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**RCDA** Research Project on  
China's Defense Affairs  
中國防務研究計畫

**特別報告：**

**2025 年臺灣軍事戰力調整觀察**

**Special Report:  
Observations on Taiwan's Military  
Force Adjustments in 2025**

Editors:

Chengkun Ma, Taiyuan Yang, & K. Tristan Tang

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**All information is based on publicly available sources. The analysis and conclusions presented reflect the author's personal views.**

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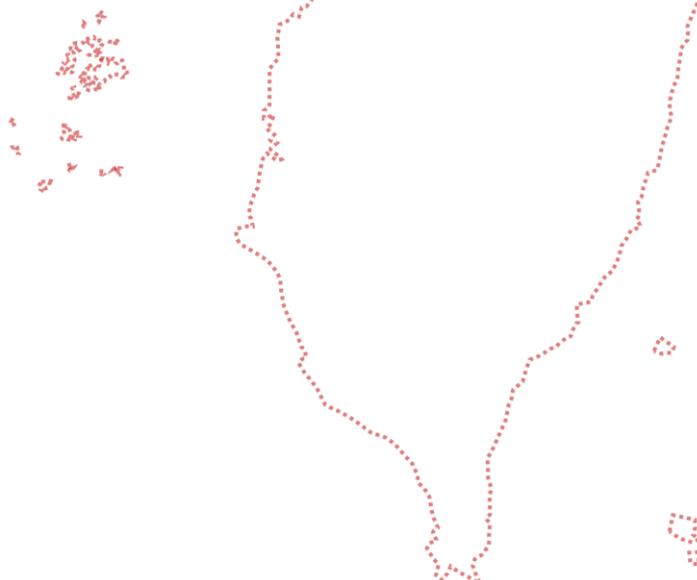
## Special Report: Observations on Taiwan's Military Force Adjustments in 2025

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## I. Han Kuang 41: Three Key Observations

Tai-yuan Yang, K. Tristan Tang, & B. Rex Chang

The 2025 Han Kuang 41 exercise introduced several notable changes from previous iterations, including the integration of gray-zone harassment scenarios, full-brigade recall training for the 206th Infantry Brigade (Reserve Force), and urban warfare exercises. Importantly, many of the exercise's key implications are not readily apparent from the Ministry of National Defense's press releases or media coverage of the drills.

This year's exercise revealed three notable observations regarding the strike brigades. First, the Taiwanese Armed Forces now appear to treat gray-zone harassment as part of the pre-war phase. Second, efforts to secure maritime supply lines and the security of eastern air and sea space have been significantly strengthened. Third, the 99th Marine Brigade may be reassigned to northern Taiwan in the future.

### Observation 1: The Taiwanese Military May Treat Gray-Zone Harassment as a Pre-War Posture

In September 2024, following that year's Han Kuang exercise, Minister of National Defense Li-hsiung Wellington Koo warned that it was becoming increasingly difficult for Taiwan to discern when the PLA might shift from training to exercises, and from exercises to actual combat. This year's exercise reflects that concern: the Taiwanese military effectively treated China's gray-zone activities as part of a broader campaign continuum, incorporating them into its operational planning and advancing defensive measures

accordingly.

According to the Ministry of National Defense's announced [schedule for the Han Kuang 41 exercise](#), the period from July 9 to July 11 simulated a phase of gray-zone harassment by China against Taiwan. In its [post-exercise assessment report](#), the ministry noted that the drills were conducted "in accordance with key warning indicators of a potential PLA invasion" and involved "a step-by-step elevation of combat readiness levels" in order to "fully rehearse the transition from peacetime to wartime and the response mechanisms to gray-zone coercion."

Notably, the Ministry of National Defense began mobilizing reserve units as early as [July 5](#), and by the start of the gray-zone phase on [July 9](#), a total of 22,000 personnel had already been called up. This suggests that the Taiwanese military, to some extent, views China's gray-zone activities as part of a pre-war posture and an integral component of broader combat operations. Although the official elevation of readiness levels was based on key warning indicators of a potential PLA attack, the mobilization of reserve forces had already commenced prior to the onset of gray-zone operations.

