Unprecedented Nuclear Strikes of the Invincible Army: A Realistic Assessment of North Korea's Operational Nuclear Capability

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Abstract

North Korea is capable of operationally using nuclear weapons, but its options for a nuclear strike are severely constrained. The only credible use of the DPRK's nuclear arsenal would be to detonate a bomb within North Korea itself to slow down or to stop an invasion in the context of an all-out war. Despite nuclear threats from the DPRK and a countervailing nuclear threat from the U.S. in the form of extended nuclear deterrence, conventional forces are the key units on the Korean Peninsula and appear likely to remain so for the foreseeable future.

Keywords: North Korea, deterrence, nuclear weapons, South Korea, United States

Introduction

Although North Korea's KCNA news often threatens to launch "unprecedented nuclear strikes," in reality, the North Korean nuclear program has limited offensive capability.[1] Just how limited is a matter of dispute between well-informed observers

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and analysts. South Korea's defense minister, Kim Kwan-jin, for example noted recently that it was "possible" that North Korea had miniaturized a nuclear warhead as there had been, in his opinion, "enough time for them to have succeeded in miniaturization."[2] He based his statement on how long it took other states to miniaturize a nuclear warhead, not on an assessment of North Korea's actual nuclear capability. Additionally, even if North Korea has miniaturized a nuclear warhead, the DPRK lacks an effective delivery mechanism and therefore has a limited ability to offensively use nuclear weapons.

In our own assessment of North Korea's nuclear capability we found that the North is capable of operationally using nuclear weapons, but its options for a nuclear strike are severely constrained. We concluded that the only credible use of the DPRK's nuclear arsenal would be to detonate a bomb within North Korea itself to slow down or to stop an invasion in the context of an all-out war. Aside from this nuclear-use scenario, conventional weapons predominate in realistic evaluations of deterrence and war-fighting in the Korean Peninsula.

North Korean Declaratory Nuclear Posture

The stated purpose of the North Korean nuclear program has changed over the last decade.[3] North Korean statements that once described the nuclear program as a tool to secure the state against outside aggression now describe it as a stabilizing force in the region.

During and after the collapse of the Agreed Framework in 2002, KCNA statements described the nuclear program as a substitute for a security guarantee from the United States. If North Korea's security concerns were addressed, they argued, there would be no need for the nuclear program. An October 2002 statement is particularly telling: "The settlement of all problems with the DPRK, a small country, should be based on removing any threat to its sovereignty and right to existence. There may be negotiations or the use of deterrent force to be consistent with this basis, but the DPRK wants the former, as far as possible."[4]

By 2005 this language had changed. North Korea declared itself to be in possession of nuclear weapons and began to depict its nuclear program as a regional stabilizer which prevented war by countering the U.S. nuclear threat to the region.[5] KCNA statements even suggested that North Korea's nuclear program benefited South Korea by raising a nuclear umbrella over the entire Korean Peninsula![6]

By 2010 North Korea had not only openly threatened to use its nuclear weapons for the first time, saying that "those who seek to bring down the system in the DPRK, whether they play a main role or a passive role, will fall victim to the unprecedented nuclear strikes of the invincible army,"[7] but also made the first real declaratory statement of its nuclear posture in response to the U.S. nuclear posture review:

> The mission of the nuclear forces of the DPRK is to deter and repel aggression and attack against the country and the nation until the denuclearization of the Korean Peninsula and the world is realized. The DPRK is invariably maintaining the pol-

> icy not to use nuclear weapons against non-nuclear states or threaten them with nuclear weapons as long as they do not join the act of invading or attacking us in conspiracy with nuclear weapons states.[8]

Although these statements should be taken very seriously, particularly by South Korea and Japan who are implicated in both via their alliance with the United States, we should not assume that North Korea has the operational military capability to back up this declaratory posture and the stated nuclear threats.

