



An August 24, 2013 photograph of Kim Jong-un standing in front of a newly constructed fast patrol craft armed with a new variant of the 30mm AK230, a 14.5mm CIWS and a 3-barrel chaff/flare launcher. (KCNA)

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Korean People's Navy 30mm CIWS

By Joseph S. Bermudez Jr.

As noted in in *KPA Journal* Vol. 2, Number 8, since the early 2000s the Korean People's Navy (KPN) has undertaken both a small-scale shipbuilding program and a series of upgrades to a number of its existing vessels and weapon systems. While the earlier article discussed the KPN 14.5mm 6-barrel close in weapon system (CIWS), it also

made mention of the "30mm 6-barrel boat automatic anti-aircraft gun system."¹ Details and quality imagery of this later system, however, were not available. In August 2013 reader Xu Tianran identified an image showing Kim Jong-un conducting "on-the-spot" guidance of what appears to be a newly constructed high-speed patrol boat. This image may have been taken during a trip to the KPN base at Munchŏn (i.e., Wŏnsan). Seen behind Kim, on the bow of an unidentified vessel, are a 14.5mm 6-barrel CIWS, a 3-barrel chaff/flare launcher and the 30mm gatling-gun CIWS. There is possibly a second a 14.5mm 6-barrel CIWS, on the port side of the vessel. This weapons system arrangement is unusual and not seen on any other KPN vessels, suggesting a new class or a vessel of experimental design. Although the former is more likely.

The origins of the 30mm CIWS are unclear, however, it is believed to have been developed from the Soviet/Russian 30mm AK230 which was first acquired by the KPN during the 1970s. The AK230 likely also served as the basis for the

Korean People's Army (KPA) M-1990 30mm 4-barrel gatling-gun. The characteristics for the M-1990 are,

Type:	30mm gatling gun
Range:	3,000m
Rate of Fire:	2,400-3,400 res./min.
Elevation:	-5 to 85 degrees
Ammo:	HEI-T (30mm x 210mm)
Other:	4-wheel carriage

KPA Lessons Learned from Foreign Conflicts 1960-Present, Part III

By Joseph S. Bermudez Jr.

In *KPA Journal* Volume 1, Numbers 9 and 10, and Volume 2, Number 4 some of the lessons that the KPA has derived from the study of foreign conflicts were discussed. Additional information concerning this subject has been identified and is presented here. While some of this new information fits within specific conflicts the subject of camouflage, concealment and deception (CCD) within the ballistic missile and WMD programs crosses several time periods and is discussed here separately.

Camouflage, Concealment and Deception

With regards to the DPRK's ballistic missile and weapons of mass destruction (WMD) programs the level of intensity ascribed to CCD operations were galvanized during the mid 1980s and early 1990s as a result three events—the Iran-Iraq War, the launch of the French commercial SPOT 1 (*Satellite Pour l'Observation de la Terre*) earth imaging satellite, and the first phase of the international crisis over the DPRK's nuclear capabilities.

During the eight-year-long Iran-Iraq war the DPRK was a major supplier of arms to Iran. In particular, beginning in 1985 it supplied Iran with Scud ballistic missiles. During the war both nations became aware of the U.S. provision of satellite imagery and other strategic intelligence to Iraq. They ascribe this assistance as being among the root causes for subsequent successful Iraqi ground offensives and ultimately of Iran being compelled to sign a cease-fire in 1988.

In 1986 France launched the commercial SPOT 1 earth observation satellite with a spatial resolution of 10-20 meters. This provided commercial access to reconnaissance imagery at a capability that was previously only available to the superpowers. This rapidly led to the use of high-resolution satellite imagery by news organizations, researchers and governments. These commercial capabilities were quickly focused upon the DPRK nuclear crisis.

