

Open Nuclear Network's

BRIEF ON 27 JULY 2023

PARADE OF THE DPRK

**STRATEGIC DELIVERY VEHICLE
DEVELOPMENT SERIES**

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8 August 2023

KEY TAKEAWAYS

- To celebrate the 70th "Victory Day" (Korean War armistice) anniversary, the Democratic People's Republic of Korea (DPRK) staged a military parade on 27 July 2023, which was centred around the DPRK's nuclear forces.
- Most of the nuclear weapon systems showcased have either finished testing or are in an advanced phase of testing, demonstrating the maturity of existing nuclear weapon systems, and the DPRK's intentions to (1) compensate for its inferior conventional military capabilities with nuclear strike systems and (2) showcase strategic deterrence against the US.
- Two types of large drones displayed during the 27 July parade could potentially observe the entire area of the Republic of Korea (ROK) while flying within the DPRK's own airspace. Once deployed, they could potentially support the operation of the DPRK's nuclear force in the region.
- With high-level attendance from China and Russia, the 27 July parade symbolized Pyongyang's increasing alignment with Beijing and Moscow, and also served to create an impression that the two countries tolerate or even tacitly endorse the DPRK's nuclear weapon programmes.

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I. PARADE OVERVIEW

To celebrate the 70th "Victory Day" (Korean War armistice) anniversary, the Democratic People's Republic of Korea (DPRK) staged a military parade on 27 July 2023. A total of 11 modern weapon formations participated in the parade, which highlighted the DPRK's nuclear weapons; among the 11 types of weapons, eight types are nuclear capable or are designed exclusively for nuclear weapon delivery. Two out of the three non-nuclear capable weapons could potentially provide crucial protection or support to the operation of nuclear forces (Table 1).

With the exception of Hwasong-12B, all nuclear delivery systems showcased during the parade have either finished testing or are

in an advanced phase of testing. While the DPRK often showcases new, previously unseen equipment during parades, the absence of such items is not necessarily a sign of lack of progress, but may instead demonstrate the maturity of existing nuclear capabilities.

The section below includes further information on the paraded nuclear-capable weapon systems that have either been deployed or in an advanced testing phase. The multi-purpose combat drone is also included in this section due to its potential to support the operation of the strategic rocket force.

Formation, in order of appearance	Quantity	Nuclear capable	Notes
New-type main battle tanks	6	No	First appeared as a prototype tank during the 13 October 2020 parade. ⁱ Its deployment status remains unknown.
600 mm multiple rocket launcher (KN-25) ⁱⁱ	6 (with 4 rockets per launcher)	Yes	De-facto ballistic missile. According to the official report on the parade, the guided and nuclear-capable 600 mm multiple rocket launcher belongs to the artillery troops, not the ballistic missile units. ⁱⁱⁱ
Land-attack cruise missiles ^{iv}	6 (with 5 missiles per launcher)	Yes	Hwasal-1 or Hwasal-2 type. The two types are similar in size, appearance and performance, and are carried by the same type of truck.
Hwasong-11A (KN-23)	6 (with 2 missiles per launcher)	Yes	Short-range aero-ballistic missile. The KN-23 has been launched from tracked chassis, truck chassis, railway cars, silos, submarines and underwater launch tubes placed in reservoirs.
Hwasong-11B (KN-24)	6 (with 2 missiles per launcher)	Yes	Short-range aero-ballistic missile. The truck-carried version of KN-24 was revealed for the first time at this parade; it was only seen with tracked chassis before.

