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Forecasting Nuclear Escalation Risks: Cloudy With a Chance of Fallout – Workshop Assumptions and Scenarios

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Overview

In 2024, we conducted a pilot study to systematically investigate the utility of forecasting for assessing and mitigating nuclear escalation risks. As part of this study, we developed a series of scenarios describing the outbreak of plausible, hypothetical crises between the United States and China, North Korea, or Russia in the year 2029, along with assumptions about relevant countries' military policies, postures, and capabilities in that year.

The assumptions and scenarios are included here exactly as they were provided to participants in the study (except for the correction of typos). No additional edits or updates have been made. These assumptions and scenarios may be used, in original form or after modification, for any noncommercial purpose so long as the original source is clearly referenced.

For more information and for our study findings and recommendations, see Jamie Kwong, Anna Bartoux, and James Acton, “Forecasting Nuclear Escalation Risks: Cloudy with a Chance of Fallout,” Carnegie Endowment for International Peace, April 2025, <https://carnegieendowment.org/research/2025/04/forecasting-nuclear-escalation-risks-cloudy-with-a-chance-of-fallout?lang=en>.

China Scenario Assumptions

It is February 1, 2029. A new American president has just entered the White House. Taiwan elected a new president in 2028. Japan has cycled through multiple prime ministers since 2024. Xi Jinping is still president of China.

The U.S.-Japan alliance and U.S.-Taiwan defense relationship remain in force and have not undergone major changes since 2024.

U.S. Posture and Capabilities

- The United States continues to emphasize that China is its “pacing challenge” and “most consequential strategic competitor.”
- The United States has permanently deployed to the Philippines two batteries of Typhon launchers—a towed land-attack launch system that can accommodate SM-6 ballistic missiles (range of 240 km) and Tomahawk cruise missiles (range of 2,500+ km). The total number of U.S. troops in the Indo-Pacific has remained roughly unchanged since 2024.
- U.S. Department of Defense (DoD) officials now regularly indicate that the conventional military balance with China in the Indo-Pacific is increasingly unfavorable to the United States.
- The United States continues to state in its declaratory policy that it “would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its Allies and partners.”
- The United States has continued to modernize its strategic nuclear forces. Following the expiry of New START, it uploaded additional warheads, so it now has around 2,000 strategic deployed warheads (using New START counting rules).
- In its declaratory policy, the United States has recently stressed that it has the capability to conduct limited nuclear strikes in the Asia-Pacific region using low-yield warheads on Trident D5 sea-launched ballistic missiles or Air-Launched Cruise Missiles launched from heavy bombers. (The Long-Range Standoff Weapon, which will replace the Air-Launched Cruise Missile, will not become operational until the 2030s).
- The United States operates a layered missile defense out of its bases in Japan and its ships in the region, designed to protect high-value

targets against aircraft and short-range missiles (Patriot-3) and to provide sea-based defenses against regional ballistic missile threats (Aegis). The United States also operates two AN/TPY-2 radar systems in Japan to detect missile launches. According to credible media reports, the United States uses data from these radars to enhance its homeland missile defense capabilities.

Chinese Posture and Capabilities

- China has continued to modernize and expand its conventional forces, in line with its goal to turn the People’s Liberation Army (PLA) into a “world-class” military by 2049. It has rapidly built-up capabilities to counter the U.S. military in the Indo-Pacific region, including by expanding its anti-access/area denial (A2/AD) capabilities.
- China continues to insist that it would not use nuclear weapons first and would never use them against a nonnuclear weapon state. Public U.S. intelligence assessments continue to question the credibility of China’s no-first-use commitment.
- China has continued to modernize and expand its strategic nuclear forces. The U.S. DoD estimates that China now has “in excess of 900 operational nuclear warheads.” It also assesses that China keeps “a large part” of this force “at heightened readiness” and that China’s nuclear posture includes “credible launch-on-warning options.”
- The United States also assesses that China has “low-yield warheads” available for both the DF-21 Mod 6 ballistic missile (range of at least 1,500 km) and the DF-26 ballistic missile (range of at least 3,000 km).
- The United States assesses that China’s nuclear-armed fractional orbital bombardment system recently reached its initial operational capability.

Japanese Posture and Capabilities

- The U.S.-Japan alliance remains a key pillar of Japan's security policy. Political leaders in the United States continue to emphasize Washington's "unwavering commitment" to the defense of Japan, "including the Senkaku Islands and other territories," while Japanese leaders emphasize their commitment to "fundamentally reinforce" Japan's own defense capabilities.
- Japan has increased its defense budget by 50% since 2024, reflecting a significant military buildup, especially in counterstrike capabilities. Key capabilities include hundreds of upgraded Type-12 anti-ship missiles (range of 900+km) and Tomahawk cruise missiles (range of 2,500+ km). Japan has also made improvements to its command-and-control systems and has made preliminary investments in new intelligence, surveillance, and reconnaissance (ISR) capabilities to enable precision deep strike.

Taiwanese Posture and Capabilities

- Taiwan's defense budget has increased to 3% of its GDP. Taiwan continues to invest in asymmetric force capabilities, including indigenous anti-ship cruise missiles (range of 150+ km) as well as U.S. Harpoon missiles (range of 90-240 km), which are now stationed at two dedicated missile bases on the country's southwestern coast. Taiwan has also deployed the Yun Feng land-attack cruise missile (range of 1,200 km+), which can reach targets in northern and central China.
- Taiwan remains a key U.S. partner in the Indo-Pacific. While the United States maintains its longstanding one China policy, it has increased its arms sales, particularly of small guided missiles and armed drones, to Taiwan since 2024.

China Scenario 1: Nuclear Storage Facility

On May 29, 2029, the U.S. president travels to Canberra to sign the contract for the sale of three Virginia-class nuclear-powered submarines to Australia as part of the AUKUS partnership. At the signing ceremony, the president and Australian prime minister announce that the first submarine will be delivered in 2032.