North Korean Technical Nuclear Capacity

When it comes to nuclear threats against the United States, South Korea, and Japan, North Korea vastly overstates its ability to strike. North Korea is estimated to have enough fissile material to produce between five and ten nuclear weapons, depending on the size of the bombs, the state's efficiency in creating and reprocessing plutonium, and the amount used in its two tests to date.[9] This means that the use of a single nuclear weapon would exhaust 10–20 percent of the DPRK's nuclear arsenal. At this time, the DPRK has not resumed operations of the Yongbyon nuclear facility and is not producing additional fissile material. North Korea's uranium enrichment program, revealed late last year, could be used to enrich uranium for a bomb, but is currently producing low enriched uranium to fuel its under-construction pilot light water reactor — assuming that its declared intention to compete and operate such a reactor is implemented as announced.[10] The limited supply of fissile material means that North must deploy its nuclear weapons in a highly strategic manner and only for the most valuable, most certain returns.

Delivery by Air

North Korea lacks a credible delivery option for its nuclear weapons. North Korean attempts to launch satellites on booster rockets in 1998, 2006, and 2009 used much the same technology needed to launch long-range missiles. All three tests failed.[11] It takes the United States scores of tests to ensure that a new missile design works and may be deployed with sufficient confidence that it is operationally effective.[12] U.S. missile tests include research and development tests (typically, 20–30 for a new model), initial operational tests (generally, 30–40 tests), demonstration and shakedown tests (when these are done varies between air force and navy missiles), follow-on operational tests (2–6 per year per missile type), aging and surveillance tests (not in flight), and supplementary component tests (to test a part or a subsystem). This level of testing represents the gold standard for confidence that missiles work as "advertised" — but they still fail.

North Korea needs many more tests of all the systems, independently and together, at a much higher rate than one every few years, to be confident that its missiles would not fail on the ground or in the boost phase, let alone even approach a target with sufficient accuracy to destroy it.[13] This includes the reliability of the war-

head itself, the missile, and the re-entry vehicle, all of which must work, and then work together, for a missile to be deployable with confidence. In short, North Korea's long-range missile program is not a credible threat to the United States and is unlikely to be one for some time.

Short- and medium-range missiles have been tested but are not accurate enough to effectively target enemy forces in a combat scenario. The DPRK's medium-range No-dong missiles cannot be counted on to hit a target.[14] Similarly, the DPRK's short-range SCUD missiles are highly inaccurate, particularly the mobile SCUD C models with an unreliable guidance system.[15] The SCUD B missiles have only a 50 percent chance of landing within 1 kilometer of their intended target, making them unsuitable for attacking military units.[16] The unreliability of North Korea's missile systems, the limited amount of fissile material, the lack of testing of the components of an integrated nuclear warhead and missile system, and the severity of any response to nuclear next-use by North Korea means that a DPRK leader is highly unlikely to rely on missiles to deliver a nuclear attack.

North Korea has only a few bombers capable of delivering a large, crude nuclear weapon to a target. The only nuclear-capable bombers in North Korea's arsenal are the Ilyushin Il-28 "Beagle" and the Chinese H-5 variants.[17] The Beagle was retired by the Soviets in the 1980s, but still is in active use in North Korea. While the Beagle is technically capable of delivering a nuclear weapon, it is hard to imagine a North Korean bomber not being shot down before it reached its intended target. In a war, a North Korea bomber flying toward the DMZ would be targeted and shot down rapidly by ROK anti-aircraft weapons. Even a bolt-out-of-the-blue surprise attack is not credible scenario due to the Il-28's slow speed and low maximum altitude.[18] There is no reason for North Korea to risk part of its limited stock of fissile material by putting it in a plane with almost no chance of actually delivering the bomb to the target.

Delivery by Sea

Delivery of a nuclear weapon by sea is a far more credible possibility than any of North Korea's air-based delivery options, but still not likely. North Korea has a variety of small boats and midget submarines capable of carrying a nuclear device to a port city in South Korea or Japan.[19] The tactical value of a bomb deployed by boat would be a surprise attack against a city or a military installation. The primary risks of this strategy are the possible detection due to radiation signature and seizure of the weapon. The longer the boat is deployed, particularly if it is not adequately shielded, the greater this risk would be, especially in war or near-wartime. That said, the government in South Korea is well acquainted with North Korean attempts to infiltrate its coastal waters via mini-subs. Its ability to detect these intrusions has increased significantly, particularly since the *Cheonan* incident last year.[20]

The DPRK government would be very hesitant to adopt this strategy for fear of losing control of fissile material. If the ship were captured or sunk or the crew defected, the North would lose a significant part of its nuclear arsenal. Furthermore, given the risk of disruption or interception of communications, Kim Jong-il would

have to delegate authority to the crew of the ship to use the weapon, something that the North would be unlikely to do given the consequences to the regime if the vessel was intercepted.

