

The authoritative guide to ensuring science and technology make life on Earth better, not worse.

How impossible is the risk of nuclear escalation in Ukraine?

By Janice Stein | December 20, 2024



Ukraine started using the older, shorter-ranged US-supplied ballistic missiles, known as the Army Tactical Missile Systems, or ATACMS, in October 2023. The Biden administration has now allowed Ukraine to use long-range ATACMS to help defend its forces in the Kursk region of Russia. (Credit: US Government / John Hamilton, via DVIDS)

Share 

In the bizarre interregnum since the US presidential elections, world leaders have been calling President-elect Donald Trump in Florida before his inauguration on

January 20. Some of them worry that the ongoing war between an increasingly desperate Ukraine that kills a Russian general in Moscow as it did **this week** and an emboldened Russia could spin out of control through miscalculation. The darkest scenario is one that culminates in escalation when Russia detonates a nuclear weapon. How likely is such a scenario in the few weeks left before inauguration day?

The likelihood of nuclear escalation cannot be estimated. The atomic bombings of Hiroshima and Nagasaki by the United States in 1945 are the only cases of the use of nuclear weapons. That strategy was deliberate, not a product of miscalculation, and can best be described as “escalate to de-escalate.” There is no case of nuclear escalation through miscalculation from conventional war to nuclear fighting. No estimate of likelihood has any validity unless there are a large enough number of cases to generate a probability distribution. Nuclear escalation occurs in a world of what Oxford University’s John Kay calls “**radical uncertainty**” in which historical information provides no reliable guidance.

One way to think about nuclear escalation in the context of Russia’s current war against Ukraine is to build scenarios in which Russia uses a nuclear weapon and then trace a logically compelling pathway back to the present. It then becomes possible to ask what conditions could enable such a pathway to escalation.

Tactical nuclear weapon. In one scenario that has been discussed, Russia explodes a tactical nuclear weapon to force Ukraine to end the fighting and agree to cede Crimea and the four Ukrainian provinces that Russia is currently occupying and claiming as its own. Under what conditions is it possible that Russia might adopt such a strategy? Detonating a single tactical nuclear weapon would provide very limited battlefield advantage to Russian forces, and there is some risk that the radioactive fallout could blow back and inflict harm on nearby Russian troops.

Nor would the damage from a single tactical nuclear weapon be grave enough to so demoralize the Ukrainian public that it would buckle under the pressure. If anything, the use of a tactical nuclear weapon would likely radicalize Ukrainians who have been reluctantly moving toward grudging acceptance of a ceasefire.

Were Russia to use a tactical nuclear weapon, such a strategy might backfire. The Ukrainian public might well rally around the flag, unite behind its leader, and stiffen its resistance to ceasefire proposals that are increasingly the subject of discussion inside Ukraine.

Finally, the detonation of a single tactical nuclear weapon—however small its payload—would break the “nuclear taboo” that has held for almost eight decades. In October 2022, encouraged by the United States, Russia’s key partners—China and India—signaled their strong opposition to the use of any nuclear weapon under any circumstances. Now isolated from the West, Russian President Vladimir Putin would not want to alienate his fellow leaders of the nine BRICS countries, which include China, India, and Iran.

There is, therefore, no compelling logic that supports the use of even a single tactical nuclear weapon. What conditions could change that logic?

Russia could face a situation where its forces are being pushed back and out of Ukraine. Putin faced a version of that scenario in the autumn of 2022 when Ukraine’s armed forces were pushing the Russian army back. It was then that the CIA issued the estimate that there was a 50 percent chance that Russia would use a nuclear weapon.

After Ukrainian troops broke through and pushed Russian forces back from Kharkiv in the northeast and Kherson in the south, US intelligence overheard a conversation among senior Russian military commanders about when and how Moscow might use a tactical nuclear weapon in Ukraine. Putin was reportedly not part of these conversations. That intelligence was circulated inside the US government in mid-October. In addition, there are unconfirmed reports that Russia moved some tactical weapons out of storage and **loosened** operational controls that would make the use of a tactical nuclear weapon easier. It was these two developments that pushed up the US intelligence estimate that Russia might use a nuclear weapon.

