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Overview of the DPRK's 25 April 2022 Military Parade

Prepared by ONN

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This is an overview of the 25 April 2022 military parade of the Democratic People's Republic of Korea (DPRK), which was held in celebration of the 90th founding anniversary of the Korean People's Army (KPA). Key observations of the parade are:

- Most of the weapon systems displayed at the 25 April 2022 parade have been presented before.
- The only new item revealed for the first time was a model of a submarine-launched ballistic missile (SLBM) that is longer than previously showcased SLBM models.
- The displayed weapon systems, such as short-range missiles that could potentially be armed with tactical nuclear warheads, hypersonic missiles, SLBMs and the Hwasong-17 ICBM, are in line with the core defense development tasks for the 2021-2025 period set forth during the 8th Party Congress of the Korean Workers' Party in January 2021.
- DPRK leader Kim Jong Un's speech at the parade was another sign that the DPRK's nuclear strategy is gradually shifting from strategic deterrence to battlefield use.
- Besides nuclear forces, the DPRK is continuing its efforts in modernizing its conventional forces and equipment.

Parade order

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Anti-tank guided missile (ATGM) carriers



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First ATGM vehicle formation at the 25 April 2022 parade. Images: KCTV



View from missile's TV seeker (left), target hit (right). Images: KCTV (2016 documentary)

DESIGNATION: Unknown

RANGE: Possibly around or below 10 km

VEHICLE: 3-axle armored vehicle

- This is presumed to carry an advanced ATGM that is possibly guided through fiber optics or radio data link.
- In such a guidance mode, the missile's TV or infrared imaging seeker sends the image in real time through the fiber optic and/or radio data link to the operator, who in turn steers the missile towards the target until hit.
- The ATGM is thought to have a helicopter-launched variant.

Bulsae-5 ATGM carriers



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Second ATGM formation at the 25 April 2022 parade. Image: KCNA



The tripod version of this ATGM was showcased during the 9 September 2021 paramilitary parade in celebration of the DPRK's 73th founding anniversary. Image: KCTV



The rear end of a Chinese beam-riding ATGM. The sensor receives the laser, which is directed at the target, and keeps the missile inside the narrow beam. Thus, it "rides on" the beam and flies towards target. Image: China Central Television

DESIGNATION: Bulsae-5 (the ATGM)

RANGE: Possibly ~5 km

VEHICLE: 4-axle armored vehicle

- "Bulsae" means "phoenix."
- The Bulsae-5 ATGM bears resemblance to the Russian 9M133 "Kornet" ATGM and thus is possibly a "beam-riding" type (see example in bottom photo).



Unknown weapon carriers



Unknown weapon carriers at the 25 April 2022 parade. Image: KCTV

DESIGNATION: Unknown

VEHICLE: 2-axle truck

- This could also be an ATGM carrier, as the appearance of the launch canisters is similar to that of the ATGMs showcased in the first equipment formation.
- However, this could also be a carrier for drones or other munitions.



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Prototype tanks



Prototype tanks at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

VEHICLE: Tracked chassis

- These tanks have some features of modern tank designs. They first appeared at the 10 October 2020 military parade and were referred to by KCNA as “prototype tanks.”
- They do not appear to have been deployed by the Korean People’s Army ground force.



Self-propelled howitzers



Self-propelled howitzers at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

VEHICLE: Based on DPRK tank chassis

- This is a relatively modern-looking self-propelled howitzer.
- Its caliber is unknown (Russia has been using 152 mm for this class of heavy artillery. NATO, Republic of Korea and China adopted 155 mm).

240 mm multiple rocket launchers (MRLs)



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240 mm MRLs at the 25 April 2022 parade. Image: KCTV



Official name plate on the system reads "240 mm multiple rocket launcher (22)," Image: ONN

DESIGNATION: 240 mm multiple rocket launcher

RANGE: ~70 km

VEHICLE: T813 8x8 truck

FIRST KNOWN TEST: 1980s

- This is the DPRK's first MRL with a range that could strike as far as the greater Seoul area.
- In the October 2020 and April 2022 parades, a total of 22 tubes were mounted on the same type of truck that is used by the KN25 (see slide 11).
- Similar types of launchers with the same number of, or fewer, tubes and different truck chassis have also been deployed.