During the later portion of the first round of the DPRK nuclear crisis (1984-1994) the U.S. presented extensive evidence including satellite imagery of both the extent of

DPRK nuclear development and its flagrant attempts to deceive the International Atomic Energy Agency (IAEA) and international community. Included within this was dramatic evidence of several DPRK falsifications. The available evidence indicates that the DPRK leadership was simultaneously embarrassed by these revelations and their technical inferiority, and astonished by satellite reconnaissance capabilities.

The net result of these three events was a reexamination and reemphasizing of CCD operations within the KPA—particularly within the ballistic missile and WMD programs.

Subsequent operations by the U.S. and its allies during Operations DESERT STORM, IRAQI FREEDOM and ENDURING FREEDOM were evaluated by the DPRK leadership as reinforcing the technical inferiority of the KPA and the correctness of their decision to reemphasize CCD operations.

In 1997 Ko Young-hwan, a defector who worked for the DPRK Ministry of Foreign Affairs, testified that his brother who was involved in the design of antiship cruise missiles and aware of CCD,

According to him [Ko's brother] the North conducted test firings of the missiles on the coastal areas of the Yellow Sea during the night time in order to avoid detection by the U.S. reconnaissance satellites.²

Three years later, in March 2000, Commander of U.S. Forces Korea, General Thomas A. Schwartz, mentioned the DPRK's increased emphasis in CCD operations in his testimony before Congress,

Applying lessons from our operations in Europe and Southwest Asia, the North Koreans have modified key facility defenses, dispersed forces, and improved an already impressive camouflage, concealment, and deception effort.³

Two years later General Schwartz's successor General Leon J. LaPorte reemphasized the DPRK commitment to CCD operations,

They concentrate their efforts against the combined surveillance, precision attack, and force generation capability of the Republic of Korea and the United States.⁴

Significantly the DPRK declared 2004 as the "Year of Camouflage."⁵ As a result a major effort was initiated to reemphasize CCD at all levels of the KPA, KPN and KPAF. These efforts reportedly included the construction of fake installations and bases.

Currently, camouflage, concealment and deception operations are practiced—with varying degrees of intensity

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and success—throughout the KPA and within its ballistic missile and WMD programs.

Operation ALLIED FORCE, 1999

During 2010 a excerpts from KPA manual concerning CCD found its way into the media. Among the interesting sections of the manual was this quote concerning operations in Kosovo that the KPA should emulate,

Yugoslavian forces in an exposed camp deployed fake antiaircraft guns, ground-to-air missiles, aircraft and tanks made of logs, plywood and cloth, and hid their actual weapons. As a result, NATO forces in fact destroyed only 13 of the 300 tanks though it claimed to have destroyed 40 percent of the armored targets.⁶

Other lessons were learned from the fighting in Kosovo. During May 2006 Kim Ch'o'l-su (pseudonym), a defector and former professor at the North Korean University of Computer Technology, gave an interview discussing the DPRK's cyber warfare capabilities. In that interview professor Kim is quoted as saving,

It [cyber warfare] was adopted as a national strategy starting in 1999. Kim Jong-il re-evaluated things after the war in Kosovo. He drew the conclusion that if wars during the 20th century were 'oil wars' and 'bullet wars,' in the 21st century they will be 'information wars.' Prior to that, the younger elite members of the military had proposed that a number of times, but it had not been adopted. Kim Jong-il has said that future warfare will depend not on 'who is showered with a lot of bullets,' but 'who grasps diverse information faster.'

War is not just crushing someone. Victory or defeat will be determined by who collects information faster, who analyzes it faster, and also by whether the command and intelligence systems can be dispersed. When people talk about 'cyber warfare,' very often they are imagining the manipulation of command systems by breaking into networks so that the enemy forces are at a disadvantage and our forces have an advantage. That, too, is reasonable. However, rapidly identifying sites scattered all over the world before anything is said and making use of them by hacking into them is itself warfare. Presumably the look of war has changed. North Korea has already begun cyber-warfare targeting the Internet servers in various and sundry countries, including the United States.