The overall operational sequence may unfold as follows: The Chinese government formally orders the PLA to initiate military action against Taiwan, prompting the mobilization of joint invasion forces across various PLA service branches. Upon detecting early warning indicators, the Taiwanese military begins mobilizing its reserve forces. Subsequently, China launches gray-zone operations to harass Taiwan, but by that point, Taiwan has already assessed the situation as a potential transition from exercises to actual combat

and treats it as part of a pre-war posture. As a result, the Taiwanese military adopts a heightened readiness approach to counter gray-zone coercion. Once the PLA initiates joint firepower strikes—targeting Taiwan's C4ISR systems and key land, sea, and air assets—along with preparatory and direct fires on intended landing zones, Taiwan can then transition to joint anti-landing operations.

### **Observation 2: Nighttime Runway Repairs Conducted Across Multiple Locations to Enable Combat Employment of Force-Preserved Units**

As in previous exercises, Air Force aircraft redeployed (轉場) to practice force preservation. However, this year's drills went a step further by incorporating nighttime runway repair operations to ensure that preserved forces could be effectively brought back into combat.

Actions such as the mobilization of reserve forces, [the dispersal of Navy vessels](#), and the [redeployment of Air Force aircraft](#) were initiated as early as July 9 and 10 to ensure the force preservation of Taiwan's key maritime and air assets.

However, beyond preserving forces, these units must also be capable of entering combat when needed in order to constitute effective combat power. The PLA's pre-landing joint firepower strikes would likely prioritize attacks on Taiwan's key naval and air bases. Given that Taiwan's force preservation areas are likely already targeted or monitored by the PLA, dispersed naval and air assets relocated to eastern Taiwan would also come under attack. The objective is not only to destroy these forces, but also to deny them the ability to rejoin the fight—even if they survive initial strikes.

For example, if outdoor runways at Hualien's Jiashan base (佳山基地) or Taitung's Zhihang base (志航基地) were destroyed, the fighter jets preserved inside hardened shelters would be unable to take off and participate in combat.

More importantly, if Taiwan is to sustain combat operations against the PLA, securing access to foreign supplies and weapons will be critical. In this year's exercise, a scenario was simulated in which a [U.S. transport vessel](#) delivered materiel to Hualien, escorted by Taiwanese naval and air forces. This underscores that force preservation is not only essential for continued combat against the adversary, but also a prerequisite for receiving external support—an indispensable condition for protracted resistance.

As a result, this year's exercise included nighttime runway repair drills at Air Force bases in [Hualien](#), [Tainan](#), and [Taichung](#). Compared to daytime repair operations, nighttime activities are significantly more difficult for the enemy to detect and target, making this aspect of the exercise closely aligned with the likely conditions of wartime repair scenarios.

### **Observation 3: The 99th Marine Brigade's Cross-Regional Reinforcement Experience Offers Insight into a Potential Relocation to Northern Taiwan**

In this year's exercise, the 99th Marine Brigade was redeployed from its home garrison in southern Taiwan to conduct [cross-regional reinforcement operations](#) in the north. Beyond validating the brigade's ability to carry out such a mission, the operation also provides valuable insight into the feasibility of permanently repositioning the unit to northern Taiwan.

First, the 99th Marine Brigade deployed northward in a light configuration. Heavy equipment and tanks did not participate in the cross-regional reinforcement; instead, the unit primarily operated with Humvees and medium tactical wheeled vehicles. This equipment profile closely resembles that of the 66th Marine Brigade, which has recently transitioned to a lighter force structure and no longer maintains its original tank and artillery battalions. (For details, see the section of this report titled “66th Marine Brigade’s New Role: Defending the Capital and Resisting Airborne Assaults”.)

Second, upon arriving in northern Taiwan, the 99th Marine Brigade first stationed at the 66th Marine Brigade’s garrison located in Guishan District, Taoyuan City.

