



The ROK Island of Yönp'yöng-do under attack from KPA artillery, November 23, 2010 (MND).

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## **The Yönp'yöng-do Attack, November 23, 2010, Part I<sup>1</sup>**

By Joseph S. Bermudez Jr.

*(I would like to thank DigitalGlobe and the people who work there for providing the satellite imagery used in this paper.)*

### **Background**

The Yellow Sea—known as the West Sea to Koreans—along the west coast of the Korean Peninsula has been the scene of numerous naval incidents between the Democratic People's Republic of Korea (DPRK) and the Republic of Korea (ROK) since the signing of the Korean War Armistice Agreement on July 27, 1953.<sup>2</sup> The most numerous and violent of these incidents have occurred in the relatively confined waters surrounding the five islands of Paengnyöng-do, Taechöng-do, Sochöng-do, Yönp'yöng-do and U-do. There are a profusion of reasons for this; however, the common

underlying factor is the Northern Limit Line.

With the signing of the 1953 Armistice Agreement, the five islands remained under ROK and United Nations control. However, no mutually agreed upon maritime equivalent to the Military Demarcation Line separating ROK and DPRK waters on the west coast was agreed upon. Subsequently in 1961, in an effort to reduce maritime incidents, the United Nations Commander of Naval Forces established a maritime line-of-control mid-channel between the five islands and the DPRK mainland. This line was based upon then current internationally accepted maritime law and was utilized by the same commander to formally establish the Northern Limit Line (NLL) on January 14, 1965. Since that time the DPRK has repeatedly decried the NLL as illegally drawn.<sup>3</sup>

In October 1999, based upon its claims of 12 nautical miles territorial waters, the DPRK unilaterally declared a new maritime line-of-control significantly further south than the current NLL. This has subsequently resulted in a number of significant and sometimes violent incidents between the DPRK and ROK. During the past twelve months alone these have included: a naval engagement on November 10, 2009 in which a Korean People's Navy (KPN) Shanghai II class patrol vessel was heavily damaged; a Janu-

ary 27, 2010 Korean People's Army (KPA) coastal defense artillery exercise near the ROK islands in the West Sea and overlapping the NLL; the March 26, 2010 torpedoing of the ROK Navy corvette *Cheonan* by a KPN midget submarine near the island of Paengnyŏng-do; a August 9, 2010 KPA coastal defense artillery exercise in the area of Yŏnp'yŏng-do; and most recently the November 23, 2010 artillery attack on Yŏnp'yŏng-do.

### 2010 KPA Coastal Defense Artillery Exercises

On December 21, 2009 the KPN Command declared that "...the waters on the extension of the Military Demarcation Line in the West Sea under the control of our army as a peacetime naval firing zone [for] coastal and island artillery units of the KPA."<sup>4</sup> Three weeks later, on January 17, the KPN Command issued a further statement that it would "...deal a merciless retaliatory blow at the bellicose forces of the South Korean puppet army in case they persist in the military provocations in the West Sea while insisting on 'preserving the northern limit line.'<sup>5</sup> This was followed on January 26, 2010 by the declaration of "no-sail" zones near the ROK islands in the West Sea and overlapping the NLL.<sup>6</sup> The zones were to be in effect from January 25 to March 29.

Beginning on Wednesday January 27, 2010, and continuing through February 29, KPA coastal defense artillery and corps-level artillery units conducted artillery exercises in the "no-sail" zones, as part of the annual Winter training cycle. Approximately 370 artillery rounds in total were fired during the exercise. No fishing vessels were operating in the target areas and all rounds impacted on the DPRK's side of the NLL, suggesting that the DPRK did not want to escalate the situation too far.

This exercise contained a number of notable features:

- It was one of the few occasions that the KPA combined 240 mm multiple rocket launchers (MRL) with 130 mm and 170 mm self-propelled artillery systems in a single coastal defense exercise.
- Targeting during the exercise was assisted by coastal defense radars.



Map of Kangnyŏng-bando - Yŏnp'yŏng-do Area

- Many of the fire missions employed "time-on-target" tactics where rounds from different units, at varying distances, arrive at the same time on the same target.
- ROK officials indicated that the artillery fire missions were accurate.
- ROK officials believed that the exercise was controlled by General Ri Yong-ho (a.k.a., Yi Yong-ho), chief of the General Staff Department. An artillery expert, Ri is be-

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Kaemŏri UGF and Coastal Defense Cruise Missile Position, November 29, 2010 (DigitalGlobe)

smaller artillery exercises were held throughout the year across Hwanghae-namdo including several immediately north of Yŏnp'yŏng-do.