The president then travels to Tokyo to meet with the Japanese prime minister. Following the meeting, the White House and Prime Minister's Office release a joint statement:

U.S.-Japan security cooperation is more important than ever as pressing regional security challenges threaten the stability of the Indo-Pacific. To ensure an effective deterrence and defense posture, the United States will build a facility for the storage of nuclear warheads and associated infrastructure in Japan. This facility will ensure the ability of the alliance to deploy nuclear warheads to the region should it become necessary to do so. There are currently no plans to base nuclear weapons in Japan.

Following the announcement, the Director of the Chinese Communist Party (CCP) Central Foreign Affairs Commission criticizes the United States for "instigating a provocation and confrontation" and warns Washington that "it has severely miscalculated China's red lines on its security interests."

Two months later, China conducts an underground nuclear test with an estimated yield of 1 kiloton. On a special televised address hours later, Xi calls the test a "measure to modernize our nuclear arsenal to strategically counterbalance against strong militaries and achieve more reliable safeguards for China's sovereignty, security, and development interests."

The U.S. president, the Japanese and Australian prime ministers, and the South Korean president convene an extraordinary virtual summit the following day and issue a joint statement condemning the “destabilizing test in the strongest possible terms.” The statement goes on to announce that the partners will conduct a large joint aerial drill at short notice to “strengthen security and stability in the Indo-Pacific and demonstrate our resolve, unity, and capability.”

The drill commences three weeks later over the East China Sea and involves U.S. B-52H nuclear-capable bombers as well as fighters from the United States and its three allies. As the drill begins, U.S. intelligence detects an increase in the alert level of Chinese air defense forces. Meanwhile, U.S. and allied aircraft over international waters are tailed by Chinese fighters in a way that U.S. pilots report is “unsafe and unprofessional.”

An hour into the drill, a Japan Airlines 737 on an early-morning flight between Tokyo and Taipei passes close to (but outside of) the aerial exclusion zone, about 150 km from China’s coast. It is downed by a Chinese surface-to-air missile. The airplane has only 17 passengers on board (eight Japanese citizens, five Taiwanese citizens, two Americans, and two Germans), all of whom are killed along with the five Japanese flight crew. An hour or so later, a Chinese J-16 and an Australian F-35A collide, resulting in the deaths of all three pilots (two Chinese, one Australian).

China Scenario 2: THAAD deployment

In mid-2028, the United States agrees to sell Taiwan a Terminal High Altitude Area Defense (THAAD) missile battery and its associated AN/TPY-2 radar. The Chinese foreign minister states that the sale “blatantly interferes in China’s internal affairs” and “severely undermines China’s core interests.” In private, multiple Chinese experts, believed to be acting on instructions from their government, emphasize concerns that the radar will be used to support U.S. homeland missile defenses and hence threatens China’s nuclear deterrent.

On June 1, 2029, a spokesperson for Taiwan’s Ministry of National Defence announces that the THAAD system is expected to become operational by August 1. On June 6, the Chinese foreign minister repeats her earlier comments, but adds that “if the system becomes operational, it will compromise the strategic security interests of China.”

A week later, Taiwanese authorities announce that they have detained three “saboteurs” who were “trespassing” at the site of the AN/TPY-2 radar and “in possession of explosives.” A day later, the Taiwanese president announces the men are Taiwanese citizens “on China’s payroll.” The spokesperson for China’s Ministry of Foreign Affairs calls the accusation “baseless,” before describing the detainees as “political prisoners who must be released immediately.”

On June 18, Taiwan is hit by a major cyberattack that severely disrupts government and military systems, including military air traffic control, during an air force exercise. In the confusion that follows, a Taiwanese F-16A lands on the single runway at Pingtung Airbase while a Taiwanese E-2K Hawkeye (an airborne early-warning aircraft) is waiting to take off. The two aircraft collide and all six crew members are killed, as is a Taiwanese officer who tries to rescue them. At about the same time, Chinese authorities announce they have detained three Taiwanese “saboteurs who were posing as fishermen and preparing to land illegally in China.”

A few days later, the speaker of the U.S. House of Representatives and the Chairman of the Senate Foreign Relations Committee (who belong to different political parties) fly to Taipei and make a joint appearance with the Taiwanese president. The president blames China for the cyberattack, demands the release of the “fishermen who were operating legally and peacefully in the Taiwan Strait,” and urges the United States “to ensure that Taiwan does not become victim to Chinese aggression.” The next day, the White House states that “the President of the United States is committed to preventing any change of the territorial status quo by force.”

On June 26, reports of an explosion at Huiyang Air Base in eastern China circulate. Within hours, Xi Jinping announces on television that “the renegade regime in Taiwan has killed 10 brave service members. There is but one China and we will defend it.” The U.S. and Taiwanese governments promptly accuse China of staging the event as a way to justify a provocation.

On June 27, China launches a salvo of six conventionally armed cruise missiles at the AN/TPY-2 radar site. Taiwanese missile defense systems intercept four missiles. The other two missiles strike the base, destroying the radar and killing eight Taiwanese personnel.

China Scenario 3: Succession

On July 3, 2029, Xinhua News Agency publishes a breaking news report:

The CCP has just announced that President Xi Jinping died suddenly today at the age of 76. China grieves the loss of our Paramount Leader. In this time of mourning, Vice President Ding Xuexiang will succeed to the office of President, as prescribed by the constitution.

The following day, *PLA Daily* publishes a statement from General Zhong Shaojun, Vice Chairman of the Central Military Commission (CMC). He states that the PLA is “best positioned to steer our country through this trying time,” and adds that the military must “reinforce our might to ensure China’s enemies do not take advantage of us.”

The next day, a swarm of 30 unarmed reconnaissance drones from China approaches Taiwan. Upon detection, Taiwanese fighter jets scramble to intercept the drones. The aircraft successfully down 27 of the drones just after they breach Taiwanese airspace. Some of the debris hit a busy park in a Taiwanese coastal town, killing one civilian and injuring an additional three.