Finally, the 99th Marine Brigade’s area of operations during this year’s exercise in northern Taiwan was primarily the Guandu Plain (關渡平原). Media reports also indicated that the unit conducted drills near Zhoumei Park (洲美公園) in Taipei City’s Beitou District. Notably, the 99th Marine Brigade conducted a nighttime “key area defense” exercise on the Guandu Plain in coordination with the Military Police, simulating PLA forces attempting to penetrate Taipei via the Tamsui River, either by water or air. It is worth noting that during the 2024 Han Kuang 40 exercise, defense of the Guandu Plain was the responsibility of an infantry battalion from the 66th Marine Brigade, stationed at Fu Hsing Kang College of National Defense University, located just north of the area.

Given the recent light-force restructuring of the 66th Marine Brigade and the partial deployment of its units to Songshan Airport, several aspects of this year’s exercise stand out: the 99th Marine Brigade operated in a light configuration, utilized the 66th Marine

Brigade's garrison facilities on the Linkou Plateau (林口臺地), and conducted drills within the Guandu Plain—an area designated as part of the 66th Brigade's defensive area in recent years. These developments suggest that the 99th Marine Brigade's cross-regional deployment served not only as a reinforcement operation but also as a practical validation of the feasibility of permanently relocating the entire brigade to northern Taiwan. Under such a relocation, the 99th Brigade could take over the garrison in the Linkou Plateau and assume responsibility for the Guandu Plain, thereby allowing the 66th Marine Brigade to focus entirely on the defense of central Taipei.

## Conclusion

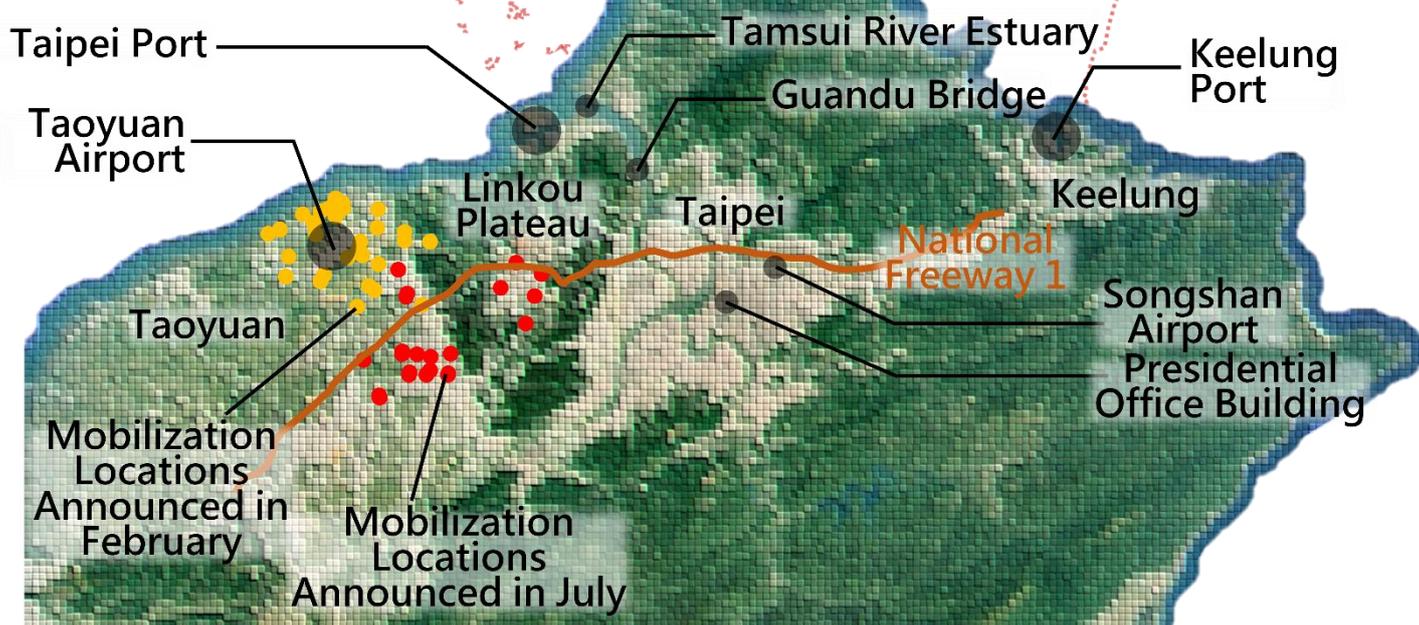
The Han Kuang 41 exercise featured several unprecedented changes and training components, widely regarded as more combat-realistic and contributing to the multi-layered deterrence posture. Beyond the visuals presented in Ministry of National Defense press releases and media coverage, it is equally important to consider what these drills signify about potential cross-strait conflict scenarios and the future direction of Taiwan's force posture and troop deployments.

