Modern Taiwanese Air Power

Roy Choo and Peter Ho

Modern South Korean Air Power

Robin Polderman

Cross Reviews by Jean-Christophe Noël

The *Vortex No. 5* issue previously discussed the various publications by the prolific Austrian publisher Harpia Publishing on the Chinese Air Force.[1] In this current issue, two other fascinating works from the same publisher that focus on modern Taiwanese and South Korean air power will be presented.

Let us start with the first text on the Republic of China Air Force (ROCAF). Written by Roy Choo, a Singaporean defence journalist, and Peter Ho, a Taiwanese aviation photographer, the 96-page book, published in 2021, is an excellent introduction to the subject, providing a mastery of the essential concepts concerning this very unique air force.

The book begins with a summary of the ROCAF's rich history. Established in 1920, it initially served as the nationalist Chinese air force. It first saw action in the 1930s, in its attempt to counter the Japanese aviation, which was vastly more supe-

1. J.-C. Noël, "Chinese Air Power in the 20th Century, Modern Chinese Warplanes (Air Force/Naval Aviation/Army Aviation), Red Dragon 'Flankers'," in *Vortex. Air and Space Power Studies*, No. 5 (June 2023): 491-498.

rior than itself. It nevertheless distinguished itself on 14 August 1937 when Chinese pilots downed three *Mitsubishi G3M* Japanese bombers without suffering any losses. This date is now celebrated as "Air Force Day". Its battles in the skies continued later against the People's Liberation Army (PLA) following the nationalists' retreat to Taiwan in 1949. During the second Strait Crisis in September 1958, ROCAF pilots became the first in the world to fire air-to-air missiles – *AIM-9 Sidewinders* – at enemy aircraft.

The authors then turn towards the history of the "Black Cat" squadron, which operated the *U-2* aircraft from January 1961 and onwards. Braving *SA-2* fire and *J-7* interceptions, strategic reconnaissance flights were carried out over China up until 1968. Yet, following significant losses, the pilots were forced to be content with only flying over international waters, while using oblique cameras to gather intelligence. *U-2* flights then came to an end entirely in 1974 when Washington and Beijing began their diplomatic rapprochement. This chapter comes to a close with a discussion of Taiwan's contributions to the development of the air forces of Singapore and the Arab Republic of Yemen.

The next chapter examines the state of the ROCAF in 2021, which details its missions, structure, and organisation. A focus is made on the 5th Tactical Composite Wing, which dates back to 1936 and is made up of four Tactical Fighter and Reconnaissance Groups. The modes of action associated with "Force Preservation" are described, which will interest the aviators of today that study the ways to defend against air or missile attacks. The ROCAF has prioritised rapid restoration of airbases, dispersion, camouflage, and, most notably, the hardening of its facilities. Two sanctuaries have been carved into rock at the Hualien and Chihhang bases to shelter aircraft. Located to the east of the island, these bases are relatively shielded from strikes originating from the west by the central mountain range. However, this facility has become more vulnerable with the positioning of Chinese navy aircraft carriers to the east of the island, as demonstrated during recent exercises. The chapter concludes with two paragraphs discussing Taiwan's surface-to-air defences and surface-to-surface missiles.

The third chapter provides a concise and vigorous exploration of the strategic challenges facing Taiwan. It is worth recalling that the PLA could project itself beyond the first island chain if it were able to operate freely from Taiwan. The authors discuss the Communist capabilities before painting a scenario that dynamically presents the strategies that each side could follow in the event of war. They note that Taiwanese officials have previously stated that the island could hold out for a fortnight on its own against an attempted invasion, before essential aid arrives.

Of course, this chapter also comments on the current Chinese strategy, which includes attempts to exhaust the ROCAF by regular intrusions into the Air Defence Identification Zone (ADIZ) or by more complete encirclement of the island. In this respect, the authors highlight a significant shift in 2020, marked by a clear intensification of these coercive actions. They emphasise the wear and tear that such modes of

action could impose on a force of approximately 300 fighters, which may potentially have to contend with 4,000 PLA Air Force fighter aircraft. To end, the chapter gives a brief description of the evolution of Taiwan's strategy, particularly through the Overall Defence Concept.[2] Additionally, it touches on issues, such as Taiwan-U.S. relations (to be redefined with the arrival of Trump), and the local industrial effort.

The fourth chapter, comprising a third of the book, presents a detailed catalogue of ROCAF's aircraft. It includes lengthy sections on the *F-16A/B Block 20*, the *Mirage 2000-5 EI/DI*, and the domestically produced *F-CK-1 C/D Ching-kuo*. Older aircraft, such as the *Northrop F-5 E/F*, the *C-130H*, the *P-3C Orion*, and others, are not left untold.

The fifth and final chapter discusses future programmes, such as the *F-16C/D Block 70*, the *T-5 Yung Ying* trainer aircraft, and Taiwan's drone programme, as well as prospects like the *F-35*. Finally, collectors will appreciate the appendix, which features the various unit patches.

The second book to be presented focuses on the Republic of Korea Air Force (ROKAF) and is titled *Modern South Korean Air Power*. The book, also published in 2021, is written by Robin Polderman, who is a professional aviation photographer. Spanning 256 pages, it is significantly longer than the book on the ROCAF, largely due to its detailed descriptions of all the aircraft that equip or will equip the ROKAF.