Three drones evade the jets and proceed east across the country’s northern territory to Taipei, where they are picked up by Taiwanese air defense forces. Because of the risk to civilians, Taiwanese forces are ordered to wait until the drones have crossed back into Chinese airspace before engaging them again. Once they do, a Taiwanese fighter jet crosses into Chinese airspace and destroys them. An errant missile from the Taiwanese jet hits a Chinese fishing boat, killing three.

Just hours later, a Japanese Coast Guard patrol vessel in the East China Sea is struck by a torpedo, resulting in the deaths of 21 of the sailors on board. Another Japanese military vessel claims that, as it approached the site of the attack, it detected a submarine headed west.

The Taiwanese president defends the pilot who crossed into China, laments the deaths of Taiwanese citizens and Japanese sailors, and calls China’s actions “highly provocative” and a “clear message that the PLA intends to directly threaten peace and security in the Indo-Pacific.” The president vows that “Taiwan and its security partners will respond appropriately.” Meanwhile, news reports circulate that the U.S. president discussed the situation on a three-way phone call with the president of Taiwan and the Japanese prime minister.

A few hours later, Xinhua publishes an official CCP statement declaring that the “ongoing events are being dealt with expeditiously” and that Zhong “has been relieved of his duty.” The statement is accompanied by a photograph of Zhong being arrested, but forensic analysis by Western news organizations quickly indicates it is AI-generated. China Central Television (CCTV) runs a breaking news story later that evening reporting that Ding has gathered an extraordinary meeting of the Standing Committee of the National People’s Congress. The CCTV presenter adds that such gatherings of China’s top legislative body have historically precipitated significant changes in PLA leadership.

China Scenario 4: Senkaku Islands

At 3:30am on June 24, 2029, two PLA Navy (PLAN) frigates enter the contiguous zone around the Senkaku Islands. A Japanese Maritime Self Defense Forces (JMSDF) destroyer and patrol aircraft shadow the ships for two hours. At 5:30am, the Japanese Vice Minister of Foreign Affairs summons the Chinese Ambassador and demands “Beijing’s spy ships” be immediately withdrawn, according to later Kyodo reports citing unnamed officials present at the meeting.

At 9:20am, the frigates change course. One ship turns immediately west and exits the contiguous zone. The other ship turns eastward and enters the islands’ territorial waters. The Japanese destroyer is ordered not to fire on the Chinese ship unless and until direct orders to engage are issued. At 1:44pm, the Chinese frigate turns west, exiting the territorial then contiguous zone.

Later that day, the Japanese prime minister issues a statement claiming that “the Chinese Navy’s intrusion into the territorial waters of the Senkaku Islands violated Japan’s sovereignty.” He adds that he has “lodged an extremely strong protest with the Chinese government through diplomatic channels and has strongly urged them to prevent a recurrence of this utterly unacceptable encroachment.” In the following days, Japanese media coverage of the incident questions whether the prime minister responded sufficiently strongly, with a leading politician criticizing the government’s “refusal to employ force in self-defense of Japanese territory.”

On July 17, the prime minister announces that the JMSDF will build a small outpost on Uotsuri Island, the largest of the Senkaku Islands, to “ensure the Japanese Self Defense Forces have a continual and permanent presence” and “remain ready to defend our territory.” A week later, Xi Jinping visits the command office for the East China Sea area of the China Coast Guard, where he states, “We will never let even 1 millimeter of our territory be taken.”

On July 26, non-governmental experts live-tracking naval activity using open-source data report that PLAN vessels are traveling southeast toward the Senkaku Islands in relatively small numbers. The following day, they report that JMSDF vessels are congregating in Japanese waters around the islands.

A Chinese naval drill commences on July 29 in Japan’s claimed exclusive economic zone just beyond the contiguous zone around the Senkaku Islands. It involves destroyers, frigates, and aerial support assets. Two hours into the drill, one Chinese destroyer enters the contiguous zone, with a fighter jet providing air cover. A Japanese destroyer hails the Chinese vessel and demands it alter course, to no avail. The Japanese destroyer continues to trail the Chinese destroyer as it nears territorial waters around Uotsuri Island.

The Japanese prime minister orders the JMSDF to employ force if the Chinese destroyer crosses into territorial waters. Minutes later, it does so, and the Japanese destroyer opens fire. A Type-90 anti-ship missile strikes the Chinese destroyer, killing 18 and severely damaging the ship. The fighter jet accompanying the Chinese destroyer returns fire, killing seven Japanese sailors stationed on deck and injuring an additional 12.

North Korea Scenario Assumptions

It is February 1, 2029. A new American president has just entered the White House, the South Korean president has been in office since 2027, and Kim Jong Un is still the leader of North Korea. The U.S.-South Korean alliance remains in force and has not undergone major changes since 2024.

U.S. Posture and Capabilities

- Political leaders in the United States continue to emphasize the U.S. “ironclad” commitment to South Korea. The USFK Commander retains war-time operational control of Combined Forces.

- In its declaratory policy, the United States continues to state that “any nuclear attack by North Korea against the United States or its Allies and partners is unacceptable and will result in the end of that regime. There is no scenario in which the Kim regime could employ nuclear weapons and survive.”
- The United States has delivered on its promise to “enhance the regular visibility” of its strategic assets on and around the peninsula, as laid out in the 2023 Washington Declaration, and has increased the number of these visits in recent months. Annual military exercises have evolved to include nuclear response planning, focused on coordination of South Korean strategic and U.S. nuclear capabilities in an escalating crisis. The United States has not redeployed nuclear weapons to the Korean peninsula.
- POTUS and POTROK have established a secure communication channel for prompt consultations in a crisis that is regularly exercised.
- The United States and South Korea enjoy conventional superiority on the Korean peninsula. These capabilities have continued to evolve since 2024.
- Key U.S. capabilities:
 - A multi-layered missile defense system deployed in South Korea, designed to protect high-value targets against aircraft and short-range missiles (Patriot-2 and Patriot-3), to provide area defense against short- and medium-range missiles (Terminal High Altitude Area Defense (THAAD)), and to provide sea-based defenses against regional ballistic missile threats (Aegis)
 - A real-time mechanism for sharing North Korean missile warning data with South Korea and Japan
 - Hundreds of precision-strike missiles—including submarine-launched cruise missiles, surface-to-surface missiles (ATACMS on HIMARS), multiple rocket launchers (M270), and mid-range ground-launched missile launchers (Typhon)—that allow for deep, short-notice conventional strikes into North Korea

