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North Korea's Nuclear Weapons and Missile Programs

Overview

North Korea continues to advance its nuclear weapons and missile programs despite UN Security Council sanctions and high-level diplomatic efforts. The country's ballistic missile testing, military parades, and policy statements suggest that North Korea is continuing to build a nuclear warfighting capability designed to evade regional ballistic missile defenses. Such an approach likely reinforces a deterrence and coercive diplomacy strategy—lending more credibility as it demonstrates capability—but it also raises questions about crisis stability and escalation control. Congress may wish to examine U.S. policy toward North Korea.

U.S. policy as well as UN resolutions call on North Korea to abandon its nuclear weapons and missile programs. In recent years, North Korean leader Kim Jong-un has repeatedly rejected “denuclearization” talks. According to the U.S. intelligence community's 2025 annual threat assessment (ATA), Kim Jong-un views nuclear weapons as a “guarantor of regime security.”

In response, the United States and South Korea have conducted joint military drills and exercises, and established bilateral consultative mechanisms focused on strengthening extended deterrence such as the Nuclear Consultative Group to “discuss nuclear and strategic planning, and manage the threat the DPRK poses to the global nonproliferation regime.” The Biden Administration's 2022 Nuclear Posture Review said, “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.” It maintains that U.S. nuclear weapons will continue to play a role in deterring “rapid strategic attacks” by North Korea in East Asia.

Nuclear Doctrine and Plans

Kim Jong Un said at the 2016 Workers' Party Congress that “nuclear weapons of the DPRK can be used only by a final order of the Supreme Commander of the Korean People's Army [Kim Jong Un] to repel invasion or attack from a hostile nuclear weapons state and make retaliatory strikes.”

At the 8th North Korean Workers Party Congress in January 2021, Kim announced a Five-Year Defense Plan that said the country would field a new nuclear-capable submarine, develop its tactical nuclear weapons, deploy multiple warheads on a single missile, and improve its ICBMs' accuracy, among other goals. The plan includes development of an ICBM with a range of 15,000 km for “preemptive and retaliatory nuclear strike,” and ground-based and sea-based solid-fueled ICBMs. Some analysts predict an increase in missile testing this year in order to meet these goals by 2026.

The Korea People's Assembly adopted a new law in September 2022 that reportedly expands the conditions

under which North Korea would use nuclear weapons to include possible first use in situations that threaten the regime's survival. In September 2023, Kim promised to boost nuclear weapons production “exponentially” and diversify nuclear strike options.

Nuclear Testing

North Korea has tested a nuclear explosive device six times since 2006. Each test produced underground blasts progressively higher in magnitude and estimated yield. North Korea conducted its most recent test on September 3, 2017. A North Korean press release stated it had tested a hydrogen bomb (or two-stage thermonuclear warhead) that it was perfecting for delivery on an intercontinental ballistic missile. In April 2018, North Korea announced that it had achieved its goals, would no longer conduct nuclear tests, and would close down its Punggye-ri nuclear test site. It dynamited the entrances to two test tunnels in May 2018. International Atomic Energy Agency (IAEA) reports say North Korea began restoring test tunnels in March 2022. A recent U.S. Department of Defense report said that “North Korea has restored its nuclear test site and is now postured to conduct a seventh nuclear test at a time of its choosing.”

Nuclear Material Production

North Korea reportedly continues to produce fissile material (plutonium and highly enriched uranium) for weapons. Fissile material production in large part determines the number and type of nuclear warheads a country is able to build.

North Korea restarted its plutonium production facilities after it withdrew from a nuclear agreement in 2009, and is also operating centrifuge uranium enrichment plants at the Yongbyon nuclear complex and possibly at Kangson. In March 2025, the IAEA reported construction and operations at the Yongbyon uranium centrifuge enrichment plant, “undeclared enrichment facilities at both Kangson and Yongbyon,” and activities at the Radiochemical Laboratory plant and Experimental Light Water 5MW(e) Reactor site. Spent fuel from that reactor is reprocessed at the Radiochemical Laboratory to extract plutonium for weapons. The IAEA also reported ongoing uranium mining, milling, and concentration activities at Pyongsan.

Nuclear Warheads

North Korean government statements show that the country is aiming to increase its stockpile of nuclear warheads and improve their design for a variety of delivery systems. Some nongovernmental experts estimate that North Korea has produced enough fissile material for up to 90 warheads but may have assembled approximately 50. Another goal of a nuclear weapon program is to lower the size and weight of a nuclear warhead for deployment on missiles, called “miniaturization.” A July 2017 DIA assessment asserted

North Korea had achieved the level of miniaturization required to fit a nuclear device on weapons ranging from short-range ballistic missiles (SRBM) to intercontinental ballistic missiles (ICBM). Kim Jong-un in January 2021 said that the country was able to “miniaturize, lighten and standardize nuclear weapons and to make them tactical ones.”

