



## PROLIFERATED DRONES

# A Perspective on South Korea

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## Introduction

The Republic of Korea (ROK) is committed to the use of unmanned aerial vehicles (UAVs) and is formulating operational requirements for them. Among the questions the ROK is considering is whether UAVs should operate purely within South Korea or over the whole Korean Peninsula, and whether it is necessary to purchase UAVs from the United States or if indigenous products will suffice. The ROK Ministry of National Defense (MND) recognizes the value of UAVs as reliable, affordable, flexible, and effective, with strategic, operational, and tactical utility. However, MND is debating whether UAVs should be limited to intelligence, surveillance, and reconnaissance (ISR) missions for land warfare, naval operations, and civil security, or if they should also be capable of air warfare and precision-guided strike operations.<sup>1</sup> The more general and extensive use of UAVs is further complicated by issues of legitimacy. However, the issue of greatest contextual importance as relates to the use of drones is the legal status of the Korean Peninsula at the time of use – is it in a wartime or peacetime situation?

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At present, UAVs should be seen as complementary to manned aircraft systems. Although it is premature for the ROK military to consider UAVs as a replacement to manned systems, there are excellent reasons to pursue their development.<sup>2</sup> Indeed, innovative defense-industrial companies are encouraging the move away from increasingly obsolete manned systems toward revolutionary new ways of fighting that use unmanned platforms and systems deployed in battle zones.<sup>3</sup> UAV operations will surely play an essential role in any future war with North Korea, and it is not an exaggeration to say that they may completely change the character of such conflicts.

### **Why Is the ROK Adopting UAVs?**

There are numerous strategic, operational, and tactical reasons to deploy UAVs. First, following the policies articulated in the MND documents *Defense Reform 2014–2030* and *2014 Defense White Paper*, the ROK is seeking to implement a “proactive deterrence strategy” against the increasingly complex and multidimensional military threats that North Korea presents. The prompt and accurate assessment of such threats by the ROK armed forces will require more effective and reliable ISR capabilities. For example, the recent North Korean testing of a submarine-launched ballistic missile in the East Sea is the kind of contingency that could be readily monitored by UAV ISR collection missions. In such situations, the clear and comprehensive intelligence that UAVs can provide prevents unwarranted escalation, avoiding the casualties that might result from the deployment of troops and manned assets.<sup>4</sup>

Second, despite needing significant education and training to sustain their effectiveness, UAVs offer the prospect of substantial reductions in human resources and budgets. Some traditional military strategists insist that manned aircraft will remain dominant, but many reformers argue that manned flight in the contested airspace above the Korean Peninsula is too risky and of limited value, and thus that UAV missions should become the rule rather than the exception.

Third, warfare on the Korean Peninsula has always been beset by difficulties resulting from the complex terrain. High and steep mountains, often covered with woodland and also much affected by seasonal changes, are not an easy battlefield to cope with. This setting maximizes the utility of UAV operations, which can be conducted even within narrow and confined valleys, providing on-scene commanders with the intelligence they require to identify tactical targets and avoid miscalculations in close-range combat situations.

Fourth, many ROK air force (ROKAF) airstrips are in crowded cities, leading to noise complaints about routine takeoff and landing activities. Many local residents and some local governments also argue that old and potentially dangerous air bases in central urban areas should be relocated to more remote areas. UAVs may ultimately provide some relief from such problems.

All things considered, there are ample reasons to prefer UAVs to manned aircraft for some – although not all – roles and missions. This should not be seen as a binary choice, but rather in terms of a process in which some functions of manned aircraft are gradually replaced by UAVs.

## Technology

The ROK's program of UAV development makes use of advanced technologies, many of which are dual use. These include structural materials with stealth technology, avionics control equipment, ultra-high-capacity two-way Long Term Evolution communications technologies, active electronically scanned array (AESA) radar, high-resolution optical sensors, and command and control (C2) systems with cutting-edge ISR capabilities to determine the identification of friend or foe.<sup>5</sup> Individual innovations in these fields are driven by commercial imperatives, which allow ROK MND to adopt these UAV-related technologies to the mutual benefit of both industry and national defense.

