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CONFIDENCE-BUILDING THROUGH MINE ACTION ON THE KOREAN PENINSULA

By Guy Rhodes, Ph.D. [Geneva Centre for Security Policy]

The Korean Peninsula is divided by a strip of land, the Demilitarized Zone (DMZ), which represents the de facto border between the Democratic People’s Republic of Korea (DPRK), more commonly known as North Korea, and the Republic of Korea (ROK), or South Korea. Contrary to its name, the DMZ is the most militarized zone on earth, and it delineates a stand-off between militaries composed of several million professional and reservist soldiers on both sides. It is the “Cold War’s last divide” and one of the most symbolic barriers between two nations. It is also heavily mined with both anti-personnel and anti-vehicle landmines, and contaminated with unexploded ordnance (UXO) from extensive ground battles and heavy aerial bombardment.

This article explores the nature and extent of explosive ordnance contamination and the physical environment within the DMZ. It considers recent changes in the political landscape that have allowed unprecedented developments within the DMZ to take place—including coordinated demining operations between military forces of North and South Korea, as well as the beginning of a human remains recovery program.

Joint demining operations are currently suspended and the political situation remains complex, but mines do not go away. The opportunity that mine action offers to contribute to confidence building on the Korean Peninsula is without parallel; such potential is explored here.

In this context and notwithstanding the considerable expertise, resources, and perspectives of the two Koreas and that of the US-led United Nations Command (UNC), this article suggests a vision for the architecture of mine action on the peninsula. This includes thoughts on further developing the legal and institutional frameworks for the sector and the potential role that the international community may offer in contributing to peace dividends, both by its presence, and its experience gained elsewhere in the world that may have application in Korea.

HISTORY OF THE KOREAN WAR AND THE ARMISTICE AGREEMENT

In the English-speaking world, the Korean War has been called “The Forgotten War,” as its memory is often overshadowed by World War II and the Vietnam War. It was, however, one of the most devastating conflicts of the modern era. It incurred the destruction of virtually all of Korea’s major cities and resulted in approximately 3 million war fatalities with a larger proportional civilian death toll than either World War II or the Vietnam War.

The conflict was between North Korea (with the support of China and the Soviet Union) and South Korea (with the support of the UNC, principally the United States but with combat troops from sixteen additional states under a UN Flag). It began on 25 June 1950 and ended on 27 July 1953 when the UNC and the Chinese-North Korean Command signed the Korean Armistice Agreement.

The armistice established the Military Demarcation Line (MDL) and the DMZ, a 4 km wide and 250 km long fortified buffer zone between the two Korean nations. After the agreement, a withdrawal of forces and the rapid establishment of the DMZ left thousands of human remains within its boundaries, which are only now being recovered. The armistice remains only a cease-fire arrangement between military forces rather than an agreement between governments to normalize relations. No formal peace treaty has been signed, and the two nations technically remain at war.
Missile Crisis (1962) and the buildup to
the Seoul Olympics (1988).

Contamination originating from
ground battles and aerial bombard-
ment such as grenades, artillery shells,
and mortars is widespread but less well
defined. It is present on the surface of the
ground and at shallow depths, and in the
case of air-delivered bombs, often at con-
siderable depth.

Table 1 details contamination known
in the DMZ and CCZ as reported by
the ROK Joint Chiefs of Staff. The exact
number could be appreciably more, with
some sources quoting between 1 and 1.2
million mines in total on the south side.

Far less is known about the mine-laying
strategies and quantities of mines deployed by North Korean forces.
The numbers of mines are reported to be at least as many as those to
the south of the MDL, with some sources suggesting numbers may be
twice as high. 6

THE CHANGING POLITICAL CONTEXT ON THE
KOREAN PENINSULA, 2018–2020

Although the political situation has become more complex on the
peninsula since the Hanoi Summit between the United States and
North Korea in February 2019, the developments that occurred in
2018 were ground breaking. On 27 April 2018, the two Koreas held
a summit between South Korea’s President Moon Jae-in and North
Korea’s Chairman Kim Jong Un. This meeting resulted in the two
leaders signing the Panmunjom Declaration on Peace, Prosperity and
Reunification of the Korean Peninsula.