~300 mm MRLs (KN09)



KN09 at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Referred to as “KN09” by the United States

RANGE: ~200 km

VEHICLE: Possibly modified ZIL-135 truck

FIRST KNOWN TEST: First tested publicly in 2016

- The KN09 guided MRL is thought to have transitioned from testing to deployment in 2018.
- The system was first showcased at a parade on 10 October 2015.
- In the October 2020 and April 2022 parades, it was mounted on a truck possibly modified from the Soviet-era ZIL-135 truck, with the number of launch tubes increased from 8 (2015) to 12.
- The guided rocket system has exhibited a maximum range of about 200 km in test firings.



~600 mm MRLs (KN25)



KN25 at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Referred to as “KN25” by the United States

RANGE: ~400 km

VEHICLE: Elongated T813 8x8 truck or tracked chassis

FIRST KNOWN TEST: 2019

NUCLEAR CAPABLE: Realistic possibility

- The KN25 MRLs have used both wheeled and tracked chassis.
- With a diameter of ~600 mm, the system may be nuclear capable.
- Though it is commonly referred to as a multiple rocket launcher system, its rockets are de facto ballistic missiles.
- The guided rocket system has exhibited a maximum range of ~400 km in test firings.
- The tracked chassis version showcased in the October 2020 parade did not appear at the 25 April 2022 parade.



Long-range land-attack cruise missiles



Long-range land-attack cruise missiles at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

RANGE: >1500 km

VEHICLE: Possibly elongated T813 8x8 truck

FIRST KNOWN TEST: 2021

NUCLEAR CAPABLE: Realistic possibility

- The missile was first flight tested in September 2021.
- A modified version was tested in January 2022.
- It carries 5 missile canisters.



Small submarine-launched ballistic missiles (SLBMs)



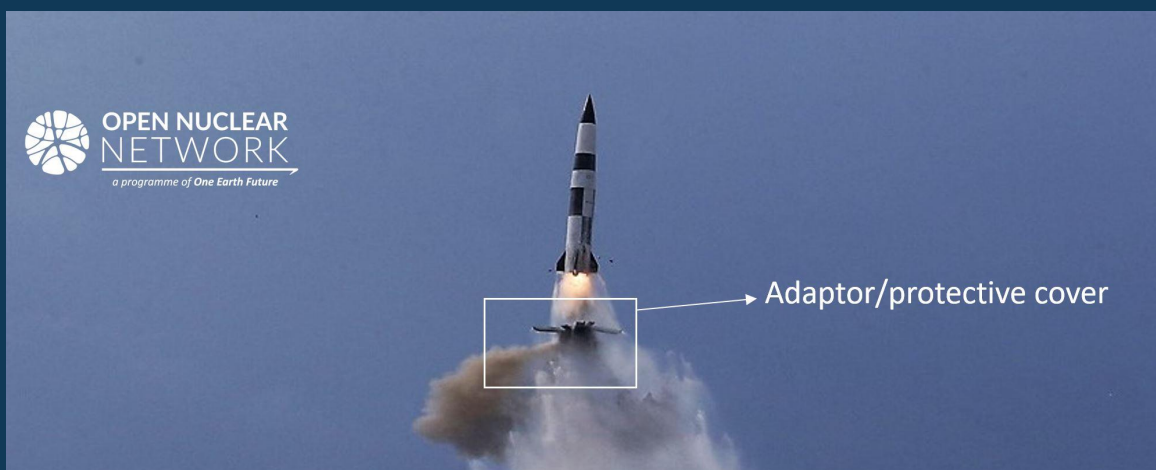
Small SLBMs at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

RANGE: ~600 km

FIRST KNOWN TEST: 2021

NUCLEAR CAPABLE: Likely



The adaptor/protective cover is discarded upon the ignition of the solid motor. Image: KCNA

- This SLBM was flight tested once in October 2021 and was launched from an experimental ballistic missile submarine.
- It is possibly based on KN23 short-range ballistic missile (SRBM).
- The bottom of the missile is attached to what appears to be an adaptor/protective cover: in the launch process, a gas generator, installed at the bottom of the launch tube, blows gas upwards to push the missile out of the water. The adaptor/protective cover protects the missile from being damaged during this process and is then discarded.