### Kangnyŏng-bando

The Kangnyŏng-bando (i.e., Kangnyŏng Peninsula) is the jagged peninsula that extends south and west of the port city of Haeju-si, Hwanghae-namdo, into the West Sea. It is named after Kangnyŏng—the major city on the peninsula and is of strategic importance to the KPA due to the close proximity to the ROK, especially the island of Yŏnp'yŏng-do. As with most coastal areas adjacent to the ROK, the Kangnyŏng-bando has numerous small KPA bases, fortified positions, pre-surveyed artillery firing positions and underground

facilities (UGF)—including specialized coastal defense artillery installations—scattered throughout it. Two of the more significant of these are the coastal defense artillery installation at Kaemŏri (37°45' 57.15" N 125°36' 51.06" E) and a large UGF one kilometer southeast of Sanji-gol (37°49' 26.88" N 125°33' 49.66" E) on the tallest peak in the area.<sup>9</sup>

- This was a combined arms exercise involving KPA artillery units, KPN vessels and Korean People's Air Force (KPAF) fighter aircraft.

On August 9, 2010 the KPA conducted another coastal defense artillery exercise in the West Sea in the area of the ROK island of Yŏnp'yŏng-do. This exercise was stated to be in response to artillery exercises conducted ROK Marines on Yŏnp'yŏng-do during August 6 and 8. During the exercise the KPA fired approximately 130 artillery rounds—some of which impacted south of the NLL.<sup>7</sup> It is unclear if "time-on-target" tactics were employed during the exercise. Notably, that evening a small unmanned aerial vehicle (UAV)—possibly a Pchela-IT—was identified flying approximately 20 km north of the island. Presumably being employed for reconnaissance and to assess the earlier exercise. This is one of the few times that KPA UAVs have been publicly identified.<sup>8</sup>

In addition to these larger exercises a number of

The Kaemŏri UGF dates to the Korean War when the KPA established artillery positions in natural caves in the 61 m high hill adjacent to the small hamlet of Kaemŏri. These caves were subsequently improved over the years, with some of expansion being conducted as late as 2010, to provide a much larger and more capable UGF. The Kaemŏri UGF is equipped with an artillery battery of 76.2 mm guns. This facility is frequently, and inaccurately, stated to house a coastal defense missile battery. There is, however, an old S-2 Sopka (SSC-2b SAMLET) coastal defense missile battery position (37°45' 46.88" N 125°36' 26.12" E) on a lower ridge located approximately 600 m to west of the main Kaemŏri UGF.<sup>10</sup>

The Sanji-gol facility is variously reported as a SA-3 surface-to-air missile (SAM) or a coastal defense cruise missile battery site. If it is the later, it would compliment the other coastal defense missile batteries located to the northeast near Haeju and to the west and southwest. Together these sites provide overlapping coverage of the sea ap-



Sanji-gol UGF, November 29, 2010 (DigitalGlobe)

## Yönp'yöng-do

Located approximately 67 km (36 nm) northwest of the port city of Inchön, the ROK island of Yönp'yöng-do (a.k.a., Daeyonpyeong-do), in Inch'ön-gwangyöksi, is 12 km (6.5 nm) south of the DPRK coast and only 3 km (1.6 nm) south of the NLL. The island encompasses an area of approximately 7.3 square km (2.8 square miles) and is home to 1,780 civilians and a ROK Marine unit of approximately 1,000 troops.<sup>13</sup> The majority of the civilian population is located on the south side of the island in and around the port town of Yönp'yöng-ni. These civilians are primarily involved in the fishing and tourism industries, although there are a small number of agri-

proaches to Hwanghae-namdo and the ROK port city of Inchön.

In addition to these UGFs, sea walls, concrete “dragon teeth,” and other anti-landing devices protect beaches that are suitable for amphibious landings.

In addition to the KPA positions on the Kangnyöng-bando, the KPA maintains a small garrison and coastal defense installation on the small island of Mu-do, approximately 12 km (6.5 nm) to the northwest of Yönp'yöng-do. The UGF is located within a 45 m high hill (at 37°47' 13.48" N 125°35' 25.54" E) on the east side of the island and houses a 76.2 mm artillery battery.<sup>11</sup>

The province of Hwanghae-namdo is the responsibility of the KPA's IV Corps, under the command of General Kim Kyok-sik, and is reported to consist of a: mechanized infantry division, four infantry divisions, tank brigade, field artillery brigade, MRL brigade, two light infantry brigades, reconnaissance brigade and various combat and service support units.

