

# **NORTH KOREA: EMP THREAT**

**North Korea's Capabilities for Electromagnetic Pulse (EMP) Attack**



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## KEY JUDGMENTS

The West consistently and unwittingly cooperates with North Korea by underestimating the advancement, sophistication, and strategic implications of North Korea's nuclear weapons and missile programs. Thus, under the nose of the U.S. Intelligence Community, North Korea surprised the world by demonstrating ICBMs that could target any city in the United States and a hydrogen bomb in the summer of 2017.

North Korea's KMS-3 and KMS-4 satellites orbit over the U.S. daily. Their trajectory is similar to that planned for a Soviet-era secret weapon called the Fractional Orbital Bombardment System (FOBS) deployed by the USSR to make a surprise High-altitude EMP (HEMP) attack on the United States. Trajectories of North Korea's KMS-3 and KMS-4 satellites are near optimal for a HEMP attack on the U.S., if they are nuclear-armed.

HEMP attack does not require much accuracy or a reentry vehicle capable of penetrating the atmosphere and is well within North Korea's technological capabilities.

Multiple credible foreign sources including from South Korea, China, and Russia—including two of Russia's foremost EMP weapons experts—allege the design for Russia's Super-EMP nuclear weapon leaked or was transferred to North Korea and that North Korea has developed Super-EMP weapons.

Super-EMP weapons are typically small, lightweight, and low-yield (designed to emit enhanced gamma rays not make a big explosion) and could fit within North Korea's KMS-3 and KMS-4 satellites; or be delivered against the U.S. by North Korean ICBMs; or be delivered against Japan, Guam, or the Philippines by North Korean IRBMs or MRBMs like the Nodong; or against South Korea by a wide array of North Korean SRBMs.

Super-EMP weapons generate extraordinarily powerful EMP fields, potentially 100 kilovolts/meter or higher, greatly exceeding the U.S. military HEMP hardening standard 50 kilovolts/meter. U.S. civilian critical infrastructures like the national electric power grid, that are indispensable to U.S. military power projection capabilities, are unprotected against HEMP.

According to North Korea state media, their September 2017 H-bomb is also a Super-EMP weapon: "The H-bomb, the explosive power of which is adjustable from tens of kilotons to hundreds of kilotons, is a multifunctional thermonuclear nuke with great destructive power which can be detonated at high altitudes for super-powerful EMP according to strategic goals."

Immediately following their September 2017 H-bomb test, North Korea published a technical report "The EMP Might of Nuclear Weapons" accurately describing a Super-EMP nuclear weapon.

North Korea has non-nuclear EMP weapons including an "EMP Cannon" used to impose an "electromagnetic blockade" on air traffic to Seoul, South Korea's capitol, making repeated attacks that also disrupted communications and the operation of automobiles in several South Korean cities in December 2010; March 9, 2011; and April-May 2012.

## NORTH KOREA: EMP THREAT

### *Denial and Deception*

The “Hermit Kingdom” is the most successfully secretive nation in the world about its internal matters, especially its defense programs. For over a decade, beginning in 1995, successive U.S. administrations, Democrat and Republican alike, were deceived into thinking that North Korea was negotiating an “Agreed Framework” to abandon its nuclear weapons program in exchange for economic aid—until North Korea’s first nuclear test in 2006.<sup>1</sup>

Then the low-yields of North Korea’s first nuclear test in 2006 and the second nuclear test in 2009 misled many analysts to assume these were failed tests, that North Korea’s nuclear weapon does not work. This despite warnings from the Congressional EMP Commission beginning in 2004 that North Korea was developing a Super-EMP nuclear warhead.<sup>2</sup>

Pyongyang consistently tries hiding its real capabilities. For example, on December 12, 2012, North Korea successfully misled Western analysts into thinking that their long-range missile test, scheduled for that day, was canceled due to technical problems. This lowered expectations and may have reduced the vigilance of some in the West monitoring North Korea’s missile test—which launched successfully just hours later.<sup>3</sup>

The West consistently and unwittingly cooperates with North Korea by underestimating the advancement, sophistication, and strategic implications of North Korea’s nuclear weapons and missile programs. Thus, under the nose of the U.S. Intelligence Community, North Korea surprised the world by demonstrating ICBMs that could target any city in the United States and a hydrogen bomb in the summer of 2017.<sup>4</sup> Reportedly, in 2017 U.S. Intelligence Community analysts also revised sharply upward their estimated number of North Korean nuclear weapons from about 20 to 60 and also concluded North Korea can miniaturize warheads for missile delivery—facts some Western analysts are still unwilling to face.<sup>5</sup>

In fact, five years earlier, North Korea already had an intercontinental ballistic missile (ICBM) capable of delivering a nuclear weapon to the United States, as demonstrated by their successful launch and orbiting of a satellite on December 12, 2012. Yet the view was widespread in the press

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<sup>1</sup> Early on many policymakers, including in the Congress, tried in vain to warn the Clinton administration that North Korea was cheating on the Agreed Framework. For example see: *North Korea Advisory Group: Report to the Speaker U.S. House of Representatives* (Washington, D.C.: November 1999).