Formation, in order of appearance	Quantity	Nuclear capable	Notes
Underwater nuclear attack drone	4	Yes	Possibly Haeil-1 or Haeli-2 type underwater drones. The 27 July parade clearly displayed the DPRK's underwater drones for the first time.
New type surface-to-air missiles	4 (with 4 missiles per launcher)	No	Surface-to-air missiles provide crucial support for key locations and strategic assets. The first known test of this type of surface-to-air missile took place on 30 September 2021. ^v Its development and deployment status remain unknown.
Multi-purpose combat drone	4	No	The multi-purpose combat drone displayed during the parade could potentially observe the entire area of the Republic of Korea and support the operation of the DPRK's strategic rocket force.
Hwasong-12Na/ Hwasong-12B ^{vi}	4	Yes	A standard booster of a Hwasong-12 intermediate-range ballistic missile armed with a wedge-shaped hypersonic glide vehicle (HGV), first seen at "Self-Defence-2021" exhibition. ^{vii} There is no known flight test of the Hwasong-12B. ^{viii}
Hwasong-18 ^x	4	Yes	Intercontinental ballistic missile (ICBM)
Hwasong-17 ^x	4	Yes	Intercontinental ballistic missile (ICBM)

Table 1. Formations of modern military equipment at the 27 July 2023 parade. Number of vehicles excludes back-up systems, which are visibly parked near the square.

A. Regional Nuclear Strike Force

1. Aero-Ballistic Missiles

The tactical missiles (KN-23, KN-24, KN-25), land-attack cruise missiles and underwater attack drones showcased during the parade belong to a new generation of nuclear weapon delivery systems with region-wide range, mainly targeting the Republic of Korea.¹ According to display boards shown to Kim Jong Un in March 2023, all these weapons could accommodate a nuclear device with a diameter of ~460 mm, namely the Hwasan-31.² In comparison, nuclear devices showcased by the DPRK in previous Kim Jong Un inspections have a diameter of ~600 mm.³ The reduced size of nuclear devices potentially enables smaller delivery

systems to become nuclear capable, making the DPRK’s nuclear force more survivable and diversified.

Since May 2019, five types of aero-ballistic missiles that utilize similar aerodynamic layout and technologies to cover different ranges have been flight tested by the DPRK (Table 2).⁴ The KN-23 and KN-24 showcased during the 27 July parade are the first two among these five types of aero-ballistic missiles, which fly within the atmosphere and rely on means of aerodynamic control to conduct manoeuvres that may potentially complicate missile defence efforts. However, the reported downing of similar Russian missiles by Patriot surface-to-air missiles in Ukraine⁵ shows that modern air defence systems could work effectively against aero-ballistic targets despite the relatively irregular flight profile.







				
Hwasong-11Ga/ Hwasong-11A	Hwasong-11Na/ Hwasong-11B	Hwasong-11Da/ Hwasong-11C	Hwasong-11Ra/ Hwasong-11D	Hwasong-11A/ Hwasong-11S
The “basic type”, almost identical to the Russian Iskander missile. US designation: KN-23	Shortened type with shorter range. US designation: KN-24	Enlarged type that is claimed to have a 2.5 tons warhead.	A type with reduced size and lowest range.	Underwater launched Hwasong-11A
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Table 2. Official designations of the DPRK’s short-range aero-ballistic missiles

The truck-carried version of the KN-24 was shown for the first time during the 27 July parade (Figure 1), making the KN-24 the second type after the KN-23 to have more than one launch platform among the five types of ballistic missiles. This demonstrated the DPRK's efforts to diversify and increase

launch platforms with lower maintenance costs (truck chassis are cheaper to service than tracked chassis). Further, their relatively high launch frequency indicates that the KN-23 and KN-24 are the most important types among the five aero-ballistic missiles.



Figure 1. The Hwasong-11B (KN-24) was carried by truck chassis for the first time during the 27 July parade. The same truck model is also used to carry the land-attack cruise missiles.

Image: KCNA/Yonhap⁶

2. Underwater Nuclear Attack Drones

The 27 July parade also for the first time clearly presented an underwater nuclear attack drone that may belong to the Haeil series (Figure 2). The DPRK claimed that the secret project of the Haeil series drones was started in 2012, and since January 2021, over 50 terminal-phase developmental tests have been conducted on the series.⁷

Since March 2023, the DPRK has publicly reported on three tests of Haeil series drones. During these tests, the Haeil series drones reportedly cruised with an average speed of ~14 km/h (~7.6 knots) and for a distance of up to 1000 km (Table 3).⁸

