THE NUCLEAR BUREVESTNIK SKYFALL

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"All wars are bankers' wars."
General Smedley Butler,1935

INTRODUCTION

Researchers in the USA have identified the probable deployment site in Russia of the “9M730 Burevestnik,” a new nuclear-powered and nuclear-armed hypersonic cruise missile touted by Russian President Vladimir Putin as "invincible."

The weapon, dubbed the “SSC-X-9 Skyfall” by NATO; is claimed to possess an almost unlimited range and can evade USA missile defenses. Some Western experts dispute this claim and the Burevestnik's strategic value, saying it will not add capabilities that Russia does not already have and risks a radiation-spewing mishap from its open cycle reactor, as if this is more worrisome than its inherent nuclear weapons delivery objective [1].

Figure 1. Rocket test launch of 9M730 Burevestnik supersonic missile, SSC-X-9 Skyfall by NATO.

Figure 2. 9M730 Burevestnik specifications.

DEPLOYMENT SITE

Figure 3. Russian hypersonic missile “Petrel” assembly line.

Using images taken on July 26, 2025 by Planet Labs, a commercial satellite firm, a construction project abutting a nuclear warhead storage facility known by two names – Vologda-20 and Chebsara – was identified as the new missile's potential deployment site. The facility is 295 miles or 475 km north of Moscow.

Figure 4. Deployment site for a Russian nuclear-powered cruise missile, including five nuclear warhead storage bunkers to the right and bermed launch positions at the lower left, in Vologda, Russia, a facility 475km or 295 miles north of Moscow as the likely launch site of the weapon. Source: Planet Labs PBC.

Nine horizontal launch pads are identified under construction. They are located in three groups inside high berms to shield them from attack or to prevent the effect of an accidental blast in one of the launch pads from detonating missiles in the others.

The berms are linked by roads to buildings where the missiles and their components would be serviced, and to the existing complex of the five nuclear warhead storage bunkers. The site is for a large, fixed missile system and the only large, fixed missile system that the Russians currently are developing is the Skyfall program.

TESTING ACCIDENTS

The identification of the missile's probable launch site suggests that Russia is proceeding with its deployment after a series of tests in recent years marred by accidents. A definitive assessment cannot be made because Russia does not typically place missile launchers next to nuclear warhead storage. Moscow's normal practice has been stockpiling nuclear payloads for

land-based missiles far from launch sites, except for those on its deployed Intercontinental Ballistic Missile (ICBM) force.

Deploying the Burevestnik at the Vologda site would allow the Russian military to stockpile the nuclear-armed missiles in its bunkers, making them available to launch quickly.

The weapon's design limitations raised doubts about whether its deployment would change the nuclear stakes for the West and other Russian foes.

The Burevestnik has a poor test record of at least 13 known tests, with only two partial successes, since 2016, according to the Nuclear Threat Initiative (NTI), an advocacy group focused on reducing nuclear, biological and emergent technology risks.

From November 2017 to February 2018, Russia conducted four tests of a Petrel-named system, each of which ended in failure. The shortest test lasted only four seconds, for which the rocket flew eight kilometers. The longest flight of 35 kilometers in more than two minutes ended in the loss of control of the rocket and its fall.

The flight of Petrel, developed since the beginning of the 2000s, takes place in two stages. On the first, the rocket is accelerated by a solid fuel rocket engine, while on the second its movement is provided by the nuclear power plant. The tests did not reach the stage of launching the nuclear power plant and therefore failed. Such Petrel tests were conducted at the insistence of the Kremlin officials who discounted the opinion of the engineers who suggested that the rocket was not ready to conduct such tests.

The setbacks include a 2019 blast during the botched recovery of an unshielded nuclear reactor allowed to smolder on the White Sea floor for a year following a prototype crash, according to USA State Department reports.

Russia's state nuclear agency Rosatom said five staff members died during the testing of a rocket on August 8, 2019. President Vladimir Putin presented their widows with top state awards, saying the weapon they were developing was without equal in the world, without naming the Burevestnik in particular.

RUSSIAN NUCLEAR WEAPONS DOCTRINE

Deputy Foreign Minister Sergei Ryabkov said Russia will make changes to its guidelines on the use of nuclear weapons in response to what it regards as Western escalation in the war in Ukraine, state news agency TASS reported.

A 2020 report by the United States Air Force's National Air and Space Intelligence Center said that if Russia successfully brought the Burevestnik into service, it would give Moscow a "unique weapon with intercontinental-range capability".

Pavel Podvig, a Geneva-based expert on Russia's nuclear forces and other experts said it will not add capabilities that Moscow's nuclear forces already do not have, including the ability to overwhelm USA missile defenses.

The open cycle nuclear-powered engine threatens to leak radiation along its flight path and its deployment risks an accident that could contaminate the surrounding region, said Cheryl Rofer, a former USA nuclear weapons scientist and other experts. However, the effects of discharging radiation on its path are minor compared with a nuclear exchange.

"The Skyfall is a uniquely stupid weapon system, a flying Chernobyl that poses more threat to Russia than it does to other countries," according to Thomas Countryman, a former top USA State Department official with the Arms Control Association, referring to the 1986 nuclear plant accident.

