Kristensen and Korda, n. 3, p. 110.
63. "Source: New Tu-160 Missile Carrier Began Flight Tests Last Week", *TASS*, January 24, 2018, at https://tass.com/defense/986663. Accessed on December 26, 2021.
64. Svetlana Bocharova and Alexey Nikolsky, "Long-Range Aviation will Receive 10 Tu-160M2 for 160 billion Rubbles", *Vedomosti*, January 25, 2018, at https://www.vedomosti.ru/technology/articles/2018/01/25/748964-tu-160m2. Accessed on December 26, 2021.
65. "Second Experimental Tupolev-160M Undergoes Ground Testing", *TASS*, December 30, 2022, at https://tass.com/defense/1241361. Accessed on December 27, 2021.
66. Russian Federation, "Expanded Meeting of the Collegium of the Ministry of Defense", December 21, 2022, at http://kremlin.ru/events/president/news/67402. Accessed on December 24, 2022.

bombers.[67] The first newly manufactured Tu-160M2 bomber conducted its maiden flight in January 2022.[68] The serial production of new bombers will start some time in 2023. Three bombers are expected to be manufactured annually for the first ten aircraft delivered before 2027.

PAK-DA

The Tu-160 modernisation programme is only a bridge to the fifth-generation strategic stealth bomber known as the Prospective Aviation Complex for Long-Range Aviation or PAK-DA, with an estimated operational range of 12,000 km. Russia signed a contract with Tupolev in 2013 to manufacture the next-generation aircraft at the Kazan factory. In 2017, Russia unveiled the first full-sized model of the PAK-DA. Construction of the first experimental model of the plane started in May 2020,[69] and the demonstration model is expected to be assembled by 2023.[70] Defence industry sources have indicated that the PAK-DA would be equipped with "a completely new on-board defensive aids suite … to defend it from all types of weapons, both radar and optical systems".[71] The aircraft's preliminary flight tests will start in 2023 and be completed by 2025.[72] The initial production would begin in 2027, and serial production in 2028 or 2029.[73]

67. "The Russian Air Force to Receive 50 New Tu-160 Bombers to Supplement the 17 Already in Service", YouTube Video, 9:45, January 14, 2022, Posted by Axx Military News, at https://www.youtube.com/watch?v=Aq2huIc6seg&ab_channel=AxxMilitaryNews. Accessed on January 27, 2022.
68. "Russia's First Post-Soviet Tu-160 Bomber Flies: Why Resurrect a 41-Year-Old Combat Jet?" *Military Watch Magazine*, January 13, 2022, at https://militarywatchmagazine.com/article/russia-first-post-soviet-bomber-tu160. Accessed on January 14, 2022.
69. "Russia Begins Construction of the First PAK DA Strategic Bomber—Sources", *TASS*, May 26, 2020, at https://tass.com/defense/1160253. Accessed on December 30, 2021.
70. "PAK DA Demonstrational Model to be Ready by 2023—Source", *TASS*, August 2, 2021, at https://tass.com/defense/1321611. Accessed on December 30, 2021.
71. "Russia's Next-Generation Strategic Bomber to get Advanced Defensive Aids Suite", *TASS*, June 9, 2021, at https://tass.com/defense/1300567. Accessed on December 30, 2021.
72. Kirill Yablochkin, "The UAC Announced the Timing of the First Flight of the PAK DA", *Zvezda*, January 25, 2018, at https://tvzvezda.ru/news/201801251520-fkum.htm. Accessed on December 30, 2021.
73. "The Choice of Real Strategists", *Kommersant*, May 14, 2019, at https://www.kommersant.ru/doc/3967519. Accessed on December 30, 2021.

EVOLUTION OF RUSSIAN NUCLEAR STRATEGY

This section analyses the Russian White Papers of three decades for an evaluation of the Russian security environment, threat perceptions and framing of responses to those threats.

No First Use (NFU) Pledge

In June 1982, Leonid Brezhnev, general secretary of the Communist Party of the Soviet Union (CPSU), announced the Soviet NFU doctrine at the United Nations.[74] The announcement was seen as a formal recognition of the evident Soviet military advantage over the North Atlantic Treaty Organisation (NATO) forces. It depicted Soviet confidence in its conventional forces to deter attacks on Russian territory and defeat such an attack in case deterrence fails. However, in the West, the Soviet NFU pledge's trustworthiness was questioned. It was perceived as a public relations ploy to garner brownie points as a responsible nuclear state in international forums. Nonetheless, the announcement of the NFU pledge at the UN was a significant milestone in the evolution of the Soviet nuclear strategy. The Soviet pledge to use atomic weapons only in retaliation to a nuclear attack was short-lived and died with the dissolution of the Soviet Union.