Models of a longer, new type SLBM



A longer SLBM concept was revealed for the first time at the 25 April 2022 parade. Image: KCNA



The Pukguksong-5 at a military parade in January 2021. Image: KCNA

DESIGNATION: Unknown

FIRST KNOWN TEST: Unknown/untested

NUCLEAR CAPABLE: Yes

- This SLBM was first revealed at the 25 April 2022 parade.
- It is longer than the Pukguksong-5 and the Pukguksong-4, which were showcased in military parades in January 2021 and October 2020, respectively.
- Neither this new SLBM, nor the Pukguksong-4 or the Pukguksong-5 SLBMs, have been flight tested.
- The development status of these three SLBMs is unknown.

Short-range surface-to-air missiles



Short range surface-to-air missile system at the 25 April 2022 parade. Image: KCTV



Short range surface-to-air missile system at 10 October 2020 parade. Image: KCNA

DESIGNATION: Unknown

VEHICLE: Commercial truck and trailer

FIRST KNOWN TEST: Unknown/untested

- The configuration is similar to the Russian “Tor” surface-to-air missile system.
- It was first showcased in a parade in October 2020.
- The presumed surface-to-air missiles are supposed to be vertically stored behind the radar antennas and ejected into the air upon launch (see image below).



A Russian “Tor” system viewed from above. A total of 16 missiles are vertically stored between the search radar and fire control radar antennas. Image: en.topwar.ru

Possible cruise missiles



A possible cruise missile concept showcased at the 25 April 2022 parade. Image: KCTV



A possible cruise missile concept showcased in a military parade on 10 October 2020. Image: KCNA