<sup>2</sup> Dr. William R. Graham, Testimony before the House Armed Services Committee, *Committee Hearing on Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack* (Washington, D.C.: July 22, 2004). EMP Commission, *Foreign Views of Electromagnetic Pulse Attack* (2017) [www.firstempcommission.org](http://www.firstempcommission.org).

<sup>3</sup> Jethro Mullen and Paul Armstrong, “North Korea Carries Out Controversial Rocket Launch” CNN (December 12, 2012). Choe Sang-Hun, “Technical Issues Delay Rocket Launching, North Korea Says” New York Times (December 10, 2012).

<sup>4</sup> Tom O’Connor, “North Korea Threatens ‘Whole U.S. Mainland’ With ‘Annihilating Strike’ After Latest Missile Test” Newsweek (July 5, 2017). Josh Smith, “How North Korea’s Latest ICBM Test Stacks Up” Reuters (November 28, 2017). Dagyum Ji and Oliver Hotham, “North Korea Announces Successful Test Of Hydrogen Bomb” NK News (September 3, 2017) [www.nknews.org](http://www.nknews.org).

<sup>5</sup> Joby Warrick et al., “North Korea Now Making Missile-Ready Nuclear Weapons” Washington Post (August 8, 2017).

and among policymakers—both poorly informed or willfully blind to the North Korean threat—that North Korea was still years away from being able to miniaturize warheads for missile delivery, and from developing sufficiently accurate missiles to pose a serious nuclear threat to the United States. Typical in the media was Philip Yun, director of San Francisco’s Ploughshares Fund, a nuclear disarmament group, who reportedly said of North Korea’s successful ICBM test, “The real threat from the launch was an overreaction that would lead to more defense spending on unnecessary systems. The sky is not falling. We shouldn’t be panicked.”<sup>6</sup>

In fact, North Korea is a mortal nuclear threat to the United States—right now. North Korea has labored for years and starved its people so it could develop an intercontinental missile capable of reaching the United States. Why? Because they have a special kind of nuclear weapon that could destroy the United States with a single blow.

### ***Super-EMP Warhead***

In 2004, members of the congressional EMP Commission met with two Russian generals, Moscow’s top strategic experts on EMP weaponry. The generals disclosed that Russia has a decisive new nuclear weapon—a Super-EMP warhead.<sup>7</sup>

However, the main purpose of the demarche by the Russian generals to the Commission was to warn that knowledgeable Russian and other foreign scientists, and design information about the Super-EMP weapon, had leaked to North Korea. They warned that North Korea armed with Super-EMP nuclear weapons “would pose a threat to global civilization.” They further stated that North Korea armed with Super-EMP weapons would pose so great a threat that “while Moscow could not publicly support a U.S. preemptive strike against North Korea to stop their nuclear weapons program, it would privately understand the necessity.”<sup>8</sup>

It is possible, even likely, that this “warning” from Russian Generals about North Korea’s Super-EMP weapon was to cover Moscow’s tracks transferring Super-EMP and other technology to North Korea, to make it appear an accident of nuclear “brain drain” to North Korea not intended by Moscow.

During their 2004 demarche, the Russian generals warned the EMP Commission that North Korea could develop a Super-EMP nuclear weapon “in a few years.” A few years later, in 2006, North Korea conducted its first nuclear test, of a device that looks suspiciously like a Super-EMP weapon. Because the North Korean device had a very low yield, about 1-2 kilotons, most experts dismissed the nuclear test as a failure, despite claims by North Korea that the device worked as planned.<sup>9</sup>

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<sup>6</sup> Matthew Schofield, "Successful North Korean Launch Triggers Security Concerns" Miami Herald (December 12, 2012).

<sup>7</sup> Dr. William R. Graham, Testimony before the House Armed Services Committee, *Committee Hearing on Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack* (Washington, D.C.: July 22, 2004).