1993 RUSSIAN MILITARY DOCTRINE

The 1993 Russian military doctrine—"The Basic Provisions of the Military Doctrine of the Russian Federation"—adopted on November 2, 1993, proposed that the objective of the Russian nuclear weapons policy "is to eliminate the danger of nuclear war by deterring the launching of aggression against the Russian Federation and its allies."[75] The doctrine was formulated during a period of relative peace and stability in the international system. The Cold War's ideological, military, and geopolitical competition was more

74. Andrei Shoumikhin, "Nuclear Weapons in Russian Strategy and Doctrine", in Stephen J. Blank, ed., *Russian Nuclear Weapons: Past, Present, and Future* (Pennsylvania: Strategic Studies Institute), p. 106.
75. The text of the 1993 Russian Military Doctrine, "The Basic Provisions of the Military Doctrine of the Russian Federation", at https://nuke.fas.org/guide/russia/doctrine/russia-mil-doc.html. Accessed on October 13, 2021.

or less settled. Leaving behind hostilities of the past four decades, Russia was looking forward to joining an all-European security architecture and concert of great powers in the post-Cold War international order. Russia regarded cooperation with the Western powers as a means to maintain international stability and uphold its peer status with the United States.[76]

While the document was silent on when to use nuclear weapons, it offered essential details about when not to use them. Reiterating Russia's negative security obligations under the nuclear Non-Proliferation Treaty (NPT), it imposed limitations on the use of nuclear weapons. It postulated that the Russian Federation would not use nuclear weapons against any state party to the NPT, except in the case of an armed attack against the Russian Federation or its allies by a country connected by a mutual security alliance to a state possessing nuclear weapons or jointly carrying out an armed attack with a nuclear power.[77]

In addition to the negative security assurance, the doctrine contained explicit warnings about a conventional or limited nuclear war escalating into an all-out catastrophic nuclear exchange. It stated that the deliberate actions by the adversary "to destroy or disrupt the operation of the strategic nuclear forces" or even the limited use of nuclear weapons in a conventional war "may provoke the massive use of nuclear weapons and have catastrophic consequences."[78]

The 1993 military doctrine abandoned the Soviet pledge not to use nuclear weapons first.[79] The right to use nuclear weapons first was not stated explicitly but introduced indirectly by omitting the previous commitments not to use them first or to use them only in response to a nuclear attack. Russia's move to abandon the no-first-use pledge reflected concerns about its military weakness and insecurity. The military imbalance between the

76. Larson Deborah Welch, and Alexei Shevchenko, "Shortcut to Greatness: The New Thinking and the Revolution in Soviet Foreign Policy", *International Organization*, vol. 57, no. 1, 2003, pp. 77-109.
77. Ibid.
78. Ibid.
79. Serge Schmemann, "Russia Drops Pledge of No First Use of Atom Arms", *The New York Times*, November 4, 1993, at https://www.nytimes.com/1993/11/04/world/russia-drops-pledge-of-no-first-use-of-atom-arms.html. Accessed on December 18, 2021.

Russian and Western forces was made evident by the US-led coalition's demonstration of its ability to carry out strategic precision strikes with long-range conventional weapons during the first Gulf War.[80] Bruce G. Blair of the Brookings Institution contended that "[w]ith the Russian army demoralised, impoverished and in disarray, the no-first-use principle may now be seen as a luxury Russia can no longer afford".[81] A similar position was expressed by Stephen Meyer, a Russian military specialist at the Massachusetts Institute of Technology (MIT). He stated, "It is just a very practical statement for a country that now has few other ways of warding off attacks on its territory."[82] In other words, with its conventional forces in disarray, drawing curtains on NFU was Russia's attempt to remind its adversaries that it might use nuclear weapons in its defence.

Although Moscow reneged on NFU, it abstained from pursuing a radical shift in nuclear strategies, such as the adoption of an asymmetric escalation strategy, threatening nuclear retaliation in response to conventional attacks. The restraint can be understood by the general confidence and certainty about the prevailing security environment. The 1993 military doctrine described the contemporary international state of affairs as a situation when "confrontation generated by ideological antagonism is being overcome, partnership and all-around cooperation are expanding, confidence in the military sphere is strengthening, and nuclear and conventional armaments are being reduced".[83] Moreover, in the relatively benign security backdrop, the scenario of a large-scale invasion launched against the Russian Federation was assumed to be unlikely. Overall, the 1993 military doctrine can be understood as an attempt to address the security concerns emanating from the military imbalance after the dissolution of the Soviet Union.

80. Gary L. Guertner, "Deterrence and Conventional Military Forces", *Small Wars & Insurgencies*, vol. 11, issue 2, 2000, pp. 60–71, at https://www.tandfonline.com/doi/abs/10.1080/09592310008423278. Accessed on November 11, 2021.
81. Sonni Efron, "Russia Discards Soviet Legacy of No First Use of A-Weapons", *Los Angeles Times*, November 4, 1993, at https://www.latimes.com/archives/la-xpm-1993-11-04-mn-53224-story.html. Accessed on December 18, 2021.
82. Schmemann, n. 79.
83. n. 75.

While the Kosovo crisis was the immediate trigger which caused Russia to reconsider the basic tenets of its military doctrine, in the longer term, NATO's continued centrality and its expansion beyond its Cold War boundaries intensified Russia's dilemmas about NATO forces stationed next to its borders.

2000 MILITARY DOCTRINE

The security backdrop to the 2000 military doctrine was not as cordial as that of the 1993 doctrine. The Western bloc did not receive the Russian attempt to join the European security architecture well. The Russian signals for a cooperative relationship were reciprocated with NATO's expansion into the former Soviet territory. Moreover, NATO's military action in Yugoslavia in March 1999 and the impending Russian military modernisation furthered the growing sense of insecurity and uncertainty. Alexei Arbatov, a noted Russian strategic thinker and politician, observes that "the war in Yugoslavia did away with the remaining hopes for a genuine security partnership and military cooperation between Russia and NATO".[84] NATO's bombing of Yugoslavia demonstrated that Western military capabilities had advanced far beyond Russia's. Moreover, the aerial campaign instigated Russian fears about a similar NATO intervention in North Caucasus, with Russia receiving precision strikes against industrial, infrastructure, and military targets.[85]