The Panmunjom Declaration led to
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The CMA focused on five areas: (1) suspension of hostile activities, (2) military measures to transform the DMZ into a peace zone, (3) establishment of a marine peace zone, (4) military communication and exchange, and (5) measures to promote military confidence building.

Of particular interest for this article are the two annexes to the CMA concerning demining operations at the Joint Security Area (JSA) at Panmunjom, and at the former battle ground at Arrowhead Hill. These annexes set the scene for collaborative demining operations between the ROK, DPRK, and the UNC that began on 1 October 2018—a joint activity that was unimaginable twelve months before. While engagement occurred for a period, subsequent strained relations led to an effective freeze in confidence-building initiatives, and joint operations did not resume in 2019. This remains the status quo as of June 2020; however, mines do not disappear, and the political environment can change quickly. For the time being, ROK Army demining units, supported by the UNC continue to work unilaterally, but mine action will continue to offer considerable opportunities and powerful optics for confidence building between the DPRK and ROK when conditions again become conducive.

DEMINING OPERATIONS IN THE DMZ

<table>
<thead>
<tr>
<th>Location</th>
<th>Year</th>
<th>Area</th>
<th>Mines Removed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCZ</td>
<td>2006–2017</td>
<td>14 sites</td>
<td>1,443</td>
</tr>
<tr>
<td>Southern CCL/Border Areas</td>
<td>2005–2017</td>
<td>42 sites</td>
<td>5,405</td>
</tr>
<tr>
<td>Rear Areas</td>
<td>1998–2017</td>
<td>76 sites</td>
<td>58,872</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>132</td>
<td>65,720</td>
</tr>
</tbody>
</table>

Table 2. Mine clearance status to 2017 from ROK military operations. Table courtesy of Republic of Korea Joint Chiefs of Staff (ROK JCS).

Demining operations in South Korea before 2018 were largely restricted to areas away from the DMZ. Table 2 illustrates the clearance statistics from 1998–2017. A total of 65,720 mines were cleared from the CCZ, southern edge of the Civilian Control Line (CCL), and particularly from sites around military bases and installations in the Rear Areas across the ROK.

Since 2018 and under the auspices of the CMA, clearance activities within the DMZ itself have been undertaken at the JSA at Panmunjom and at the formal battle site at Arrowhead Hill.

Demining at the Joint Security Area (Figure 2). The Panmunjom JSA is the only portion of the DMZ where North and South Korean forces stand face-to-face. The JSA is used for diplomatic engagements.

Deminers from the 127 ROK Army Engineering Battalion, supported by the UNC, conducted operations within the southern portion of the JSA (shaded blue in Figure 3). The U.S. Army Corps of Engineers and representation from the U.S. Department of State acted as observers. In northern zones (shaded yellow), the Korean People’s Army (KPA) conducted its own independent clearance operations. At times, ROK-UNC teams were in proximity to DPRK teams and exchanged cordial greetings and conversations. Both sides focused on areas of suspected mine and UXO contamination with the intent to further demilitarize the JSA and support greater tourist circulation. The operations are now complete on the south side and declared complete on the north.

Operations of the ROK Army in the southern sectors between 1 and 19 October cleared 36,461 sq m of land and recovered considerable quantities of metal debris, but no mines were present. To the north, the KPA were observed conducting demining operations at three localities between 1 and 18 October. The KPA appeared to use detectors, primitive probes, and pitch-fork-style tools within operations that claimed the removal and destruction of 636 mines.

An underlying challenge during the JSA clearance task was the lack of common standards for operations, particularly in quality management procedures for released land. Both the ROK Army and the DPRK KPA used different military doctrines for demining, and there was a disparity in demining resources and equipment. In the longer term, the UNC suggests that joint mine action operations would benefit from...
being based on the International Mine Action Standards (IMAS)—adapted to the context and conditions of the DMZ.

**Arrowhead Hill demining to support human remains recovery (Figure 2 Label 5).** Atop of a little-known ridge in the Cheorwon Valley almost seven decades ago, French, South Korean, and American troops fought off waves of mainly Chinese communist forces in a series of trench battles that marked some of the bloodiest days of the Korean War. Hundreds of the fallen were never recovered. Of the Chinese and South Korean losses alone, it is estimated that 6,700 and 14,332 troops fell, respectively. Over a nine-day period, the U.S. Air Force dropped 2,700 bombs, the Chinese fired 55,000 shells, and South Korea fired 185,000 more around Hill 281, also known as Arrowhead Hill.9

Under the CMA, the first joint remains recovery task in the DMZ was conducted at Arrowhead Hill. This included the construction of a 3 km access road (1.7 km from the south side and 1.3 km from the north) to serve mine clearance and joint remains recovery operations.

