



## PROLIFERATED DRONES

# A Perspective on Japan

*Lieutenant General Masayuki  
Hironaka, Japan Air Self-Defense  
Force (Ret.)*

## Introduction

An unmanned aerial vehicle (UAV) is, by definition, a remotely operated system. This system is composed of vehicle, communications, and control systems. The U.S. Air Force usually uses the term “remotely piloted aircraft,” which clearly expresses its character. Recently, the strategic implications of drones have become more important than ever.

This paper will focus on the strategic implications of drones from a defense perspective, analyzing how they will help against future challenges and focusing on the strategic implications of the Global Hawk system in Japan.<sup>1</sup> There are many agendas to be addressed in order to procure and deploy the Global Hawk system, not only regarding issues of interoperability and autonomous capabilities but also with regard to the critical discussions around operational principles, domestic legal restrictions, and future maintenance.

## Technology

Several drone systems have been researched and developed for the Ground Self-Defense Force (GSDF) by the Technical Research and Development Institute (TRDI), a part of the Ministry of Defense. These experimental drones have been based on commercially available off-road cars and have been developed to reduce risk for Japan Self-Defense Force (JSDF) personnel undertaking anti-explosion, anti-nuclear, and anti-terror missions.



Drone systems for the Maritime Self-Defense Force (MSDF), on the other hand, have mainly been developed as a means of countering underwater mines to reduce the risk for minesweeping operations. The U.S. Navy has announced plans to have drones perform all its minesweeping operations by 2017. Though the MSDF has replaced its drone systems with Hydroid's REMUS 600, it has not followed the United States' example in shifting to drone-only minesweeping operations. The TRDI also developed the elements of a drone surface system from 2011 to 2014.

Drones for the Air Self-Defense Force (ASDF), meanwhile, have been developed for the purpose of strengthening intelligence, surveillance, and reconnaissance capabilities. In this regard, the TRDI and ASDF have been researching drone test systems for quite some time. In particular, the procurement of drone systems has been supported by research that has been underway since 2013.

The Mid-term Defense Buildup Program (MDBP) from FY2014 to FY2018 has stated that long-endurance drone systems for aerial operations will be used to strengthen all-around intelligence, surveillance, and reconnaissance (ISR) capabilities in a wider area than before and that they will be used in joint operations. These capabilities have been sorely needed to reduce psychological and physical crew fatigue during lengthy MSDF and ASDF operations in the tense strategic environment surrounding Japan. Consequently, the Global Hawk system, a high-altitude and high-endurance drone system, has been chosen as a component of Japan's UAV portfolio, with about 15.4 billion yen having been budgeted for the system in FY2015.

*The Japanese Global Hawk system is tentatively planned to be*

*deployed at Misawa Air Base, given that U.S.-owned Global Hawks have already been deployed to the base since May 2014.*

The Japanese Global Hawk system is tentatively planned to be deployed at Misawa Air Base, given that U.S.-owned Global Hawks have already been deployed to the base since May 2014. This location is preferable to alternatives in Guam, which has more weather-related operating restrictions.<sup>2</sup>

## Strategic Implications

The use of drone systems for aerial operations has a long history, with the earliest forms of unmanned aerial vehicles developed around World War I. During the 1960s, unmanned planes began to be used for full-scale reconnaissance in the Vietnam War. These were later used for highly risky reconnaissance missions in the Middle East too. This technology saw great development during the 1980s, with the emergence of real-time imagery transmissions for aerial drone systems.

From this history, one can surmise that the purpose behind the initial development of drones was reconnaissance rather than remote attack. With the end of the Cold War, however, the U.S. armed forces saw serious defense budget cuts, making it difficult to put resources toward drone development in the early 1990s. With the outbreak of ethnic conflict in Yugoslavia in the latter half of the 1990s, U.S. armed forces began using high-altitude long-endurance drones in Bosnia. These HALE drones were incredibly useful as reconnaissance systems, largely a result of their remarkably long flight times.<sup>3</sup> Reducing the number of casualties became a top priority throughout the operation. Since this implementation in Bosnia, long-endurance drone systems began to see rapid development.