While the Kosovo crisis was the immediate trigger which caused Russia to reconsider the basic tenets of its military doctrine, in the longer term, NATO's continued centrality[86] and its expansion beyond its Cold War boundaries intensified Russia's dilemmas about NATO forces stationed next

84. Alexei G. Arbatov, "The Transformation of Russian Military Doctrine: Lessons Learned from Kosovo and Chechnya", The George C. Marshall European Centre for Security Studies, The Marshall Centre Papers, No. 2, pp. 1–2, at https://www.marshallcenter.org/sites/default/files/files/2020-03/mc-paper_2-en.pdf. Accessed on November 21, 2021.
85. Ibid., p. 18.
86. Andrey A. Sushentsov and William C. Wohlforth, "The Tragedy of US-Russian Relations: NATO Centrality and the Revisionist Spiral", *International Politics*, vol. 57, pp. 427-450, at https://link.springer.com/article/10.1057/s41311-020-00229-5. Accessed on November 20, 2021.

to its borders.[87] The 2000 doctrine expressed concerns about some of these contemporary developments and sought to address the military imbalance by propping nuclear weapons as the ultimate guarantor against conventional threats.

The 2000 military doctrine shared many provisions with its predecessor but invoked certain subtle but consequential changes. Nuclear weapons were entrusted with a broader political role in a veiled recognition of Russia's conventional inferiority and rising security challenges. In the 1993 military doctrine, the primary goal of nuclear weapons was to deter large-scale invasions against the Russian Federation. In 2000, they came to be viewed as a "factor in deterring aggression, ensuring the military security of the Russian Federation and its allies, and maintaining international stability and peace."[88]

While the military doctrine of 1993 had technically allowed the first use of nuclear weapons, the 2000 military doctrine suggested that Moscow might use tactical nuclear weapons in a large-scale regional war.

The revised doctrine also lowered the Russian nuclear-use threshold. While the military doctrine of 1993 had technically allowed the first use of nuclear weapons, the 2000 military doctrine suggested that Moscow might use tactical nuclear weapons in a large-scale regional war, threatening Russian security: "The Russian Federation reserves the right to use nuclear weapons in response to the use of nuclear and other weapons of mass destruction against it and/or its allies, as well as in response to large-scale aggression with the use of conventional weapons in situations critical to the national security of the Russian Federation."[89] The shift towards an asymmetric escalation strategy resulted from internal debates within the Russian Ministry of Defence and the strategic community in the second half

87. R. G. Gidadhubli, "Expansion of NATO: Russia's Dilemma", *Economic and Political Weekly*, vol. 39, issue 19, 2004, pp. 1885-87, http://www.jstor.org/stable/4414989. Accessed on January 19, 2022.
88. The full English text of the 2000 Military Doctrine, initially published in Russian and translated by the US Foreign Broadcast Information Service (FBIS), is at https://www.armscontrol.org/act/2000-05/russias-military-doctrine.
89. Ibid.

of the 1999s. The worsening regional security environment and domestic-political rivalry within the Kremlin sparked the debates. The discussion pertained to the growing challenges to Russian security posed by NATO's eastward expansion, its propensity to flout international law, and its demonstration of modern precision strike capabilities in Yugoslavia. The aggravating security concerns led military officials and experts to propose limited use of nuclear weapons to address conventional asymmetry with NATO and deter threats to Russian security. Conveying similar sentiments, Nikolai Sokov argued that NATO expansionism "propelled nuclear weapons into the centre of attention" and shaped the Russian perception that they "could be usable in a broader array of scenarios", including in a large-scale conventional war.[90]

The underlying objective of lowering the nuclear threshold was to raise the costs for an adversary to wage a conventional attack or intervene on behalf of a third party. The message from the Kremlin was clear: any large-scale aggression against the Russian Federation using conventional weapons might risk use of nuclear weapons; thus, any advantage the adversary was seeking would outweigh the costs it might suffer. The implicit assumption was that even a sparing use of nuclear weapons would increase the attacker's cost to the point where it would outweigh the anticipated political and economic gains. Consequently, the attacker would prefer to terminate the conflict based on the status quo ante.[91]

The threat to use nuclear weapons to de-escalate conventional conflicts served two purposes. The first was essentially defensive.[92] The asymmetric escalation threats were directed towards the US and its allies, deterring their involvement in conflicts with higher political stakes for Russia.[93] In addition to defensive purposes, the lowered nuclear threshold served an offensive

90. Nikolai Sokov, "Russia's 2000 Military Doctrine", *The Nuclear Threat Initiative*, September 30, 1999, at https://www.nti.org/analysis/articles/russias-2000-military-doctrine/. Accessed on October 26. 2021.
91. Ibid.
92. Nikolai Sokov, "Why Russia Calls a Limited Nuclear Strike 'De-escalation'", *Bulletin of Atomic Scientists*, March 13, 2014, at https://thebulletin.org/2014/03/why-russia-calls-a-limited-nuclear-strike-de-escalation/. Accessed on November 10, 2021.
93. Ibid.

purpose of swift de-escalation of conventional conflicts. In the case of a large-scale conventional aggression launched against the Russian Federation that exceeded the Russian defence capacity, the lowered threshold provided the Kremlin with an option to respond with a limited nuclear strike, staving off military defeat. The Russian Federation would "use all available forces and assets, including nuclear, in the event of the need to repulse armed aggression, if all other measures of resolving the crisis situation have been exhausted and have proven ineffective", according to the Russian National Security Concept of 2000.[94]