## II. Han Kuang 41: Observations on the Full Mobilization of the 206th Brigade Reserve Forces

Tai-yuan Yang, Thomas T. Kao, & K. Tristan Tang

The full-unit call-up of the 206th Infantry Brigade (Reserve Force) during the Han Kuang 41 exercise drew considerable attention. Beyond testing the brigade's ability to mobilize personnel at scale, the more significant development lies in the shift in its deployment logic compared to past exercises. The changes observed in the 206th Brigade's role warrant close attention, as they may signal a potential direction for future adjustments to the deployment patterns of other Army reserve infantry brigades.

### Illustrative Map of the 206th Infantry Brigade's Mobilization During Han Kuang 41



## Each Battalion of the 206th Infantry Brigade Held Both Coastal and Urban Tactical Positions, with Urban Sites Located Deep Within the City Center

Under the current “[on-site call-up](#)” (現地教召) policy, mobilized units are summoned directly to areas near their designated tactical positions, in line with the principle of “mobilize where you fight.” In other words, the call-up location effectively reflects the unit’s assigned area of responsibility. This year, [the call-up locations for the 206th Infantry Brigade](#) were adjusted shortly before the Han Kuang exercise. At the beginning of the year, the Ministry of National Defense had announced that the brigade would be mobilized in the area stretching from Dayuan’s coastline to the vicinity of Taoyuan International Airport, suggesting a force posture encircling the airport. The brigade had also participated in [an airport counter-assault drill](#) during the Han Kuang 39 exercise, indicating a likely mission focus on beach defense and airport security.

However, in the Han Kuang 41 exercise, the 206th Infantry Brigade’s mobilization sites were shifted to Taoyuan District and Guishan District in Taoyuan City, as well as Linkou District in New Taipei City—all of which are located in urban core areas. This marked the first time that a Taiwanese reserve unit has been stationed within a city center. Even Urban Reserve Brigades designated for urban defense missions have traditionally been positioned on the outskirts of cities, never inside the urban core. Furthermore, the 206th Brigade’s [call-up training](#) this year focused primarily on urban warfare, strongly suggesting that the unit is likely to take on a formal role in urban area defense in the future.

## **The 206th Infantry Brigade and 269th Mechanized Infantry Brigade Employed Successive Resistance and Mutual Cover to Retreat While Attriting Enemy Forces**

The 206th Infantry Brigade's shift to urban tactical positions does not imply abandonment of its previous roles near coastal or airport areas. According to media reports, 1st Company of the brigade's 5th Battalion established defensive positions in [Luzhu District, Taoyuan City](#), tasked with covering the withdrawal of frontline combat units. Notably, this position is located near the initial mobilization site announced earlier this year, adjacent to Taoyuan International Airport. This suggests that the 206th Infantry Brigade maintains at least two tactical positions—covering both coastal and urban environments—and can transition between them depending on the evolving battlefield situation. This also marks the first time the Taiwanese military has demonstrated a transition plan for mobilized forces during an exercise, coordinating with frontline combat units through successive resistance and mutual covering actions to implement [a defense-in-depth operation](#).

The main combat unit covered by the 206th Infantry Brigade is highly likely to be the 269th Mechanized Infantry Brigade. On July 10, the 269th Brigade dispatched a Taoyuan battle team to Dayuan District, Taoyuan City, to conduct a support drill for [Taoyuan Airport](#), using firepower to delay enemy amphibious forces at the forward edge. During the exercise on July 16, the 206th Brigade deployed 1st Company of the 5th Battalion to key routes and intersections around Luzhu to establish defensive positions, providing cover for the main combat unit's maneuver and redeployment. This demonstrated the reserve brigade's role in taking over combat

responsibilities on the battlefield and its coordination with frontline units to execute a defense-in-depth operation.