South Korean Posture and Capabilities

- Alongside its alliance with the United States and their combined defense posture, South Korea places its so-called three-axis system at the center of its deterrence and defense strategy. The system has three components: (1) Kill Chain for preempting attacks, (2) Korea Air and Missile Defense (KAMD) for intercepting attacks, and (3) Korea Massive Punishment and Retaliation (KMPPR) for retaliating after an attack.
- South Korea’s Strategic Command (ROKSTRATCOM), which manages the three-axis system, has been operational since 2024. There has been some coordination between ROKSTRATCOM and U.S.-ROK Combined Forces Command (CFC). However, unlike other parts of the South Korean military, ROKSTRATCOM would not come under the operational command of CFC in a conflict.
- Key South Korean capabilities:
 - Limited independent satellite surveillance capabilities



- A multi-layered missile defense system designed to protect high-value targets against aircraft and short-range missiles (Patriot-2 and Patriot-3; Cheongung) and to provide area defense against short- and medium-range missiles (L-SAM)
- Thousands of precision-strike missiles—including multiple rocket launchers (K239 Cheonmu), ground-launched ballistic and cruise missiles (ATACMS, and multiple Hyunmoo variants, including with penetrator payloads), air-dropped bunker buster bombs (GBU-28), and air-launched cruise missiles (AGM-84H/K SLAM-ER and KEPD 350 Taurus ALCM)—that can hit targets anywhere in North Korea
- 50 F-35A stealth fighter jets (and various non-stealthy fighters)
- At the 9th Worker's Party Congress in 2026, Kim set out a new five-year military modernization and expansion agenda. Key goals include launching more reconnaissance satellites, improving maneuverable reentry vehicle technology, and ensuring the survivability and effectiveness of the nuclear arsenal. An ongoing scientific exchange between North Korea and Russia, which began in 2023, has helped North Korea to advance these goals, especially by refining space launch capabilities and accessing the materials needed to scale up solid-fuel missile production.
- Key North Korean capabilities:
 - 90-120 nuclear warheads, including high-yield thermonuclear and low-yield tactical warheads
 - Hundreds of ground-launched regional ballistic missiles (solid and liquid-fueled, assumed assigned to both conventional and nuclear missions) with diverse basing modes, including rail-mobile launchers, fixed silos, TELs, and lake-submerged launchers
 - Tens of intercontinental ballistic missiles (solid and liquid-fueled, all assumed assigned exclusively to nuclear missions), including some with multiple independent reentry vehicles
 - A small force of regional submarine-launched ballistic and cruise missiles (all assumed assigned exclusively to nuclear missions), deployable on the country's three ballistic missile submarines (SSBs)
 - A small force of ground-launched nuclear-capable cruise missiles

North Korean Posture and Capabilities

- North Korea continues to embrace the nuclear strategy outlined in the 2022 Nuclear Forces Policy Law. It has identified two core roles for its nuclear forces: 1) deter attacks “seriously threatening the security of the country and the people,” and 2) use nuclear weapons to repel attacks if deterrence fails.
- North Korea has emphasized Pyongyang's right to use nuclear weapons preemptively and has reiterated that “a nuclear strike shall be launched automatically and immediately” according to an “operational plan decided in advance” should Kim's command and control be threatened by an adversary's attack.

North Korea Scenario 1: Nuclear Redeployment

The United States and South Korea release a joint press statement following the thirteenth Nuclear Consultative Group (NCG) principals meeting, announcing that:

At the direction of the Presidents of the United States and the Republic of Korea, the alliance will begin preparations to deploy U.S. nonstrategic nuclear warheads to the Republic of Korea. This deployment, which is strictly defensive, is intended to enhance deterrence.

The warheads will remain in U.S. custody and control in full compliance with the Treaty on the Non-Proliferation of Nuclear Weapons. Certified South Korean dual-capable aircraft will be made available for nuclear roles and South Korean personnel will be trained accordingly.

As a first step, in the coming days, the alliance will begin constructing facilities at Kunsan Air Base capable of safely storing the warheads.

Following the announcement, a Korean Central News Agency (KCNA) statement warns that North Korea “will not tolerate U.S. plans to arm South Korea with nuclear weapons,” and that “if the American imperialists and their illegitimate lackeys try to bring nuclear war to our peninsula, we will have no choice but to strike first in self-defense.”

Two months later, the United States and South Korea commence their annual Ulchi Freedom Shield (UFS) exercise. The exercise includes aerial drills over the East Sea, close to North Korean airspace. The aircraft involved include South Korean F-35As stationed at Kunsan Air Base.

Partway through the drills, North Korea fires surface-to-air missiles (SAMs) at allied aircraft participating in the drills. The aircraft evade the missiles. A joint

U.S.-South Korean intelligence assessment in the immediate aftermath of the incident concludes with high confidence that the SAMs were launched with the intention to shoot down aircraft and not as a warning shot. The U.S. and South Korean presidents consult and order a retaliatory strike on the SAM battery and radars that carried out the launch. The allied strike, conducted jointly by U.S. and South Korean aircraft, destroys those assets, killing 12 North Korean soldiers in the process.

A Korean Central Television (KCTV) broadcast characterizes the incident as “an unjust response to the brave defense of our sovereign airspace,” and accuses the United States of “irresponsibly equipping feeble South Korean pilots with nuclear power.” The broadcast goes on to say that “Marshal Kim has vowed to respond in an appropriate manner without delay to defend the honor of our fallen comrades.”

Days later, North Korea launches a salvo of ten conventionally armed ballistic and cruise missiles at Kunsan Air Base. U.S. missile defense systems deployed in South Korea intercept six missiles. Four missiles strike the base, temporarily disabling three aircraft hangars and causing significant damage at the construction site of an underground storage vault for nuclear warheads. The strike kills eight South Korean and five U.S. military personnel, and injures an additional 25.