Small Chance of Success, High Risk of Retaliation

Given that any attempted attack, successful or not, would result in immediate and overwhelming retaliation against North Korea, its leaders are highly unlikely to take this risk using a delivery system with little to no chance of hitting its target. North Korea has limited fissile material, a weak and untested missile program, slow and easily detectable bombers, and a limited but high risk ability to deliver a weapon via boat. North Korea risking a 100 percent chance of overwhelming retaliation for a very small chance of a limited success (after all, even a successful North Korean nuclear surprise attack would not destroy the entire U.S. or ROK military), is not credible. We conclude that North Korea is highly unlikely to use its nuclear arsenal to attack a foreign target.

Deployment in the Field

With no feasible delivery mechanisms for external attacks, North Korea's nuclear arsenal is primarily useful, if at all, for the direct territorial defense of the state. The weapons could be deployed within the DPRK (under an invasion corridor or near an air or sea landing site) in order to slow or block an invasion. These weapons would have to be deployed well in advance of any such attack, probably by trucks which could be camouflaged easily, and buried in the ground or stored in tunnels below the invasion corridors. This strategy would involve the risk of losing direct control of the weapons should war break out. It would also entail maintenance of those weapons after they were deployed to ensure that they will fire when needed, raising the risk of early identification. One of the problems with this strategy is that U.S. and ROK war planners may have concluded that these will be the most likely places for deployment of a nuclear bomb and compensated for the risk of nuclear attack by plotting alternate invasion routes. Additionally, given that these weapons will be buried in or stored under the ground, it may take more than one to adequately defend a mountainous invasion corridor. These weapons would be very difficult to redeploy in wartime on surface transport given the risk of air attack. With a limited number of nuclear weapons, the DPRK may not have an arsenal adequate to predeploy bombs at all invasion corridors and air and sea landing zones. Such an attack is more attractive than an attack delivered on an external target. In particular, attempted but failed use north of the DMZ would not instantly invoke retaliation, especially if fired as a warning shot in a prewar period of crisis.

One "external" mode of ground delivery would be to attempt to move a nuclear weapon via an undiscovered tunnel reaching into South Korea under the DMZ into

a shallow, subterranean firing point. As such tunnels were dug to allow troops to attack from behind U.S.-ROK forces in South Korea, such a nuclear firing point is conceivable in a physical sense, but the strategic value is very unclear.

Scenarios in Which a North Korean Nuclear Attack Is Plausible

North Korea has the capacity to deploy a defensive nuclear force. If the only realistic deployment of a North Korean nuclear weapon would be in or under an invasion corridor, the most realistic scenario for nuclear next-use on the Korean Peninsula would be in response to an attack or the imminent threat of an attack. This nuclear next-use could have one of two purposes. First, nuclear weapons could be used *before* an attack by U.S. and ROK forces to send a warning of the severity of the situation to the U.S. and South Korea in order to stall or stop a war from starting or escalating further. Second, North Korea could use nuclear weapons to directly assault USFK during an actual invasion of the DPRK.

In the first scenario, North Korea would effectively blow up a small piece of itself to indicate that any attack will involve a nuclear response, if not exchange, to delay the invasion or provoke a diplomatic response to reduce tensions. Fallout created by the nuclear blast would (depending on season) likely blow onto South Korea. Responding to the threat of radiation to the military and civilians would evoke a firm and likely massive response by the U.S. and ROK, even if only to end fighting and stabilize the situation. Furthermore, with better access to iodine tablets, superior equipment for combat in dust and debris, and training under conditions of radiological and chemical threat, U.S. and ROK forces would have a significant tactical advantage over the North Korean forces after a nuclear blast.