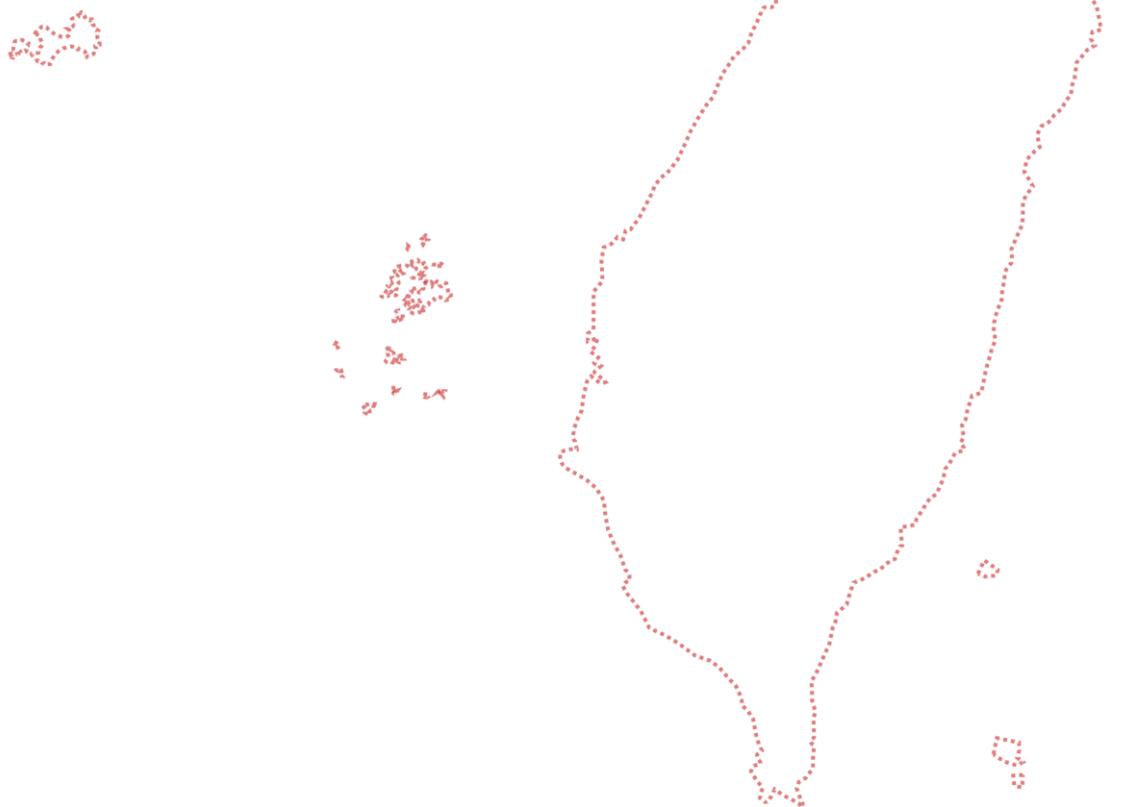
### **109th and 206th Infantry Brigades Deployed to Reinforce Defense of Linkou Plateau**

During the Han Kuang 41 exercise, the 2nd Battalion and the brigade's howitzer battalion of the 206th Infantry Brigade conducted call-up training on the Linkou Plateau, distinct from the brigade's other infantry battalions stationed in urban Taoyuan. [The howitzer battalion](#) further practiced firing from the Linkou Plateau against enemy forces on the beach, indicating the brigade's wartime responsibilities include defending the Linkou Plateau as well as coastal and beach combat missions.

