DEFENCE AND DIPLOMACY

IN PURSUIT OF NATIONAL SECURITY

VOL. 11 NO. 3 ISSN 2347 - 3703 APRIL-JUNE 2022

JOURNAL OF THE CENTRE FOR AIR POWER STUDIES

SARMAT MISSILE TEST: TRACING RUSSIA'S EXPEDITION FOR MIRVED MISSILES

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Multiple independently targetable re-entry vehicles (MIRVs) for delivery of nuclear weapons are considered unfinished business of Cold War arms control. In April 2022, amidst the ongoing Ukraine Crisis, Russia conducted a test of the MIRVed Sarmat missile and thereby gave a signal of sorts to the US/NATO. Since its inception in the 1970s, MIRVs have travelled a long distance, and no arms control treaty was able to annihilate their existence. In this context, this paper examines Russia's recent flight test of the Sarmat missile and its significance. Secondly, the paper traces the genesis of MIRVs in Russia. Thirdly, it inspects the impact of MIRVs on nuclear deterrence and strategic stability, and fourthly, attempts to examine the resultant MIRVs-BMD equation between Russia and the US.

SARMAT MISSILE TEST

On April 20, 2022, Russia conducted the first flight test of the RS-28 Sarmat intercontinental ballistic missile (ICBM). It was launched from the Plesetsk launch facility in northern Russia, and the warheads

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successfully hit the designated targets at the Kura firing range on the Kamchatka Peninsula. RS-28 Sarmat is also known as SS-X-29 or sometimes SS-X-30 or Satan II. It is a three-stage liquid-fuelled ICBM. It has a range of 18,000 km and a launch weight of 208.1 metric tons.[1] It is 35.3 metres long and 3 metres in diameter. It is a heavy ICBM and is capable of delivering up to "10 MIRVed thermonuclear warheads weighing up to 10 tonnes, 16 smaller ones, a combination of warheads and countermeasures, or hypersonic boost-glide vehicles" to any point in the world.[2]

It is claimed to be a fundamentally different missile system since it can strike faraway targets and is capable of "circling the globe and attacking targets from any direction"; if the target is in the north, it can attack from the south and vice versa.[3] Its short boost phase makes tracking and interception difficult. It also has fractional orbital bombardment capability and is capable of breaching any present missile defence system using different flight paths. It is the largest nuclear-tipped missile ever built. According to TASS, Sarmat is a "cutting-edge, powerful and breakthrough" weapon.[4]

Sarmat has been in development since 2000 in Russia. The first prototype of the missile was ready in 2015. In 2017, the first silo-ejection test of Sarmat was conducted, followed by two subsequent tests in March and May 2018. This missile was first unveiled in 2018, by Russian President Vladimir Putin, who publicly praised the missile and said that Sarmat would surpass existing or potential missile defences because of its short boost phase and extremely long-range capability which would allow the missile to travel over the North

1. "Russia successfully test-launches Sarmat ICBM from Plesetsk spaceport—top brass", TASS Russian News Agency, April 20, 2022, at https://tass.com/defense/1440631?utm_source=defensenews.com&utm_medium=referral&utm_campaign=defensenews.com&utm_referrer=defensenews.com. Accessed on April 21, 2022.
2. Missile Defense Project, "RS-28 Sarmat," *Missile Threat*, Center for Strategic and International Studies, May 17, 2017, at https://missilethreat.csis.org/missile/rs-28-sarmat/. Accessed on April 22, 2022.
3. "ICBM Sarmat can carry several hypersonic warheads—strategic force commander", TASS Russian News Agency, April 24, 2022, at https://tass.com/russia/1442231. Accessed on April 25, 2022.
4. "Russia Tests World's Largest Nuclear Missile", INF News, May 4, 2022, at https://inf.news/ne/military/044872cf2278d4d8cbcf01f8f4247e56.html. Accessed on May 4, 2022.

and South poles.[5] It will replace the ageing Voyevoda ICBM also known as R-36M/SS-18 'Satan' missile, a 10-warhead heavy ICBM that was first deployed in 1988. Missiles are expected to be deployed with a unit in the Krasnoyarsk region of Siberia, which is 3,000 km east of Moscow. They would be placed at the same sites and silos of Voyevoda missiles to save resources and time.[6]