Before the announcement of the military doctrine in 2000, Russia practised using nuclear weapons in a conventional war during the large-scale military exercise Zapad-99 (West-99). The military exercise simulated a large-scale invasion by NATO against Russia and its allies, which the Russian military would not withstand conventionally. In such circumstances, Russia responded with tactical nuclear strikes launched by strategic bombers against the countries from whose territories the attack was launched.[95] Russian Defence Minister Igor Sergeyev said after the military drill, "Our army was forced to launch nuclear strikes first, which enabled it to achieve a breakthrough in the theatre situation."[96]

The symmetric response to the Russian military inferiority should have been the modernisation of its conventional forces. However, the rapid modernisation of the Russian military after the Cold War was limited by its poor economic state and the disorderly military-industrial complex. In the face of building structural pressures, Russia needed a quick fix to its conventional vulnerabilities to address immediate security challenges and hedge against future threats until the conventional military woes were settled. Therefore, the most reasonable Russian response was to increase

94. The English excerpts of the 2000 Russian National Security Concept can be accessed at https://www.armscontrol.org/act/2000-01/features/russias-national-security-concept.
95. Jacob W. Kipp, "Russia's Non-strategic Nuclear Weapons", *Military Review*, May-June 2001, at https://ia803101.us.archive.org/9/items/Russia_s_Nonstrategic_Nuclear_Weapons_Kipp/2001-05-01.pdf. Accessed on November 2, 2021.
96. Mark B. Schneider, "Russian Nuclear 'De-escalation' of Future War", *Comparative Strategy*, vol 37, issue 5, 2018, p. 361, at https://www.tandfonline.com/doi/abs/10.1080/01495933.2018.1526558. Accessed on November 5, 2021.

reliance on nuclear weapons to deter large-scale regional wars of the type demonstrated in the Balkans.[97]

Russia adopted a tailored deterrent strategy in the 2000 military doctrine to buttress the asymmetric escalation strategy. The doctrine noted that Russia "needs to possess a nuclear potential capable of guaranteeing the infliction of *predetermined damage* to any aggressor in any condition." In a tailored or predetermined nuclear strike, the damage inflicted on the adversary need not be unacceptable but simply sufficient to ensure that the perceived costs by the aggressor exceed the expected benefits.[98] The mention of "predetermined damage" instead of the customary "unacceptable damage" reflected the Russian adoption of the limited use of nuclear weapons to deter large-scale conventional aggression and conduct de-escalation strikes.

In continuation with the 1993 military doctrine, the 2000 doctrine reiterated the probability of a "large-scale war with the use of only conventional weapons… escalating into a nuclear one with catastrophic consequences for civilisation, the foundations of life and the existence of mankind."[99] In addition to the concerns about inadvertent nuclear escalation, the doctrine extended the negative security assurance to the states party to the NPT except in the case of an attack on the Russian Federation or its allies "carried out or supported by such a non-nuclear-weapon state, jointly or in the presence of allied commitments with a nuclear-weapon state".[100]

2010 MILITARY DOCTRINE

The under-par performance of the Russian ground forces in the Russo-Georgia War of 2008 and the improved economic prospects enabled the Ministry of Defence to launch a comprehensive State Armaments Programme to modernise Russia's armed forces. By 2010, Russia had

97. Kristin Ven Bruusgaard, "Russian Nuclear Strategy and Conventional Inferiority", *Journal of Strategic Studies*, vol 44, issue 1, 2021, pp. 15-17, at https://www.tandfonline.com/doi/full/10.1080/01402390.2020.1818070. Accessed on October 28, 2021.
98. M. Elaine Bunn, "Can Deterrence be Tailored", *Strategic Forum*, no. 225, 2007, pp. 1-8, at https://www.researchgate.net/publication/Can_Deterrence_Be_Tailored_Strategic_Forum_Number_225_January_2007. Accessed on August 29, 2021.
99. n. 88.
100. Ibid.

launched a comprehensive State Armaments Programme to upgrade around 70 per cent of its military inventory, including precision strike weapons, command and control and missile defence systems.[101] By 2010, Russia had deployed new sea-based (Kalibr) and air-based cruise missiles (Kh-101) and had equipped some brigades with the Iskander short-range ballistic missile system.[102]

The impending modernisation of Russian conventional forces, which gained new life in 2010, was still inadequate for conducting advanced military operations, creating incentives for further changes in the Russian declaratory nuclear strategy. During the build-up to the 2010 military doctrine, Secretary of the Russian Security Council—the body charged with drafting the new document—Nikolai Patrushev revealed that the new military doctrine might expand the role of nuclear weapons in the Russian nuclear strategy by assigning them to "local conflicts".[103] However, the new military doctrine released on February 10, 2010, rather than increasing the role of nuclear weapons, surprisingly, reduced it, imposing stricter conditions on nuclear use:

> The Russian Federation reserves the right to utilise nuclear weapons in response to the utilisation of nuclear and other types of weapons of mass destruction against it and (or) its allies, and also in the event of aggression against the Russian Federation involving the use of conventional weapons when the very existence of the state is under threat.[104]

101. Susanne Oxenstierna and Fredrik Westerlund, "Arms Procurement and the Russian Defense Industry: Challenges Up to 2020", *The Journal of Slavic Military Studies*, vol. 26, issue 1, 2013, at https://www.tandfonline.com/doi/abs/10.1080/13518046.2013.757135. Accessed on December 8, 2021.
102. Missile Defense Project, "9K720 Iskander (SS-26)," *Missile Threat*, Centre for Strategic and International Studies, September 27, 2016, last modified August 2, 2021, at https://missilethreat.csis.org/missile/ss-26-2/. Accessed on December 29, 2021.
103. "Russia Open to Pre-Emptive Nuclear Strikes", *CBS News*, October 14, 2009, at https://www.cbsnews.com/news/russia-open-to-pre-emptive-nuclear-strikes/. Accessed on November 4, 2021.
104. "The Military Doctrine of the Russian Federation" approved by the Russian Federation presidential edict on February 5, 2010, at https://carnegieendowment.org/files/2010russia_military_doctrine.pdf.