...Cyber-warfare is warfare which has the possibility of intruding into everyday life across the board.⁷

Operation DESERT STORM, 1999 and IRAQI FREEDOM, 2003-2010

A official DPRK statement in April 2003 speaks to another lesson learned by the country's leadership,

The Iraqi war teaches a lesson that in order to prevent a war and defend the security of a country and the sovereignty of a nation, it is necessary to have a powerful

physical deterrent.⁸

As noted in *KPA Journal* Vol. 1, Number 10 during the Iran-Iraq War the Korean People's Navy (KPN) took an active interest in naval mine operations and supplied Iran with large quantities of naval mines and naval mine production technology. Subsequently, during Operation DESERT STORM, the KPN closely observed both Iraqi naval mine operations in the waters off Kuwait and on the shores, and the US Navy's response to these threats.

While conducting an amphibious demonstration and heading to an amphibious raid, the USS *Princeton* (CG-59), a Ticonderoga-class guided missile cruiser, and the USS *Tripoli* (LPH-10), an Iwo Jima-class amphibious assault ship, were both severely damaged by Iraqi naval mines.⁹

While the precise lessons learned by the KPN from these operations are unknown, they likely reinforced lessons learned during the Iran-Iraq War, existing KPN naval mine warfare doctrine and the understanding that naval mine operations have the potential to shape the nature of a future conflict in the waters around the Korean Peninsula and denying the US Navy access to large sections of its exposed coastlines.

Spaced Armor Screening for KPA Tanks

By Joseph S. Bermudez Jr.

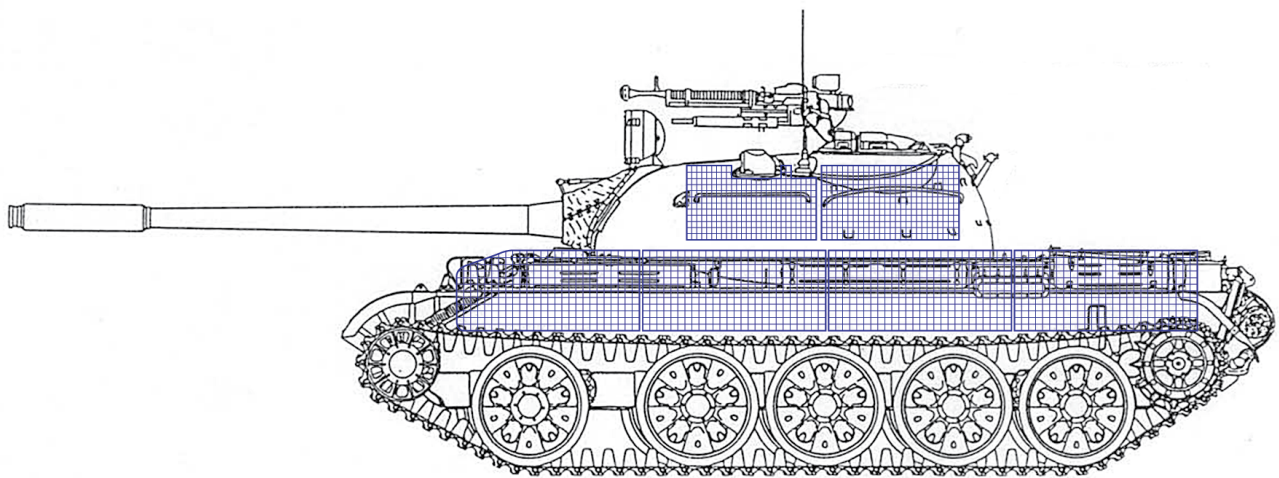
While it is know that the KPA has been interested in spaced and reactive armor for it tanks (see *KPA Journal* Volume 1, Number 4 for examples of the armor on the P'okpoong main battle tank) most of the details concerning this inter-