The joint operations with the DPRK in 2018 did not continue when demining by the ROK resumed in the southern half of the DMZ at Arrowhead Hill in April 2019 following a deterioration of relations among parties to the conflict in early 2019. However, the ROK Army and UNC made a decision to continue the operation. When clearance concluded for the winter in November 2019, 102,688 sq m of land had been released, 455 mines and 5,754 UXO cleared, and 261 sets of human remains recovered.

**Future plans for the human remains recovery program.** The remains recovery program for 2020 is planned to first be completed at Arrowhead Hill. Beyond this site operations are envisaged to continue in the spirit of the CMA on a unilateral basis by demining units of the ROK Army supported by the UNC. In conjunction with records supplied by the Sending States,10 operations will focus on additional battle sites not specified in the CMA that are expected to yield more remains. Possible sites may be drawn from the conflict zones such as Bunker Hill, Old Baldy, Iron Triangle, Northern Punchbowl, and Heartbreak Ridge.
Indeed, since the signing of the armistice in 1953, there has been a revival of wild habitats in the absence of human activity. According to the National Institute of Ecology (2018), 11,616 species of flora and fauna have been documented in the DMZ with 102 species classified as endangered or vulnerable. These are spread across varied landscapes of wetlands, plains, and mountains from the Imjin River Estuary in the west to the coastal region of the east.

Conducting survey and clearance operations in this wildlife refuge carries a tremendous responsibility and demands the utmost respect for the environment. By its very nature, demining is disruptive, but there are many approaches to mitigate its impact. IMAS 07.13 Environmental Management in Mine Action is a good point of departure, but future National Mine Action Standards for Korea (yet to be developed) should be far more comprehensive and prescriptive in nature. The competing challenges of demining and environmental preservation call on heightened collaboration between authorities concerned with clearance operations and those institutions and ministries dealing with conservation of the natural habitat.

Appropriate demining methods and tools will need to be considered together with integrated planning and priority-setting approaches that are responsive to ecological sensitivities. In some cases, this may be achieved through timing and sequencing of operations that do not conflict with the nesting and mating cycles of endangered birds and mammals. In others, consideration of the diminishing risk from ageing ordnance may support a decision that certain areas of particular environmental importance will not be prioritized, at least not as a starting point. Considering the enormous size of the DMZ and the reality that clearance operations will take decades to complete, this would appear entirely reasonable,
POTENTIAL ROLE AND CONTRIBUTION FROM THE INTERNATIONAL MINE ACTION COMMUNITY

At the 74th UNGA, President Moon also presented a vision to transform the DMZ into an international peace zone. “The DMZ has become a symbolic space steeped in history, which embraces both the tragedy of division as embodied by the JSA, guard posts and barbed-wire fences as well as the yearning for peace. The DMZ is the common heritage of humankind, and its value must be shared with the whole world. Once peace is established between the two Koreas, I will work together with North Korea to inscribe the DMZ as a UNESCO World Heritage Site.” He went on to say, “Approximately 380,000 anti-personnel mines are laid in the DMZ, and it is expected to take 15 years for South Korean troops to remove them on their own.” However, cooperation with the international community, including the United Nations Mine Action Service (UNMAS), will not only guarantee the transparency and stability of demining operations, but also instantly turn the DMZ into an area of international cooperation.

Notwithstanding security considerations, current legislation restrictions, and necessary solutions for appropriate funding mechanisms, the addition of international expertise and capacity, including international NGOs, is also supported by the UNC.