The 2010 doctrine endured with the first-use plank. Nuclear weapons were assigned the role of not only deterring nuclear but also conventional conflicts (a large-scale or regional war).

Whereas the previous doctrine envisaged the use of nuclear weapons "in situations critical to the national security of the Russian Federation", the 2010 doctrine intended to utilise nuclear weapons "when the very existence of the state is under threat". Since there might be scenarios which threaten Russian national security without threatening the very existence of the Russian state, the 2010 doctrine restricted the employment of nuclear weapons.

The 2010 doctrine endured with the first-use plank. Nuclear weapons were assigned the role of not only deterring nuclear but also conventional conflicts (a large-scale or regional war): "Nuclear weapons will remain an important factor for preventing the outbreak of nuclear military conflicts and military conflicts involving the use of conventional means of attack (a large-scale war or regional war)."[105]

Like the previous documents, the 2010 version cautioned that a purely conventional large military conflict could escalate into an all-encompassing nuclear war: "In the event of the outbreak of a military conflict involving the utilisation of conventional means of attack (a large-scale war or regional war) and imperilling the very existence of the state, the possession of nuclear weapons may lead to such a military conflict developing into a nuclear military conflict."[106] The subtle language change compared to previous doctrines reflected the broader terms of the provision.[107] In the previous versions, the risk of nuclear escalation was seen as a tool to deter and dissuade states from waging conventional aggression against Russia. The 2010 version expressed concern that a conventional war between nuclear-armed adversaries might

105. Ibid.
106. Ibid.
107. Nikolai Sokov, "The New, 2010 Russian Military Doctrine: The Nuclear Angle", Centre for Nonproliferation Studies, February 5, 2010, at https://nonproliferation.org/new-2010-russian-military-doctrine/. Accessed on November 2, 2021.

escalate into a nuclear war, implying that nuclear-weapon states should avoid fighting wars in general.

The relative decline of the centrality of nuclear weapons for Russian security in the 2010 doctrine was complemented by the emphasis on 'conventional precision strike' weapons based on "new physical principles comparable to nuclear weapons in terms of effectiveness."[108]. The doctrine envisaged the usage of high-precision weapons to prevent war (during peace-time) and de-escalate conflict (during war-time) as part of the "strategic deterrence activities of a forceful character." The stress on long-range, high-precision weapons reflected the growing strategic importance of a precision strike regime to deter regional conflicts and manage escalation. The doctrine indeed stipulated a provision for precision strike weapons for strategic deterrence measures.

The inclusion of conventional strike weapons in the ambit of strategic deterrence indicated the "clear limits to nuclear deterrence" and the urgency for Russia to invest in future development of credible pre-nuclear deterrence.

The inclusion of conventional strike weapons in the ambit of strategic deterrence indicated the "clear limits to nuclear deterrence" and the urgency for Russia to invest in future development of credible pre-nuclear deterrence.[109] The shift in emphasis also reflected the priority of the political and military leadership attributed to the ongoing military modernisation.[110]

2014 MILITARY DOCTRINE

The 2014 doctrine enunciated Russia's perception of the prevailing international security environment and military risks as:

> World development at the present stage is characterised by the strengthening of global competition, tensions in various areas of inter-state and inter-regional interaction, the rivalry of proclaimed values and models

108. n. 104.
109. Ibid., p. 199.
110. Sokov, n. 107.

> of development, instability of the processes of economic and political development at the global and regional levels against a background of general complication of international relations.[111]

Russia continued to perceive with concern the widening conventional asymmetry with Western forces and NATO's global endeavours in violation of international law. The doctrine identified the eastward expansion of NATO and the deployment of military infrastructure close to the Russian border as the primary external military threats. Some of the other threats perceived by the Russian Federation were the development and deployment of strategic missile defence systems "…, implementation of the global strike concept…, and deployment of strategic non-nuclear systems of high-precision weapons."

The Russian nuclear strategy largely remained unchanged in the 2014 version of the military doctrine. It repeated much of the language on the role of the Russian nuclear forces and the criterion for the employment of strategic weapons. As in 2010 (and the previous military doctrines), the Russian nuclear arsenal continued to deter both nuclear and conventional threats: "Nuclear weapons will remain an important factor in preventing an outbreak of nuclear military conflicts involving the use of conventional arms (large-scale war or regional war)."[112] The language on the criterion for the use of nuclear weapons also remained unchanged: "The Russian Federation shall reserve the right to use nuclear weapons in response to the use of nuclear and other types of weapons of mass destruction against it and its allies, as well as in the event of aggression against the Russian Federation with the use of conventional weapons when the very existence of the state is in jeopardy."[113]

The 2014 military doctrine, for the first time, codified the ideas circulating in the Russian strategic community on non-nuclear deterrence

111. The text of the 2014 Russian Military Doctrine is available at https://rusemb.org.uk/press/2029.
112. Ibid.
113. Ibid.

and highlighted the deterrent capacity of the Russian non-nuclear forces. It defined non-nuclear deterrence as a "complex of foreign policy, military and military-technical measures aimed at preventing aggression against the Russian Federation through non-nuclear means."[114] The introduction of the novel concept depicted the translation of Russia's precision strike capabilities into deterrent potential.