This missile test represents a show of strength at a time when tensions with the US and its allies have reached their highest level since the 1962 Cuban missile crisis. President Putin called this a big event because this will "ensure Russia's security from external threats and make those who, in the heat of frantic, aggressive rhetoric, try to threaten our country, think twice."[7] President Putin also said that Sarmat has the "highest tactical and technical characteristics and it is also 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." It would deter enemies of Russia and will ensure security from external threats. Putin also warned the West that "any attempt to get in its way will lead you to such consequences that you have never encountered in your history."[8]

GENESIS OF RUSSIAN MIRVS

On August 29, 1949, Soviet Union conducted its first nuclear test. It tested the first thermonuclear bomb in 1953. SS-3 or R-5 Pobeda was the first ballistic missile of the Soviet Union with a nuclear warhead tested in 1956, but it was a short-range missile. Subsequently, in 1959, it tested and deployed SS-4 Sandal or R-12 Dvina, a theatre ballistic missile that became the central point of the 1962 Cuban missile crisis.

5. Anthony Ruggiero, Bradley Bowman and John Hardie, "Russia's Sarmat test underscores need to modernize US nuclear triad", *Defense News*, April 28, 2022, at https://www.defensenews.com/opinion/commentary/2022/04/28/russias-sarmat-test-underscores-need-to-modernize-us-nuclear-triad/. Accessed on April 30, 2022.
6. Mark Trevelyan, "Russia to deploy Sarmat missiles by autumn in 'historic' nuclear upgrade", Reuters, April 23, 2022, at https://www.reuters.com/world/europe/russia-deploy-first-nuclear-capable-sarmat-missiles-tass-2022-04-23/. Accessed on April 25, 2022.
7. "Russia tests new nuclear-capable missile", *Defense News*, April 20, 2022, at https://www.defensenews.com/training-sim/2022/04/20/russia-tests-new-nuclear-capable-missile/. Accessed on April 22, 2022.
8. Mark Trevelyan, "Russia tests nuclear-capable missile that Putin calls world's best", Reuters, April 21, 2022, at https://www.reuters.com/world/europe/russia-tests-new-intercontinental-ballistic-missile-2022-04-20/. Accessed on April 23, 2022.

It was capable of delivering a megaton-class nuclear warhead at medium range. Then, with SS-5 Skean or R-14 Chusovaya, the Soviet missile range was further extended because it was an intermediate-range ballistic missile. SS-6 Sapwood or R-7 Semyorka, successfully tested on August 21, 1957, became the world's first ICBM. It was capable of delivering nuclear warheads to US targets. On October 4, 1957, it launched Sputnik 1, the first artificial satellite into space. Since 1960, the Soviet Union began producing a large number of ICBMs, and by 2010 it had built around 5,000 ICBMs.

The US first developed MIRV technology in 1970. The US deployed its first MIRVed ICBM Minuteman III with three warheads, and in 1971 it deployed its first MIRVed SLBM Poseidon with ten warheads.[9] The Soviet Union started deploying MIRV in 1975. SS-17 Spanker Mod 1/RS-16 was the first missile whose deployment began on December 30, 1975. It was capable of carrying up to 4 warheads. It was Russia's first MIRVed ICBM. It was soon followed by SS-18 ICBM with up to 10 warheads and SS-19 ICBM with 6 warheads.[10] Table 1 provides a comprehensive view of Russian ICBMs and its MIRVed missiles till date.