Additionally, in preparation for the November call-up, some companies of the 109th Infantry Brigade (Reserve Force) have relocated their training sites to the coastal area near Baodoucuo (寶斗厝) in Linkou, tasked with defending the foothills of the Linkou Plateau. These units would operate in coordination with the rest of the 109th Brigade, which is constructing a beach defense line extending southward from the Tamsui River estuary to Linkou. Among the reserve forces, this arrangement shows the 109th Infantry Brigade responsible for coastal defense of Linkou, while the 206th Infantry Brigade is assigned to defend the Linkou Plateau. These units could coordinate with the Marine and Military Police forces stationed in Linkou to jointly defend the area.

## Conclusion

During this year's Han Kuang exercise, the Army's 206th Brigade not only conducted a full-unit call-up but also introduced significant operational changes, including establishing dual tactical positions for coastal and urban warfare, practicing coordinated withdrawal maneuvers, and enhancing deployments on the Linkou Plateau. These experiences and validation outcomes hold critical implications for the future force planning of Taiwan's defense-in-depth operations. It will be important to monitor whether similar training elements will be adopted across other defense brigades moving forward.

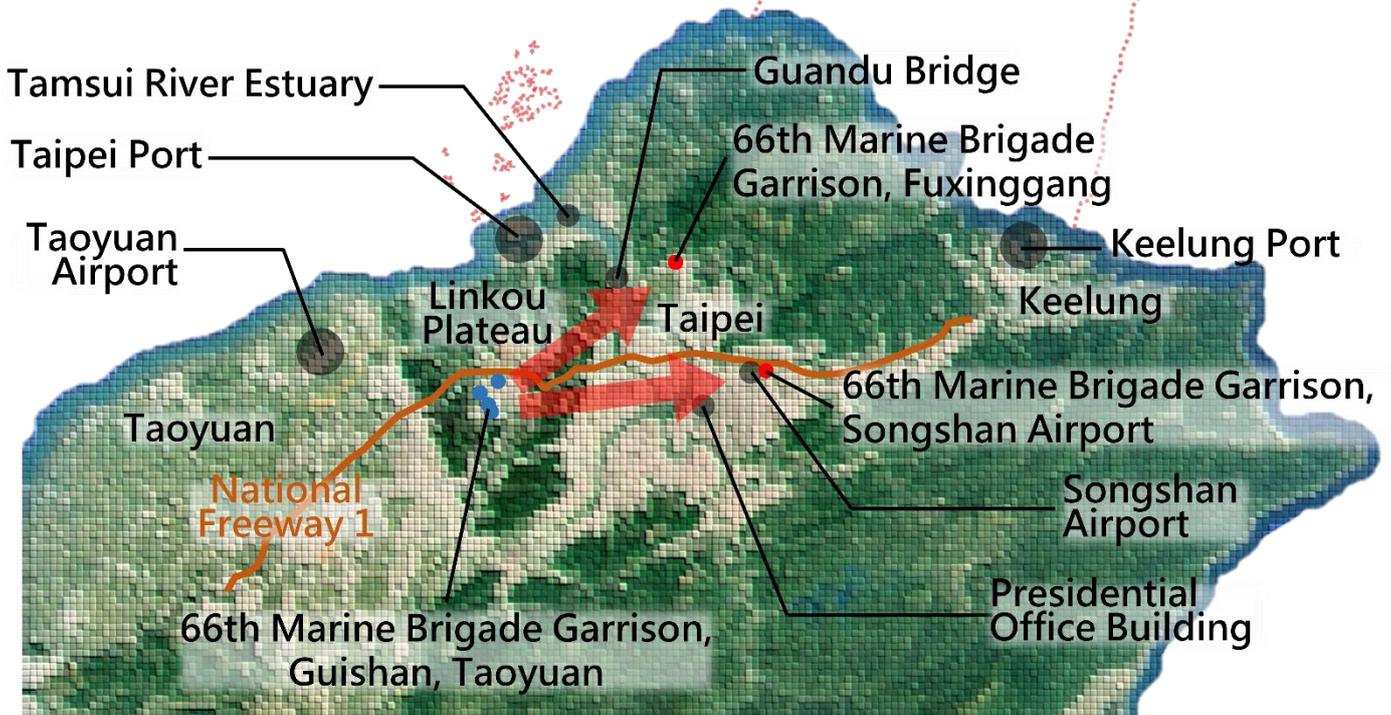


### III. 66th Marine Brigade's New Role: Defending the Capital and Resisting Airborne Assaults

B. Rex Chang

In recent years, the Taiwanese military has restructured its defense posture for the capital region. The 66th Marine Brigade, as one of the primary force responsible for guarding northern Taiwan, has undergone significant organizational and mission adjustments. Its tank and artillery battalions have been reorganized into [an UAV battalion and a fire support battalion](#), reflecting a shift from traditional heavy equipment and direct fire support toward a more mobile, flexible, and precision-strike asymmetric warfare model.