The growing importance of 'non-nuclear deterrence' was evident in the years leading up to the publication of the 2014 doctrine. The annual military exercises since 2011 demonstrated the growing role assigned to conventional weapons compared to the previous decade when Russia depended on nuclear weapons to make up for the deficiencies in the conventional domain. Adamsky argues that "[l]eading up to the events in Ukraine, an assumption emerged in the Russian strategic community that the relevance of nuclear deterrence is limited to a very narrow set of scenarios unless it is skilfully synthesised with other forms of coercion."[115] The 2014 military doctrine manifested this assumption by skilfully articulating the concept of non-nuclear deterrence.

2020 BASIC PRINCIPLES OF STATE POLICY OF THE RUSSIAN FEDERATION ON NUCLEAR DETERRENCE

In June 2020, Russia released an unprecedented document, *Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence*.[116] This is the first-ever document in Russia's history giving details of the Russian nuclear strategy and the concept of nuclear deterrence. Signifying the document's importance, the Russian International Affairs Council (RIAC) stated, "June 2020 will go down in the history of Russia's approaches to

114. Ibid.
115. Dmitry (Dima) Adamsky, "From Moscow with Coercion: Russian Deterrence Theory and Strategic Culture", *Journal of Strategic Studies*, vol. 41, issue 1-2, 2017, p. 12, at https://www.tandfonline.com/doi/full/10.1080/01402390.2017.1347872. Accessed on December 14, 2021.
116. Russian Federation Foreign Affairs Ministry, "Basic Principles of State Policy of the Russian Federation on Nuclear Deterrence." June 2, 2020, at https://mid.ru/ru/foreign_policy/international_safety/1434131/?lang=en. Accessed on November 19, 2021.

nuclear deterrence and nuclear weapons in general."[117] The document is a conceptual reaction to the US' Nuclear Posture Review (NPR) of 2018, which voiced concerns about Russia's escalate-to-de-escalate doctrine.

The document states that the Russian policy on "nuclear deterrence is defensive by nature".[118] Russia would maintain nuclear forces sufficient to deter potential adversaries from waging aggression against Russia or its allies and guarantee national sovereignty and territorial integrity. It further outlines that Russia considers nuclear weapons "exclusively as means of deterrence, their use being an extreme and compelled measure."

The document clearly outlines the conditions under which Russia might use nuclear weapons. First, Russia might use nuclear weapons if it received reliable information about a ballistic missile launch toward Russian territory or its allies. Launching a retaliatory nuclear strike on detection of an incoming missile by ground-based or space-based sensors and trackers is called the launch on warning posture. Russia's decision to raise the readiness level of its nuclear forces reflects a fear that the US or NATO would undertake a preemptive strategic first strike against it, destroying a part of its stationary nuclear forces. Second, Russia might use nuclear weapons in retaliation to an adversary's use of nuclear weapons or other weapons of mass destruction against Russia or its allies. Third, Russia might retaliate with nuclear weapons in response to an adversary attack on its critical government or military infrastructure. The clause addresses the threats to nuclear command and control and other critical infrastructure from cyber intrusions and precision strike weapons. In some sense, it mirrors the American strategy to deter a non-nuclear strategic attack on its critical infrastructure with nuclear retaliation. The 2018 US Nuclear Posture Review reserved the option to launch nuclear weapons in response to a significant non-strategic nuclear attack on the US or allied nuclear forces, command

117. "Expert Opinions on Russia's Basic Nuclear Deterrence Principles", Russian International Affairs Council, June 23, 2020, at https://russiancouncil.ru/en/analytics-and-comments/analytics/expert-opinions-on-russia-s-basic-nuclear-deterrence-principles/. Accessed on January 18, 2022.
118. n. 116.

and control, or warning and attack assessment capabilities.[119] Fourth, Russia might use nuclear weapons against conventional aggression, jeopardising the very existence of the Russian state.

While the document brings out the thresholds for nuclear use, it maintains some uncertainty about the use of nuclear weapons when the outlined thresholds are not reached, particularly regarding the de-escalating role of nuclear weapons. The document provides for the use of nuclear weapons in instances where Russia cannot repel and defeat invasion using conventional means to terminate the conflict on favourable and acceptable terms to the Russian Federation and its allies. This clause is interpreted as evidence of a low threshold for nuclear use, or what is known as the escalate-to-de-escalate doctrine in the West. The provision to use nuclear weapons in a conventional conflict is qualified in paragraph 17, which states that Russia would respond with nuclear weapons "in the event of aggression against the Russian Federation with the use of conventional weapons when the very existence of the state is in jeopardy."[120] Nonetheless, there remains some ambiguity about the Russian employment of nuclear weapons in a conventional conflict, keeping the conventionally superior adversary guessing about Russia's next move in a crisis. Andrey Baklitskiy, a noted Russian expert on non-proliferation and arms control, argues that "[t]he use of broad and imprecise wording in nuclear doctrines is a common practice. Countries are forced to balance their unwillingness to 'authorise' the adversary's actions below the threshold of nuclear use and the fear that the other side will not believe in the deterrence 'coverage' if it is too broad."[121]

The document outlines that the Russian concept of nuclear deterrence prioritises punishment over denial. Deterrence by punishment is the ability to persuade the adversary that the cost it will transact for aggressive and

119. US Department of Defence, "Nuclear Posture Review 2018, February 2, 2018, "p. 21, at https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF. Accessed on October 17, 2021.
120. n. 116.
121. n. 117.