RELATED: [Interview: Rose Gottemoeller on the precarious future of arms control](#)

Around the same time, Russian Defense Minister Sergei Shoigu, in one of his calls with US Defense Secretary Lloyd Austin, accused Ukraine of planning to use a “dirty bomb.” Concern among Western officials grew that Putin was preparing a **false flag operation**. Only a long phone call between Gen. Mark Milley, then chairman of the US Joint Chiefs of Staff, and Russian Gen. Valery Gerasimov, reduced the tensions. The most senior military officer from each country discussed Russia’s doctrine governing the use of nuclear weapons and reassured

one another. This episode tells us that even when Russian forces were retreating in Ukraine, Putin did not break the nuclear taboo.

Russia has since significantly lowered the threshold of when it would use nuclear weapons. In November 2024, Putin signed a decree amending Russia's nuclear doctrine in two important ways. The doctrine now declares that Russia has the right to use nuclear weapons against a non-nuclear state that attacks Russia or its allies and is supported by a nuclear power. In addition, Russia's nuclear doctrine released in 2020 declared that Russia would use nuclear weapons in response to a conventional attack when the very existence of the state is in jeopardy. The new amendment lowers that threshold to a conventional attack that is a critical threat to Russia's sovereignty or territory.

Putin also railed against the Biden administration's decision in November to allow Ukraine to use US-supplied longer-range Army Tactical Missile Systems, or ATACMS, against military installations inside Russia and warned that this decision was tantamount to NATO declaring war on Russia. Moscow then launched the Oreshnik, an intermediate-range ballistic missile equipped with multiple warheads, against Ukraine. The missile can carry nuclear warheads. Despite the bellicose rhetoric and the new missile launch, Russia has not loosened operational controls on any tactical nuclear weapons nor moved any of these weapons out of storage. Instead, Gerasimov again reassured the current chairman of the Joint Chiefs of Staff, Gen. Charles Q. Brown Jr., in a phone call that the missile launch was planned long before the announcement about the ATACMS.

The difference between now and the fall of 2022, of course, is that Russian troops are on the offensive on the battlefield and Ukrainian forces are struggling to contain Russian advances. Political and military leaders are far more likely to take risks when they fear losses than when they are making gains.

Miscalculation. What about a scenario in which Putin uses a nuclear weapon because of a technical miscalculation? Experts have long warned that miscalculation could occur if nuclear and conventional forces and their command-and-control structures are integrated. As nuclear weapons are modernized and, in some cases, become smaller, integration is becoming more frequent. However, all these scenarios deal with conventional wars between large nuclear powers that escalate to a nuclear confrontation. In Ukraine, Russia is not at war with another nuclear power. It is difficult to see how these scenarios of escalation through technical miscalculation would be relevant.

Political miscalculation, another type, can occur when a leader miscalculates the consequences of the use of a nuclear weapon to demonstrate resolve. Could Putin make this kind of miscalculation in the weeks before or shortly after President Trump is inaugurated? A scenario might go something like this.

RELATED: [Biden allowing Ukraine to strike into Russia is much ado for little consequence](#)

Conflicts tend to intensify as the parties anticipate negotiation. Ukrainian President Volodymyr Zelensky, deeply alarmed by the prospect of an imposed ceasefire, tries a “Hail Mary pass” to break the stalemate on the battlefield. To do so, he decides to use almost all his drone and missile forces in a coordinated attack on the front and behind the lines in Russia. Inevitably, some of the missiles get through, causing Russian forces to retreat, even temporarily, and significant casualties among Russian civilians. Ukrainian intelligence services also assassinate two or three other key Russian generals far behind the lines to show their long reach, as they did when they **brazenly killed Gen. Igor Kirilov** in Moscow this week. The Russian public is furious and military bloggers stoke the fury, calling for a fierce response. An outraged Putin then gives the order to detonate a tactical nuclear weapon.

How compelling is the path toward that scenario?