CONSIDERATIONS FOR STRENGTHENING OF MINE ACTION FRAMEWORKS ON THE KOREAN PENINSULA

Demining the DMZ is a considerable undertaking, which will take decades. Whether operations are upscaled soon or in a few years, it takes time to establish the legal, institutional, strategic, and operational frameworks to support such a considerable task. It is vital that an appropriate framework is established at an early stage in order to maintain confidence in the safety, quality, and environmental acceptability of survey and clearance operations whether they be delivered by military, commercial, or NGO capacities.
Institutions. It is important to establish an appropriate legal and institutional framework to accommodate expanding programs, particularly if a variety of demining operators are to be employed. Such a framework should define an architecture of regulation, management, and coordination. More than just a technical activity, demining has implications across ministries and sectors. This should be reflected in the governance structure with a view to corresponding architecture within the North Korean authorities.

There are many variations on institutional frameworks for mine action programs that have varying degrees of military and civilian representation and authority. In the context of Korea, this will inevitably be skewed towards the military. In a generic model, the most senior level—a National Mine Action Authority (NMAA), perhaps under the prime minister—is typically responsible for policy and coordination across ministries, which include those with implementation responsibilities (Defense and Foreign Affairs), those affected by contamination (Environment and Agriculture), and those with economic roles (Planning and Finance). The NMAA would normally approve the overall mine action strategy, national standards, annual workplans, and priorities. With jurisdiction over the DMZ in the ROK, the UNC should also be positioned appropriately for decision-making procedures linked to either the NMAA or the Mine Action Centre (MAC).

Below the NMAA, the MAC typically coordinates national and international operators. It manages daily operations that could include mine risk education and victim assistance, while also monitoring the quality of operations. The MAC would also be responsible for information management, including the national database, and developing national mine action standards (NMAS). The Ministry of National Defense (MND) may serve as a suitable host for such an office and function.

At an operational level, implementers could potentially be national or international organizations, military units, or non-profit/commercial entities. They operate in accordance with NMAS and are usually accredited and monitored by teams from the MAC.

Standards. A peace zone is compromised if accidents occur after demining operations take place or if the safety of the land is in question. Confidence-building measures can be damaged or reversed if mines remain in the ground and subsequent injury or death occurs.

A common reference framework could have been beneficial during the 2018–2019 operations at the JSA and Arrowhead Hill. Observations of the demining that occurred under the CMA, particularly to the north of the MDL, raised some questions about the reliability of the procedures and quality management systems in use.

The IMAS are the reference standards for the United Nations and international community, developed over the course of twenty years by a wide range of mine action stakeholders. The IMAS are used in over fifty countries, including by

- the UK government for clearance operations on the Falkland Islands,
- the US Humanitarian Demining Training Center as a basis for training US forces, and
- the Chinese military undertaking demining in Peace Keeping Operations.

In 2019, the MND commissioned the Peace Sharing Association (PSA) to translate the IMAS into Korean. This was completed and provides a comprehensive set of documents from which to draw upon to develop the National (Korean) Mine Action Standards (KMAS). These should be adapted to the context of the peninsula while remaining compliant to the overarching IMAS.

The KMAS will be defined by the ROK authorities. If adopted, the KMAS would ensure that different organizations deliver a common and consistent approach to demining, ensuring safety, efficiency and effectiveness, and confidence that the quality of cleared land is maintained and assured.

Recent developments offer the option to database the Korean version of the IMAS to facilitate the navigation and interrogation of more than 1,000 pages of technical material. Such an exercise has only recently been completed for the IMAS in English. Bringing the Korean version into the newly established IMAS database would provide the peninsula with a tool at the forefront of the global mine action sector.

By databasing the requirements and recommendations of IMAS, Korea will be able to dynamically filter the standards to create targeted checklists for self-assessment or external-compliance monitoring purposes. Korea could benefit from the work already done, which would allow a straightforward review of existing military doctrines against IMAS, identifying and addressing any gaps that may be present.
The IMAS have a close relationship with international conventions on disarmament and are the reference point for donors and sponsors of mine action. International financial support will be important for the future of the peninsula, particularly initiatives in the north. Funding would be more forthcoming if programs operated within the recognized framework of IMAS. When conducive, moving towards a common framework for the entire peninsula has potential to be an important process.

**Information Management.** For the considerable task of demining the DMZ, a state-of-the-art information management system is essential. Databases and geographic information systems provide the means to inform decision makers and to manage and monitor operations. Moreover, they record what activities were completed where, when, and by whom. This safeguards against duplication, facilitates planning and reporting, and may be important to address any future liability considerations.