The mention of non-nuclear deterrence, first introduced in the 2014 military doctrine and then in the 2020 one, reflects a shift away from nuclear deterrence in the Russian military strategy, especially when it comes to lower levels of warfare involving regional actors and conventional weapons.

undesirable action will be much greater than the perceived potential benefits. "Russia does not promise that the opponent will not be able to achieve its goal; it promises damage to the aggressor that will exceed expected benefits."[122]

Unlike the 2014 military doctrine and other documents, which refer to predetermined or tailored responses, the new decree commits to inflict "unacceptable damage" in response to an attack by the potential adversary.[123] Russia first introduced the concept of tailored deterrence in the 2000 military doctrine, suggesting the limited use of nuclear weapons in a conventional regional war. The underlying logic of inflicting commensurate damage was to align the objective of its nuclear doctrine—to deter large-scale conventional war and nuclear war—with the operational nuclear strategy. The change from "tailored damage" to "unacceptable damage" in the 2020 document might suggest a more profound shift in the Russian nuclear strategy. It might be possible that Russia no longer intends to deter large-scale regional conventional war through nuclear weapons, reflecting confidence in its conventional military capabilities. The change in this direction was first indicated in the 2010 military doctrine, which adopted a stricter criterion for employing nuclear weapons. Also, the mention of non-nuclear deterrence, first introduced in the 2014 military doctrine and then in the 2020 one, reflects a shift away from nuclear deterrence in the Russian military strategy, especially when it comes to lower levels of warfare involving regional actors and conventional weapons.

122. Nikolai Sokov, "Russia Clarifies Its Nuclear Deterrence Policy", Vienna Centre for Disarmament and Non-Proliferation, June 3, 2020, at https://vcdnp.org/russia-clarifies-its-nuclear-deterrence-policy/. Accessed on February 11, 2022.
123. n. 116.

THEORETICAL AND PRACTICAL CONCERNS

Conventional Inferiority and Nuclear Threshold

A close look at the evolution of the Russian nuclear strategy reveals a similar correlation between Russia's conventional capabilities and its nuclear use threshold. Russian military generals and analysts have indicated that the coercive threat to use nuclear weapons early in a conventional conflict was a temporary strategy until the Russian military and non-military capabilities were able to catch up and contribute to more effective and credible deterrence. In 1999, then Commander of the Strategic Missile Force, Colonel-General Vladimir Yakovlev, stated, "Russia, for objective reasons, is forced to lower the threshold for using nuclear weapons, extend the nuclear deterrent to smaller-scale conflicts and openly warn potential opponents about this."[124] The objective reasons the general referred to were mounting security concerns and Russian military inferiority.

While Russian military weakness and external security concerns largely account for the fluctuations in the Russian nuclear strategy, some scholars have argued that Russia's political intentions and its quest for great power status explain the changes in the Russian nuclear policy, especially the adoption of the escalate-to-de-escalate strategy.[125] Despite the poor performance of Russia's economy and the condition of its military forces, nuclear weapons have perennially remained the symbol of Russian great power status, prestige, and influence. Nuclear weapons are not just the ultimate guarantors of Russian sovereignty; they give Russia a peer status with the United States as a great nuclear power. However, how the lower nuclear use threshold contributes to the Russian quest for great power status is not entirely clear. Kristin Ven Bruusgaard argues that the Russian de-escalation strategy "was a product of a lack of a conventional response option to a strategic conundrum identified by Russian strategists. It was

124. Schneider, n. 96, p. 362.
125. Ibid., p. 362.

not the product of increasing Russian foreign policy ambitions, but rather a response to a perceived growing threat."[126]

RUSSIAN PERSPECTIVES ON NUCLEAR DE-ESCALATION AND ESCALATION CONTROL

There is a diversity of opinions across the Russian military-analytical community about limited nuclear strikes and the credibility of escalation control. The Russian overreliance on nuclear weapons has been contested and criticised by academics and scholars. Indeed, Russian scepticism about escalation control and the legitimacy of a decreased nuclear threshold have pushed the country's conventional strike and deterrence capabilities forward.

To the extent Russian strategists have argued for nuclear weapon use to de-escalate a conventional conflict, their views on the deterrence against conventional aggression and the role of Non-Strategic Nuclear Weapons (NSNWs) in it are mutually exclusive and still unsettled.[127] Different schools of thought have attributed the mission of de-escalation and regional nuclear deterrence to diverse delivery systems such as non-strategic platforms, strategic platforms carrying tactical weapons, strategic systems carrying strategic weapons, or pre-nuclear deterrence weapons such as precision-guided munitions serving the last warning before nuclear use.[128] The mutually exclusive operational concepts illustrate conceptual disagreements, lack of clear doctrinal directives, and unclear role of NSNWs in regional nuclear deterrence.