A photograph of a KPA T-55 tank and crew during a training exercise. Note the attachment points welded onto the turret. (KPA Publishing House)



Kim Chong-il standing from of a T-55 equipped with spaced armor screening. (KCNA)



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Postulated drawing of what the spaced armor screening would look like on a KPA T-55 tank. Base drawing is courtesy of Steven J. Zaloga.

est and possible technical developments are unknown. While occasional photographs of KPA armor show attachment points for what was believed to be spaced armor, clear imagery of this armor remained elusive. In 2011, however, a documentary about Kim Chong-il and Kim Jong-un showed a short clip of Kim Chong-il speaking in front of a T-55 equipped with spaced armor screening. The screening consists of welded weave-mesh panels positioned several inches from the hull and turret and attached to mounting points by short brackets. These panels are similar in design to those seen in use by other armies for many years. These panels are designed to split the fuze off a high explosive antitank (HEAT) warhead to prevent the proper formation of the shaped-charge metal stream that could penetrate the tank's armor.

KPA Antennas (II)

By Joseph S. Bermudez Jr.

This is the second article on Korean People's Army (KPA)—or in this case the Korean People's Air Force (KPAF)—communications equipment and COMINT capabilities. This article is one of an occasional series that will provide brief insights on these subjects based upon interviews with experts and other open-source data.



Antenna 1, a discone antenna. (KCNA)

During 2013 KCNA released an image of three MiG-29s climbing out of a KPAF air base (probably Sunch'ŏn). In the foreground is seen what appears to be the top of the control tower and five antennas.

The antenna (Antenna 1) on the far left is a discone, vertically polarized and probably covering the 100-1000 MHz range. It looks similar to a vertically polarized Diamond D-130 discone without the vertical element. Al-



A 2013 image of a flight of three KPAF MiG-29s taking off (probably from Sunch'ŏn Air Base) during a demonstration for Kim Jong-un. There are five antennas seen here on what appears to be the roof of the control tower. (KCNA)



Antennas 2, 3 and 4 and a portion of the light array. (KCNA)



Antenna 5, a low gain horizontally-polarized Yagi antenna. (KCNA)



What appears to be a seven-bulb runway status indicator array.

though mounted crooked it appears to be in reasonable condition.

The next antenna (Antenna 2) is the satellite dish-shaped device set at an elevation angle that suggests it's non-terrestrial. From the size it probably covers the 10+ GHz range. It has been suggested that it could be a circular polarized antenna for communicating with aircraft down-range.

The third antenna (Antenna 3) is either a vertical dipole cut for approximately 45 MHz. or a vertical monopole receiving broadband or a transceiver in the 30–80 MHz range.

The next antenna (Antenna 4) is biconic and probably operates in the 100–1000 MHz range. It is possibly a commercial grade unit due to the small diameter elements.

The final antenna (Antenna 5) at the far right appears to be a low-gain horizontally-polarized Yagi of wire, mounted on a wooden beam for point-to-point communications, and possibly covering the 150-600 Mhz range. The KPA appears to have a tradition of using wooden masted horizontally polarized Yagis for long distance point-to-point communications.