In the official report on the tests of the Haeil drones, the DPRK openly admits the conventional military superiority of its opponents and claimed that the mission of the Haeil drones is to create “radioactive tsunami through underwater explosion to destroy naval striker groups and major operational ports of the enemy.”¹⁰ According to underwater nuclear tests conducted by the USA in the 1940s, underwater nuclear explosions could bring heavy and irreparable damage to navy vessels.¹¹ In this regard, the Haeil series drones are consistent with other DPRK attempts to compensate for its conventional military vis-a-vis the overwhelmingly superior ROK and US conventional military with nuclear weapons.¹²



Figure 2. Underwater nuclear attack drones at the 27 July parade. As the DPRK navy is not known to have super-large torpedo tubes, it is possible that this drone is either directly launched from shore or released by surface vessels.

Image: KCTV/Yonhap⁹

	Reported test date	Reported designation	Reported cruise time	Reported cruise distance
Test 1	21 to 23 March 2023	Haeil	59 hours and 12 minutes	-
Test 2	25 to 27 March 2023	Haeil-1	41 hours and 27 minutes	600 km
Test 3	4 to 7 April 2023	Haeil-2	71 hours and 6 minutes	1000 km

Table 3. Tests of Haeil series drones.

B. The DPRK's "Global Hawk and Reaper"

Two types of large drones, first publicly displayed during the 26 July 2023 "Weaponry Exhibition-2023" in Pyongyang,¹³ also participated in the 27 July parade (Figure 3). One of the drones, referred to by the Korean Central Television (KCTV) as "Morning Star-4 strategic reconnaissance drone",¹⁴ closely resembles the US RQ-4 Global Hawk high-altitude reconnaissance drone. The other one, referred to by the KCTV as "Morning Star-9 multi-purpose combat drone",¹⁵ has a similar appearance to the US MQ-9 Reaper.

Normally such drones can be operated over very long distances via communications satellites; however, DPRK does not possess

such satellites. Nonetheless, the limited depth of the Korean Peninsula may largely eliminate the need for satellite communications. For example, if the flight ceiling of the "Morning Star-4" and "Morning Star-9" is roughly comparable to that of the US RQ-4 and RQ-9 (~19 km and ~15 km, respectively),¹⁷ they would have a radar horizon of roughly 500 to 600 km,¹⁸ enough to cover all of the ROK territory when flying within the DPRK's own airspace. Once deployed, they could potentially improve the DPRK's overall situational awareness and provide information for regional nuclear delivery systems on time-sensitive targets. The drones could also be used to monitor the DPRK's own nuclear-capable ballistic and cruise missile launches to provide additional or better flight data.



Figure 3. The "Morning Star-4" (left) and "Morning Star-9" showcased during the 27 July parade. Images: KCNA/Yonhap¹⁶

C. Intercontinental Ballistic Missiles

The DPRK displayed two types of its newest ICBMs, the Hwasong-17 and Hwasong-18, during the 27 July parade. The Hwasong-17 ICBMs at the 27 July 2023 parade included a skirt section, though in the most recent Hwasong-17 launch in March 2023 the previously-included skirt section had been removed (Figure 4). The 27 July parade also showcased the Hwasong-17 ICBMs in camouflage. However, the checkered pattern (often painted on prototypes to facilitate optical tracking) on older Hwasong-17s is still visible despite the camouflage overpaint (Figure 5).

These two observations about the skirt reappearance and the camouflage overpaint suggest that the Hwasong-17s displayed during the 27 July parade are likely not newly produced, and that the Hwasong-17 may have entered service of the strategic rocket force. However it is possible that the paraded ICBMs are non-operational mockups - without further information, the parade display can not be relied upon solely to judge DPRK ICBM production.¹⁹

The Hwasong-17 is the largest liquid-propellant, land-mobile ICBM of the DPRK. Normally, large liquid-propellant, land-mobile ballistic missiles have to spend hours at their outdoor launchpad to be fueled after the missiles have been erected. However, evidence suggests that the DPRK may have achieved the fuelling of liquid-propellant ICBMs at a horizontal position indoors²¹ as well as some limited movement of fully fuelled liquid-ICBMs outdoors.²² These practices could potentially reduce the pre-launch preparation time in an outdoor environment, reducing its vulnerabilities vis-a-vis pre-emptive strikes.