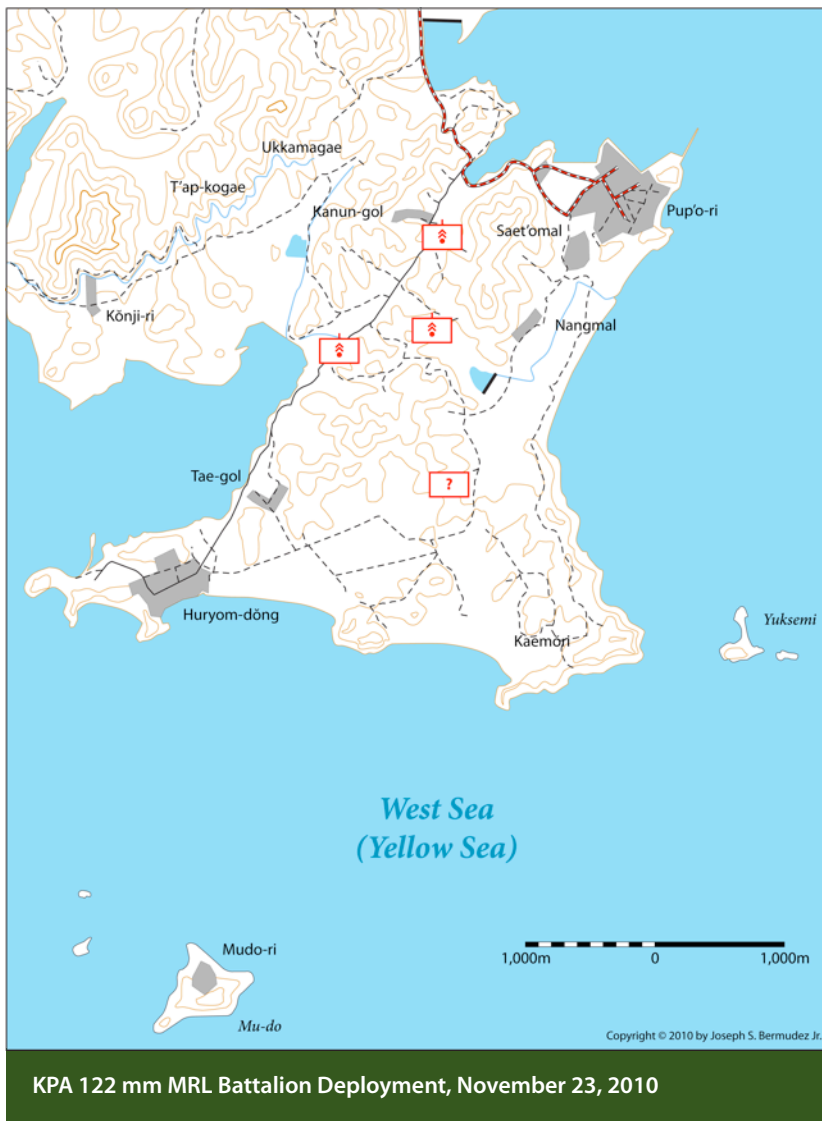
Air defense of the western section of the DPRK, including Hwanghae-namdo, is the responsibility of the KPAF's 3<sup>rd</sup> Air Combat Division, headquartered at Hwangju Air Base, Hwanghae-bukto. As part of its responsibilities the 3<sup>rd</sup> Air Combat Division commands the majority of the surface-to-air missile (SAM) units within its area responsibility.<sup>12</sup>

cultural areas located across the island. A number of civilians are also employed in support of the ROK Marine unit stationed on the island. As part of the ROK's overall civilian defense plans the civilian population is provided with communal underground shelters.

The primary mission of the Marines is to defend the island against a KPA amphibious assault.<sup>14</sup> The unit is augmented by various intelligence components and two artillery batteries. The first artillery battery is equipped with six 105 mm towed howitzers; the second with six 155 mm K-9 self-propelled howitzers and a number of K-10 armored ammunition resupply vehicles. Over the years the island has been fortified with numerous underground bunkers, hardened artillery sites, beach defense, POL storage facilities, three helicopter pads, C4ISR facilities, fortified fighting positions and a number of other military related facilities.

## Pre-Attack Activities

On November 16 the ROK Joint Chiefs of Staff (JCS) announced that it planned to conduct the annual Hoguk training exercise during November 22-30 and that approximately 70,000 troops from all four services would participate. As is routine for these exercises the DPRK denounced them as “simulating an invasion of the North” and demanded that they be cancelled.<sup>15</sup> The ROK rejected these demands since the Hoguk exercise had been held annually



KPA 122 mm MRL Battalion Deployment, November 23, 2010

three firing batteries were initially deployed to three positions (northern at 37°47' 40.83" N 125°35' 59.96" E; eastern at 37°47' 23.49" N 125°35' 59.06" E; and southern at 37°47' 13.48" N 125°35' 25.54" E) laid out in a 500 m radius arc, centered on a point 600 m south of the village of Kaun-gol. Although it is unclear if it is related to the deployment of the 122 mm MRL battalion, or the subsequent attack upon Yŏnp'yŏng-do, satellite imagery identifies a small cluster of 4-7 camouflaged vehicles further south (at 37°46' 36.92" N 125°35' 00.38" E), approximately 1.3 km southwest of the southern battery position.<sup>21</sup>

Satellite imagery shows that each of the battery positions followed KPA standards, consisting of six individual "U" shaped revetted positions. Each of the revetted positions were approximately 11 m x 4 m with a 1-2 m high berm and open on the side facing away from the enemy. The six positions were equally spaced at 20 m intervals with the entire firing line approximately 110 m long. Adjacent to the individual positions was a small crew dugout (although these were not completed in many of the satellite images available). Approximately 15-25m forward (i.e., towards the enemy), or at the end, of the firing line was a larger battery headquarters dugout. All equipment and the battery headquarters were covered with camouflage netting.<sup>22</sup>