<sup>8</sup> EMP Commission, *Foreign Views of Electromagnetic Pulse Attack* (2017) [www.firstempcommission.org](http://www.firstempcommission.org).

<sup>9</sup> “North Korea’s May Nuclear Test Few Kilotons: U.S.” Reuters (June 15, 2009). “List of Nuclear Weapons Tests of North Korea” [www.en.wikipedia.org](http://www.en.wikipedia.org).

However, a Super-EMP weapon would have a low-yield, like the North Korean device, because it is not designed to create a big explosion, but to convert its energy into gamma rays, that generate the HEMP effect. In 2009, a second North Korean nuclear test looked like the first, and was again declared a failure by many in the West, and a success by North Korea.<sup>10</sup> A third North Korean nuclear test on February 12, 2013, again had a low-yield, estimated by South Korea to be 6-9 kilotons, again consistent with a Super-EMP warhead designed to maximize fast gamma ray output.<sup>11</sup>

In 2011, the Director of the Defense Intelligence Agency, Lt. General Ronald Burgess, testified before the Senate Armed Services Committee that North Korea has weaponized its nuclear device into warheads for arming ballistic missiles. This confirms that North Korea's nuclear tests were, in fact, successful. The North Koreans would not arm their missiles with duds. European intelligence agencies concluded that North Korea armed with nuclear warheads Nodong missiles capable of striking Japan in 2009. The CIA's top East Asia analyst publicly stated that North Korea had successfully miniaturized nuclear warheads for missile delivery in a 2008 interview. So North Korea now has missiles armed with nuclear warheads, of mysterious design.<sup>12</sup>

During this period of North Korea's development of nuclear warheads, several press reports citing South Korean military intelligence concluded, independently of the EMP Commission, that Russian scientists are in North Korea helping develop a Super-EMP nuclear weapon. In 2010, according to some reputable European analysts, radio isotope data indicates North Korea may have conducted two clandestine nuclear tests of a very low yield nuclear device of sophisticated fusion design. In 2012, a military commentator for the People's Republic of China told a Hong Kong journal that North Korea has Super-EMP nuclear warheads.<sup>13</sup>

General Michael Dunn during President George W. Bush's administration served several years in Seoul as "the lead negotiator with the KPA at the DMZ, and had been to 4 party talks, 6 party talks, etc...In Pyongyang, we had lots of meetings with the North Koreans. The last one...they told us they were working on a bomb bigger than a nuclear weapon. We thought at the time...bigger than a nuclear weapon? What's bigger than that?...We were later told by a People's

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<sup>10</sup> Ibid. Dr. William R. Graham, Testimony before the House Armed Services Committee, *Committee Hearing on Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack* (Washington, D.C.: July 22, 2004). Dr. Peter Vincent Pry, "Pry: North Korea EMP Attack Could Destroy U.S.--Now" Washington Times (December 19, 2012).

<sup>11</sup> Ibid.

<sup>12</sup> Lt. General Ronald Burgess, Director, Defense Intelligence Agency, *Worldwide Threat Assessment: Statement before the Committee on Armed Services, U.S. Senate* (Washington, D.C.: March 14, 2011), p. 15. "North Korea Nukes Might Fit on Missiles, Aircraft" Global Security Newswire: NTI (March 14, 2011). "Spie Agencies Believe NKorea Has Nuke Warheads" Agence France Presse (March 31, 2009). Interview with former CIA East Asia Division Chief Arthur Brown by Ruriko Kubota and Yosuke Inuzke, "DPRK Has Produced Small-Type Nuclear Warheads" Sankei Shimbun in Japanese (Tokyo: October 1, 2008) Fuji Sankei Communications Group URL <http://www.sankei.co.jp>.

<sup>13</sup> Kim Min-sek and Yoo Jee-ho, "Military Source Warns of North's EMP Bomb" JoonAng Daily (September 2, 2009); Geoff Brunfiel, "Isotopes Hint at North Korean Nuclear Test" Nature (February 3, 2012) <http://www.nature.com/news/isotopes-hint-at-north-korean-nuclear-test-1.9972>. Li Daguang, "North Korea Electromagnetic Attack Threatens South Korea's Information Warfare Capabilities" Tzu Chin, No. 260 (Hong Kong: June 1, 2012), pp. 445-45 translated in "PRC Owned HK Journal Says DPRK May Build EMP Bombs To Paralyze ROK Weapons System" CPP201206066787019.