North Korea Scenario 2: Nuclear Test

On September 7, 2029, North Korea conducts its ninth nuclear test with an estimated yield of 1 kiloton. A KCNA statement describes it as a “successful test of a tactical warhead ready for delivery on cruise missiles.” The United States issues a statement condemning the test and reiterating that “any nuclear attack by North Korea against the United States or its allies will result in the end of that regime.” South Korean and U.S. forces conduct a drill to simulate an “attack on deeply buried targets in mountainous terrain,” according to the South

Korean Joint Chiefs of Staff. The drill employs South Korean short-range ballistic missiles and both South Korean and U.S. F-35A fighter jets.

A week later, North Korea conducts another nuclear test, this time with an estimated yield of 450 kilotons. A KCNA statement describes the test as “yet another affirmation and reminder to American imperialists and their foolish partners of the effectiveness, reliability, and prowess of the range of DPRK nuclear weapons.” The statement goes on to say that Kim has congratulated the Korean People’s Army (KPA) Strategic Force for “so resolutely delivering” on the goals outlined at the 9th Worker’s Party Congress.

Following the second test, the United States and South Korea release a joint statement:

We strongly condemn the DPRK’s destabilizing nuclear tests in the strongest possible terms. We are committed to taking additional, significant steps to demonstrate to North Korea that there are consequences to its unlawful and dangerous actions. The United States reiterates that its commitment to defend the ROK is ironclad, and it will continue to demonstrate that ironclad commitment through appropriate measures.

Days later, the United States and South Korea announce that they will conduct a large joint aerial drill at short notice “to strengthen security and stability on the Korean peninsula and across Northeast Asia.”

The drill commences on September 20, 2029. According to a statement issued by the South Korean Joint Chiefs of Staff, the drill includes “the simulated use of South Korean aircraft to attain air superiority and suppress enemy air defenses prior to operations involving U.S. bombers, which are capable of delivering both nuclear and nonnuclear warheads.” In parallel, the allies convene a special Nuclear Consultative Group (NCG) principals meeting, the first to be convened outside of the regular biannual meetings.

Following the drill, North Korea releases a statement claiming that it “won’t tolerate an invasion rehearsal on its doorstep” and that it is “left with no choice” but to respond to the allies’ “madcap nuclear war racket.” Shortly after, North Korean forces launch four unarmed ballistic missiles toward Guam.

Three of the four missiles are on trajectories that will lead them to impact the island’s coastal waters. Two of these missiles are intercepted by U.S. missile defenses. The third missile is unarmed and causes no damage. The fourth missile, which U.S. missile defenses also fail to intercept, lands on the island itself, hitting a community center. Although this missile is also unarmed, the impact kills 25 civilians, including eight children.

North Korea Scenario 3: Succession

In May 2029, Ri Chun-hee, now 85 years old, takes up her former KCTV chair to announce that Kim Jong Un has died:

It is with indescribable sadness that I inform you of our beloved leader’s death. North Koreans are convulsing with pain and despair at the loss of comrade Kim Jong Un. As I urged you to do following the deaths of our eternal president and dear leader, we must now faithfully follow the leadership of respected comrade Kim Yo Jong, who will serve as regent until comrade Kim Ju Ae is of age.

Kim Ju Ae, Kim’s daughter, who was seen regularly with him in public since 2022, is estimated to be around 16 years old. Kim Yo Jong is Kim’s sister and advisor.

The following day, *Joson Immingun* publishes a statement from Vice Marshal Ri Yong-gil, Chief of the General Staff. It states that the “senile, grief-stricken Ri Chun-hee misspoke,” and declares that “only the KPA can see the illustrious people of this country through this trying time.” He adds that the KPA will “remind our foolish

southern neighbors and their American benefactors that the DPRK regime remains vigilant and strong in this time of mourning.”

The next day, a swarm of a dozen small, unarmed reconnaissance drones from North Korea approaches Seoul. ROKSTRATCOM does not detect the swarm until it is over civilian areas. South Korea suspends all flights in and out of Seoul’s airports and orders the mobilization of anti-drone assets, including fighter jets. Ten drones breach the no-fly zone around the South Korean presidential compound, which also houses the Joint Chiefs of Staff headquarters.

Because of the risk to civilians, South Korean forces do not attack the drones while they are over Seoul and have only limited success engaging them as they return across the border. One South Korean fighter pursuing the swarm crosses into North Korean air space and destroys five drones. The debris destroys a North Korean guard tower at the demilitarized zone (DMZ), igniting a nearby ammunition storage depot and killing six North Korean soldiers.

Just hours later, a Republic of Korea Navy patrol boat in disputed waters in the Yellow Sea is struck by a torpedo and sinks, resulting in the deaths of 19 of the 31 sailors on board. The attack is not immediately attributable to North Korea, but another navy vessel claims that, as it approached the site of the attack, it detected a submarine headed north.

The South Korean president defends the pilot who crossed into North Korea, laments the deaths of the sailors, and calls North Korea’s actions “highly provocative” and a “clear message that the KPA intends to directly threaten the peace and security of the Republic of Korea.” The president vows to retaliate “at a time and place and in a manner of our choosing.”

A few hours later, in an unprecedented move, Kim Yo Jong broadcasts live on KCTV, declaring:

Foolish generals, in a futile power grab, started a fight with the puppet regime that resulted in the deaths of our brave comrades. It is a fight that only I, the rightful heir to our beloved leader, can finish. And make no mistake, I intend to finish the fight for good.

North Korea Scenario 4: Civilian Aircraft Shootdown¹

On March 18, 2029, the United States and South Korea conduct a field training exercise (FTX). The FTX involves three B-2 stealth bombers. The B-2s fly northwest across South Korean territory and turn west over the Yellow Sea just short of the North Korean border. The following day, the KPA general staff releases a statement saying that the drill was a “serious threat and pursuant to the scenario for a preemptive nuclear strike.” It vows to respond with “appropriate force to any further assault on our security by U.S. forces and the southern gangsters.”