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For the ROK Ministry of National Defense, UAVs are seen as the most versatile solution for sophisticated ISR missions, as they are capable of executing covert operations in the constricted airspace over the Korean Peninsula – especially above the Demilitarized Zone (DMZ) on land and the Northern Limit Line (NLL) at sea – without risking human casualties. At present, ROK UAVs are limited to tactical operations in the airspace above the Korean Peninsula, but the ROK is hoping to deploy UAVs capable of medium-altitude strategic ISR missions in the near future.

Currently, ROKAF is operating eight Baekdu and Keumgang long-range manned ISR aircraft (Hawker 800XPs purchased from Raytheon in the United States) to fulfill the strategic role, but they are not sufficient to support the ROK armed forces in modern integrated networked warfare, which includes elements of ISR, C2, and prompt global strike.<sup>6</sup> Also, it was revealed in November 2007 and April 2015 that these aircraft have faced serious logistical constraints as well as operational difficulties in communicating with their ISR control stations.<sup>7</sup> These factors may well prompt ROK MND to expedite its plans to indigenously develop a strategic UAV capable of medium-altitude long-endurance ISR operations – currently scheduled to be developed by 2020, according to *Defense Reform 2014–2030*.



For such indigenous strategic UAVs to be able to share ISR links with U.S. assets, however, ROK MND would need to obtain comprehensive export licenses for various UAV-related technologies from several U.S. defense companies, including Boeing, General Atomics, Lockheed

Martin, and Northrop Grumman. If this is not possible, ROKAF would instead consider purchasing the U.S.-developed Global Hawk. It was also reported in 2014 that the KF-X fighters under development will be equipped with advanced indigenous AESA radar that

will also allow the ROK to produce its own strategic UAVs.<sup>8</sup>

## Strategic Implications

Inserting strategic ROK UAVs into the constricted and sensitive airspace over the Korean Peninsula may cause friction with its neighbors. The Chinese People's Liberation Army (PLA) is already operating Yilong-1/Wing-Loong-1 strategic UAVs with sophisticated ISR sensors and PGS capabilities in the congested Northeast Asian airspace.<sup>9</sup> A crisis could be triggered by a UAV ISR mission that penetrates an air defense identification zone (ADIZ) claimed by a rival. Unfortunately, there is no clear doctrine or standing rules of engagement to guide how ROK MND should react to a Chinese incursion of this kind, though the likely response would be to lodge a strong protest through diplomatic channels.

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Current operations with indigenous UAVs focus on tactical purposes, either for ground operations or for civil security. They require little manpower, can operate safely in the densely populated residential areas of the Korean Peninsula, and can provide coverage for the operational area of an army corps (approximately 100 kilometers). Indigenous low-altitude UAVs currently in use include Songgolmae ("Peregrine"), designed for ground operations by the army and marine corps and produced by Korea Aerospace Industries, and RemoEye, supplied by Uconsystem, intended only for battalion-size units. RemoEye has been deployed by the ROK peacekeeping unit in Afghanistan.<sup>10</sup> The ROK navy (ROKN) uses ship-borne rotary UAVs for ISR missions with real-time signals and communications relayed to destroyers and frigates. It has also been reported that since the turn of the

century, ROKN has been using a prototype UAV to monitor the sensitive disputed seas near the NLL and that ROKN plans to acquire Fire Scout UAVs from the United States for the same mission.<sup>11</sup>

Recently the ROK and the United States have established an ad hoc combined ground force, the first of its kind, between the ROK army and the U.S. 2nd Infantry Division, which is intended to leverage their joint UAV capabilities to facilitate immediate combat readiness: the so-called “fighting tonight” spirit. This combined ground force division is operating a variety of ISR-oriented operational and tactical UAV or unmanned aircraft system (UAS)<sup>12</sup> assets that permit the sharing of a common operational picture of the Korean Peninsula battlefield theater. A combined UAV-related joint team charged with processing, exploitation, and dissemination distributes the information collected, making use of the Planning Tool for Resource Integration, Synchronization, and Management (PRISM) and the Combined Enterprise Regional Information Exchange System for Korea (CENTRIXS-K).<sup>13</sup>