Republic of China vice minister and a couple of Russian general officers that North Korea was working on a Super-EMP weapon...I made sure it was in the cables going back to DC. The cables went to Defense, State, NSC Staff, and Joint Staff, plus the Intelligence Community.”<sup>14</sup>

### ***“The EMP Might of Nuclear Weapons”***

On April 30, 2017, South Korean officials told The Korea Times and YTN TV that North Korea’s test of a medium-range missile on April 29 was not a failure, as widely reported in the world press, because it was deliberately detonated at 72 kilometers altitude. According to South Korean officials, “It’s believed the explosion was a test to deliver a nuclear weapon different from existing ones.” Japan’s Tetsuro Kosaka wrote in Nikkei, “Pyongyang could be saying, ‘We could launch an electromagnetic pulse (EMP) attack if things get really ugly.’”<sup>15</sup>

On September 3, 2017, during its sixth underground nuclear detonation, North Korea claimed to have tested another H-bomb, acknowledged as such by most experts because of its high-yield—250 kilotons (possibly 328 kilotons), about 25 times more powerful than the Hiroshima A-bomb (about two-thirds more powerful than initially estimated by the U.S. Intelligence Community).<sup>16</sup>

According to North Korea state media, their September 2017 H-bomb is also a Super-EMP weapon: “The H-bomb, the explosive power of which is adjustable from tens of kilotons to hundreds of kilotons, is a multifunctional thermonuclear nuke with great destructive power which can be detonated at high altitudes for super-powerful EMP according to strategic goals.”<sup>17</sup>

Immediately following their September 2017 H-bomb test, North Korea published a technical report “The EMP Might of Nuclear Weapons” accurately describing a Super-EMP nuclear weapon.<sup>18</sup>

### ***Super-EMP Satellites?***

Any of North Korea’s ICBMs or their Space Launch Vehicle could probably deliver a Super-EMP warhead to the United States. North Korea orbited a satellite weighing about 100 kilograms. One design of a Super-EMP warhead would be a modified neutron bomb, more accurately an Enhanced Radiation Warhead (ERW) because it produces not only lots of neutrons but all kinds of radiation, including lots of gamma rays. Gamma rays cause the E1 HEMP effect. One U.S. ERW warhead (the W-82) deployed in NATO during the Cold War weighed less than 50 kilograms. Since an EMP attack entails detonating the warhead at high-altitude, above the atmosphere, the warhead does not even need a re-entry vehicle.<sup>19</sup>

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<sup>14</sup> General Michael Dunn, Correspondence (May 4, 2020).

<sup>15</sup> Tetsuro Kosaka, “North Korea’s ‘Failed’ Missile Test May Have Been A Thinly Disguised Threat” Nikkei (May 2, 2017).

<sup>16</sup> Dimitri Voytan et. al., “Yield Estimates for the Six North Korean Nuclear Tests...” Journal of Geophysical Research Solid Earth (April 25, 2019) <https://doi.org/10.1029/2019JB017418>. Kyle Mizokami, “North Korea’s Latest Nuclear Test Was More Powerful Than We Thought” Popular Mechanics (June 5, 2019).

<sup>17</sup> KCNA September 2, 2017.

<sup>18</sup> Kim Song-won, “The EMP Might of Nuclear Weapons” Rodong Sinmun, Pyongyang (September 4, 2017). EMP Commission, *Chairman’s Report* (2017), p. 25 [www.firstempcommission.org](http://www.firstempcommission.org).

<sup>19</sup> For a photo of North Korea’s orbited Bright Star-3 satellite that weighs 220 pounds see David Wright, “North Korea’s Satellite” All Things Nuclear: Union of Concerned Scientists (December 15, 2012) [www.allthingsnuclear.org/north-koreas-satellite/](http://www.allthingsnuclear.org/north-koreas-satellite/). The U.S. W-82 Enhanced Radiation Warhead, a nuclear artillery



Accuracy is not necessary to make a nuclear HEMP attack against the United States. The HEMP field is so large that detonating anywhere over the U.S. would have catastrophic consequences. North Korea orbited its satellite around the Earth at an altitude of about 500 kilometers. The trajectory of North Korea's satellite is no accident—North Korea deliberately aimed for and achieved its desired orbit and altitude. “North Korea announced that the satellite was expected to be placed in an orbit at an altitude of about 500 kilometers, and initial tracking information shows that the satellite is in a nearly circular orbit with minimum and maximum altitudes of 494 kilometers and 588 kilometers.”<sup>20</sup>

North Korea's satellite repeatedly overflew the United States during April 2013—amidst the most serious nuclear crisis up to that point with Pyongyang. North Korea's new leader, Kim Jong-Un, repeatedly threatened to make nuclear missile strikes against the U.S. and its allies from February through April 2013. On April 9, North Korea's KMS-3 satellite flew over or near the U.S. bull's eye for a high-altitude EMP burst that would have covered all 48 contiguous United States. On April 16 the KMS-3 overflew the Washington, D.C.-New York City corridor on the optimum trajectory to put a peak HEMP field over the U.S. political and economic capitols. The KMS-3 still orbits over the U.S. mainland regularly.

