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RUSSIAN NUCLEAR FORCES: PRESENT AND FUTURE CAPABILITIES, BATTLEFIELD RELEVANCE, AND STRATEGIC BOMBERS

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Introduction

Post expiry of the New Strategic Arms Reduction Treaty on 5 February 2026, Russia voluntarily committed to follow the treaty's quantitative limits for one additional year.[1] This cautious step came along with continued modernisation efforts, including the delivery of two upgraded Tu-160M strategic bombers in late 2025.[2] These developments mark a significant change in Russia's nuclear posture, focused on integration, modernisation, and streamlined management of both conventional and nuclear operations. These changes aim to reduce response times from target acquisition/ identification to weapon launch while addressing perceived threats from United States missile defences and precision-guided munitions. Although this is intended to strengthen deterrence, such advancements risk blurring the boundaries between conventional and nuclear forces, particularly in the current conflict in Ukraine.

The introduction of advanced and improved systems like the nuclear-powered Burevestnik cruise missile and the Poseidon underwater vehicle (tested successfully

in 2025) introduces unpredictable elements in the warfighting. This affects global strategic stability. The modernisation programme also caters to long-standing Russian concerns for reduction in its second-strike capability.

Historical Background of Russia's Nuclear Programme

Russia's nuclear weapons programme traces back directly to the Soviet Union. During the Soviet era, Russia developed one of the most extensive and sophisticated arsenals during the Cold War. This programme not only shaped global geopolitics but also continues to influence Russia's current nuclear posture, doctrine, and capabilities under the leadership of President Putin.

Nuclear physics research in the Soviet Union began in the early twentieth century under nuclear physicist such as Abram Ioffe and Igor Kurchatov, laying the groundwork. By the late 1930s, Soviet physicists were studying nuclear fission, following in the footsteps of European discoveries. Progress further accelerated after intelligence reports revealed the American Manhattan Project. In 1943, Joseph Stalin sanctioned a programme under Kurchatov's scientific leadership and Lavrentiy Beria's political oversight.[3] Espionage played a critical role in speeding up development.

The first Soviet nuclear test, widely known as RDS-1, took place on 29 August 1949 at the Semipalatinsk Test Site in Kazakhstan. The 1950s witnessed rapid improvements in nuclear science. This included the first thermonuclear test in 1953 by the Soviet Union. It was followed by the massive Tsar Bomba test in 1961, which yielded approximately 50 megatons. By the 1980s, the nuclear arsenal of the Soviet Union reached its peak. The warheads were spread, with tens of thousands of warheads deployed across a full triad. They comprised intercontinental ballistic missiles, submarine-launched ballistic missiles, and strategic bombers. Economic strains from this arms race contributed significantly to the Soviet collapse.

After the 1991 dissolution of the Soviet Union, Russia was left with the bulk of the arsenal. Through a number of talks and international agreements and the Cooperative Threat Reduction programme, Ukraine, Kazakhstan & Belarus returned their nuclear weapons for dismantlement. Subsequent arms control treaties significantly reduced

the number of nuclear warheads. Russia ratified the Comprehensive Nuclear-Test-Ban Treaty in 2000 but withdrew in 2023.

Russia's Nuclear Doctrine

Russia maintains a flexible nuclear doctrine based on the principle of "escalate to de-escalate". This permits limited nuclear use to deter or terminate conventional conflicts on favourable terms. The Basic Principles of State Policy on Nuclear Deterrence, published in 2020, outlined conditions for the employment of nuclear weapons. Further, it was revised, and the updated version was approved by President Vladimir Putin in November 2024, broadening these thresholds.[4]

The revised policy allows nuclear response in following conditions:

- Reliable indications of a ballistic missile launch against Russia or its allies
- Use of nuclear or other weapons of mass destruction against Russia or its allies
- Attacks on critical nuclear command infrastructure
- Conventional aggression creating a critical threat to sovereignty or territorial integrity, including that of Belarus.

These guidelines view nuclear weapons as both strategic deterrents and political instruments. This ambiguity in the doctrine and employment of nuclear weapons further increases the risk of miscalculation, especially when combined with novel systems developed by Russia capable of coastal or infrastructure strikes. Key elements included in the doctrine are survivability through mobility and redundancy, with emphasis on hypersonic weapons to penetrate defences. The doctrine integrates hybrid warfare, as observed in Ukraine, where nuclear signalling was used time and again to deter escalation while conventional forces remained engaged.