Given the extensive coverage of strategic UAVs, whether indigenous systems or the U.S.-made Global Hawks, ROK MND’s plans to keep a closer watch on military and political activities in North Korea also implies the ability to monitor some areas of mainland China and Russia. For example, this would allow better observation of events such as the recent flights of Russian long-range surveillance aircraft near Japan in April 2014 and the frequent penetration by Chinese UAVs and ISR aircraft of ROK and Japanese ADIZs over the East China Sea.

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According to *Defense Reform 2014–2030*, ROK MND will implement a pre-emptive posture by constructing a new mechanized corps with UAV capabilities, and by 2020, this corps will establish an independent air-support operations center. This center will focus mainly

on collecting and disseminating ISR but will also have some strike capability. In close air support operations, UAVs will take over short-range surveillance and reconnaissance activities in support of tactical fighters. In joint military operations, UAVs will play a vital role in linking communications between strategic commanders and operational and tactical commanders more closely than has previously been possible.

ROK President Park Geun-hye recently stressed the importance of developing cutting-edge unmanned aerial vehicles and platforms to support the ROK's move to a proactive defense posture as well as the more general value of concomitant improvements to information technologies.<sup>14</sup> Although ROK MND is unlikely to deploy its strategic UAVs beyond the Korean Peninsula and would not react to unidentified strategic ISR UAVs unless there was a definite armed threat, the possibility of UAV intrusions from beyond the line of sight on the Korean Peninsula must be addressed.

## Constraints

For ROK MND, there are legal issues to be considered in determining rules of engagement (ROE) due to the division of the Korean Peninsula. Since the end of the Korean War, the two Koreas have technically existed in a prolonged truce situation following the signing of the Armistice Agreement. The two Koreas are each legitimate nations, being members of the United Nations, but each also claims authority over the other's territory. This is a particular concern for UAV ISR missions with precision-guided strike capability, since under the current ROE, activities that could cause military escalations are prohibited.

For manned military aircraft, the ROE within the ROK air defense identification zone (KADIZ) allow the ROK to intercept and repel intruders with an appropriately scaled response; however, it is silent on the use of UAVs. The robust ROE between the two Koreas – required to maintain the truce agreement – caused the ROK some consternation when numerous small unmarked UAVs, later determined to be of North Korean origin, were found to have infiltrated many parts of South Korean territory in March and April 2014.<sup>15</sup> The UAVs were widely distributed around South Korea, including on the remote island of Baengnyeong, which is one of five South Korean islands within sight of the North Korean coast, and near the South Korean presidential residence in central Seoul.<sup>16</sup> This incident

was particularly shocking since the latter area is a restricted zone in which no flights of any kind are permitted, yet there was no reaction from the ROK's air defense units nor any early warning indications from the Master Control and Reporting Center based in Osan Air Base.



Because UAVs are limited in the payloads they can carry and the length of time they can operate, there should be some caution against regarding them as a panacea capable of executing every kind of ISR and precision-guided strike operation. Given the buildup of North

Korean arms deployed in the vicinity of the DMZ, the ROKAF has to target vast numbers of individual military facilities, and manned aircraft will surely continue to be needed. The latter point is demonstrated by the ambitious KF-X project to produce an indigenous 4.5-generation advanced multirole stealth fighter. Nevertheless, the fact that UAVs can carry out many kinds of missions without risking human casualties means that operating strategic, operational, and tactical UAVs over the Korean Peninsula offers great benefits, despite their limited payloads and endurance. Even the U.N. now uses UAVs for ISR missions, although the use of UAVs for precision-guided strike operations is distinctly more controversial.<sup>17</sup> Since 2001, various nations have been using UAVs not only for surveillance and reconnaissance but also as strike weapons for attacking enemy leaders and major command and control posts. This means that *any* use of UAVs is therefore potentially threatening to the ROK.