DESIGNATION: Unknown

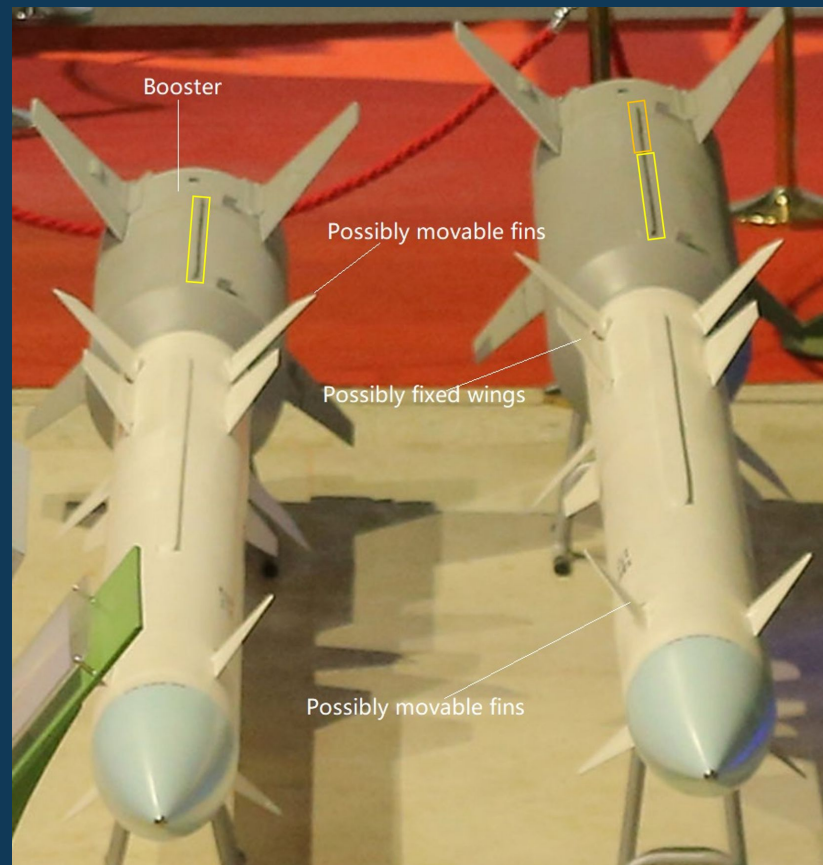
VEHICLE: Tracked chassis

FIRST KNOWN TEST: Unknown/untested

- Possibly a further development of a cruise missile concept first revealed in a military parade on 10 October 2020. However, details of the canisters displayed during the October 2020 and April 2022 parades are different, the truck chassis has been replaced by a tracked chassis and the number of missile canisters has been increased from 4 to 8.
- Its possible uses include anti-ship cruise missiles or land-attack cruise missiles. The possibility of it being an air-defence system also cannot be ruled out at this point, as it is showcased between two surface-to-air missile formations.



Mid- to long-range surface-to-air missiles



Left: Launch of the surface-to-air missile. Right: Two surface-to-air missiles on display. As shown by the cable raceways (in yellow and orange boxes), the booster of one missile is longer than that of the other (longer part marked in orange box). Images: KCNA



Mid- to long-range surface-to-air missiles at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

VEHICLE: Commercial truck and trailer

FIRST KNOWN TEST: 2021

- This missile was test fired publicly in September 2021.
- This missile seems to have two versions of boosters (see image in center).

Small short-range ballistic missiles (SRBMs) tested on 16 April 2022



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Small SRBMs at the 25 April 2022 parade.
Image: KCNA

DESIGNATION: Unknown

RANGE: Likely around or below 200 km*

VEHICLE: 3-axle truck

FIRST KNOWN TEST: 16 April 2022

NUCLEAR CAPABLE: Likely

- The smallest SRBM of the DPRK
- It was first tested on 16 April 2022.*
- The DPRK claimed that this new missile would boost the firepower of its frontline long-range artillery units and enhance efficiency in the operation of its tactical nuclear weapons.**

* Xu Tianran, "Increasing Nuclear Risk on the Korean Peninsula. The DPRK's Pursuit of Tactical Nuclear War-Fighting Capabilities," ONN, 25 April 2022, available at: https://opennuclear.org/publication/increasing-nuclear-risk-korean-peninsula-dprks-pursuit-tactical-nuclear-war-fighting?language_content_entity=en

** "Respected Comrade Kim Jong Un Observes Test-fire of New-type Tactical Guided Weapon," KCNA, 17 April 2022, available at: <http://kcna.kp/en/article/q/ef857f3a6a119b3cd07e76774404678c.kcmsf>

KN23 SRBMs



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KN23 on truck chassis at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Referred to as “KN23” by the United States

RANGE: ~600 km

VEHICLE: 4-axle truck or tracked chassis

FIRST KNOWN TEST: 2019

NUCLEAR CAPABLE: Likely

- The KN23 bears a close resemblance to the Russian 9K723/Iskander ballistic missile.
- It is likely nuclear capable and has an aero-ballistic trajectory that makes it harder to intercept.
- The tracked chassis version did not appear in the parade on 25 April 2022.



Hwasong-11Na (KN24) SRBMs



Hwasong-11Na at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Hwasongpho-11Na*
Referred to as “KN24” by the United States

RANGE: ~400 km

VEHICLE: Tracked chassis

FIRST KNOWN TEST: 2019

NUCLEAR CAPABLE: Likely

- It has an aero-ballistic trajectory that makes it harder to intercept.
- In January 2022, the DPRK claimed that the Hwasong-11Na had already entered mass production.**

* “Hwasong” means “Mars” and “Pho” means “artillery.” The DPRK has used the term “Hwasongpho” only in the case of the Hwasongpho-11Na and the Hwasongpho-17.