It is not impossible that a desperate Zelensky could try to reverse his losing hand. Trump and his team are floating a “peace plan” that is deeply alarming to Zelensky and appears to be very favorable to Russia. It is hard to imagine that Putin would sacrifice that very large potential gain—and possibly more—in exchange for no gain on the battlefield, universal opprobrium from friends and foes alike, and the poisoning of his relationship with the new US president. Putin would have to be so outraged and so emotionally dysregulated that he would lose all self-control. The evidence we have of Putin as an ice-cold and ruthless decision-maker does not fit that profile. This scenario also ignores the multiple conventional options that Putin still has in his arsenal that could inflict far greater punishment on Ukraine.

Context matters. If nuclear escalation through technical or political miscalculation is not a grave concern in the transition period between the Biden and Trump administrations, another pattern is concerning.

From the beginning of the war in Ukraine, Putin has hinted that the use of a nuclear weapon is a live option. Before launching his full-scale invasion in February 2022, he ordered an unknown level of alert that proved to be no more than increased staffing of strategic command centers and issued veiled nuclear threats if NATO were to intervene. A few months later, Putin loosened operational controls on tactical nuclear weapons and two years later lowered the threshold of nuclear use. Even though Putin never appeared to approach a decision to use a nuclear weapon, he manipulated the threat to use nuclear weapons to deter NATO from supplying weapons to Ukraine.

This strategy failed again and again. The United States and its Western allies supplied Ukraine with increasingly more sophisticated equipment over time despite the “nuclear noise.” They judged Putin’s intentions not by what he said but by the larger context in which he was making his thinly veiled threats designed to coerce. They took him seriously only once when Russian forces were in retreat.

Context always matters, even when the threats are nuclear. Putin now has the unenviable reputation of someone who bluffs. This reputation can only encourage NATO to continue to call his bluff in the future. But one day Putin may not be bluffing. If leaders do not pay attention to context, they may well miss the “signal” that, this time, Russia is serious about using a nuclear weapon to coerce an adversary.

Together, we make the world safer.

The *Bulletin* elevates expert voices above the noise. But as an independent nonprofit organization, our operations depend on the support of readers like you. Help us continue to deliver quality journalism that holds leaders accountable. **Your support of our work at any level is important.** In return, we promise our coverage will be understandable, influential, vigilant, solution-oriented, and fair-minded. Together we can make a difference.

Make your gift now

Keywords: ATACMS, NATO, Oreshnik, Russia, Russia-Ukraine war, Ukraine, United States, Vladimir Putin, nuclear escalation

Topics: Nuclear Weapons



Get alerts about this thread ▼



Be the First to Comment!

B *I* U **[+]**

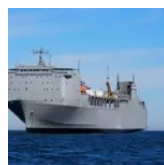
0 COMMENTS



Janice Stein

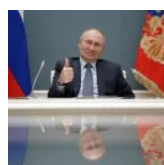
Janice Stein is the founding director of the Munk School of Global Affairs & Public Policy and the Belzberg Professor of conflict management... [Read More](#)

RELATED POSTS



Note to Syrian rebels: Give up Assad's chemical weapons and prosecute those who used them

By Doniyor Mutalov



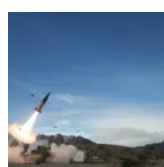
A growing nuclear debate: The risk of calling everything a nuclear threat

By Chloe Shrager



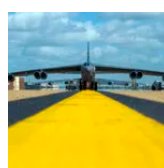
Trump's chance for a major breakthrough in Iran-West relations

By Seyed Hossein Mousavian



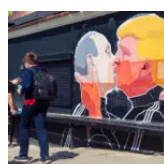
Biden allowing Ukraine to strike into Russia is much ado for little consequence

By Mariana Budjeryn



Dispatch from a nuclear petting zoo

By Collin Van Son



After Trump's victory, a divided Europe braces for its security without the United States

By François Diaz-Maurin



Receive Email Updates

Subscribe

Bulletin Daily



Seven noteworthy stories about potential progress on climate change in 2024

By Jessica McKenzie



Note to Syrian rebels: Give up Assad's chemical weapons and prosecute those who used them