Two days after the B-2 FTX, a private jet takes off from Gimhae International Airport for a two-hour flight to Mongolia. There are three crew members on board, along with three passengers—a mother and her two young children, one of whom will be receiving a long-awaited kidney transplant in Mongolia. The flight plan, which is common for civilian aircraft, involves travelling northwest from Gimhae, before turning west within 25 miles of North Korea.

Due to a technical malfunction, the aircraft loses power in the cockpit shortly after takeoff. It misses its westward turn and approaches North Korean airspace. When power is restored, air traffic control tells the pilot to bank west and follow a path out to the Yellow Sea—a nearly identical flightpath to that of the B-2 bombers on March 18.



Within minutes, the aircraft is shot down by a North Korean missile. As the South Korean president meets with her advisors, North Korean state media releases a statement:

It is the heroic KPA's mettle to mercilessly punish any provokers who hurt the dignity of the DPRK. At about 11:45 on March 20, a U.S. bomber intruded deep into the sky above Kangryong County, South Hwanghae Province, beyond the military demarcation line in the western sector of the front. A surface-to-air missile unit of the KPA Anti-Air Force shot down the aircraft, displaying its fixed will to show no mercy to the aggressors.

The South Korean president subsequently orders ROKSTRATCOM to conduct a ballistic missile strike on the KPA Air Force headquarters and one of the Kim family palaces. ROKSTRATCOM initiates the strike a few hours later (South Korean presidential advisors having informed their U.S. counterparts of the strike a few minutes beforehand). The ballistic missiles hit their targets, killing 18 North Korean soldiers at the KPA Air Force headquarters and one staff member at the Kim family palace.

In a television address that evening, the South Korean president decries Kim for "crossing all lines of human decency" and announces that:

Republic of Korea armed forces have responded to this cruel and unjust act. Our grief at this moment knows no bounds. But our response does, as it has been carefully limited to those responsible for perpetrating this horrible crime. The armed forces also stand ready to expand our operations if North Korea persists in attacking our citizens.

Russia Scenario Assumptions

It is February 1, 2029. A new American president has just entered the White House. Vladimir Putin is still president of Russia.

Russia and Ukraine agreed to a ceasefire in 2026. Russia occupies all of Crimea, Donetsk, and Luhansk, and most of Kherson and Zaporizhzhia. Sporadic negotiations have not produced a peace agreement. The line of contact between Russian and Ukrainian forces is highly militarized.

NATO Posture and Capabilities

- NATO membership has not changed since 2024 (with Swedish accession), though the alliance's position remains that "Ukraine's future is in NATO." Many NATO members continue to provide significant military support to Ukraine.
- There is widespread agreement within NATO that the alliance enjoys conventional superiority against Russia across Europe as a whole. However, various states, particularly the Baltic States, regularly express concerns that Russia could rapidly seize some of their territory before NATO could mount an effective conventional response.
- Allies now deploy twelve multinational battalion-sized battlegroups in states on NATO's eastern flank (up from four such battlegroups in February 2022). The alliance has continued to enhance its capability to reinforce these forces rapidly in a crisis.
- The United States has sold HIMARS launchers and Precision Strike Missiles (a 400+ km-range conventionally armed ballistic missile) to Poland. These missiles are in service.

- NATO now states that the two Aegis Ashore installations in Poland and Romania have a role in defending against Russian regional missiles. An additional installation is under construction in Latvia.
- The United States continues to deploy B-61 gravity bombs at six sites in five European countries (Belgium, Germany, Italy, the Netherlands, and Turkey). In 2026, it deployed them at an additional site in the United Kingdom. Except in the case of Turkey and the UK, the host state has the capability to deliver these weapons with its own aircraft.
- The British and French nuclear postures and capabilities remain substantially unchanged since 2022.
- The United States has continued to modernize its strategic nuclear forces. Following the expiry of New START, it uploaded additional warheads, so it now has around 2,000 strategic deployed warheads (using New START counting rules).
- The United States has three non-strategic capabilities: B-61 gravity bombs (deployed in both Europe and the United States); Trident D5 sea-launched ballistic missiles armed with low-yield warheads; and the ageing Air-Launched Cruise Missile (ALCM). (The ALCM replacement, the Long-range Standoff Missile is due to be deployed in 2033. The nuclear-armed, sea-launched cruise missile, which is under development, will be deployed in the late 2030s).

U.S. Posture and Capabilities

- While the United States publicly states its commitment to NATO, it also continues to emphasize that China is its “pacing threat” and urges European allies to do more in their own defense. It no longer provides substantial military assistance to Ukraine.
- The United States has deployed to Europe one battery of Typhon launchers—a towed land-attack launch system that can accommodate SM-6 ballistic missiles (range of 240 km) and Tomahawk cruise missile (range of 2,500+ km). Otherwise, the total number of U.S. troops in Europe has remained roughly unchanged since 2022.
- The United States continues to state in its declaratory policy that it “would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its Allies and partners.”

Russian Posture and Capabilities

- Russia’s conventional forces were severely depleted by its war against Ukraine. Although Putin has announced ambitious plans to rebuild those forces, Russia’s progress is lagging by almost every important measure.
- The main exception is Russia’s conventional missile forces. Russia has rapidly rebuilt a large force of ground-launched ballistic and cruise missiles. It has also deployed one new type: the SS-33, a ground-launched ballistic missile (range of 3,000 km).
- Following the United States’ deployment of Typhon launchers to Europe, Russia announced it would deploy missiles formerly prohibited by the Intermediate-Range Nuclear Forces (INF) Treaty to Europe. It now bases both the SS-33 and the SSC-8, a ground-launched cruise missile, in western Russia. (The United States assesses the range of the SSC-8 to be in excess of 2,000 km.)