After Bosnia, regional and ethnic conflict gradually morphed into international terrorism. The September 11, 2001, terrorist attacks against the United States drastically impacted the use of drone systems. These drones were able to produce more accurate strikes while

meeting the top priority of reducing the number of casualties. Armed long-endurance drone systems for remote attack became highly important. Unsurprisingly, the development and deployment of long-endurance drone systems dramatically increased during the early 2000s, with some, such as the Global Hawk, having first been used in battlefields in 2003.

## *Future use of Global Hawk in Japan may drastically impact its extended operational responsibilities.*

Japan's procurement of Global Hawk systems was greatly needed, as the requirements of JSDF's ISR operations have rapidly increased. Regrettably, its high cost was initially considered prohibitive. It is highly important that at least the procurement of such systems is mandated by the current MDBP. Future use of Global Hawk in Japan may drastically impact its extended operational responsibilities. In the near future, Japan's Global Hawk may fly beyond Japanese territorial airspace to conduct ISR missions. In addition, not only are ISR missions needed in peacetime and wartime operations, they can also be highly effective in large national disasters. When the East Japan Great Earthquake triggered the nuclear accidents on March 11, 2011, only the U.S. Global Hawk could fly over the Fukushima nuclear plant's reactors in the initial phase to provide critical information.

# Constraints

## Operational Principles

Based on the current MDBP, the Global Hawk system will be operated by a joint organization. As to the actual implementation of this, the responsibility of the Joint Staff Office has been ambiguous. Does the Joint Staff Office directly command the system? Or does the Headquarters of Defense Intelligence (DIH) command it? Moreover, the manner

in which the information collected by the system is managed is also unclear.

Responsibility regarding the command and management of the Global Hawk must be decided soon.

As for the actual operation of U.S. HALE drone systems, the Central Intelligence Agency and other intelligence organizations have requested to oversee aspects of intelligence, while the U.S. Air Force oversees the piloting of the drone systems per each intelligence agency request. This clear distinction of roles and missions suggests a potential model for Japan's use of drones and highlights the country's current lack of an operational principle. Theoretically, intelligence requirements for the use of Global Hawk systems should be handled by intelligence organizations such as the DIH, while the ASDF should oversee the flights of Global Hawk drones much like their U.S. counterparts, with the Joint Staff Office being responsible for the overall operations of the drones. At this time, however, ASDF pilots may not clearly understand orders from each intelligence organization because of the lack of an operational principle. This lack of clarity could place a heavy burden on ASDF pilots.

## Domestic Laws

With regard to existing domestic laws pertaining to drone use in Japan, relevant legislation includes the Civil Aeronautics Act, the Aircraft Manufacturing Industry Law, and the Radio Law.<sup>4</sup> Unfortunately, these have not been revised to match the current situation. For that reason, there are many issues regarding the actual implementation of drone systems. Under the Civil Aeronautics Act, the definition of an aircraft is one with a human on board for aeronautical use. By this definition, a HALE drone would not be legally regarded as an aircraft because it does not have a human on board. The two forms of undefined aircraft the Civil Aeronautics Act specifies are an airplane without a human on board and a model airplane.



Flight of an airplane without a human on board is approved by the Ministry of Land, Infrastructure, Transport, and Tourism, with legal restrictions in support of flight safety. For example, any airplane without a human on board must submit flight plans in the same manner as an airplane with a human on board. In

practice, however, the restrictions for the Global Hawk are not effective because of the lack of regulation in operational space. Global Hawks generally fly out of territorial space, with domestic laws being effective only in territorial space. The requirements of registration and flight safety have limited impact on model airplanes, which are not required to have flight plans below 250 meters because this range is out of the air control area for commercial aircraft.

The Aircraft Manufacturing Industry Law defines drone systems by the same standard. Per the enforcement ordinance, a drone is defined as a model airplane weighing more than 100 kilograms. The requirements for registration and safety are also the same as those for model airplanes as defined by the Civil Aeronautics Act, with similarly limiting effectiveness. It is necessary to revise these domestic laws to maintain flight safety with exceptions for defensive purposes.

Finally, the Radio Law should be revised, particularly with regard to its frequency band assignment. All frequency bands are designated by a Radio Law. Generally, there is no proper frequency band for drone systems – even for defensive drone systems operated by the JSDF – and there are no plans in place to address this issue. Broadband network is necessary for the heavy data exchange between airborne Global Hawks and ground control systems. In this context, it is necessary to gain a new band; however, it is very difficult to renew bands in Japan. To get a new band, it may be necessary to develop new measures of data transmission using a concept such as fiber-optic measure.