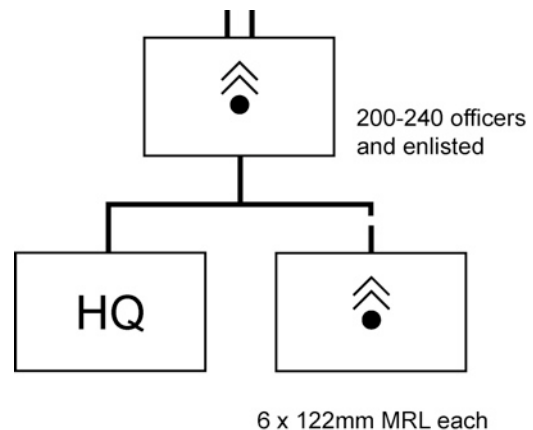
A typical KPA division-level 122 mm MRL battalion consists of 200-240 officers and enlisted personnel and is organized into a headquarters and three firing batteries—each with six launchers.

The most common 122 mm MRLs in KPA service are the BM-21,

since 1996.<sup>16</sup>

According to statements by National Intelligence Service Director (NIS) Won Sei-hoon and MND spokespersons, ROK intelligence detected the movement of a KPA 122 mm MRL battalion on Kangnyŏng-bando "...two days before..." (i.e., November 21) the attack upon Yŏnp'yŏng-do.<sup>17</sup> This battalion may have been from the IV Corps' 33<sup>rd</sup> Infantry Division which is deployed to defend the southwest section of Hwanghae-namdo.<sup>18</sup> Accompanying this movement, or possibly slightly pre-dating it, KPA engineers appear to have improved several existing revetted artillery firing positions between the small villages of Kaun-gol and Tae-gol on the southern tip of the Kangnyŏng-bando. Many reports would later incorrectly state that the entire MRL battalion was deployed to the coastal defense artillery installation at Kaemŏri.<sup>19</sup> The information concerning the movement of the 122m MRL battalion does not appear to have been passed to the Marines stationed on Yŏnp'yŏng-do.<sup>20</sup>

Preliminary information suggests that the battalion's



KPA 122 mm MRL Battalion, 2010



The northern 122 mm MRL battery position on November 29, 2010. Note the trench for the communications cable from the Kaemöri UGF bisecting the position. The camouflaged battery headquarters can be seen approximately 25 m south of the firing line. (DigitalGlobe)



Taken on November 29, 2010, this image shows what is believed to have been the eastern 122 mm MRL battery's original firing position on November 23, 2010. Note the trench for the communications cable from the Kaemöri UGF east of the position. (DigitalGlobe)



KPA BM-11 122 mm MRL, October 10, 2010 (KCTV)



KPA M-1992 122 mm MRL, 2002 (KPA)



KPA M-1993 122 mm MRL, October 10, 2010 (KCTV)

BM-11, M-1985, M-1992 and M-1993.<sup>23</sup> The BM-21, M-1985, M-1992 and M-1993 consist of a 40 launch tube assembly, while the BM-11 has a 30 launch tube assembly. Maximum rate of fire for these systems is 2 rounds per second. Given the dimensions of the prepared firing positions and the size of the vehicles themselves it would appear that the battalion was equipped with the M-1985, M-1992 or M-1993 MRL.

At approximately 08:20 hours (local time) on November 23 the DPRK sent a telegram to the ROK stating that it would not “...sit idly by and watch if South Korea fires at North Korean waters during the military training.” According to then ROK Minister of National Defense (MND) Kim Tae-young this warning was dismissed since the ROK Marine exercise, a component of the unit’s monthly training cycle, was unrelated to the ongoing annual Hoguk exercise. Furthermore, the designated impact area within ROK territorial waters had been previously announced in internationally accepted Notices to Airmen (NOTAM).<sup>24</sup>

Somewhat later in the day ROK artillery units on the islands of Yŏnp’yŏng-do and Paengnyŏng-do (a.k.a., Baeknyeong-do)—both in Inch’ŏn-gwangyŏksi—commenced their routine monthly live-fire training exercise. The designated impact area for the exercise was 20-30 kilometers southwest of Yŏnp’yŏng-do (i.e., within the waters now claimed by the DPRK).<sup>25</sup>

Shortly before 14:30 hours the 122 mm MRL battalion near Kaun-gol reportedly conducted a brief firing exercise. As with the earlier intelligence concerning the movement of

the battalion, this information does not appear to have been passed to the Marines on Yŏnp’yŏng-do.<sup>26</sup>

At approximately the same time the 60<sup>th</sup> Air Regiment at Pukch’ang-ni Air Base, in P’yŏngan-namdo, launched a flight of five MiG-23ML flogger fighters. These aircraft flew southwest and assumed a patrol pattern over Hwanghae-namdo. Meanwhile, Korean People’s Navy (KPN) coastal defense missile units went on alert and a number of patrol vessels sortied from their bases on the West Sea. Additionally, some IV Corps long-range artillery units reportedly moved to pre-surveyed firing positions.<sup>27</sup>