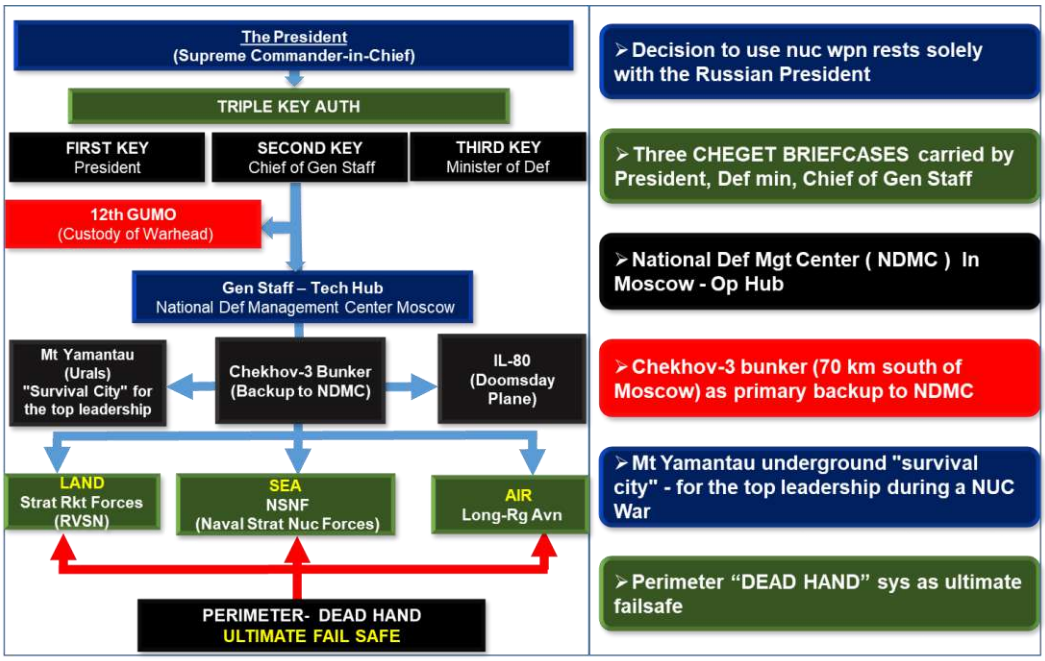

Figure 1: Command and Control Structure of Nuclear Command

Command and Control Structure

Command and control structure of Russian nuclear command remains highly centralised under the President as Supreme Commander-in-Chief, who holds ultimate launch authority through the Cheget system.[5] Final decisions to launch a nuclear strike require coordination with the minister of Defence and the chief of the general staff. In case of redundancy, hardened facilities, including mountain bunkers and airborne command posts, are present to ensure survivability. The 12th Main Directorate of the Ministry of Defence acts as an independent custodian of nuclear warheads, creating a safeguard against unauthorised use.

The Strategic Rocket Forces of the Russian Army manage land-based missiles, while naval and aviation components are integrated with the Navy and Air Force, respectively. A lot spoken and most feared fail-deadly backup system, known as Perimeter- Dead Hand, provides a last-resort and retaliation capability in case leadership is decapitated.[6]