North Korea appears to have borrowed more from the Russians than the design of a Super-EMP warhead. During the Cold War, Moscow experimented with a stealthy way of delivering a nuclear attack on the United States using a Fractional Orbital Bombardment System (FOBS). This would entail launching an ICBM or Space Launch Vehicle southward, away from the United States, so it appears non-threatening, and delivering the warhead like a satellite on a south polar orbit, so the nuclear attack comes at the U.S. from the south. During the Cold War and today, the United States has no Ballistic Missile Early Warning Radars or missile interceptors facing south. We might not even see the attack coming.<sup>21</sup>

The trajectory of North Korea's satellite launch of December 12, 2012, looked very much like a Fractional Orbit Bombardment System for EMP attack. The Space Launch Vehicle flew southward, away from the United States, sent the satellite over the south polar region, approaching the U.S. from the unprotected south, at the optimum altitude for a HEMP attack that would place all 48 contiguous United States under an electric field. North Korea now appears to be armed with a FOBS capability to attack the United States—or any and all nations on Earth—with Super-EMP.

According to the EMP Commission *Chairman's Report*:

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shell for the 155mm howitzer, including the heavy shell casing, weighed only 95 pounds. See

<http://nuclearweaponsarchive.org/Usa/weapons>.

<sup>20</sup> David Wright, "Overestimated or Underestimated? North Korea's Satellite Launch in Perspective" Bulletin of the Atomic Scientists (December 13, 2012).

<sup>21</sup> Two U.S. PAVE PAWS Large Phased Array Radars look southward with the edges of their radar fields, but there is a gap between the fields, a hole in the radar coverage, larger than the Yucatan Peninsula and in that general location. "Fractional Orbital Bombardment System" Jane's Space Systems and Industry (March 26, 2006)

<http://articles.janes.com/articles/Janes-Space-Systems-and-Industry/Fractional-Orbital-Bombardment-System-FOBS>.

*“On April 16, 2013, North Korea’s KMS-3 satellite orbited over the U.S. from a south polar trajectory, over-flying the Washington, DC-New York City corridor, the nation’s political and economic capitals, from the south...On April 16, KMS-3’s trajectory was near optimal to make an EMP attack that would blackout the Eastern Grid that services half of the United States—if the satellite is nuclear armed. On that same day, parties unknown used AK-47s to make a sophisticated commando-style attack on the Metcalf transformer substation, which services San Francisco and the Silicon Valley, an important part of the Western Grid...KMS-3 was launched on December 12, 2013, exactly two months before, and probably in anticipation of, North Korea’s illegal nuclear test on February 12, 2013 which provoked a protracted crisis with the United States.”*<sup>22</sup>

On February 7, 2016, North Korea orbited a second satellite, KMS-4, amidst another severe nuclear crisis with the United States, one month after North Korea claimed to have tested an H-bomb, during its fourth underground nuclear detonation on January 6, 2016.<sup>23</sup>

Kim Jong-Un has threatened to reduce the United States to “ashes” with “nuclear thunderbolts” and threatened to retaliate for U.S. diplomatic and military pressure by “ordering officials and scientists to complete preparations for a satellite launch as soon as possible” amid “the enemies’ harsh sanctions and moves to stifle” the North.<sup>24</sup> North Korean press asserts readiness for “any form of war” and includes their satellite with “strengthening of the nuclear deterrent and legitimate artificial satellite launch, which are our fair and square self-defensive choice.”<sup>25</sup>

Moreover: “The nuclear [weapons] we possess are, precisely, the country’s sovereignty, right to live, and dignity. Our satellite that cleaves through space is the proud sign that unfolds the future of the most powerful state in the world.” The same article, like many others, warns North Korea makes “constant preparations so that we can fire the nuclear warheads, which have been deployed for actual warfare for the sake of the national defense, at any moment!”<sup>26</sup>

KMS-3 and KMS-4 are NORAD’s acronyms for North Korea’s satellites Kwangmyongsong-3 and Kwangmyongsong-4 (Guiding Star-3 and Guiding Star-4) names richly symbolic for Korean mythology and the deification of Kim Jong-Un who according to official propaganda was born on Mt. Paeku under a newly appeared bright guiding star—like the mythical god-king Dangun Wanggeon who according to legend defeated China and founded Korean civilization in 2333 BC—signifying the birth of a great general and conqueror.<sup>27</sup>

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<sup>22</sup> EMP Commission, *Chairman’s Report* (2017) p. 23 and note 21 [www.firstempcommission.org](http://www.firstempcommission.org).