### Attack on Yŏnp’yŏng-do

At 14:34 hours on November 23, 2010 the southern 122 mm MRL battery located 1.2 km south of Kaun-gol conducted an unprovoked surprise “time-on-target” artillery attack upon the ROK island of Yŏnp’yŏng-do. It is possible that either one, or both, of the 76.2 mm coastal defense batteries at Kaemŏri and on Mu-do participated in the attack.<sup>28</sup>

The initial barrage continued from 14:34 to 14:46 hours and consisted of an estimated 150 rounds. Approximately 60 rounds fell on Marine positions (including three helipads) and the small villages of Songnim-myŏn and Yŏnp’yŏng-ni, while 90 rounds impacted in the surrounding waters. This barrage sent civilians racing to communal shelters and subsequently to the docks at Yŏnp’yŏng-ni on the south side of the island to evacuate. Marines raced to their combat positions, while their artillery—still positioned to



the southwest for the earlier live firing exercise—moved to hardened firing positions. At 14:47 hours the Marine 155 mm K-9 battery commenced counter-battery fire and continued until approximately 14:55 hours. The K-9 battery, however, faced some significant challenges. Only four of its six K-9 self-propelled howitzers were combat ready and the fire control center experienced trouble with its AN/TPQ-37 Fire Finder counter-battery radar. This forced the Marine K-9s to execute preplanned counter-battery fire against "... command posts and barracks..." on Mu-do. Approximately 50 rounds were fired at targets on Mu-do before the AN/TPQ-37 Fire Finder was repaired and identified the 122 mm MRL battery south of Kaun-gol. Approximately 30 rounds of counter-battery fire were then directed against that position. After the initial KPA barrage there was a 15-minute pause then at 15:10 hours a second barrage commenced. This lasted until 15:41 hours. The entire exchange lasted approximately one hour. The MND estimates that during the engagement the KPA fired approximately 170 rounds while the ROK Marine K-9s expended 80 rounds.<sup>29</sup>

Describing the initial "time-on-target" artillery barrage on Yönp'yöng-do Marine Corporal Park Tae-min said "First, I saw one or two shells falling. Then immediately, a

shower of dozens of shells blanketed the town. ...In an instant, buildings were lifted and flown around, and fires erupted all over."<sup>30</sup>

While the artillery engagement was in progress the ROK Air Force (ROKAF), at 14:50 hours, launched F-15K and KF-16 aircraft in preparation both to conduct retaliatory strikes against KPA positions and engage the KPAF MiG-23s should they undertake hostile actions—the rules of engagement in place at the time required presidential approval before engaging KPA forces except for instances of self-defense. The F-15K and KF-16 were subsequently given Presidential authorization to attack KPA artillery positions should they commence a third artillery barrage. Ultimately the KPA didn't conduct a third barrage and these aircraft did not launch any strikes or engage the MiG-23s. On November 24 ROK Defense Minister Kim Tae-young stated that the highly restrictive rules-of-engagement were being reviewed to possibly update them to require emergency reaction aircraft to immediately launch retaliatory strikes if ROK units are under attack.<sup>31</sup>

At 15:45 hours the ROK JCS ordered the intelligence watch status of the armed forces be upgraded from watchcon 3 to watchcon 2. The defense condition—defcon, how-



Taken on November 29, 2010, this image shows what is believed to abandoned position of the southern 122 mm MRL battery. This is the position from which the attack on Yönp'yöng-do was conducted. Note the burn marks from the launch on the northern side of the individual positions and the impact craters from the 155 mm K-9 counter-battery fires just north and west of the firing line. (DigitalGlobe)

ever, remained unchanged. Several hours after the attack the ROK Ministry of Land, Transport and Maritime Affairs ordered all a cessation of all civilian maritime and air traffic to and around the island. International flights operating out of Inchön International Airport were not impacted but were warned to take exercise additional caution in the area.<sup>32</sup>

Estimates of the total damage and casualties inflicted upon the KPA by the Marine K-9 counter-battery fire are unknown at this time. A ROK Joint Chiefs of Staff spokesperson, referring to the Mu-do strike, stated that satellite images "...show our shells landed on a cluster of barracks in North Korea, so we presume there have been many casualties and considerable property damage."<sup>33</sup>

Total ROK casualties as a result of the attack are reported to be 2 Marines and 2 civilians killed and 15 Marines and 3 civilians wounded.<sup>34</sup> The KPA shelling caused moderate damage to ROK Marine positions, damaged fuel stores, began bushfires at numerous locations on the island and destroyed or damaged a number of civilian structures in and around the village of Yönp'yöng-ni. Large numbers of firefighters and emergency personnel from Inchön were deployed to the island to contain the fires and assist with recovery operations.<sup>35</sup>

*(The conclusion of this article will appear in Vol. 1, No. 12 and will include a gazetteer of cited place names.)*

the many other unnamed individuals who were extremely generous with their time and expertise during the preparation of this report. A special thanks goes to the people at DigitalGlobe for their generosity in allowing me to use their imagery.

—Joseph S. Bermudez, Jr.