** “Test-fire of Tactical Guided Missiles Held,” KCNA, 18 January 2022.



SRBMs with “2.5 ton warhead”



SRBMs with “2.5 ton warhead” at the 25 April 2022 parade. Image: KCTV

DESIGNATION: Official designation unknown

RANGE: ~600 km

VEHICLE: 5-axle truck

FIRST KNOWN TEST: 2021

NUCLEAR CAPABLE: Likely

- This larger SRBM was built on the basis of the KN23 and Hwasong-11Na (KN24).
- The DPRK claims that this missile has a warhead of 2.5 tons. Several Member States of the UN Security Council assessed that the mass of 2.5 tons may refer to the entire weight of the missile after burnout.*
- It has an aero-ballistic trajectory that makes it harder to intercept.

* UN Panel of Experts report S/2021/777



Unnamed hypersonic missiles



Unnamed hypersonic missile at the 25 April 2022 parade. Image: KCNA

DESIGNATION: Unknown

RANGE: Medium-range

VEHICLE: MAZ-547 truck (6 axles) with modified cabin

FIRST KNOWN TEST: 2022

NUCLEAR CAPABLE: Likely

- The term “hypersonic” is normally used to refer to missiles that travel at speeds of Mach 5 or above that can be flown at low altitudes and maneuvered during flight.*
- This hypersonic missile is based on the Hwasong-12 intermediate-range ballistic missile (IRBM).
- It carries a hypersonic glide vehicle (HGV) as its warhead.
- It was tested twice, on 5 and 11 January 2022. During the 11 January 2022 test, the HGV reached a top speed of Mach 10.**

* Xu Tianran, “Analysis of the 11 January 2022 Hypersonic Missile Test of the DPRK,” ONN, 14 January 2022, available at: <https://oneearthfuture.org/publication/analysis-11-january-2022-hypersonic-missile-test-dprk>

** Song Sang-ho, “N. Korea's improved ballistic missile traveled at Mach 10: JCS,” Yonhap News Agency, 11 January 2022, available at: <https://en.yna.co.kr/view/AEN20220111001057325>

(Possibly) Hwasong-8



At 25 April 2022 parade. Image: KCNA

DESIGNATION: Hwasong-8

RANGE: Medium- to intermediate-range

VEHICLE: MAZ-547 truck (6 axles) with modified cabin

FIRST KNOWN TEST: 2021

NUCLEAR CAPABLE: Likely

- This missile is significantly longer than the Hwasong-8 tested on 14 September 2021 (see next two slides).
- It is also based on the Hwasong-12 IRBM.
- It carries the same hypersonic glide vehicle (HGV) that was carried by the Hwasong-8 in the 14 September 2021 test.*
- During the 14 September 2021 test, the Hwasong-8 reportedly only reached a top speed of Mach 3.**

* Xu Tianran, "ONN Brief: Analysis on the 5 January 2022 Hypersonic Missile Test of the DPRK," ONN, available at: https://opennuclear.org/publication/onnn-brief-analysis-5-january-2022-hypersonic-missile-test-dprk?language_content_entity=en

** Yoo Hyun-min, "북한 극초음속 미사일, 초기단계로 배치에 상당시간 소요" [North Korea's hypersonic missiles are in an early stage and take considerable amount of time to deploy], Yonhap News Agency, 29 September 2021, available at: <https://www.yna.co.kr/view/AKR20210929099551504>.

Comparison of DPRK's hypersonic missiles and Hwasong-12 IRBM (1)



- The rocket stage of the Hwasong-8 flight tested on 14 September 2021 appears to be significantly shorter than that of the standard Hwasong-12, but is similar in length to the rocket stage of the unnamed hypersonic missile tested on 5 and 11 January 2022.*

Length comparison of rocket stages of the Hwasong-12, Hwasong-8 hypersonic missile and the unnamed hypersonic missile. Image: KCNA

* Xu Tianran, "Brief on the Defence Development Exhibition of the Democratic People's Republic of Korea," ONN, 20 October 2021, available at: https://opennuclear.org/publication/brief-defence-development-exhibition-democratic-peoples-republic-korea?language_content_entity=en