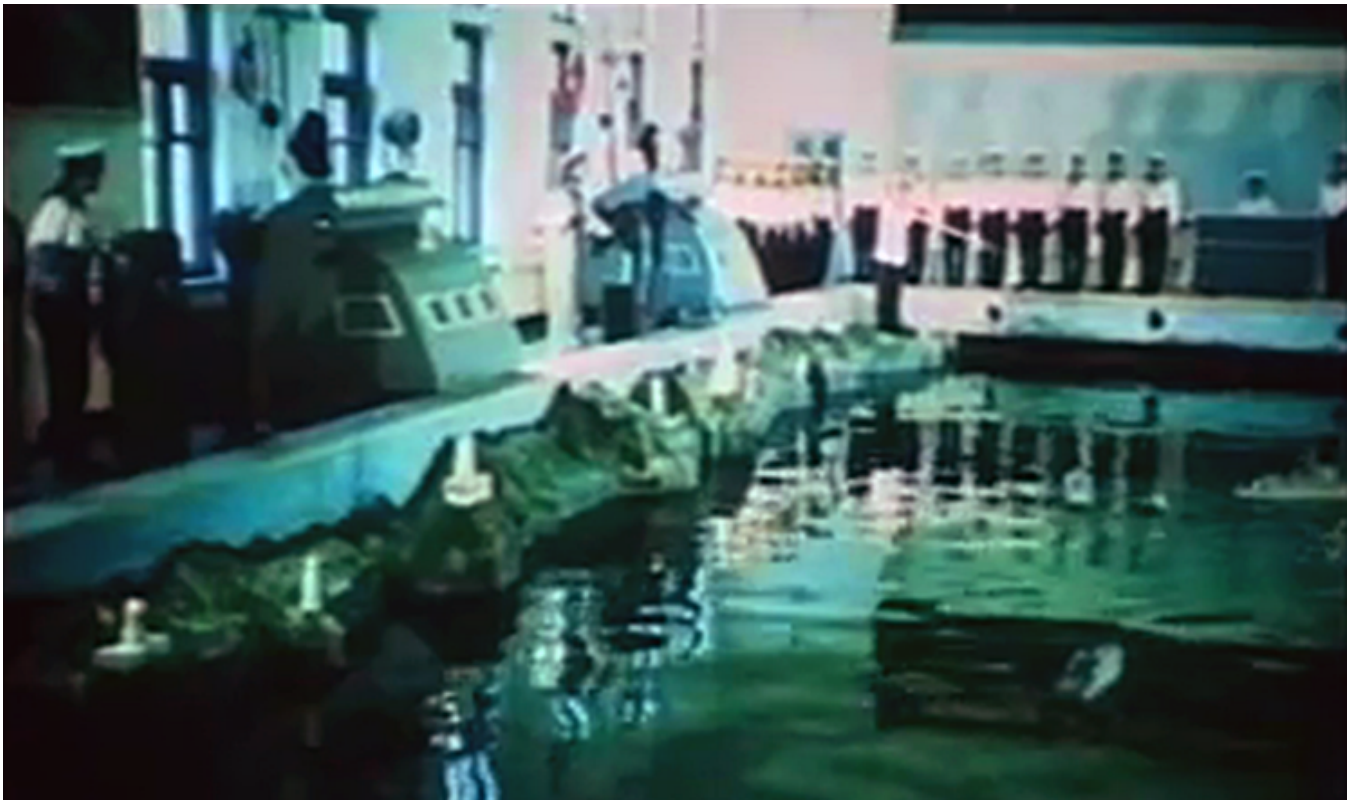
The seven bulb array (four orange/red and three green) is likely a runway status indicator.

While all the antennas have the general appearance of being amateurish it could be that they suffer from improper installation and lack of regular maintenance.

KPN Training Aid

By Joseph S. Bermudez Jr.

In *KPA Journal* Volume 2, Number 10 the subject of KPA tank training aids was discussed. A number of readers have asked if there were any similar information or imagery



KPN scaled handling pool and two patrol craft bridge simulators. Not the instructor standing on a rock in the pool. (KCNA)

available for KPAF or KPN training aids. One low-quality image, taken from an KCNA documentary shows a rudimentary KPN scale handling pool and two patrol craft bridge simulators. This training aid is apparently used for instructing sailors in the basics concepts of handling of ships, formation maneuvers and combat tactics. The location of the simulator is unknown, however, the elite Mangyongdae Revolutionary Academy located in P'yongyang, or the Kim Jong-suk Naval Academy (a.k.a., Kim Chong-suk Naval University) located in Majöl-li, Tongdo-ri would be reasonable assumptions.

Organization of the KPA Tank Battalion¹⁰

By Joseph S. Bermudez Jr.