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## Editor's Note

The preparation of this two part overview of the KPA's November 23, 2010 attack on Yönp'yöng-do has been a challenging and time consuming project. I hope that readers will find the information contained within it both interesting and valuable. Part II is being released concurrently so please go to the website and download it. Eventually I will reformat the two parts into a single report and post it on the *KPA Journal* website. This will undoubtedly make it easier to reference and read.

I have received a tremendous number of emails and other correspondence from people asking me why I haven't posted frequent updates concerning the current tension in the West Sea. The answer to this is complicated, but to distill the answer down to something reasonable I will just say that *KPA Journal* is neither a blog or a news site. I simple do not have the time or resources to pursue such endeavors.

As always you are welcome to freely share *KPA Journal* with colleagues and friends. If they'd like to keep receiving the journal please have them visit the website.

All readers are encouraged to submit any corrections, clarifications, comments or simply share ideas of what you would like to see in future issue of *KPA Journal*. Thank you all for your encouragement and support.

I would like to thank would like to thank Daniel Allmacher, Keith Jacobs, Michael Madden, Dwight Rider and

## Endnotes

- 1 This preliminary overview of the November 23, 2010 KPA attack upon the ROK island of Yŏnp'yŏng-do has been written with information available in the four short weeks following the attack. Readers are cautioned that, as with any account written so close to the event it is describing, it likely that many important details are presently unavailable or incomplete. It is
- 2 The Korean War is known as the "Fatherland Liberation War" within the DPRK. Aside from identifying the Yellow Sea as the West Sea, both Koreas also refer to the Sea of Japan as the East Sea.
- 3 This is the most basic of explanations of the Northern Limit Line and there is considerable debate concerning the actual date of its establishment. Readers interested in a more comprehensive understanding of this fascinating subject are advised to begin with the following sources: Central Intelligence Agency. *The West Coast Korean Islands*, BGI RP 74-9, January 1974 [Declassified 2000/04/18], <http://www.kpajournal.com/declassified-documents-old/The%20West%20Coast%20Islands%20January%201974.pdf>; Kotch, John Barry; Abbey, Michael. "Ending naval clashes on the Northern Limit Line and the quest for a West Sea peace regime," *Asian Perspective*, Vol. 27, No. 2, pp. 175-204, <http://www.asianperspective.org/articles/v27n2-f.pdf>; Moo, Col. Bong Ryoo. *The Korean Armistice and the Islands*. Carlisle Barracks: U.S. Army War College, March 11, 2009, <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA500904&Location=U2&doc=GetTRDoc.pdf>; *Text of the Korean War Armistice Agreement*, July 27, 1953, <http://news.findlaw.com/wp/docs/korea/kwarmagr072753.html>; and Van Dyke, Jon. *The Maritime Boundary Between North & South Korea in the Yellow (West) Sea*. Washington, D.C.: 38 North U.S.-Korea Institute, Johns Hopkins University School of Advanced International Studies, July 29, 2010, <http://38north.org/2010/07/the-maritime-boundary-between-north-south-korea-in-the-yellow-west-sea/>.
- 4 "In Defiance of Sea Border," *Korea Times*, December 22, 2009, <http://www.koreatimes.co.kr/www/news/include/print.asp?newsIdx=57746>.
- 5 "S. Korean Puppets Commit Grave Military Provocation in West Sea," *KCNA*, December 17, 2009, <http://www.kcna.co.jp/item/2009/200912/news17/20091217-24ee.html>.
- 6 "N. Korea Declares No-sail Zones off West Coast: Officials," *Yonhap*, January 26, 2010.
- 7 Ibid.; and Song, Sang-ho. "Spy Agency, Military Under Fire for not Dealing with N. Korea," *Korea Herald*, December 2, 2010, <http://www.koreaherald.com/national/Detail.jsp?newsMLId=20101202000986>.
- 8 Interview data acquired by Joseph S. Bermudez Jr.; and "ROK TV on Sighting of DPRK Unmanned Aerial Vehicle in Yellow Sea," *MBC TV*, August 16, 2010.
- 9 Interview data acquired by Joseph S. Bermudez Jr.
- 10 Ibid.
- 11 Ibid.
- 12 Ibid.; and "S.Korea 'Outgunned' in West Sea," *Chosun Ilbo*, November 25, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/25/2010112501264.html](http://english.chosun.com/site/data/html_dir/2010/11/25/2010112501264.html).
- 13 ROK MND Statement November 29, 2010; and "S. Korea Deploys More Artillery, Rockets on Yeonpyeong Island," *Yonhap*, November 29, 2010.
- 14 "Seoul to Bolster Marine Corps as Elite Force," *Korea Herald*, December 4, 2010; "S.Korea 'Outgunned' in West Sea," *Chosun Ilbo*, November 25, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/25/2010112501264.html](http://english.chosun.com/site/data/html_dir/2010/11/25/2010112501264.html); and McDonald, Mark. "'Crisis Status' in South Korea After North Shells Island," *New York Times*, November 23, 2010, <http://www.nytimes.com/2010/11/24/world/asia/24korea.html?emc=tnt&tntemail0=y>.
- 15 McDonald, Mark. "'Crisis Status' in South Korea After North Shells Island," *New York Times*, November 23, 2010, <http://www.nytimes.com/2010/11/24/world/asia/24korea.html?emc=tnt&tntemail0=y>.
- 16 "US Marine Won't Participate in Exercise in West Sea," *Korea Times*, November 18, 2010, [http://www.koreatimes.co.kr/www/news/nation/2010/11/205\\_76555.html](http://www.koreatimes.co.kr/www/news/nation/2010/11/205_76555.html).
- 17 Interview data acquired by Joseph S. Bermudez Jr.; "Failure of Intelligence And Vigilance," *Dong-A Ilbo*, December 3, 2010, <http://www.asahi.com/english/TKY201012030537.html>; and "Fumbling on Intelligence," *JoongAng Ilbo*, December 3, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2929138>.
- 18 Within the KPA 107 mm and 122 mm MRLs are generally brigade and division level assets, while 140, 200 and 240 mm MRLs are typically Corps and Army level assets. The identification of the 33<sup>rd</sup> Infantry Division remains to be confirmed. Interview data acquired by Joseph S. Bermudez Jr.; Bermudez Jr., Joseph S. *The Armed Forces of North Korea*. London: I.B. Tauris, 2001, pp. 57-78; and "S.Korea 'Unlikely' to Have Damaged N.Korean Artillery Positions," *Chosun Ilbo*, December 1, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/12/01/2010120101038.html](http://english.chosun.com/site/data/html_dir/2010/12/01/2010120101038.html); One ROK report describes the organization of the MRL battalion as being "...six 122-mm MLRS shells and later two batteries of 12 112-mm MLRS shells." The reference to "112 mm MRLS" is in error. "Military Knew of N.Korean Artillery Move Before Attack," *Chosun Ilbo*, November 26, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/26/2010112600954.html](http://english.chosun.com/site/data/html_dir/2010/11/26/2010112600954.html); and "The Devastating Power of N. Korea's MLRS Artillery," *Chosun Ilbo*, November 26, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/26/2010112600744.html](http://english.chosun.com/site/data/html_dir/2010/11/26/2010112600744.html).
- 19 Interview data acquired by Joseph S. Bermudez Jr.; and "ROK Defense Ministry Says DPRK Fires 170 Shells in Act of 'Savagery,'" *Agence France Presse*, November 24, 2010.
- 20 "Military Knew of N.Korean Artillery Move Before Attack," *Chosun Ilbo*, November 26, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/26/2010112600954.html](http://english.chosun.com/site/data/html_dir/2010/11/26/2010112600954.html).