Comparison of DPRK's hypersonic missiles and Hwasong-12 IRBM (2)

Unnamed hypersonic missile



Hwasong-8



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The unnamed hypersonic missile, the Hwasong-8 hypersonic missile and the Hwasong-12 IRBM at military parades.
Images: KCNA, KCTV

Hwasong-12 IRBM



- The unnamed hypersonic missile was significantly shorter than the Hwasong-8 showcased at the parade.
- The length of the rocket stage of the Hwasong-8 showcased at the parade appears to be similar to that of a standard Hwasong-12.
- This indicates that the Hwasong-8 tested on 14 September 2021 might be in an interim configuration. The end-goal might be to put the HGV on a standard Hwasong-12 stage, as is shown during the parade.*

*Xu Tianran, "Brief on the Defence Development Exhibition of the Democratic People's Republic of Korea," ONN, 20 October 2021, available at: https://opennuclear.org/publication/brief-defence-development-exhibition-democratic-peoples-republic-korea?language_content_entity=en



Hwasong-15 intercontinental ballistic missiles (ICBMs)



Hwasong-15 shown on a 9-axle modification of the WS51200 at the 25 April 2022 parade.
Image: KCNA

DESIGNATION: Hwasong-15
Referred to as “KN22” by the United State

RANGE: Intercontinental-range

VEHICLE: WS51200, modified to have an additional (9th) axle

FIRST KNOWN TEST: 2017

NUCLEAR CAPABLE: Yes

- The Hwasong-15 is a two-stage, mobile ICBM.
- It shares engine technology with the Hwasong-12 IRBM and the Hwasong-14 ICBM.
- The Hwasong-15 was flight tested in November 2017 and possibly in March 2022.*

* “N. Korea seems to have fired Hwasong-15 ICBM last week, S. Korea's military tells lawmakers,” Yonhap News Agency, 29 March 2022, available at: <https://en.yna.co.kr/view/AEN20220329008052325>

Hwasong-17 ICBMs



Hwasong-17 at 25 April 2022 parade. Image: KCTV

DESIGNATION: Hwasongpho-17

RANGE: Intercontinental-range

VEHICLE: WS51200 truck, modified to have 11 axles

FIRST KNOWN TEST: 2022

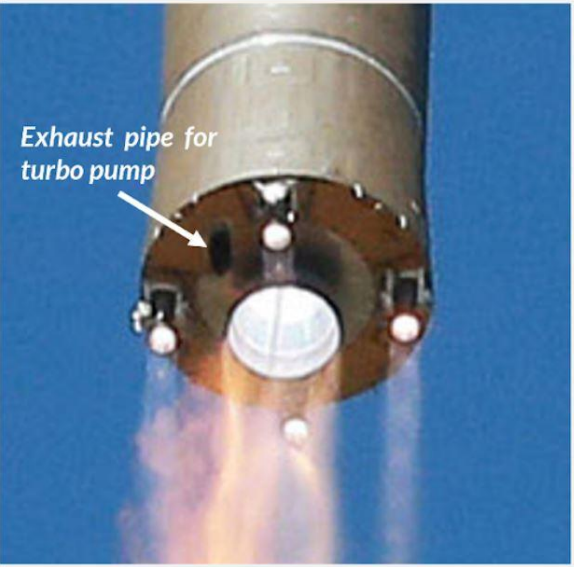
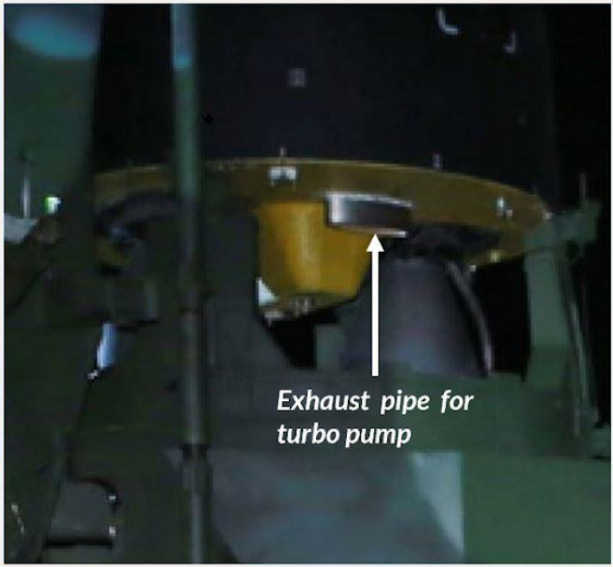