Despite some commonly accepted ideas that the Korean Peninsula is unsuitable for extended armored operations, the Korean People's Army (KPA) has long held that armor has a major role to play in any future conflict on the peninsula, and maintains large numbers of tank and mechanized formations as strategic assets. Today, the KPA is estimated to possess an armor force consisting of approximately 4,100 tanks and 2,200 armored personnel carriers (APC).

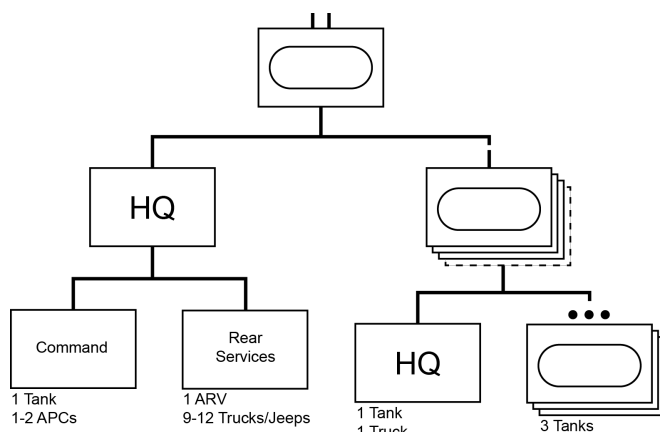
Tank Battalions

Within the KPA there are several types of tank formations, the tank division, tank brigade/regiment, mechanized

brigade/independent brigade/division-level tank battalion, independent light tank battalion and reserve military training unit (RMTU) tank battalion. Additionally, the KPA is believed to still possess a small number of SU-100 self-propelled gun battalions.

KPA tank battalions are typically commanded by a lieutenant colonel, with companies commanded by a major or captain. The structure of the tank battalion is quite similar to both the standard Russian and Chinese tank battalion organizations consisting of a headquarters and three tank companies. The headquarters consist of command and rear services elements, while the tank companies consist of a command element and three tank platoons.

There are variations in tank battalion personnel strength and equipment especially among battalions organic to elite, forward deployed, rear area and RMTUs. In general, a forward deployed tank battalion has a strength of approximately 227 (25 officers and 202 enlisted) and is equipped with 31 main battle tanks, 1 armored recovery vehicle (most often a T-34-T or possibly a BTS-4A), 1-2 APC or light tanks and 12-15 trucks and jeeps. The 31 tanks are distributed; one for the battalion commander and three companies of ten tanks each. Each tank company has one tank for the company commander and three platoons of three tanks each. Some tank battalions within elite units may have a four company organization. In which case their



KPA Medium Tank Battalion

strength is approximately 252 (30 officers and 222 enlisted) and is equipped with 41 main battle tanks, 1 armored recovery vehicle (most often a T-34-T or possibly a BTS-4A), 1-2 APC or light tanks and 16-20 trucks and jeeps. The 41 tanks are distributed; one for the battalion commander and four companies of ten tanks each. Each tank company has one tank for the company commander and three platoons of three tanks each.

The actual type of main battle tank a battalion is equipped with is dependent upon its parent unit's type, location and importance within KPA operational plans. Elite and many forward deployed tank formations are equipped with versions of the P'okpoong or Chonma main battle tank. The remaining tank battalions are equipped with versions of the T-54/T-55/Type-59. Although some RMTUs are likely equipped with the T-34.

The KPA also deploys a small number of light tank battalions. In general, these battalions have a strength of approximately 202 (29 officers and 173 enlisted) and is



Seventeen PT-76Bs from the 105th Tank Division's light tank battalion seen in January 2010 during a visit by Kim Jong-un. (KCNA)

equipped with 40-41 light tanks (PT-76, Type-62/63 or M-1985), 1 armored recovery vehicle (a T-34-T or APC-based vehicle), 1-2 APCs and 12-15 trucks and jeeps. The 40-41 tanks are distributed; the battalion commander may have one tank and four companies of ten tanks each. Each tank company has one tank for the company commander and three platoons of three tanks each. Some light tank battalions deployed in the rear areas may only have three companies. It is presently unclear if RMTUs possess any light tank battalions.