<sup>23</sup> Ju-min Park and Louis Charbonneau, “North Korea Rocket Puts Object Into Space, Angers Neighbors, U.S.” Reuters (February 6, 2018). “Kwangmyongsong-4” [www.en.wikipedia.org](http://www.en.wikipedia.org).

<sup>24</sup> Alex Lockie, “North Korea Threatens ‘Nuclear Thunderbolts’ As U.S. And China Finally Work Together” American Military News (April 14, 2017). Fox News, “U.S. General: North Korea ‘Will’ Develop Nuclear Capabilities to Hit America” (September 20, 2016) [www.foxnews.com/world/2016/09/20/north-korea-says-successfully-ground-tests-new-rocket-engine.html](http://www.foxnews.com/world/2016/09/20/north-korea-says-successfully-ground-tests-new-rocket-engine.html).

<sup>25</sup> Rodong Sinmun (March 7, 2016).

<sup>26</sup> Ibid.

<sup>27</sup> Pae-Gang Hwang, *Korean Myths and Folk Legends* (2006).



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## FROM THE CONGRESSIONAL EMP COMMISSION *CHAIRMAN'S REPORT*:

### *“Are North Korea’s Satellites an EMP Threat?”*

*“North Korea’s KMS-3 and KMS-4 satellites orbit over the U.S. daily... Their trajectory is similar to that planned for a Soviet-era secret weapon called the Fractional Orbital Bombardment System (FOBS) deployed by the USSR to make a surprise nuclear attack on the United States. In 2004, two retired Russian Generals, then teaching at Russia’s Voroshilov General Staff Academy, told the EMP Commission that the design for Russia’s Super-EMP nuclear weapon was accidentally transferred by Russian scientists and engineers working on North Korea’s missile and nuclear weapons program. They said North Korea could test a Super-EMP weapon “in a few years.” The 2006 and subsequent low-yield tests do not appear to have been failures because North Korea proceeded with weaponization. In 1997, Andrey Kokoshin, then Russia’s First Deputy Defense Minister, stated Russia was deploying a new generation of advanced nuclear weapons “that have no counterparts in the world” including EMP weapons and “ultra-small warheads weighing less than 90 kilograms.” Such weapons would be small enough for North Korea’s satellites. General Vladimir Slipchenko and General Vladimir Belous, who warned the EMP Commission about North Korean development of Super-EMP weapons, are among Russia’s most prominent experts on EMP and advanced technology warfare. General Slipchenko’s advocacy of EMP and Combined-Arms Cyber Warfare is recognized in Iran’s military textbook Passive Defense that advocates development of capabilities for nuclear EMP attack.”*

Source: EMP Commission, *Chairman’s Report* (July 2017) p. 24 [www.firstempcommission.org](http://www.firstempcommission.org).

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### ***Non-Nuclear EMP Weapons***

North Korea has employed non-nuclear EMP weapons to attack South Korea.

North Korea used an “EMP Cannon” purchased from Russia, a non-nuclear Radio Frequency (RFW) Weapon towed by a truck, to impose an “electromagnetic blockade” on air traffic to Seoul, South Korea’s capitol. Non-nuclear EMP attacks on airliners flying to Seoul threatened their GPS and control systems, forcing suspension of flights to the city. The repeated attacks by RFW also disrupted communications and the operation of automobiles in several South Korean cities in December 2010; March 9, 2011; and April-May 2012.<sup>28</sup>

Designing non-nuclear EMP warheads for delivery by ballistic and cruise missiles is well within North Korea’s technological capabilities.