## **Future Maintenance**

Japan is procuring a small number of Global Hawks but will ideally use the United States' Foreign Military Sales (FMS) program to maintain logistical support for the system. While Japan could primarily handle "front-line maintenance," U.S. contractors could more efficiently do regular inspections or larger repairs. This outsourcing is largely due to the fact that the key element of the Global Hawk system is the electronic equipment behind its sensor system. Maintaining Japan's Global Hawk fleet in accordance with U.S. standards would thus optimize efficiency as well as the capacity for interoperability.<sup>5</sup>

*Japan is procuring a small number of Global Hawks but will ideally use the United States' Foreign Military Sales (FMS) program to maintain logistical support for the system.*

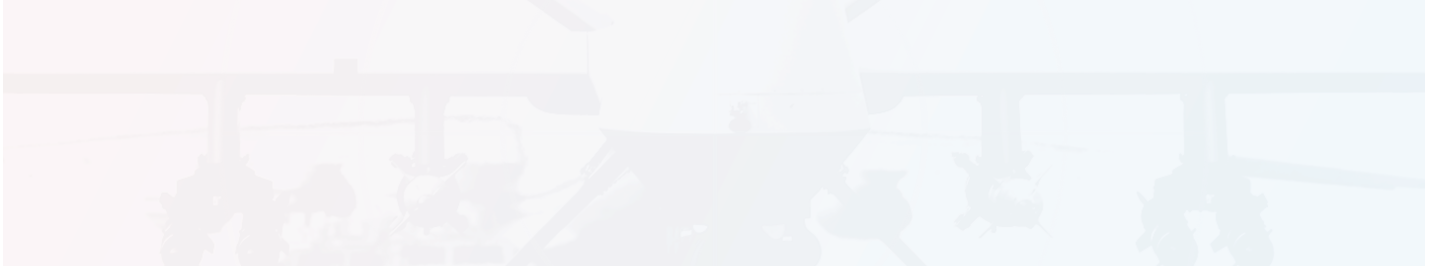
On the other hand, relying solely on FMS for Global Hawk maintenance would be far too expensive and could negatively impact Japan's capacity for responsibly maintaining its own systems. With this in mind, Japan should refer to how regional depots are used for F-35 maintenance as a model to follow.

## Conclusion

The landscape is such that ISR or remote strike missions simply cannot be conducted without drone systems. Now that Japan has decided to procure Global Hawk drone systems in its most recent MDBP, the JSDF must make great efforts to expedite the early deployment of these systems.

This article has focused on the strategic implications of aerial drone systems, particularly the HALE system known as Global Hawk. Nevertheless, the East Japan Great Earthquake of March 2011 has suggested that the tactical use of these systems is highly effective. For this reason, Japan should not neglect tactical drones.

The procurement of Global Hawk to strengthen Japan's all-around ISR capabilities is extremely significant. However, there are a number of outstanding constraints on Japan's future use of UAVs, including a lack of operational principles and domestic laws and issues surrounding drone maintenance. These must be resolved soon. Given global trends in the proliferation of HALE drones, Japan should accumulate operational know-how through future ISR missions using Global Hawk.



# Response: South Korea Perspective

**By Captain Sukjoon Yoon, Republic of Korea Navy (Ret.)**

If Japan is indeed planning to expand its UAV operations over the Korean Peninsula, then this could provide very valuable intelligence for South Korea. The basic data collected by the Japanese Self-Defense Force UAVs would need to be classified, integrated, and disseminated in order to support precise actionable operations, on or around the Korean Peninsula, but this type of military cooperation between Japan and South Korea seems likely to be highly mutually beneficial.

For the time being, the Japanese military does not appear keen on introducing operational and tactical UAVs, since it rarely engages in warlike activities or even in military peacekeeping operations; however, the introduction of strategic UAVs for intelligence, surveillance, and reconnaissance purposes is a top priority. The ability to effectively monitor activities beyond Japanese territories is crucial, the primary targets being the threat from North Korea and the maritime territorial disputes with China, in the East China Sea, and Russia, over the Kuril Islands.