- Although Russia's formal declaratory policy for nuclear use remains unchanged (see appendix), Russian leaders, including Putin, regularly emphasize the role of nuclear weapons—especially non-strategic nuclear weapons—in ensuring Russia's security.
- Russia has continued to modernize its strategic nuclear forces and has deployed Poseidon, a nuclear-powered, nuclear-armed torpedo. (The nuclear-powered cruise missile, Burevenstnik, remains under development.) The United States estimates that, following the expiry of New START, Russia expanded its strategic forces and now deploys around 2,000 strategic warheads (though it relies more heavily than the United States on ground-launched ICBMs loaded with multiple warheads).
- The United States assesses that Russia has “in excess of 2,500 nonstrategic warheads” kept in centralized storage, compared to estimates of “up to 2,000” in the early 2020s. Russia openly states that some of these warheads are based in Kaliningrad and close to the Finnish border.
- The United States assesses that Russia is developing new types of nonstrategic delivery systems and has deployed a nuclear-armed, co-orbital anti-satellite capability that can be launched at short notice. Russia openly claims that the SS-33 and SSC-8 are dual-use (that is, they can accommodate nuclear or nonnuclear warheads).

Arms Control

- The Moscow-Washington hotline remains operational and is regularly exercised.
- The U.S.-Russian ballistic missile launch notification agreement remains operative.

- In 2025, Russia formally renounced its participation in the Vienna Document.
- In February 2026, New START expired without Russia's returning to compliance. Moscow and Washington did not attempt to negotiate a successor agreement.

Appendix: Russian Declaratory Policy

Except from “Foundations of State Policy of the Russian Federation in the Area of Nuclear Deterrence,” June 2022, translated by the CNA Russia Studies Program.

17. 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 (or) 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.

18. The decision to use nuclear weapons is taken by the President of the Russian Federation.

19. The conditions that make it possible that Russia will employ nuclear weapons include:

- a. the receipt of reliable information about the launch of ballistic missiles attacking the territory of the Russian Federation and (or) its allies;
- b. the use by an adversary of nuclear weapons or other weapons of mass destruction on the territories of the Russian Federation and (or) its allies;
- c. adversary actions affecting critically important state or military objects of the Russian Federation, the disablement of which could lead to the disruption of retaliatory actions by nuclear forces;

- d. aggression against the Russian Federation with the use of conventional weapons when the very existence of state is in jeopardy.

Russia Scenario 1: Nuclear Deployment

Following the 2029 Warsaw Summit, NATO releases a new Deterrence and Defence Posture Review, which states:

The review has shown that despite the current ceasefire, Russia's war of aggression against Ukraine and ongoing threats have gravely altered the security environment.

To ensure an effective deterrence and defence posture, the United States will expand its deployment of B-61 nuclear weapons in Europe. This deployment is strictly defensive.

The warheads will remain in U.S. custody and control in full compliance with the Nuclear Non-Proliferation Treaty. Additional, certified Allied dual-capable aircraft will be made available for nuclear roles and personnel will be trained accordingly.

Following the announcement, the Federation of American Scientists publishes a report that reveals construction of a probable nuclear weapons storage facility is underway at Łask Air Base in Poland.

Russian Foreign Minister, Sergei Lavrov, calls the development "an unacceptable furtherance of NATO's reckless expansion to the East" and says NATO should be held "fully responsible" for forcing Russia to "match their nuclear threats to our security."

Two months later, Russia conducts an underground nuclear test at Novaya Zemlya with an estimated yield of 1 kiloton. On national television hours later, Putin calls the test a "necessary response to NATO's eastward

expansion that threatens the very existence of our state." He states that he ordered the test of a "non-strategic nuclear weapon to make clear to the West that we also have weapons that can hit targets on their territory."

NATO leaders convene an extraordinary virtual summit the following day, and issue a joint statement condemning the "destabilizing test in the strongest possible terms" and denouncing Moscow's "dangerous violation of the norm against explosive nuclear testing." The statement goes on to announce that the allies will conduct a large joint naval drill at short notice to "strengthen security and stability in the Euro-Atlantic area and demonstrate the Alliance's resolve, unity, and capability."

The drill commences in the Baltic Sea three weeks later. It involves a UK aircraft carrier under NATO command and additional escort and support ships from Canada, Spain, and Denmark. On the second day of the drill, Russian aircraft begin buzzing the NATO ships. Upon making its approach, one aircraft loses controls and crashes into the Danish ship. The Russian pilot and 23 Danish sailors are killed. An additional 30 Danish sailors are injured.

Following the crash, Putin publicly accuses NATO of deliberately downing the Russian aircraft and vows to respond "at a time and place and in a manner of our choosing." A day later, Russian fighter jets in Russian airspace shoot at NATO aircraft inside Estonian airspace that are patrolling the border. One of the allied aircraft is downed, killing the pilot.

Russia Scenario 2: Baltic State

On June 6, 2029, Putin mentions during an interview at the St. Petersburg International Economic Forum that Russia is "already taking steps to ensure that NATO's third European missile defense site will not undermine strategic stability." Construction of a third Aegis Ashore installation, at Lielvārde Air Base in Latvia, is expected to be completed within months.

A month later, Latvian authorities announce that they have detained three “saboteurs” who were “trespassing” at Lielvārde and “in possession of explosives.” A day later, the Latvian Prime Minister announces the men are Russian-speaking Latvian citizens “on Russia’s payroll.” The spokesperson for Russia’s Ministry of Foreign Affairs, Maria Zakharova, calls the accusation a “baseless delusion,” before describing the detainees as “political prisoners who must be released immediately.”

On July 8, Latvia is hit by a major cyberattack that severely disrupts government and military systems, including military air traffic control. In the confusion that follows, a Polish F-16 lands on the single runway at Lielvārde while a French Rafale is waiting to take off. The two aircraft (which were deployed to Latvia as part of NATO’s Baltic Air Policing mission) collide and both pilots are killed, as is a Latvian officer who tried to rescue the pilots from the wreckage. At about the same time, Russian authorities announce they have detained three Latvian “saboteurs who were posing as fishermen and preparing to land illegally in Kaliningrad.”