Table 1: Russian ICBMs

NATO Designation	Russian Designation	Period (Approxi-mately)	Warheads (Approximately)
SS-6 Sapwood	R-7	1960-1967	1
SS-7 Saddler	R-16	1961-1977	1
SS-8 Sasin	R-9	1963-1977	1
SS-9 Scarp M1	R-36	1966-1979	1
SS-9 Scarp M2	R-36	1967-1978	1
SS-9 Scarp M3	R-36	1969-1979	1
SS-9 Scarp M4	R-36	1970-1977	Up to 3 (MRV)
SS-11 Sego M1	UR-100	1965-1979	1
SS-11 Sego M2	UR-100K	1973-1990	1
SS-11 Sego M3	UR-100K	1975-1990	Up to 3 (MRV)
SS-11 Sego M4	UR-100U	1975-1979	Up to 6 (MRV)

9. Federation of American Scientists, "Case Study 3: The Origin of MIRV", at https://man.fas.org/eprint/leitenberg/mirv.pdf. Accessed on April 21, 2022.
10. Federation of American Scientists, "UR-100MR/SS-17 Spanker", at https://nuke.fas.org/guide/russia/icbm/ur-100mr.htm. Accessed on April 2, 2022.

SS-13 Savage M1	RT-2	1969-1979	1
SS-13 Savage M2	RT-2P	1975-1983	1
SS-17 Spanker M1	MR-UR-100/ RS-16 A	1975-1990	Up to 4
SS-17 Spanker M2	MR-UR-100 UTTH/RS-16 A	1975-1990	1
SS-17 Spanker M3	MR-UR-100 UTTKh/100U/ RS-16B	1978- 1990	Up to 4
SS-18 Satan M1	R-36M	1974-1983	1
SS-18 Satan M2	R-36M	1975-1980	Up to 8
SS-18 Satan M3	R-36M UTTKh	1979-1986	1
SS-18 Satan M4	R-36 MUTTH	1979-2005	Up to 10
SS-18 Satan M5	R-36 MUTTH	1986-2009	1
SS-18 Satan M6	R-36M2/RS20V	1988-present	Up to 10
SS-19 Stilleto M1	UR-100N	1975-1983	Up to 6
SS-19 Stilleto M2	UR-100N	1977-1982	1
SS-19 Stiletto M3	UR-100 NUTTH/RS-18	1980-present	Up to 6
SS-19 M4	Avangard	2019	1 HGV
SS-24 Scalpel M1	RT-23UTTH	1987-2005	Up to 10
SS-24 Scalpel M2	RT-23UTTH	1988-2000	Up to 10
SS-25 Sickle	RT-2PM Topol/ RS-12 M	1988	1
SS-27 Mod 1 (mobile)	RS-12M1/ Topol-M	2006	1
SS-27 Mod 1 (silo)	RS-12M1/ Topol-M	1997	1
SS-27 Mod 2 (mobile)	RS-24 (Yars)	2010	Up to 4
SS-27 Mod 2 (silo)	RS-24 (Yars)	2014	Up to 4
SS-X-29	RS-28 (Sarmat)	2022	Up to 10

Source: Table compiled by the author based on data available on *Bulletin of the Atomic Scientists*.[11]

*MRV refers to multiple reentry vehicles.

11. Robert S. Norris and Hans M. Kristensen, "Nuclear U.S. and Soviet/Russian Intercontinental Ballistic Missiles, 1959-2008", *Bulletin of the Atomic Scientists*, vol. 65, no. 1, 2009, pp. 62-69, at https://www.tandfonline.com/doi/pdf/10.2968/065001008. Accessed on December 12, 2021. Also see, Hans M. Kristensen and Matt Korda, "Russian nuclear weapons", *Bulletin of the Atomic Scientists*, February 25, 2022, at https://www.tandfonline.com/doi/full/10.1080/00963402.2022.2038907. Accessed on April 21, 2022.

UR-100 MR/SS-17 Spanker

It was amongst the first MIRVed ICBM of the Soviet Union. It had three variants. SS-17 Mod-1 was the initial version that could carry four MIRV warheads. Its deployment began in 1975. SS-17 Mod-2 was able to carry only one warhead. SS Mod-3 was also able to carry up to four MIRV warheads.[12] They all were gradually removed from inventory as outlined in Table 2.