- <sup>21</sup> Interview data acquired by Joseph S. Bermudez Jr.
- <sup>22</sup> Ibid.
- <sup>23</sup> There are additional, as of yet publicly unidentified, 122 mm MRL systems in KPA inventory. Interview data acquired by Joseph S. Bermudez Jr.
- <sup>24</sup> Kim, Christine. "South Thwarts Even Bigger Attack: Military Says Strike by Howitzers Took Out Equipment," *Joongang Ilbo*, November 25, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2928852>; "N.Korea Cites S.Korean Drill as Excuse for Attack," *Chosun Ilbo*, November 24, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/24/2010112401004.html](http://english.chosun.com/site/data/html_dir/2010/11/24/2010112401004.html); McDonald, Mark. "'Crisis Status' in South Korea After North Shells Island," *New York Times*, November 23, 2010, <http://www.nytimes.com/2010/11/24/world/asia/24korea.html?emc=tnt&ntemail0=y> and "N. Korea Threatens Additional Attacks, Accuses S. Korea of Provocation," *Yonhap*, November 23, 2010.
- <sup>25</sup> "N. Korea Threatens Additional Attacks, Accuses S. Korea of Provocation," *Yonhap*, November 23, 2010.
- <sup>26</sup> "Military Knew of N.Korean Artillery Move Before Attack," *Chosun Ilbo*, November 26, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/26/2010112600954.html](http://english.chosun.com/site/data/html_dir/2010/11/26/2010112600954.html).
- <sup>27</sup> "ROK Defense Ministry Says DPRK Fires 170 Shells in Act of 'Savagery,'" *Agence France Presse*, November 24, 2010.
- <sup>28</sup> During the past ten years a growing percentage of the KPA's coastal defense artillery has been upgraded to 130 mm guns, with a range of 27 km. The unit at Kaemöri, however, was apparently still equipped with 76.2 mm guns with a range of 12 km. Interview data acquired by Joseph S. Bermudez Jr.; Kim, Christine. "N. Korea Fired Thermobaric Bombs," *Joongang Ilbo*, November 26, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2928905>; "ROK Defense Ministry Says DPRK Fires 170 Shells in Act of 'Savagery,'" *Agence France Presse*, November 24, 2010; and "Navy Warns of Threat from N.Korea's Coastal Artillery," *Chosun Ilbo*, August 10, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/08/10/2010081000648.html](http://english.chosun.com/site/data/html_dir/2010/08/10/2010081000648.html).
- <sup>29</sup> There is some confusion over the number of combat ready K-9s. Most sources state three were combat ready, while another source places the number at four. According to Defense Minister Kim Tae-young the 105 mm guns were not employed to conduct counter-battery fire because the range was too short. He also stated that the 105 mm howitzers on the island would quickly be replaced by more modern and longer-ranged K-9 self-propelled systems. It should be noted that Minister Kim was compelled to tender his resignation on November 25th because of the incident. President Lee Myung-bak replaced him with Kim Kwan-jin, former Chairman of the Joint Chiefs of Staff. "Failure of Intelligence And Vigilance," *Dong-A Ilbo*, December 3, 2010, <http://www.asahi.com/english/TKY201012030537.html>; Song, Sang-ho. "Spy Agency, Military Under Fire for not Dealing with N. Korea," *Korea Herald*, December 2, 2010, <http://www.koreaherald.com/national/Detail.jsp?newsMLId=20101202000986>; "S. Korea Names New Defense Minister," *Yonhap*, December 4, 2010; "Military Pushes to Increase Budget For Defending Western Islands," *Yonhap*, November 29, 2010; "Military Knew of N.Korean Artillery Move Before Attack," *Chosun Ilbo*, November 26, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/26/2010112600954.html](http://english.chosun.com/site/data/html_dir/2010/11/26/2010112600954.html); Ser, Myo-ja. "Defense Minister Resigns After Heavy Criticism," *Joongang Ilbo*, November 26, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2928904>; "S. Korea Considers Deploying 'cave-busting' Missiles on Border Islands," *Yonhap*, November 25, 2010; Kim, Christine. "South Thwarts Even Bigger Attack: Military Says Strike by Howitzers Took Out Equipment," *Joongang Ilbo*, November 25, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2928852>; "ROK Defense Ministry Says DPRK Fires 170 Shells in Act of 'Savagery,'" *Agence France Presse*, November 24, 2010; "S. Korea to Toughen Rules of Engagement Against N. Korean Attack," *Yonhap*, November 24, 2010; "ROK To Deploy More Artillery on Island After Shelling," *Agence France Presse*, November 24, 2010; "N. Korea Fires Artillery Onto S. Korean Island; Two Soldiers Killed," *Yonhap*, November 23, 2010; Sanger, David E. and McDonald, Mark. "South Koreans and U.S. to Stage a Joint Exercise," *New York Times*, November 23, 2010, <http://www.nytimes.com/2010/11/24/world/asia/24nkorea.html?emc=tnt&ntemail0=y> and "S. Korea Warns of 'Stern Retaliation' Against any Additional N. Korean Attacks," *Yonhap*, November 23, 2010.
- <sup>30</sup> Kim, Sam. "S. Korean Marines Recount N. Korea's Deadly Shelling of Yeonpyeong," *Yonhap*, December 14, 2010.
- <sup>31</sup> "S.Korea 'Was Ready to Strike' North During Yeonpyeong Attack," *Chosun Ilbo*, December 13, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/12/13/2010121300397.html](http://english.chosun.com/site/data/html_dir/2010/12/13/2010121300397.html); "Defense Minister Resigns After Heavy Criticism," *Joongang Ilbo*, November 26, 2010, <http://joongangdaily.joins.com/article/view.asp?aid=2928904>; "Military Under Fire for Response to N.Korean Attack," *Chosun Ilbo*, November 25, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/11/25/2010112500536.html](http://english.chosun.com/site/data/html_dir/2010/11/25/2010112500536.html); and "S. Korea to Toughen Rules of Engagement Against N. Korean Attack," *Yonhap*, November 24, 2010.
- <sup>32</sup> "Seoul Bans Movement of Boats, Small Planes Near Attacked Island," *Yonhap*, November 23, 2010.