Theoretically, to credibly threaten the first use of nuclear weapons against conventional aggression, one would expect Russia to be transparent about capabilities, deployment pattern, operational status and conditions of use. However, Dima Adamsky argues that even when Russia relied on nuclear weapons to ensure regional deterrence, Russian NSNWs had

126. Bruusgaard, n. 97, p. 26.
127. Dmitry Adamsky, "Nuclear Incoherence: Deterrence Theory and Non-Strategic Nuclear Weapons in Russia", *Journal of Strategic Studies*, vol. 37, issue 1, 2014, p. 10, at https://www.tandfonline.com/doi/full/10.1080/01402390.2013.798583. Accessed on November 8, 2021.
128. Ibid., pp. 10–12.

"no meaningfully defined mission and no deterrence framework".[129] An extensive study by Adamsky on the incoherence between Russian deterrence theory and non-strategic nuclear weapons reveals that the Western description of Russian nuclear strategy—dubbed escalate-to-de-escalate—is based on superficial shreds of evidence and passing statements made by military generals. Such a strategy's theoretical and operational underpinnings have not been studied profoundly or have been deliberately overlooked.

In the Western strategic literature, the dominant narrative about the Russian nuclear strategy is that Moscow would use low-yield nuclear weapons in a conventional conflict to prevent NATO from defeating the Russian ground forces or to coerce the Atlantic alliance to end the conflict on terms favourable to Russia.

There is an ongoing debate about the Russian nuclear strategy and conditions under which Russia might use nuclear weapons. Western countries, including in the Trump Administration's Nuclear Posture Review (NPR), have claimed that Russia has a low nuclear threshold. As per the 2018 NPR, Russia has adopted the de-escalation strategy, allowing Moscow to use nuclear weapons early in a conflict to defeat aggression on conditions favourable to Russia. In the Western strategic literature, the dominant narrative about the Russian nuclear strategy is that Moscow would use low-yield nuclear weapons in a conventional conflict to prevent NATO from defeating the Russian ground forces or to coerce the Atlantic alliance to end the conflict on terms favourable to Russia.[130] In other words, the Russian nuclear weapon use threshold is so low that it

129. Ibid., p. 2.

130. Jüri Luik and Tomas Jermalavičius, "A Plausible Scenario of Nuclear War in Europe, and How to Deter it: A Perspective from Estonia", *Bulletin of the Atomic Scientists*, vol. 73, issue 4, 2017, pp. 233-239, at https://www.tandfonline.com/eprint/umSnuTKFrMZggbaRv3SR/full. Accessed on November 11, 2021; Elbridge Colby, "Countering Russian Nuclear Strategy In Central Europe", *CNAS*, November 11, 2015, at https://www.cnas.org/publications/commentary/countering-russian-nuclear-strategy-in-central-europe. Accessed on November 11, 2021.

would use limited nuclear strikes early, even in a regional conflict, to bring it to an early and decisive end.

Theoretically, the Russian de-escalation strategy fits the asymmetric escalation approach, operationalising tactical nuclear weapons as a war-fighting instrument to deter conventional aggression. The general understanding of the de-escalation doctrine suggests that Russia would use theatre nuclear weapons to avoid a catastrophic defeat against a conventionally superior enemy to re-establish deterrence. Dima Adamsky precisely explains the causal logic of the Russian approach to regional deterrence, or what is often called de-escalation doctrine by some in the West: "Implicitly, it assumed that regional conventional wars would not involve values for which the adversary would tolerate the risk of even a single nuclear strike. Consequently, limited nuclear use would deter or terminate conventional hostilities, without escalation to a massive nuclear exchange."[131]

CONCLUSION

"The Russian nuclear policy has demonstrated remarkable consistency during the past two decades."[132] It has changed in response to external security threats and the modernisation of Russian military capabilities. In the Cold War's immediate aftermath, Russia found its conventional forces in utter disarray, incompetent and ill-equipped to deter and defeat the modern Western conventional forces. The looming American unipolarity, Russian military inferiority, and Western demonstration of precision strike capabilities forced Moscow to depend on the nuclear cushion to deter conventional war against the Russian Federation and its allies.

Nuclear hawks point toward the alleged Russian de-escalation strategy to argue that Russia would use nuclear weapons early in a conflict. However, there is little concrete evidence of the escalate-to-de-escalate strategy being part of the Russian declaratory nuclear doctrine. In the late 1990s and early

131. Adamsky, n. 115, p. 15.
132. Nikolai Sokov, "Russia's 2000 Military Doctrine", *The Nuclear Threat Initiative*, September 30, 1999, at https://www.nti.org/analysis/articles/russias-2000-military-doctrine/. Accessed on October 26, 2021.

2000s, Russia adopted a low nuclear threshold, threatening nuclear escalation early in a conventional regional war that threatened Russian national security to end the conflict on terms advantageous to Moscow. However, in 2010, Russia raised the bar for nuclear use and, barring minor ambiguity, gave up early use of nuclear weapons to de-escalate the conventional conflict. In the past decade, Russia's dependence on nuclear weapons has decreased as its conventional response options have expanded, enabled by the rapid modernisation of the Russian military forces. Russia is less likely to use nuclear weapons today than it was two decades ago.

Russia's efforts to move away from a low-nuclear threshold, the modernisation of the conventional forces, and the inception of comprehensive concepts such as strategic deterrence reflect the Russian discomfort with the over reliance on nuclear weapons and the lack of confidence in the credibility of asymmetric nuclear weapons threats. The Russian experience is a classic case which depicts that "conventional inferiority may produce nuclear compensation, but this is not a static choice. Changes in conventional threats and capabilities can produce changes in nuclear strategy, reducing reliance on limited nuclear options."[133]

133. Bruusgaard, n. 97, p. 11.