In his January 1, 2023, speech, Kim said the country would expand its nuclear arsenal and “mass produce” tactical nuclear weapons. The 2024 ATA said that Kim ordered a “an increase in the nuclear weapons stockpile and the expansion of weapon-grade nuclear material production” in March 2023. The ATA said that “North Korea also unveiled a purported tactical nuclear warhead and claimed it could be mounted on at least eight delivery systems, including an unmanned underwater vehicle and cruise missiles.”

Missile Testing

North Korea has accelerated the pace of its ballistic missile test launches since 2022. UN Security Council (UNSC) resolutions prohibit North Korea’s development of the means of delivering conventional and nuclear payloads, in addition to the nuclear weapons themselves. UNSC resolutions specifically ban “all ballistic missile tests” by North Korea. A ballistic missile is a projectile powered by a rocket engine until it reaches the apogee of its trajectory, at which point it falls back to earth using earth’s gravity. Ballistic missiles can deliver nuclear and large conventional payloads at high speed and over great distances. They are categorized as short-range, medium-range, or long-range (intercontinental) based on the distance from the launch site to the target.

North Korea will likely continue testing and developing a variety of missiles to increase the reliability, effectiveness, and survivability of its ballistic missile force. According to the 2025 ATA, North Korea may be receiving technical expertise from Moscow in exchange for weapons sales, which “could accelerate North Korea’s testing and deployment efforts.” In his May 2025 congressional testimony, U.S. Forces Korea Commander said, “Russia’s expanded cooperation will enable advancements of DPRK’s weapons of mass destruction (WMD) program across the next three to five years.”

Intercontinental Ballistic Missiles

North Korea has been improving its ability to strike the continental United States with an ICBM through a series of tests, first in 2017, then in 2022, four times in 2023, and most recently in October 2024. The DPRK first successfully test-launched two liquid-propellant, road-mobile ICBMs in 2017: the Hwasong-14 (U.S. designated KN-20) and Hwasong-15 (U.S. designated KN-22). North Korea displayed a larger Hwasong-17 ICBM at an October 2020 military parade and began test launching it in 2022. In December 2022, North Korea static (or ground) tested an ICBM solid-propellant rocket motor, potentially for a land-based or submarine-based ICBM. On April 13, July 12, and December 17, 2023, North Korea flight tested its solid-fuel ICBM, the Hwasong-18. The October 31, 2024, test was assessed as a Hwasong-19 solid-propellant ICBM with multiple independently targetable reentry vehicle (MIRV) capability. These systems may require further testing to improve reliability.

Short- and Medium-Range Missiles

North Korean SRBMs and medium-range ballistic missiles (MRBM), precision-guided multiple launch rocket systems (MLRS), and artillery pose the most acute near-term threats to other nations. Advances in these systems demonstrate a shift toward solid propellants and satellite guidance systems; advances that could carry over to larger, more potent systems like the Hwasong series ICBMs. These developments provide the projectiles greater mobility and survivability prior to launch and greater precision on target. Selected systems are described here.

In the MRBM category, the Pukguksong-2 (KN-15) is a solid-propellant missile capable of carrying a nuclear or conventional payload—known as dual capable. The North Koreans fire the missile from a tracked vehicle, which gives the system mobility and makes prelaunch targeting of the system difficult. The KN-23 SRBM can strike any location on the Korean peninsula with either a conventional or nuclear payload and uses a solid-propellant.

North Korea has committed to expanding the performance of its precision guided *tactical* weapons, which can pose significant threats to South Korea and U.S. assets on the peninsula. The KN-24 is a tactical system with a mobile launcher, solid propellant, and relatively large payload. The KN-25 blurs the line between rocket and missile; however, it achieves the same effect as a traditional SRBM by delivering destructive effects on a precision target at significant range. The North Koreans may seek to fire these rockets in salvos to overwhelm missile defense systems.

The recent advances in North Korea’s ballistic missile program appear to be directed at developing capabilities to defeat or degrade the effectiveness of missile defenses in the region: Patriot, Aegis Ballistic Missile Defense (BMD), and Terminal High Altitude Area Defense (THAAD). The United States and South Korea are developing Integrated Air and Missile Defense (IAMD).

North Korea’s progress with submarine-launched ballistic missiles (SLBM) suggests an effort to counter land-based THAAD missile defenses by launching attacks from positions at sea outside the THAAD’s radar field of view, although local Aegis BMD systems could likely still track these projectiles. The Pukguksong-3 SLBM was successfully tested beginning in late 2019. According to a 2021 DIA report, North Korea has said this SLBM, to be launched from a ballistic missile submarine, will be cold-launched, solid-fueled and “will carry a nuclear warhead.” North Korea has since then revealed development of longer-range SLBMs, the Pukguksong-4, -5, and -6. Unveiled in 2022, the Pukguksong-6 is a longer-range SLBN that some analysts assess is solid-fueled, MIRVed, and under development with a new ballistic missile submarine (SSBN).

North Korean missile tests have demonstrated growing success and, coupled with increased operational training exercises, suggest a pattern designed to strengthen the credibility of North Korea’s regional nuclear deterrent strategy.

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