Table 2: UR-100MR/SS-17 Spanker/MR-UR-100 Sotka

Variants	Type of warhead	Warheads (Approximately)	Deployed (Approximately)
SS-17 Mod-1/ Spanker/RS-16A/ MR-UR-100	MIRV	Up to 4	1975-1990
SS-17 Mod-2/ Spanker/RS-16A/ MR-UR-100 UTTH	Single	1	1975-1990
SS-17 Mod-3/ Spanker/RS-16B/ MR-UR-100kh/100U	MIRV	Up to 4	1980-1990

Source: Table compiled by the author based on data available on Federation of American Scientists.[13]

R-36M/SS-18 Satan

R-36 ICBMs were initially developed by the Soviet Union, now the Russian Federation. A total of six versions have existed with only the Mod 6 still in operation. SS-18 development began in 1964. Deployment began on December 30, 1975. Over time, previous versions of the SS-18, such as SS-18 Mod 1/2/3 missiles, were removed and replaced by the Mod 4. Mod 4 could carry around eight to ten MIRVs. In 1988 the replacement of Mod 4 began with the single-warhead Mod 5 and multiple-warhead Mod 6. Currently, only Mod 6 is in operation and can house 10 MIRVs as illustrated in

12. Federation of American Scientists, "UR-100 MR/SS-17 Spanker", at https://nuke.fas.org/guide/russia/icbm/ur-100mr.htm. Accessed on October 30, 2021.
13. Ibid.

Table 3.[14] Table 3 outlines all the MIRVed variants of R-36M missile. Now, in April 2022, after the successful flight test of the Sarmat missile, these missiles will retire soon.

Table 3: Family of R-36M Voyevoda/SS-18 Satan

R-36M/SS-18 Satan Variants	Type of warhead	Warheads	Deployment (Approximately)
R-36M/ SS-18 Mod 1/Satan/ RS-20A	Single	1	1975-1983 (approx.)
R-36M/ SS-18 Mod 2/Satan/ RS-20A	MIRV	Up to 8	1975-1980 (approx.)
R-36M UTTkh/ SS-18 Mod 3/Satan/ RS-20A	Single	1	1979-1986 (approx.)
R-36MU UTTKh/ SS-18 Mod 4/Satan/ RS-20B	MIRV	Up to 10	1979-2005 (approx.)
R-36M2/ SS-18 Mod 5/Satan/ RS-20V	Single	1	1986-2009
R-36M2/ SS-18 Mod 6/Satan/ RS-20V	MIRV	Up to 10	1988-present

Source: Table compiled by the author based on data available on Federation of American Scientists.[15]

14. Missile Defense Project, "R-36 (SS-18 "Satan")", *Missile Threat*, Center for Strategic and International Studies, August 10, 2016, last modified August 2, 2021, at https://missilethreat.csis.org/missile/ss-18/. Accessed on October 31, 2021.
15. Federation of American Scientists, "R-36M/SS-18 Satan", at https://nuke.fas.org/guide/russia/icbm/r-36m.htm. Accessed on October 10, 2021. Also see, Missile Threat CSIS Missile Defense Project, "R-36 (SS-18 'Satan')", at https://missilethreat.csis.org/missile/ss-18/. Accessed on April 30, 2022.

By 1975, R-36 ICBMs opened a "window of vulnerability". It was speculated that only a few Minuteman could survive the Soviet attack. This "window of vulnerability" of US land-based strategic missiles became a major debate in US strategic debates in the 1970s and 1980s. The R-36/SS-18 was the main focus of arms control initiatives in the Bush and Reagan administrations. It was seen as a first-strike and destabilising weapon, and because of its enormous threat to the balance of power, the START II Treaty specifically tried to ban land-based MIRV systems.[16]

RS-18/SS-19 "Stiletto"/UR-100/UR-100 NUTTH

This ICBM was also among the first Soviet missiles to be equipped with MIRV warheads, along with SS-17 and SS-18. There have been three SS-19 models, Mod 1 was in service from 1975 to 1983, Mod 2 was in service from 1977 to 1982, and Mod 3 from 1980 to the present. The Avangard hypersonic glide vehicle is presently "fielded on a UR-100 booster and emplaced in existing UR-100 siloes". This is also known as SS-19 Mod 4 as depicted in Table 4.[17]