In comparison, the second type of paraded ICBMs, the solid-propellant Hwasong-18, has completely eliminated the need for the fueling process. Possibly due to its better operational flexibilities, the Hwasong-18 may become an important element of the DPRK's strategic deterrence, as evidenced by the official report on the parade describing the Hwasong-18 as "the most powerful core mainstay of the strategic force."²³

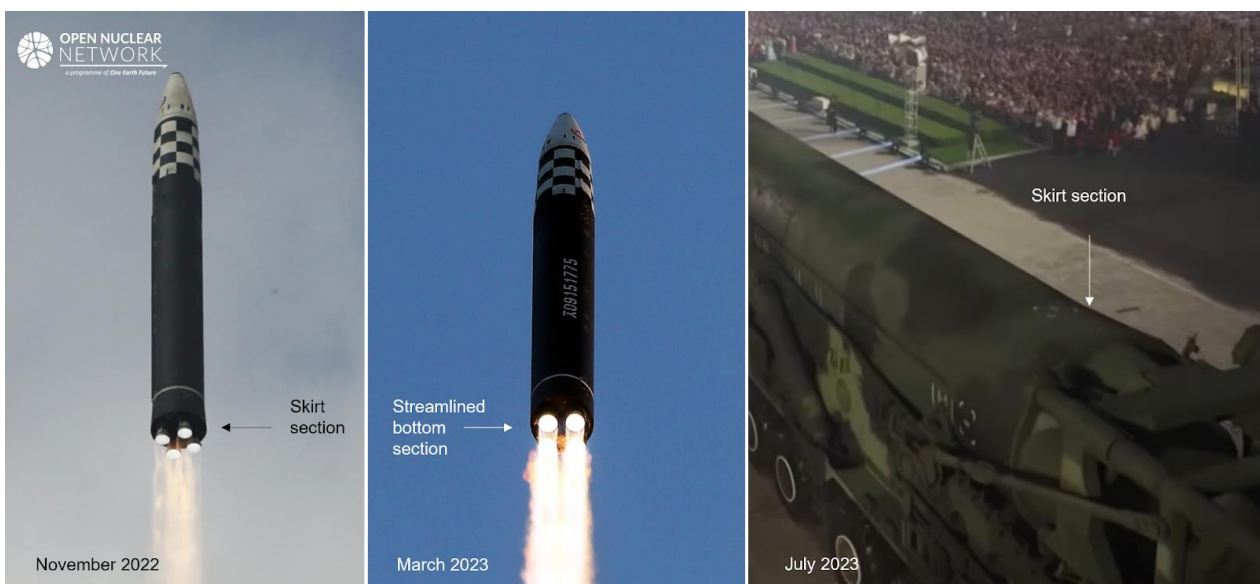


Figure 4. Minor adjustment between Hwasong-17 launched in November 2022 and March 2023 (left and middle). The Hwasong-17's skirt section seen during the 27 July 2023 parade (right). Images: KCNA²⁰



Figure 5. The Hwasong-17's checkered pattern is visible despite the new camouflage overpaint.
Image: KCTV/Yonhap²⁴

II. POLITICAL IMPLICATIONS

The 27 July parade, with a heavy focus on the DPRK's nuclear strike capabilities, is the first military parade to have high level attendance from both China and Russia. While China has been sending high level officials to DPRK's military parades celebrating big anniversaries since 2013 (60th armistice anniversary, 70th party founding anniversary and 70th state founding anniversary), the 27 July parade is the first

DPRK parade with attendance of a top Russian official, in this cases, Russian defence minister Shoigu.

The attendance of these high-level officials at the 27 July parade symbolized Pyongyang's increasing alignment with Beijing and Moscow, and served to create an impression that the two countries tolerate or even tacitly endorse the DPRK's nuclear weapon programme.

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One Earth Future's Open Nuclear Network programme is a non-aligned, non-governmental entity that seeks to increase security for all States by ensuring that nuclear decision makers have access to high quality, shareable open source information which enables them to make the best decisions in the face of escalating conflict.

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