A few days later, the presidents of the three Baltic States, France, and Poland make a joint appearance in Riga. The Latvian president blames Russia for the cyberattack, demands the release of the “fishermen who were operating legally and peacefully in the Baltic Sea,” and urges NATO “to invoke Article 5 of the North Atlantic Treaty and to defend Latvia, Lithuania, and Estonia against impending Russian aggression.”

Following a meeting of North Atlantic Council two days later, NATO’s Secretary General announces that “because an attack against one is an attack against all, the Allies have invoked Article 5 and decided to deploy the Very High Readiness Task Force to the Baltic States.” The Russian Ministry of Defence promptly announces that “the troops of the St. Petersburg Military District are preparing to deal with any contingency.”

On July 22, widespread reports of an explosion at Pskov-Kresty airbase in western Russia circulate. Within hours, Putin announces on national television that “our nation has been attacked by NATO and 11 of our brave service members have been killed. We want peace, but we are not afraid to respond to such blatant aggression.” Many Western governments, including the U.S. government, promptly accuse Russia of staging the event.

On July 24, Russia launches a salvo of six conventionally armed cruise missiles at Lielvārde Air Base. NATO missile defense systems intercept four missiles. The other two missiles strike the base, causing significant damage at the construction site of the Aegis Ashore installation, killing seven Latvian and four American military personnel, and injuring an additional 9.

Russia Scenario 3: Succession

On May 3, 2029, *Ria Novosti* publishes a breaking news report:

The Kremlin has just announced that President Putin died suddenly today at the age of 77. Mr. Putin will forever be remembered as an ardent champion of the Russian people. In this time of national mourning, Prime Minister Mishustin will assume the role of acting president. As proscribed by the constitution, a presidential election will be held within three months.

The following day, *Krasnaya Zvezda* publishes a statement from Army General Valery Gerasimov, Chief of the General Staff. He states that the Russian Armed Forces are “best positioned to steer our country through this trying time,” and adds that the military must “reinforce our might to ensure irresponsible Western leaders do not take advantage of us.”

The next day, a swarm of drones from Russia approaches Finland. Finnish air defense forces assess them to be unarmed reconnaissance drones, and Finnish fighter jets scramble to intercept them. The aircraft successfully down 27 drones shortly after they breach Finnish airspace. The debris hits a busy park in a Finnish border town, killing one civilian and injuring an additional three.

Undetected, three drones evade the jets and proceed west. Finnish air traffic control picks them up near Helsinki and suspends all flights in and out of Helsinki Airport. Because of the risk to civilians, Finnish fighter jets are ordered to wait until the drones have crossed back into Russian airspace before engaging them again. Once the drones do so, one of the jets destroys them. In the process, an errant missile hits a Russian border guard station, killing three. (The next day, a Russian Ministry of Defence spokesperson will claim that the Finnish jet crossed into its airspace during this engagement—a claim that Finland neither confirms nor denies.)

Just hours after the last Russian drone is destroyed, a Norwegian Coast Guard patrol boat in the Barents Sea is struck by a torpedo and sinks, resulting in the deaths of 21 of the 48 sailors on board. The attack is not immediately attributable to Russia, but another vessel claims that, as it approached the site of the attack, it detected a submarine headed east.

NATO's Secretary General defends the Finnish pilot, laments the deaths of Finnish citizens and Norwegian sailors, and calls Russia's actions "highly provocative" and a "clear message that the Russian Armed Forces intend to directly threaten the peace and security of the Alliance." The Secretary General vows that "NATO allies will respond appropriately."

A few hours later, Acting-President Mishustin delivers a televised address on Russian state media, declaring:

Gerasimov's treacherous rebellion is doomed to fail. He betrayed his country and his people, sacrificing Russian lives and undermining Russia's security. I will unify the Russian people and, in the face of Western aggression, guarantee the security of our Motherland.

Russia Scenario 4: Ukraine War

On March 19, 2029, a skirmish between Ukrainian and Russian forces at the line of contact near Donetsk results in 13 Ukrainian and six Russian military deaths. Later that evening, the Ukrainian president delivers a special video address:

Today, we mourn the loss of our heroes at the frontline who, for the past three years, have remained vigilant and constant in protecting our independence and freedom.

But let me be clear: It was Russia who fired first. Our brave Ukrainian forces acted in self-defense. I implore all parties to continue to observe the 2026 ceasefire as we work toward lasting peace.

The following morning, Putin claims in a national television address that the Ukrainian president is attempting "to deceive us" and "recover from his failed violation of the ceasefire." He states that "Russia has no choice but to pick up where we left off—to defend ourselves and demilitarize and de-nazify Ukraine once and for all."

The conflict resumes in earnest within weeks. Western leaders condemn Russia's return to its "brutal war of aggression against Ukraine." They commit to increasing their military support to Kyiv. The Dutch and Danish prime ministers announce plans to transfer a dozen additional F-16s to Ukraine. The Kremlin warns that the West is "playing with fire" and that such "escalation can lead to serious consequences."

As Western military aid flows into Ukraine over the next few months, Ukrainian forces gain momentum. They push Russian forces back to the line of contact and make significant gains into Donetsk and initial gains into Luhansk. Ukraine's existing F-16 fleet plays a critical role in its war effort. Russia's deputy foreign minister, Sergei Ryabkov, describes the plans to transfer additional aircraft as a "colossal risk that underestimates the seriousness of the rebuff they may receive."

In October 2029, the additional Dutch and Danish F-16s arrive at the Military Aviation Depot No.2 in Bydgoszcz, Poland for maintenance prior to their transfer to Ukraine. On October 10, Russia fires ten conventionally armed ballistic missiles at the aviation depot. While NATO missile defenses intercept six missiles, four strike the depot. The strike destroys seven of the F-16s, kills 25 Polish military personnel, and injures an additional 13.

About the Authors

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Notes

- 1 This scenario is adapted from Jeffrey Lewis, *The 2020 Commission Report on the North Korean Nuclear Attacks Against the United States* (Houghton Mifflin Harcourt: Boston, 2018).