### ***North Korean EMP Defenses?***

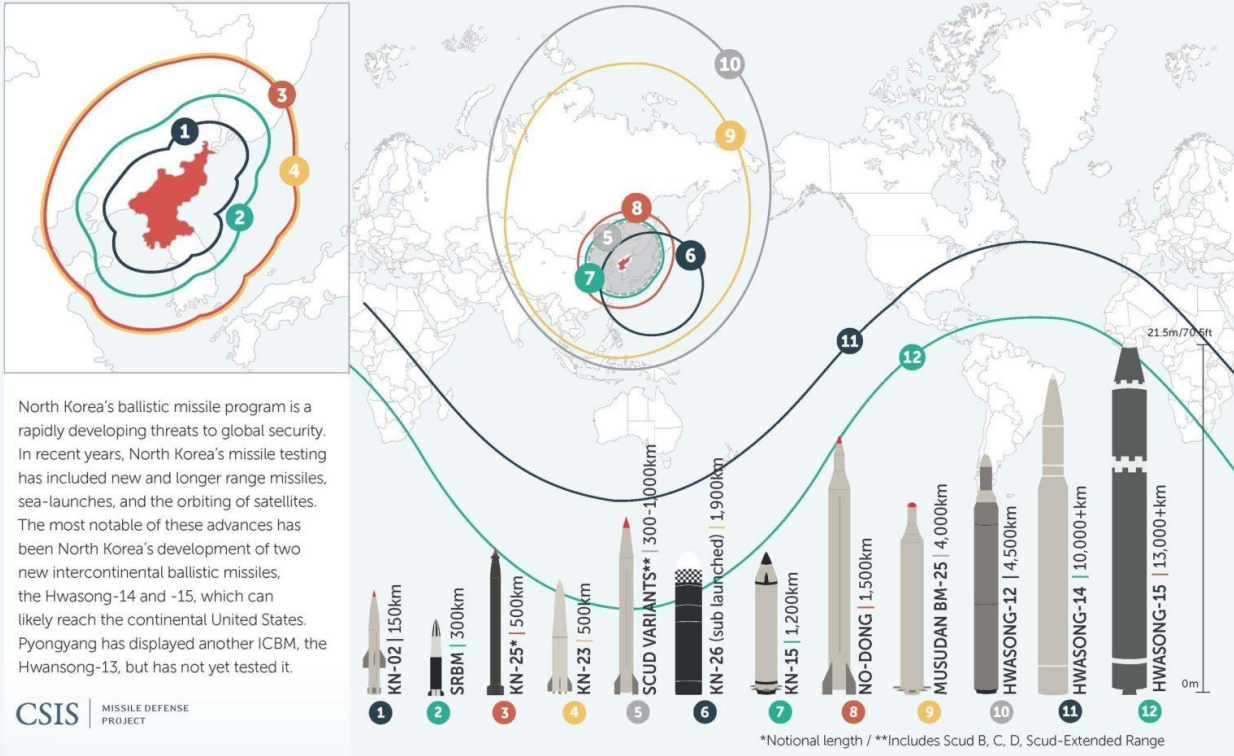
Virtually nothing is known about whether North Korea has hardened its electric grid and other critical infrastructures. We do not know what, if anything, North Korea has done to protect itself from EMP.

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<sup>28</sup> “Massive GPS Jamming Attack by North Korea” GPSWORLD.COM (May 8, 2012).

Given their strenuous efforts to develop offensive EMP capabilities, it seems logical that North Korea would make at least some defensive provisions to protect their electric grids and critical infrastructures from EMP. It seems likely that North Korea would provide at least for the protection of such critical infrastructures as are necessary for the survival of its political-military elites.

# NORTH KOREA'S BALLISTIC MISSILES



Source: “Missile Threat: CSIS Missile Defense Project”

<https://missilethreat.csis.org/country/northkorea>

**NORTH KOREA'S MISSILES CAPABLE OF EMP ATTACK**

<b>MISSILE</b>	<b>TYPE</b>	<b>RANGE</b>
Taepodong-2	SLV	4,000-10,000 km
Hwasong-15	ICBM	8,500-13,000 km
Hwasong-14	ICBM	10,000+ km
KN-14	ICBM	8,000-10,000 km
KN-08	ICBM	5,500-11,500 km
Hwasong-12	IRBM	4,500 km
Taepodong-1	IRBM	2,000-5,000 km
BM-25 Musudan	IRBM	2,500-4,000 km
Pukguksong-3 (KN-26)	SLBM	1,900 km
Pukguksong-2 (KN-15)	MRBM	1,200-2,000 km
NoDong	MRBM	1,200-1,500 km
Pukguksong-1 (KN-11)	SLBM	1,200 km
Hwasong-9 (Scud-ER)	MRBM	800-1,000 km
Hwasong-6	SRBM	500 km
KN-18 (Scud MARV Variant)	SRBM	450+ km
KN-24	SRBM	410 km
KN-25	SRBM	380 km
Hwasong-5	SRBM	300 km
KN-02	SRBM	120-170 km

All North Korea's ballistic missiles are listed here, as all are potentially capable of EMP attack if armed with a nuclear weapon or non-nuclear EMP warhead.