Table 4: UR-100/SS-19 "Stiletto"/RS-18/ UR-100NUTTH

RS-18/ SS-19/ Stiletto	Type of Warhead	Warheads	Deployment
SS-19 Mod 1/Stiletto Mod 1/ UR-100N	MIRV	Up to 6	1975-1983
SS-19 Mod 2/Stiletto Mod 2/ UR-100N	Single	1	1977-1982
SS-19 Mod 3/Stiletto Mod 3/ UR-100NUTTH	MIRV	Up to 6	1980-present
SS-19 Mod 4/UR 100 booster	Avangard	1 HGV	2019-present

Source: CSIS Missile Defense Project.[18]

16. Federation of American Scientists, "R-36M/SS-18 Satan", at https://nuke.fas.org/guide/russia/icbm/r-36m.htm. Accessed on October 10, 2021.
17. Missile Threat CSIS Missile Defense Project, "UR-100 (SS-19)", at https://missilethreat.csis.org/missile/ss-19/. Accessed on October 10, 2021.
18. Ibid.

RS-24 Yars/SS-27 Mod-2/SS-29

This ICBM can carry four MIRVs and is in service since 2010. It has a newer design of RV which allows it to manoeuvre in space and also during re-entry.[19]

SS-X-29/RS-28 (Sarmat)

This MIRVed ICBM will replace the ageing SS-18 Satan. The media has dubbed SS-29 as the "Son of Satan" because "it is a follow-on to the SS-18, which the United States and North Atlantic Treaty Organization (NATO) designated 'Satan'—presumably to reflect its extraordinary destructive capability."[20]

SUBMARINE LAUNCHED BALLISTIC MISSILES

The sea-based leg of the Soviet Union was built in the 1960s with the deployment of SLBMs on Golf, Hotel, and Yankee-class submarines. Though these submarines carried intermediate-range missiles, their mobility allowed them to successfully threaten Europe and to some extent the US. Currently, Russia's Strategic Naval Forces have mainly 10 strategic submarines of three different types: Delta, Typhoon, and Borei class. Delta and Borei class submarines have the capability to carry 16 SLBMs with multiple warheads on a missile. Under New START, the submarine fleet can carry 600 warheads. Most of the submarines in Russia are older Delta class. This also includes Delta III submarines and six Delta IV submarines. The last of these Delta class submarines were built in 1992. Delta submarines were deployed with three warheads SS-N-18 missile, the Delta IV submarines carry four warheads SS-N-23 missile. Sineva system is an upgraded version of this and in 2007 entered into service.[21] Another modification known as Liner could reportedly carry up to 10 warheads.[22] Table 5 illustrates all the MIRVed SLBMs of Russia.

19. Missile Threat CSIS Missile Defense Project, "RS-24 Yars (SS-27 Mod 2", at https://missilethreat.csis.org/missile/rs-24/. Accessed on October 10, 2021.
20. Hans M. Kristensen and Matt Korda, "Russian nuclear forces, 2020", *Bulletin of the Atomic Scientists*, vol. 76, no. 2, p. 108, March 9, 2020, at https://www.tandfonline.com/doi/pdf/10.1080/00963402.2020.1728985. Accessed on July 14, 2021.
21. Amy F. Woolf, "Russia's Nuclear Weapons: Doctrine, Forces, and Modernization", Congressional Research Service Report R45861, 2020, at https://sgp.fas.org/crs/nuke/R45861.pdf. Accessed on April 20, 2022.
22. Russian Strategic Nuclear Forces, "Strategic fleet", August 7, 2021, at http://russianforces.org/navy/. Accessed on August 29, 2021.

Table 5: Russia's SLBMs

SLBMs	Year	Warheads
SS-N-18 M1 'Stringray'/ RSM-50/R-29-R	1978	Up to 3 (MIRV)
SS-N-23 'Skiff' M2/3/ RSM-54 (Sineva/ Layner)/R-29 RM Sineva	2007	Up to 4 (MIRV)
SS-NX-32/RSM-56/ Bulava/R-30 Bulava	2018	Up to 6 (MIRV)

Source: Compiled from *Bulletin of the Atomic Scientists*.[23]