DESIGN DETAILS

Little is publicly known about the Burevestnik missile's technical specifications. It would be launched aloft by a small solid-fueled rocket engine to drive air into an engine containing a miniature nuclear reactor.

Questions exist about the heat exchange medium, as well as the design of the compact reactor. Maybe the medium would be some kind of fins. The jet engine layout could be a turbofan with a large bypass ratio.

What is supposed to represent the power source may not be a conventional nuclear reactor, but a hafnium-isomer nuclear battery that gained attention a decade ago.

The USA Tory series of Nuclear Ramjet engines was tested in the Nevada desert at Area 26 or "Jackass Flats" from 1961 and 1964. After successful testing the plan was to build a SLAM Airframe for the Tory-IIC Engine and fly it remotely controlled in the Pacific Ocean at Johnson Atoll. The suggested flight path featured a terminal dive into the ocean over the Marianas Trench so that the reactor and airframe would sink to the deepest spot on Earth.

Superheated and possibly radioactive air would be blasted out, providing forward thrust. The design was unveiled in March 2018, by President Vladimir Putin saying the missile would be "low flying," with nearly unlimited range, an unpredictable flight path and "invincible" to current and future defenses.

The Burevestnik could have a range of some 15,000 miles or 23,000 km compared with more than 11,000 miles or17,700 km for the Sarmat, Russia's newest ICBM.

CONJECTURAL USA PREENTIVE/FIRST STRIKE

A conjectured usa nuclear decapitating strike would proceed as follows:

1. The USA destroys all Russian missile carriers submarine boomers at sea or in their ports.
2. USA stealth bombers and stealth cruise missiles destroy all Russian heavy ICBMs in their silos.
3. USA SLBMs Submarine Launched Ballistic Missiles destroy the Russian heavy rail-mobile ICBMs.
4. USA SLBMs destroy most of the Russian road-mobile lCBMs.
5. The remaining road-mobile ICBMs which survive to launch are intercepted by Aegis ashore or some boost/ascent or other Ballistic Missile Defense BMD system.
6. The USA threatens to use its full inventory of ICBMs in a counter-recovery attack unless the Russians submit to its will.

INTERNATIONAL TREATY LIMITATIONS

The Burevestnik's deployment is not banned by the NEW START, the last USA-Russian treaty limiting strategic nuclear weapon deployments, which expires in February 2026.

A provision of the treaty allows the USA to request negotiations with Russia on bringing the Burevestnik under the caps. A State Department spokesperson said no such talks had been sought.

Citing the war in Ukraine, Russia has spurned USA calls for unconditional talks on replacing the NEW START Treaty, stoking fears of an all-out nuclear arms race when it expires.

Russia might use the missile as a bargaining chip and apolitical weapon when talks resume.

RECENT TESTING

Russia has tested the nuclear-powered Burevestnik cruise missile. It has launched a multi-hour flight of a nuclear-powered missile and it covered a 14,000 km or 8,700-mile distance, which is not the limit.

The low-flying experimental weapon, first announced in 2018, has been hailed as having a potentially unlimited range and the ability to evade missile defenses. A "final successful test" of the weapon had been held in 2023, but the claim could not be independently verified. Of at least 13 known tests, only two had partial success since 2016.

The testing claims that the missile was in the air for 15 hours during the test on October 21, 2025. The missile's vertical and horizontal maneuvering were tested and were found to be up to specification, according to Russia's Tass news agency.

A 2021 report by the USA Air Force's National Air and Space Intelligence Center concluded: "A nuclear-powered cruise missile would give Russia a unique weapon with intercontinental range capability."

The International Institute of Strategic Studies (IISS) noted that Russia faces significant challenges in making the weapon viable: "Its entry into Russia's inventory arguably hinges not only on overcoming the considerable technical challenge of ensuring the reliable performance of the nuclear-propulsion unit" IISS analysts wrote. "There have been numerous flight-test failures, and an accident resulting in several deaths."

DISCUSSION

A confusion exists about the supersonic nature of the Buresvestnik and the hypersonic Avangard missiles.

A Russian military journal quoted in an IISS report claims that the missile has a range of between 10,000 and 20,000 km, allowing "the missile to be based anywhere in Russia and still be able to reach targets in the continental USA". The same journal also says the missile can fly as low as 50 to 100 meters above ground, making it difficult for air defenses to intercept it.

The missile, code-named Skyfall by NATO, is thought to be powered by a nuclear reactor, which is supposed to activate after solid fuel rocket boosters have launched it into the air.

Its assumed subsonic speed claimed by Western experts makes it easily detectable, targetable and vulnerable as any cruise missile. The longer it flies, the more vulnerable it becomes because there is more time to track and target it. The fact is that the ramjet engine used imparts the vehicle a possible supersonic speed, negating such assumptions.

“There are currently no effective defenses against hypersonic weapons because of their speed and maneuverability. They can hug the ground at 500 feet below long-range radars beams and hence escape detection. This is in contrast to ballistic missiles which possess predictable trajectories determined by momentum and gravity.[1]”

“A subsidiary of General Dynamics, Convair at San Diego, California earlier envisioned it as an air-breathing, unshielded nuclear reactor-powered cruise missile that would penetrate enemy airspace at low altitude, drop nuclear payloads on enemy targets, and make a suicidal plunge into a final target” [1].

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