Despite the recent rapid progress in developing UAVs, some technical issues remain. First, more than 400 U.S. military UAVs have been lost over the past 14 years due to a number of reasons, including mechanical problems, operator error, and bad weather.<sup>18</sup> Second, UAV integration into controlled airspace will remain a considerable challenge due to the growth in civilian UAV usage. During the first five months of 2015, there were 57 incidents of illegal usage of UAVs in the Seoul airspace, a fourfold increase since the previous year.<sup>19</sup> In the future, it will be essential to distinguish such civilian activities from incursions by North Korean UAVs. At any moment, the North Korean military might launch a disruptive asymmetric attack, so it is essential that its activities be continuously monitored.

# Conclusion

UAVs are the best technology available to meet the ISR requirements of the ROK MND. They also offer the potential for precision-guided strike operations that can be achieved by using networked long-range surface-to-air missiles. However, in the event of a UAV incursion into ROK territory, it will not be easy to distinguish between UAVs with these two distinct types of missions, nor will it be easy to identify the given UAV's origin. These factors will make it difficult to calibrate a response to such an incursion. Furthermore, in the event of a positive identification of the UAV's origin, unintended military escalation may follow. Despite these challenges, UAVs provide a number of beneficial capabilities. In the unusual circumstances of the Korean Peninsula, UAVs can provide real-time images that allow a precise understanding of enemy activities. This capacity can enable a superior warning system of incipient attacks and can also allow nonthreatening troop movements to be recognized as such. Given such capabilities, the ROK is likely to expand its use of such systems in the future.



## Response: China Perspective

**By Ian Easton**

The Republic of Korea is developing drone capabilities to defend against North Korean aggression. This drone buildup is remarkable for the close coordination and cooperation it has engendered with the United States. The ROK, unlike the United States, does not

currently operate drones capable of strategic missions over the entire Korean Peninsula. But it too is moving in that direction.

The People's Republic of China (PRC) is likely to view South Korea's near-term production, acquisition, and use of drones with a low level of concern. Indeed, there is little evidence to suggest that the PRC views any ROK defense capability as threatening the interests of the Chinese Communist Party (CCP) leadership. General Secretary Xi Jinping and Park, the ROK president, have the best relationship of any two leaders in Northeast Asia.

The PRC's main external challenge is ensuring the unification or annexation of Taiwan while avoiding U.S. intervention. China's second most pressing concern is maintaining security along its 14 land borders. Of these, the PRC-India border appears the most dangerous from the perspective of most Chinese military strategists. Chinese military drone fleets, which are far larger and more advanced than those of South Korea, are aimed at Taiwan and India scenarios. Drones are also allotted for missions in the East China Sea and the South China Sea.

What truly concerns the CCP leadership is the continued presence of U.S. forces on ROK territory. The United States uses drones to conduct strategic intelligence-gathering missions over North Korea, potentially including the PRC-North Korea border area. From Beijing's perspective, these missions could compromise the security of strategic sites in northeastern China. As a result, the PRC would be concerned if the ROK developed an indigenous long-range drone by 2020 *and* decided to share its "take" with the United States. The PRC will be even more troubled when South Korea acquires American Global Hawks, as it is scheduled to do in the 2017-2019 time frame.<sup>20</sup> Yet the overall situation on the Korean Peninsula is to Beijing's general satisfaction and drone developments are unlikely to change that.

It is unlikely that the PRC is going to be highly exercised by South Korea's development of military drones. Relations between Beijing and Seoul are as good as they have ever been. More importantly, the Korean Peninsula is relatively low on the PRC's long list of strategic threats and national challenges. China has big problems to worry about. This is not one of them.

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  13. Jooyheon Kim, “How to coordinate the US division-level UAS with ROK UAVs,” *Kookbang Ilbo*, July 23, 7. According to this report, the U.S. 2nd Infantry Division is operating RQ-11Bs at battalion level, RQ-7Bs at brigade level, and MQ-1Cs at division level, enabling 24-hour coverage of the Korean Peninsula.
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