Russia's Borei class of ballistic missile submarines (SSBN) construction began in 1996. It joined the Northern Fleet in 2013. It is speculated that Russia will deploy 10 Borei-class submarines, with 5 in the Pacific Fleet. Three submarines are currently in service, all in the Northern Fleet, and five more are in different stages of construction. The latter five submarines will be an improved version, known as the Borei-A/II. Russia plans to complete the "first eight ships by 2023 and to finish the last two by 2027. Borei-class submarines can carry 16 of the SS-N-32 Bulava missiles; each missile can carry six warheads."[24]

IMPACT OF MIRV ON NUCLEAR DETERRENCE AND STRATEGIC STABILITY

By the mid-1960s, both the Superpowers had achieved mutual vulnerability. There was presumed to be stability at the strategic level. But the advent of anti-ballistic missiles (ABM) systems combined with MIRVed missiles changed the situation. There are generally two schools of thought on the impact of MIRVs on nuclear deterrence and strategic stability. One argues that MIRVs are stabilising as they ensure a second-strike capability and increase deterrence; the other school argues that MIRVs are destabilising because they tend to increase the possibility of a first strike, can overwhelm the ABM system, lead to miscalculations, misunderstandings and are also hard to negotiate for arms control.

23. Hans M. Kristensen and Matt Korda, "Nuclear Notebook: How many nuclear weapons does Russia have in 2022", *Bulletin of the Atomic Scientists*, February 23, 2022, at https://thebulletin.org/premium/2022-02/nuclear-notebook-how-many-nuclear-weapons-does-russia-have-in-2022/. Accessed on March 30, 2022.
24. Woolf, n. 21.

During the 1960s and 1970s, some American strategists argued that MIRVs would increase deterrence and discourage a Soviet first strike because they would complicate Soviet Union's attack planning. MIRVed SLBMs also would complicate Soviet efforts to launch a disarming first strike. MIRVs have been defended as being a "cost-effective means" to enhance deterrence.[25] On the other side of the debate, the precise fact that MIRVs tend to increase the first-strike possibility makes them extremely destabilising. Once they are installed on existing missiles, MIRVs immensely increase the available number of deliverable warheads. The military advantage of this development comes in the understanding that the possessor would try to strike first. With reasonable confidence in the precision of its warheads, the possessor could consider itself capable of "almost completely disarming its opponents' land-based missile force by saturating it with a skillfully planned MIRV barrage."[26] Even after attacking first the attacker would still be left with a winning situation and its own terms of peace. This was obviously bad for strategic stability.

MIRVed missiles disrupted the stability that favoured earlier nuclear math in the 1970s. Also, the logic of "cost-exchange ratios favour shooting first at a MIRVed force because a smaller number of attacking missiles could pre-emptively destroy a much larger part of the MIRVed adversary's total nuclear arsenal."[27] And thus both parties, being aware of this logic, face "use it or lose it" dilemma. In which shoot first or face the loss and damage. This also remains beneficial for the attacker because then there is no requirement of increasing the launch facilities to cause destruction. Whereas one warhead missile can target only one area, the MIRVed missile acts as a dispenser of warheads in different areas.

MIRVs overwhelm ABM systems and reduce their effectiveness without even increasing the size of the missile fleet. ABM systems came into place to counter single warheads from ICBMs. The

25. W. C. Potter, "Coping with MIRV in a MAD World", *Journal of Conflict Resolution*, vol. 22, no. 4, 1978: 599-626.
26. B. S. Lambeth, "Deterrence in the MIRV Era", *World Politics*, vol. 24, no. 2, 1972, pp. 224-225.
27. Dakota S. Rudesill, "MIRVs Matter: Banning Hydra-Headed Missiles in a New START II Treaty", *Stanford Journal of International Law*, vol. 54, 2018, p. 92.

concept was simple, and the economic cost was low because the cost of ICBM launching a warhead was always more than the smaller interceptor missile that would be used to destroy the incoming ICBM. Therefore, this equation favoured defence. An increase in missiles can be countered by increasing the interceptors but MIRVs changed this balance. Now each missile became capable of carrying multiple warheads, including decoys. This created the need for more interceptor missiles for each warhead to cover a large geographical area. On the one hand, an MIRVed missile could have multiple warheads, and on the other hand, interceptors could have only one warhead per missile. Therefore, an MIRVed missile made attack easier than defence. Also, decoys could further confuse and evade interception. This led to a heavy cost-exchange ratio biased in favour of the attacker. This immensely enhanced the cost of defence. Thus, the ABM system became extremely costly, as defence became more costly than offence.