The second scenario would involve a direct North Korean assault against the combined forces of the ROK and U.S. militaries in an attempted breakthrough of defensive forces. In what could become a fluid battlefield no longer defined by the Military Demarcation Line established by the Armistice, the North could attempt to channel countervailing U.S. and ROK forces into attack corridors and narrow defiles where the North might have a tactical advantage. However, sealing these corridors would require the use of more than one nuclear weapon and the DPRK would quickly exhaust its arsenal.

Another scenario would involve waiting until the U.S. and ROK forces entered an invasion corridor and then detonating a bomb to destroy as many of these units as possible. This strategy would have a higher risk of U.S. or ROK forces seizing the nuclear weapons if the DPRK waited too long to detonate them, or lost communications and control over them.

Even if the detonation were successful in a tactical sense, such an attack would guarantee the demise of the North Korean state, not deter or defeat the invaders. North Korean forces, even augmented by nuclear capabilities, are outmatched by U.S. and ROK forces.[21] North Korean use of nuclear weapons would ensure that the

U.S. and ROK dismantled the DPRK with conventional forces to demonstrate the consequences of nuclear next-use.

Nuclear Threat on the Korean Peninsula

It is worth noting that the U.S. is also constrained in its use of nuclear weapons on the Korean Peninsula. A U.S. nuclear missile attack from U.S. Air Force bases at Malmstrom, Warren, or Minot would have to overfly the Russian Far East and would risk triggering the Russian early warning system and provoking a counter-attack from Russia. Clarifying the launch of a nuclear attack on North Korea with the Russian leadership would be tantamount to the United States asking Russian permission to go to war, something the United States is not likely to do and the Russian government would be unlikely to agree to should the United States be foolish enough to ask.

Given how slow they are, strategic bombers flying from the continental United States would be unlikely to be used to deliver nuclear weapons on North Korea in "real time" during a war. We conclude that a U.S. nuclear attack on North Korea likely would have to come from a U.S. submarine in the Pacific to avoid overlying Russia. Such an attack, particularly if done from the western Pacific using a depressed trajectory from a submarine to shorten delivery time to target in North Korea, would be of great concern to China, which would also fall in the line of fire, and could rapidly invoke Chinese intervention in the peninsula. China's long-range phased radar arrays reportedly point northwards, anticipating attack either from the United States over the North Pole or from Russia. This means that the Chinese, like the Russians, would be able to identify an attack from a U.S.-based ICBM only at the last minute. They too would have to decide in a few minutes whether to ride out a possible nuclear strike — or respond immediately by launching a counterstrike against the United States (for example, on Guam) or its allies that host U.S. forces (such as Japan and Korea). Again, the United States would have to decide in advance to advise the Chinese (given the risk that a civilian or news reporter files an instantaneous report of missile firings from the continental United States) or risk their response.

Conclusion

Overall, therefore, all nuclear-armed parties to the Korean conflict are constrained in their options to use nuclear weapons. These are the ultimate "threat devices," but in their very massiveness they reduce their relevance to real-world deterrence. Despite nuclear threats from the DPRK and a countervailing nuclear threat from the U.S. in the form of extended nuclear deterrence, conventional forces are the key units on the Korean Peninsula and appear likely to remain so for the foreseeable future.

If conventional forces are the basis of military deterrence in Korea, and if nuclear

forces on both sides of the DMZ are primarily psychological weapons, then U.S. and ROK policy would be best served by reducing the nuclear threat in the region. Calls in the ROK for U.S. tactical nuclear weapons to be redeployed or for an independent nuclear arsenal seem especially unhelpful. De-emphasizing nuclear deterrence — something the North Koreans have requested in negotiations about their nuclear program — might open the door for engagement with North Korea to roll back its nuclear program.[22]

At this stage, North Korea's outrageous nuclear threats against nuclear targets outside its borders are not backed up by actual capabilities. Countering the North's rhetorical threat with more extended nuclear deterrence raises tensions instead of addressing the underlying problem of nuclear insecurity. Ultimately, the only way forward is to re-engage the North, and identify pathways that create confidence and reduce the mutual perception of the threat of massive destruction by conventional or nuclear weapons.

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