NUCLEAR CAPABLE: Yes

- This is a very large road-mobile ICBM powered by a pair of first stage engines of the Hwasong-15.
- It was first showcased during a military parade on 10 October 2020.
- It was possibly test fired in late February and March 2022.*

* "Test-fire of Tactical Guided Missiles Held," KCNA, 18 January 2022; "N. Korea seems to have fired Hwasong-15 ICBM last week, S. Korea's military tells lawmakers," Yonhap News Agency, 29 March 2022, available at:

<https://en.yna.co.kr/view/AEN20220329008052325>; "Statement by Pentagon Press Secretary John Kirby on Recent DPRK Missile Tests," US DoD, 10 March 2022, available at: <https://www.defense.gov/News/Releases/Release/Article/2963053/statement-by-pentagon-press-secretary-john-kirby-on-recent-dprk-missile-tests/>

Technological lineage of the new generation of Hwasong strategic ballistic missiles*

HWASONG-12 IRBM* /-14 ICBM	HWASONG-15 ICBM	HWASONG-17 ICBM
 <p>Exhaust pipe for turbo pump</p>	 <p>Exhaust pipe for turbo pump</p>	 <p>One of the two exhaust pipes for turbo pumps</p>
<ul style="list-style-type: none"> • One engine with one main combustion chamber and four smaller, movable combustion chambers; • Turbo pump working at ~60% capacity. 	<ul style="list-style-type: none"> • One dual chamber engine with two movable main combustion chambers; • Turbo pump working at ~100% capacity. 	<ul style="list-style-type: none"> • Two dual chamber engines with four movable main combustion chambers; • Two turbo pumps working at ~100% capacity.
<p>* and hypersonic missiles based on Hwasong-12</p> 		

Images: KCNA, KCTV

* Xu Tianran, "24 March 2022 DPRK ICBM Test," ONN, 25 March 2022, available at: https://opennuclear.org/publication/24-march-2022-dprk-icbm-test?language_content_entity=en



Kim Jong Un's parade speech, 25 April 2022

In particular, the nuclear forces, the symbol of our national strength and the core of our military power, should be strengthened in terms of both quality and scale, **so that they can perform nuclear combat capabilities in any situations of warfare, according to purposes and missions of different operations and by various means.**

The prevailing situation demands that more proactive measures be taken to provide a firm and sustained guarantee for the modern character and military technological supremacy of our Republic's armed forces.

To cope with the rapidly-changing political and military situations and all the possible crises of the future, we will advance faster and more dynamically along the road of building up the self-defensive and modern armed forces, which we have followed unwaveringly, and, especially, will continue to take measures for further developing the nuclear forces of our state at the fastest possible speed.

The fundamental mission of our nuclear forces is to deter a war, but our nukes can never be confined to the single mission of war deterrent even at a time when a situation we are not desirous of at all is created on this land.

If any forces try to violate the fundamental interests of our state, our nuclear forces will have to decisively accomplish its unexpected second mission.

The nuclear forces of our Republic should be fully prepared to fulfil their responsible mission and put their unique deterrent in motion at any time.

Comrades, officers and men of the People's Army, our armed forces are now fully prepared for any type of war.

Excerpt from "Respected Comrade Kim Jong Un Makes Speech at Military Parade Held in Celebration of 90th Founding Anniversary of KPRA," KCNA, 26 April 2022

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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 Image information which enables them to make the best decisions in the face of escalating conflict.

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