## **DR. PETER VINCENT PRY**

Dr. Peter Vincent Pry is Executive Director of the EMP Task Force on National and Homeland Security, a Congressional Advisory Board dedicated to achieving protection of the United States from electromagnetic pulse (EMP), cyber-attack, mass destruction terrorism and other threats to civilian critical infrastructures on an accelerated basis. Dr. Pry served as Chief of Staff of the congressional Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack (2001-2017); as Director of the United States Nuclear Strategy Forum, an advisory board to Congress on policies to counter Weapons of Mass Destruction; and on the staffs of the Congressional Commission on the Strategic Posture of the United States (2008-2009); the Commission on the New Strategic Posture of the United States (2006-2008); the House Armed Services Committee (1995-2001); and the CIA (1985-1995).

Dr. Pry served as Professional Staff on the House Armed Services Committee (HASC) of the U.S. Congress, with portfolios in nuclear strategy, WMD, Russia, China, NATO, the Middle East, Intelligence, and Terrorism. While serving on the HASC, Dr. Pry was chief advisor to the Vice Chairman of the House Armed Services Committee and the Vice Chairman of the House Homeland Security Committee, and to the Chairman of the Terrorism Panel. Dr. Pry played a key role: running hearings in Congress that warned terrorists and rogue states could pose an EMP threat, establishing the Congressional EMP Commission, helping the Commission develop plans to protect the United States from EMP, and working closely with senior scientists who first discovered the nuclear EMP phenomenon.

Dr. Pry was an Intelligence Officer with the Central Intelligence Agency responsible for analyzing Soviet and Russian nuclear strategy, operational plans, military doctrine, threat perceptions, and developing U.S. paradigms for strategic warning. He also served as a Verification Analyst at the U.S. Arms Control and Disarmament Agency responsible for assessing Soviet compliance with strategic and military arms control treaties.

Dr. Pry has written numerous books on national security issues, including: *Will America Be Protected? (Volumes I and II)*; *The Power And The Light: The Congressional EMP Commission's War To Save America*; *POSEIDON: Russia's New Doomsday Machine*; *The Long Sunday: Nuclear EMP Attack Scenarios*; *Blackout Wars*; *Apocalypse Unknown: The Struggle To Protect America From An Electromagnetic Pulse Catastrophe*; *Electric Armageddon: Civil-Military Preparedness For An Electromagnetic Pulse Catastrophe*; *War Scare: Russia and America on the Nuclear Brink*; *Nuclear Wars: Exchanges and Outcomes*; *The Strategic Nuclear Balance: And Why It Matters*; and *Israel's Nuclear Arsenal*. Dr. Pry often appears on TV and radio as an expert on national security issues. The BBC made his book *War Scare* into a two-hour TV documentary *Soviet War Scare 1983* and his book *Electric Armageddon* was the basis for another TV documentary *Electronic Armageddon* made by the National Geographic.

DR. PETER PRY



*This recognizes Dr. Peter Pry for his outstanding accomplishments during his 10 years of service at the Central Intelligence Agency. A noted expert in his field, Dr. Pry conducted groundbreaking research that illuminated one of the most important issues of our time—the US-Soviet nuclear competition. On the vanguard of strategic intelligence analysis during the Cold War, he developed much of what the US Government knows about Soviet planning for nuclear war, including Soviet views of the character of war, perceptions of US intentions, assessment of the nuclear balance, and operational plans. In the post-Cold War period, his work has been central to the US Government's understanding of evolving Russian threat perceptions and military doctrine and the construction of new paradigms for strategic warning and stability assessments.*

*Dr. Pry can take pride in knowing that his work has contributed significantly to the security of the United States. He has been a pillar of the Intelligence Community and will be sorely missed. Without a doubt, his continued public service on Capitol Hill will reflect the same expertise, professionalism, and dedication that have characterized his exemplary career at the CIA.*

*We wish him much success in his new endeavor.*

A handwritten signature in cursive script, reading "Lawrence K. Gershwin".

Lawrence K. Gershwin

A handwritten signature in cursive script, reading "Charles E. Allen".

Charles E. Allen

A handwritten signature in cursive script, reading "John E. McLaughlin".

John E. McLaughlin