It makes sense for Japan to cooperate with South Korea over the introduction of strategic UAVs, given the political sensitivity of such operations and the two countries' geographic proximity and mutual security interests. This would likely provide great benefits for



South Korea by enhancing its efforts to deter North Korean adventurism and to maintain the peace and stability of the Korean Peninsula. Since the early 1960s, the Japanese and South Korean militaries have convened annually for a military intelligence-sharing conference, and in December 2014 the two countries signed an agreement to begin much more frequent sharing of military intelligence on North Korea, albeit indirectly via the United States.

It has been reported that the Japanese government wants to introduce high-altitude long-endurance UAVs to provide a reliable overview of the seas between Japan and the Korean Peninsula. Such operations by advanced UAVs would not be required to provide notifications upon entry into national air defense identification zones because of their operational altitude, but it is very important that Japanese UAVs be capable of establishing ISR mission-based interoperable coordination with South Korea and the United States.

The JSDF is expected to operate U.S.-produced Global Hawks, which are ISR-specific UAVs. The Republic of Korea Ministry of National Defense should consider establishing some new kind of robust bilateral intelligence-sharing mechanism with the JSDF, presumably employing the U.S. forces in Japan and/or Korea as a close intermediary, to produce a common operational picture. This would be invaluable, not only for analyzing and perhaps pre-empting North Korean military activities, but also for observing related activities in China and Russia. In peacetime or in wartime, a closer coordination of intelligence exchanges to monitor North Korean military threats via UAV operations is a crucial aspect of the military cooperation between South Korea and Japan.

As a consequence of the North Korean UAV infiltrations that occurred in March and April of 2014 and of the recent tensions after two South Korean soldiers were seriously injured by North Korean land mines, military commanders in both Japan and South Korea have been requesting UAV operations much more frequently. UAV ISR missions can effectively replace those by aging fixed-wing spy aircraft, and UAVs could also be used for lethal airstrike missions. It is clearly in South Korea's interests for Japan to operate ISR-oriented UAV missions around the Korean Peninsula, provided operational coordination is established. The United States should coordinate the management of such UAV ISR operations in the same way that it already does for submarine operations in the waters between Japan and South Korea.

## About the Authors

**Lieutenant General Masayuki Hironaka (Ret.)** is a research fellow for the Security and Foreign Affairs Program at Sasakawa Peace Foundation USA. He is concurrently a non-resident senior fellow at the Center for a New American Security and a senior fellow at the Rebuild Japan Initiative Foundation. He is also a senior advisor at ITOCHU Corporation, Japan.

**Captain Sukjoon Yoon (Ret.)** is a senior research fellow of the Korea Institute for Maritime Strategy. He is also a visiting professor at the Department of Defense System Engineering, Sejong University, Seoul, South Korea.

## Endnotes

1. For further information on this topic, see Defense Technology Inspection Report, “Current Situation and Future Trends of Unmanned Systems,” Defense Industry Committee, Japan Business Federation, March 2014.
2. Tropical cyclones, which sometimes develop into typhoons, frequently impact Guam, in turn limiting U.S. Global Hawk operations. See, for example, Aram Roston, “Will Congress Let the Air Force Abandon the Global Hawk?,” *Defense News*, June 24, 2013, <http://archive.defensenews.com/article/20130624/C4ISR01/307010011/Will-Congress-Let-Air-Force-Abandon-Global-Hawk->.
3. The HALE drone system is categorized by the U.S. Department of Defense as Group 5 – beyond 1,340 pounds of weight and below 18,000 feet of flight altitude.
4. The Civil Aeronautics Act covers the definition of drones as well as guidelines concerning drone endurance, registration, and pilot qualifications. The Aircraft Manufacturing Industry Law covers technical elements related to drones and facilities for manufacturing and industry. The Radio Law covers drone data

link specifications.

5. In February 2013, the author directly observed the deployed U.S. Global Hawk at the U.S. air base in Guam during Cope North Guam, a U.S.-Japan joint exercise.

#### Image Credits

Northrop Grumman RQ-4 Global Hawk (210476312): Image via  
[commons.wikimedia.org](https://commons.wikimedia.org)

Global Hawk on the flight line:Image by Master Sergeant Scott T. Sturkol, USAF via  
[commons.wikimedia.org](https://commons.wikimedia.org)



**Bold. Innovative. Bipartisan.**