By Doniyor Mutalov





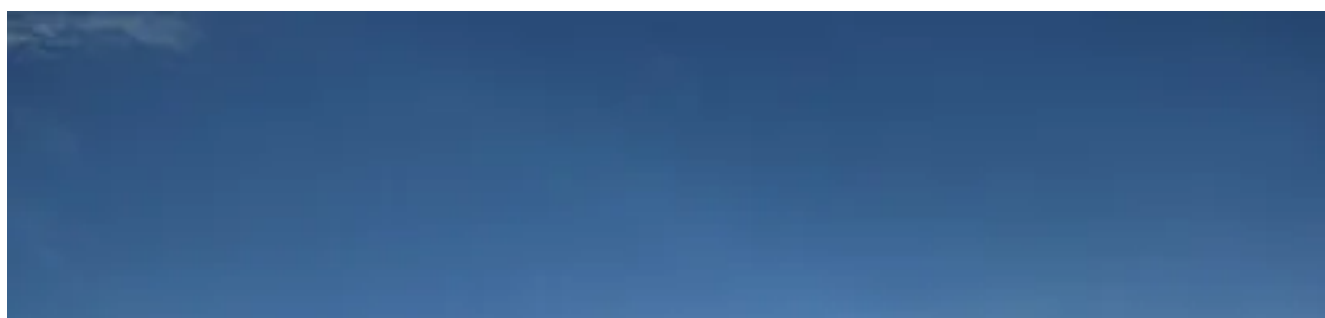
Doomscrolling—the fun way! Our picks for best multimedia stories in 2024

By Erik English, Thomas Gaulkin



Another year, another 366 days of tech (with a healthy dose of AI)

By Sara Goudarzi





How impossible is the risk of nuclear escalation in Ukraine?

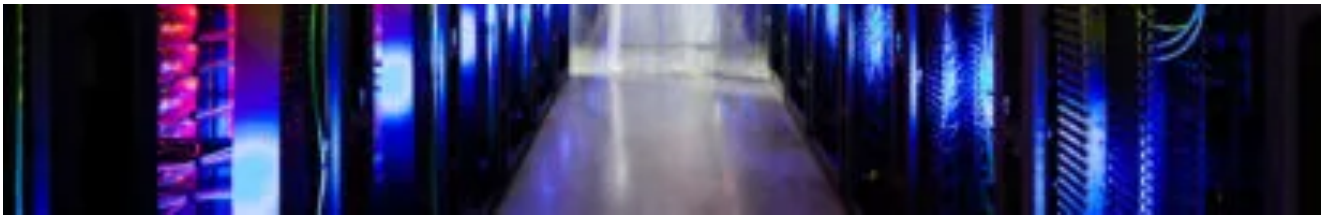
By Janice Stein



How regenerative agriculture can foster peacebuilding in conflict areas

By Richard "Drew" Marcantonio





AI goes nuclear

By Dawn Stover



RFK Jr. may soon become health secretary, but Louisiana and other states are already passing anti-vaccine laws

By Jennifer Herricks

Doomsday Clock

[Doomsday Clock Statement](#)

Featured Topics

[Nuclear Risk](#)

[FAQ](#)
[Timeline](#)
[Know the Time](#)
[Doomsday Dashboard](#)
[Doomsday Clock Playlist](#)

Other Topics

[Events](#)
[Current Magazine Issue](#)
[Magazine Covers](#)
[Next Generation](#)
[Multimedia](#)
[Pathogens Project](#)
[Arts Science Initiative](#)
[Nuclear Notebook](#)
[Virtual Tour](#)

About Us

[Our Mission](#)
[Leadership](#)
[Staff](#)
[Columnists](#)
[Annual Report](#)
[What's new at the Bulletin](#)
[Editorial Independence Policy](#)
[Open Positions](#)

[Climate Change](#)
[Disruptive Technologies](#)

Support

[Ways to Give](#)
[Annual Fund](#)
[Annual Event](#)
[Planned Gifts](#)
[Donor recognition](#)
[Special initiatives](#)
[Store](#)

Contact Us

[Send us a Tip](#)
[Write for Us](#)
[Permissions & copyrights](#)
[Media Inquiries](#)
[Support Us](#)
[Advertise](#)
[Email Us](#)

Stay Connected

[Facebook](#)
[Bluesky](#)
[LinkedIn](#)
[YouTube](#)
[Instagram](#)
[Twitter](#)
[Get Our Newsletter](#)
[My Account](#)