The information management database stores information on known or suspected areas of contamination together with other datasets such as access routes, vegetation cover, topography, land ownership, various war archive data, and environmental information—ideally in an integrated system to support planning and priority setting. It should be designed and developed with the whole DMZ in mind. Understanding that some data is sensitive, information management systems can easily be designed to have different levels of access and authority, but it is important to balance appropriate transparency with security and other considerations.

**Research.** There are many opportunities to share cross-border experiences and knowledge, but one research area stands out when considering demining and the importance of the preservation of the environment. This is the understanding of how risk changes as munitions age. What are the impacts of changing circumstances and conditions that surround mines and UXO on the Korean Peninsula? This has great implications when making informed decisions on priority setting and balancing risk from explosive devices with a desire to retain the integrity of a fragile environment.

The ageing process affects different devices in different ways. The energy required for arming and initiation of mines is often supplied by springs. Where springs have corroded, the munition is incapable of functioning as designed. For instance, the wooden box mine, which is understood to have been widely used by North Korean forces, has a case that is prone to disintegrate over time.16 It also has a fuse with a firing chain that can be disrupted by corrosion. In the south, the M16 mine is metallic and rusts over time. It may become unrecognizable. Other mines such as the M14...
anti-personnel mine are more resilient. However, there is some reassurance that mines will pose a diminishing risk in the long term, but it is difficult to quantify.

**THE VISION FOR MINE ACTION ON THE PENINSULA**

However fanciful, programs should have a vision. The vision for the Korean Peninsula is that an architecture for demining the DMZ is jointly owned by both North and South Korea, and that demining operations address shared objectives and priorities and are undertaken in accordance with common practices within a framework of recognized international norms.

When it eventually comes, the signing of a Peace Agreement will provide an opportunity to establish a more integrated institutional framework with North Korea to reinforce a unified approach to demining the DMZ. This could involve elements of a joint authority and steps towards a common MAC. In the meantime, much can be done unilaterally to advance mine action programs, involve the international community, and explore further how mine action activities can be used to build confidence on the Korean Peninsula.

**SUMMARY OF RECOMMENDATIONS**

Peace on the Korean Peninsula remains a long process, and while the climate for confidence-building opportunities is currently at a low ebb, landmines in the DMZ do not go away. Nor do the opportunities that mine action offers to contribute to reconciliation and peace.

It takes time to adapt an architecture for mine action outside a purely military lens, but this is necessary to establish the fundamentals needed to underpin all opportunities for mine action in the future. President Moon has a vision for a peace zone in the DMZ free from mines and UXO, and he believes that cooperation with the international community will both guarantee the transparency and stability of demining operations and help turn the DMZ into an area of international cooperation. This vision is supported by the UNC.

To help prepare for future work, the relevant authorities could benefit from considering five key recommendations to help achieve this vision.

First, adjusting national legislation for mine action to allow non-military capacities to contribute to demining.

Second, ensuring that the institutional and strategic frameworks for mine action reflect the inter-ministerial nature of the problem and support a longer-term goal of a joint mine action architecture for the entire peninsula. The MND in its appropriate role could also strive to be more accessible and open for exchange.

Third, further adaptation of operational frameworks such as standards in operations (including quality management systems) of the military and alignment with recognized international norms and practices. The development of KMAS based on IMAS offers an early and significant opportunity in this respect.

Fourth, pursuit of research and international exchange on pertinent issues of relevance to Korea. For example, the management of risk concerning ageing explosive ordnance, mitigation approaches towards environmental impact, advanced prioritization schemes for operations, and appropriate information management systems and processes that are fit for purpose.

Fifth, promotion of information sharing and appropriate transparency with the DPRK to inform the process of developing a mine action machinery that is geared toward peace, not war. Optics are important. Consideration could be given to having deminers dressed in a neutral attire rather than military fatigues.

These suggested adjustments to the mine action ethos and architecture in Korea will help ensure the success of operations, where “success” will be measured in peace dividends that are linked to safety and confidence of cleared land and the value of activities that mine action helps to facilitate.

In the absence of collaboration with the DPRK, a reformed mine action sector in the ROK will be beneficial to support unilateral activities. It will also ensure that the ROK is well equipped to accommodate all confidence-building opportunities that mine action can offer, and in addition, position itself to support the inevitable upscaling of operations in the future.

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