- <sup>33</sup> “‘Source’ Cites DRPK Official Saying DPRK Had Many More Casualties Than ROK,” *Kyodo*, December 4, 2010; “Military Suggests Counterfire Caused ‘Many Casualties’ in N. Korea,” *Yonhap*, December 3, 2010; and “S.Korea ‘Unlikely’ to Have Damaged N.Korean Artillery Positions,” *Chosun Ilbo*, December 1, 2010, [http://english.chosun.com/site/data/html\\_dir/2010/12/01/2010120101038.html](http://english.chosun.com/site/data/html_dir/2010/12/01/2010120101038.html).
- <sup>34</sup> The two Marines were Sgt. Seo Jeong-woo (22) and Pvt. Moon Kwang-wook (20). Kim, Sam. “S. Korean Marines Recount N. Korea’s Deadly Shelling of Yeonpyeong,” *Yonhap*, December 14, 2010; “Rival Parties Embarrassed By Blunders on Yeonpyeong Island,” *Yonhap*, December 1, 2010; “S. Korea to Toughen Rules of Engagement Against N. Korean Attack,” *Yonhap*, November 24, 2010 and McDonald, Mark. “‘Crisis Status’ in South Korea After North Shells Island,” *New York Times*, November 23, 2010, <http://www.nytimes.com/2010/11/24/world/asia/24korea.html?emc=tnt&tntemail0=y>.
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