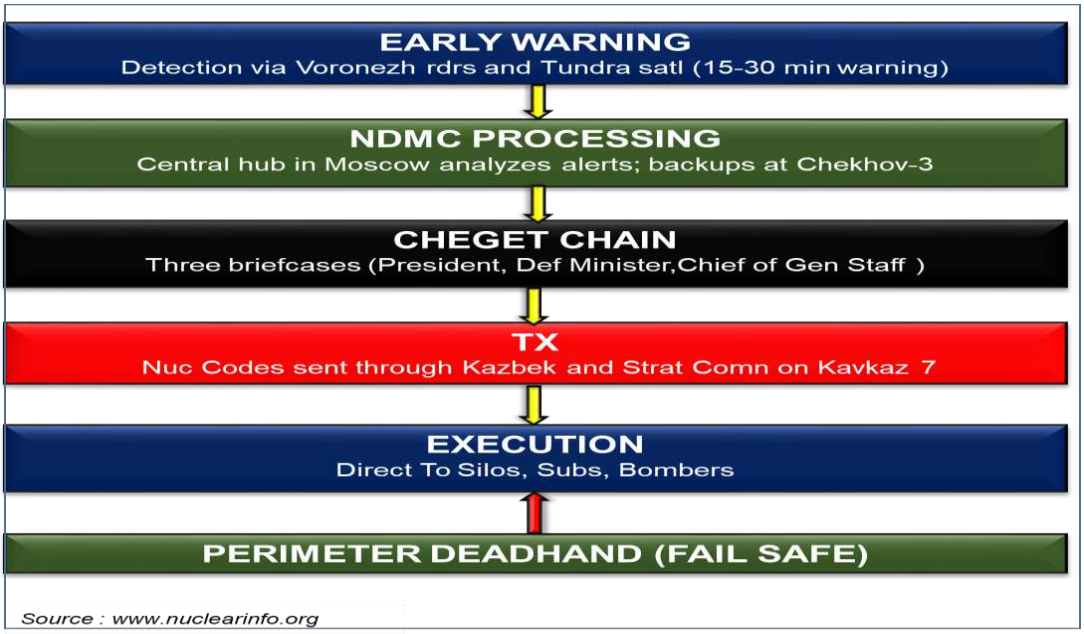

Figure 2: Command and Control Flow

Current Nuclear Capabilities Including Strategic Bombers

As of early 2026, Russia maintains an estimated stockpile of approximately 4,309 nuclear warheads assigned to operational forces, with about 1,718 strategic warheads deployed across the triad. The land-based leg depends heavily on systems such as the RS-24 Yars and the newer RS-28 Sarmat intercontinental ballistic missiles. The sea-based leg has Borei-class submarines armed with Bulava missiles. They also hold older Delta IV submarines which continue limited operations. Non-strategic warheads, counting roughly 1,000 to 2,000, provide tactical flexibility through systems. They are launched from missile systems like the Iskander missile and air-delivered options.

Strategic bombers form the most flexible leg of the triad. The Russian fleet consists of approximately 60 operational aircraft, primarily the Tu-95MS Bear and the supersonic Tu-160 Blackjack. The Tu-95MS, which has long range and aerial refuelling capability, can carry multiple Kh-101 or Kh-102 cruise missiles. The Tu-160 offers higher speed and payload; with recent modernisation and developments, it has added digital systems and compatibility with advanced hypersonic weapons. In late 2025, Russia delivered two new Tu-160M aircraft. This signals renewed production efforts toward a modernised fleet. These bombers have been used in conventional cruise missile

strikes in Ukraine. However, they retain full nuclear options. Aircraft such as the Su-34 are dual-capable tactical aircraft that further extend nuclear and precision strike potential at shorter ranges.[7]

Relevance to Current Battlefield Conditions

In the ongoing conflict in Ukraine, Russia's nuclear capabilities serve primarily to deter and coerce rather than as an instrument of direct employment. It is observed that nuclear signalling has intensified during periods of setback for Russia or increased Western support to Ukraine or threats tied to long-range missile authorisations and strikes on Russian territory.

The updates in the 2024 doctrine explicitly address perceived threats to critical infrastructure and allied countries. Russia has deployed the Oreshnik intermediate-range ballistic missile in a conventional role against Ukrainian targets,[8] and demonstrated hypersonic speeds and the ability to overwhelm defences. These strikes have psychological bearing, especially when directed near NATO borders, while underscoring Russia's ability to manage escalation. Recent deliveries of modernised Tu-160M bombers reinforce the role of long-range aviation. These bombers enable standoff operations without crossing the nuclear threshold.

Other non-strategic systems deployed to Belarus[9] and integrated with conventional forces help mitigate manpower and equipment challenges. The absence of any formal treaty after the expiry of the New Strategic Arms Reduction Treaty heightens risks of miscalculation in a hybrid warfare environment.

Future Nuclear Capabilities

Russia's continuous multi-decade modernisation programme focuses on replacing Soviet-era and vintage systems and countering United States missile defences. Without any treaty limitations, expansion of warheads or increased capacity remains possible.

Key development programmes include deployment of the Sarmat heavy intercontinental ballistic missile (MIRV-capable) and hypersonic glide vehicles,

expansion of the Borei-Class submarine fleet, and development of novel systems. The Burevestnik nuclear-powered cruise missile claims unlimited range, while the Poseidon underwater vehicle offers a Tsunami-like unique coastal-strike option. The Oreshnik system, which is being used in Ukraine, may see increased production. The future PAK DA stealth bomber is expected to enter service in the 2030s to replace aging strategic bombers. These key programs prioritise qualitative improvements and survivability. Post-treaty environment could accelerate an arms race dynamic if not reciprocated.[10]

Implications and Lessons for India

Russia's experience in ongoing conflict against Ukraine highlights the importance of a credible sea-based second-strike capability. This enhances survivability, reinforcing the importance of India's submarine-based deterrent. The centralised but redundant command and control of the nuclear arsenal, including different warhead custodians, underscores the need for strict political control and discipline in nuclear decision-making. India's current nuclear doctrine of credible minimum deterrence and no-first-use contrasts with Russia's more flexible posture. This demonstrates that effective deterrence depends more on survivability, clarity, and restraint than on large numbers or automation.

Flexible air assets, such as strategic bombers, can aid in crisis management and de-escalation. India can play a greater role in developing international norms on nuclear risk reduction and responsible integration of emerging technologies.

Conclusion

Modernised Russian nuclear forces enhance its deterrence. It also increases and battlefield options in hybrid conflicts and introduces new escalation challenges. Flexible aviation leg of the triad exemplifies the doctrinal flexibility which allows sustained conventional operations under a nuclear shadow. As the arms control treaty expired, careful management will be essential to prevent miscalculation. The evolution of Russia's nuclear arsenal will continue to influence global stability and non-proliferation efforts in a current multipolar world.

DISCLAIMER

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ENDNOTES

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