This book also begins with a historical overview of the Korean Air Force, this time from a capability-based perspective. Officially established on 1 October 1949, the ROKAF initially had only 22 propeller-driven aircraft, including the *L-4, L-5,* and *AT-6*, at the time when North Korea invaded the country in June 1950. To aid their defence, it soon received *F-51Ds* from the United States, who continued selling advanced models, such as the *F-86 Sabre, F-4 Phantom*, and *F-5 Tiger* during the Cold War. Under Washington's instigation, Seoul, in turn, transferred 44 of its *F-5 Tigers* to South Vietnam in the early 1970s to help Saigon counter its northern adversaries. Remaining a steadfast ally of the United States, the ROKAF later procured *F-16* and *F-15* fighters and eventually opted for the *F-35*. This historical chapter concludes with a unique discussion of North Korean and Chinese defectors who sought political asylum in South Korea by air.

Following a chapter dedicated to the numbering of aircraft and units, the author offers a comprehensive review of ROKAF aircraft and weaponry in 2021 in just under 100 pages. The previously mentioned U.S. aircraft are naturally discussed, but the text also highlights the *IAF Harpy* drone and, notably, the aircraft manufactured by Korean Aerospace Industries. The full range of this aircraft is detailed, from the *KAI KT-1* used for initial pilot training, to the *KAI T-50*, an advanced trainer and light fighter aircraft that also equips South Korea's acrobatic patrol, the *Black Eagles*. As

2. The Overall Defense Concept (ODC) was developed in 2017 by Admiral Lee. He proposes abandoning the traditional strategy in favour of asymmetric warfare. From a practical point of view, this means abandoning the traditional and costly *F-16C/D Block 70* weapons in favour of a wide range of low-cost missiles that would rain down on communist forces attempting to land on the island.

far as armaments are concerned, the chapter is exhaustive, detailing all the air-to-air and air-to-surface missiles, bombs, pods and other surface-to-air missiles used by the ROKAF. For example, it has purchased *AIM-120D* missiles for its *F-35* fleet and *Meteor BVRAAMs* for its future *KF-21* jets. Additionally, it possesses *AGM-84H SLAM-ERs*, *AGM-88 HARMs* and *Taurus KEPD 350Ks*. This chapter underscores the Air Force's excellence in air-to-air and air-to-surface capabilities. It also highlights the determination of the South Korean authorities to diversify the origins of its armaments, despite the dominance of U.S.-made equipment.

The following chapter looks at the training of South Korean aircrew. It begins by discussing the initial training provided, noting that this is now carried out on modern equipment. The *KT-1*, for instance, is far better equipped than the previous *T-37C* it replaced. It features a heads-up display, which prepares aviators for operating the most advanced aircraft. The *T-50* has the particularity of its low approach speed, making it much easier to land than the older *T-38*. All pilots are permitted to wear a red scarf as soon as they are licensed. It represents a sign of rallying and of belonging to an elite that active and retired pilots exhibit with pride. The author also highlights the training missions carried out by South Korean aviators in Red Flag exercises held in the Nevada desert, where their first involvement dates to March 1979. More recently, South Korean *F-15 K Slam Eagles* have been involved in Red Flag-Alaska training. Additionally, the bilateral Max Thunder exercises, conducted twice a year, involve units from the Pacific Air Forces (PACAF) and the ROKAF. These exercises are often met with vehement protests from Pyongyang.

The next two chapters address the modernisation of the ROKAF (2021-2035) and the South Korean aerospace industry. Readers cannot help but be struck by South Korea's ambition and move upmarket in the latter area. From 2026, for example, South Korean manufacturers are due to supply their forces with a *KF-21 Boramae* generation 4.5 fighter, which will evolve with the *F-15K* and *F-35*. 120 of these are due to equip squadrons by 2032. Developed in cooperation with Indonesia, this aircraft is attracting interest from European countries, such as Poland.

The subsequent chapter examines the regional strategic situation, devoting eight pages to North Korea's air power that are more than welcomed. As expected, the author notes that North Korea's air capabilities are technologically outdated. However, its aircraft could still serve as delivery systems for chemical or biological weapons. Intriguingly, the most "dangerous" aircraft in the Korean Popular Army Air Force (KPAAF), notes the author, might not be the *MiG-29* but the much older *An-2*. Equipped with satellite communications and possibly terrain-following radar, this aircraft could transport small teams of special forces into South Korea to sow chaos. Finally, the chapter also covers joint Russian and Chinese bomber flights near South Korea's ADIZ and the U.S.-South Korea partnership. The book concludes with photographs of patches from ROKAF units and those of the United States Air Force (USAF) in Japan and South Korea.

These two volumes will undoubtedly delight readers who wish to learn more about these Asian air forces while enjoying the magnificent photographs that accompany the text. Once again, Harpia Publishing succeeds in achieving its ambitious goal. It satisfies lovers of aviation photography with remarkable visual reproductions, offers military aircraft enthusiasts a precise and demanding summary of the equipment in use, and provides an overview of the strategic dilemmas faced by local actors.

While it is worth noting that these volumes regrettably date from 2021, a period during which the regional strategic situation has evolved rapidly, they nonetheless inspire curiosity in the readers. After flipping through these pages, they will gain the foundational knowledge needed to further explore the subject. It is afterwards where they can then turn to specialised literature, journals, or the countless reports from think tanks on the region to delve deeper into one point or another.