Also, multiple warheads, generally fitted at the last stage of ICBM, introduce "ambiguity in the calculus of strategic strength". Therefore, arms control measures agreement finds it difficult to verify the numerical strength of MIRVs. Moreover, states also have "operational, cost-efficiency and prestige related reasons for relying on MIRVs", therefore it becomes difficult to negotiate them in arms control negotiations.[28] For instance in June 1992, a follow-on accord to START I was agreed upon between the leaders of both nations and was signed in 1993. START II accord called for reducing deployed strategic arsenals to 3,000-3,500 warheads and it banned the deployment of MIRVed missiles. It was the only drafted treaty that was focused on banning the MIRVs on ICBMs. Therefore, it is also known as deMIRVing Agreement. Though the negotiations took place, unfortunately they never came into force. It was ratified by the US in 1996, Russia ratified it in 2000, but as the US withdrew from the ABM Treaty in 2002, in response Russia also withdrew from the START II accord in 2002. Therefore, START II was shelved and never entered into force.[29]

28. Ibid., p. 83.
29. Miroslav Tüma, "Will the Validity of the Last US-Russia Arms-Control Treaty, the New START Treaty, be Extended?", Policy Publications, June 25, 2019, at https://

SARMAT AS A RESPONSE TO US MISSILE DEFENCE SYSTEM

MIRVed Sarmat is a landmark achievement in Russia's nuclear modernisation. It has also triggered US strategic community to push the US for the modernisation of the US nuclear triad and its command, control and communication system.

Beyond power projection and nuclear signalling in the ongoing Ukraine Crisis, some scholars believe that, for Russia, Sarmat is a response to US ballistic missile defence capabilities. In the logic of Assured Destruction (AD), nuclear powers "intrinsically hold each other hostage to a counterattack, or 'second strike' with no one side able to attack the other with nuclear weapons without risking being attacked in return". The problem is that if one side has missile defence, and is successful in defending itself from a nuclear attack, the adversary will feel insecure because then the BMD capable enemy can launch a "surprise attack/first strike" and will also be able to defend itself against the adversary's retaliatory second strike.[30]

Though the US has clarified that its BMD is against rogue states of Iran and North Korea, Russia and China don't believe in that logic. US ground-based interceptor system has less than 50 missiles and could credibly defeat an incoming attack of ten missiles or less at best. For Russia and China that is not a problem for now but they have a concern that the US missile defence system could be "scaled upward to handle many more incoming missiles". The logic is that "even if the defender has enough interceptor missiles to go around, missiles like Sarmat can overwhelm the defender's ability to shoot down threatening missiles at a specific moment, allowing at least some to slip through."[31] However, due to the constraints of New START, it is also possible that Russia will build only a limited number of Sarmats.

CONCLUSION

Amidst this extraordinary Russia-Ukraine crisis, all the ongoing nuclear sabre-rattling is increasing the 'costs and stakes' in the

www.iir.cz/en/bude-prodlouzena-platnost-posledni-kontrolne-zbrojni-americko-ruske-smlouvy-new-start-2. Accessed on August 25, 2021.

30. Kyle Mizokami, "Russia Just Tested the World's Largest Nuclear-Tipped Missile", *Popular Mechanics*, April 29, 2022, at https://www.popularmechanics.com/military/weapons/a39827639/russia-sarmat-nuclear-tipped-missile/. Accessed on May 1, 2022.
31. Ibid.

war for both sides involved. To avoid the increasing possibility of materialisation of a nuclear crisis, arms control negotiations are the only way forward. The only working New START Treaty is also going to expire in 2026. Therefore, all the nuclear powers should come together to strive for reaching an agreement in the next treaty for a decrease in the role of nuclear weapons and their continuous advancing delivery vehicles to make this world a safer place.