Self-propelled Gun Battalions

The KPA is believed to still possess a small number of SU-100 self-propelled gun battalions. These, however, are likely organized as antitank artillery units rather than armor units. It is estimated that an SU-100 battalion has a strength of approximately 199 (35 officers and 164 enlisted) and is equipped with 12 SU-100 self-propelled guns, and 14-16 trucks and jeeps. The 12 SU-100s are distributed into two batteries of six SU-100s each. With each battery having three sections of two SU-100s each.

Editor's Notes

This issue marks the end of Volume 2 of *KPA Journal*, which has suffered numerous delays due to the demands upon my professional career. Beginning with Volume 3 (2014) *KPA Journal* will receive an editorial and design makeover and switch to a different publication schedule—most likely quarterly. As part of these developments the journal will expand somewhat in size publishing longer articles, openly accept article submissions and initiate a peer-review system for submitted articles.

As always I continue to solicit your thoughts and suggestions on how to both improve *KPA Journal* and to tailor it more closely to your needs and interests, as well as those of the organizations you represent. Please feel free to contact me with any recommendations.

I would like to thank Chris Beaumont, Michael Madden, Cookie Sewell, Xu Tianran and Steven Zaloga for their assistance during the production of this issue.

Please feel free to share *KPA Journal* with your colleagues and friends. If you are a new reader and would like to be added to the *KPA Journal* mailing list please do so by submitting an email through the *Contact* feature on the website (www.kpajournal.com)

—Joseph S. Bermudez Jr.

Endnotes

- ¹ See the blog of Dr. Lun Swe at www.drlunswe.blogspot.com, accessed July 2009.
- ² U.S. Congress. Senate. *Committee on Governmental Affairs. North Korean Missile Proliferation, Hearing Before the Subcommittee on International Security, Proliferation, and Federal Services*. 105th Congress, 1st Session, October 21, 1997.
- ³ U.S. Congress, Senate, *Statement of General Thomas A. Schwartz, Commander United Nations Command, Commander, Republic of Korea-United States Combined Forces Command and United States Forces Korea Before the 108th Congress Senate Armed Services Committee*, 7 March 2000.
- ⁴ U.S. Congress, Senate, *Statement of General Leon J. LaPorte, Commander United Nations Command, Commander, Republic of Korea-United States Combined Forces Command and United States Forces Korea Before the 110th Congress Senate Armed Services Committee*, March 13, 2003
- ⁵ "North Korea Announces Year 2004 as 'Year of Camouflage,'" *Chosun Ilbo*, July 22, 2004.
- ⁶ Yu Yong-won. "Seoul Must Counter N.Korea's 'Asymmetrical' Advantage," *Chosun Ilbo*, October 12, 2010.
- ⁷ I Un-gy'on. "'Godfather of the Hackers' Reveals North Korea's Frightening Hacking Capabilities," *Gendai Koria*, May 2006, pp. 20-32.
- ⁸ Sanger, David. "Administration Divided Over North Korea," *New York Times*, April 21, 2003.
- ⁹ Rosenberg, Captain L. H. "Stopped Short by Mines," *Proceedings*, January 2001, pp. 66-68.
- ¹⁰ Interview data acquired by Joseph S. Bermudez Jr.; Warford, James M. "The Ch'onma-ho Main Battle Tank," *Armor*, September-October 2005, p. 46-49; Minnich, James M. *The North Korean People's Army: Origins and Current Tactics*, (Annapolis: Naval Institute Press, 2005); and Bermudez Jr., Joseph S. "The Tank Battalion of the North Korean People's Army," *Armor*, November-December 1986, p. 16-20.