Illustrative Map of the 66th Marine Brigade's Garrison Relocation



According to media reports, the 66th Brigade has deployed units to the [Air Force's Songshan Air Base](#), where it works alongside the Military Police to defend critical military facilities in Taipei City. This transformation goes beyond a mere reorganization; it signals the Taiwanese military's effort to learn from international combat experiences and bolster the capital's garrison defense and counter-airborne assault capabilities.

## Features

### 1. Enhancing Capital Defense with Highly Mobile and Precision Firepower Systems.

The recent transformation of the 66th Marine Brigade focuses on disbanding its tank battalion, equipped primarily with M60A3 tanks, and its artillery battalion, equipped with M109A2 self-propelled howitzers, to form a new UAV battalion and a fire support battalion. [The UAV battalion's equipment](#) includes domestically produced Ruiyan UAVs, loitering munition drones, and U.S.-purchased Switchblade 300 drones, capable of reconnaissance, harassment, and precision strike missions. Although specific details on the fire support battalion's equipment remain undisclosed, it is likely to include Javelin and Stinger missiles, Kestrel rockets, and mortar carrier vehicles, based on the Army's [existing combined arms battalion fire support company](#) model. This configuration provides capabilities against air and armored threats, along with mobile fire support.

This equipment restructuring indicates that the 66th Marine Brigade has transformed from a traditional area-attack force into a unit capable of dispersed deployments and precision strikes. Its new

focus is particularly on encircling and annihilating PLA forces that may attempt airborne or air assault operations within the capital's garrison area.

## 2. Reassignment of the 66th Marine Brigade as the General Staff Headquarters' Strategic Reserve for Wartime Operations

Parts of the 66th Marine Brigade have been deployed to Songshan Base (Taipei Songshan Airport), with their barracks unit designation reading "Marine Corps 66th Brigade, Garrison Second Battle Team (海軍陸戰隊陸戰六六旅衛戍第二戰鬥隊)." This reflects a shift in their role from regional defense to direct protection of key capital-area installations. Notably, the barracks share no walls or clear barriers with the Air Force runway area, facilitating rapid response to potential airborne or air assault incursions.

Media reports from January of this year indicated that amphibious reconnaissance units have been deployed at potential PLA landing points such as the Tamsui River estuary and Taipei Port to enhance anti-infiltration and decapitation defense capabilities across northern Taiwan. In February, reports noted that the 66th Brigade would be reassigned during wartime under the General Staff Headquarters as the strategic reserve for the northern region. On April 28, media outlets further emphasized plans for the entire 66th Brigade to relocate into Taipei city proper to bolster capital garrison defense capabilities.

### Observations and Analysis

Based on the aforementioned news reports, the 66th Marine

Brigade has undergone significant organizational and deployment changes. The following analysis will examine these developments from three perspectives: “Overview of Changes in Enemy Threats,” “Enhanced Counter-Decapitation and Control Capabilities,” and “Strengthened Anti-Armor Capabilities.”

### 1. Strengthening Capital Forces in Response to Evolving Threats

A report from the U.S. Naval War College noted that “by 2022 at the latest, the [PLA's Airborne Corps](#) had completed large-scale fielding and corresponding training of the Y-20 transport aircraft, enabling air assault operations at the battalion and brigade levels.”

[On November 5, 2024](#), China Central Television's news broadcast reported that “a new type of airborne infantry fighting vehicle has been fielded,” with open-source information indicating that this vehicle is equipped with an active protection system. This system includes interceptors similar to those used on the Type 99A main battle tank and a four-sided small phased-array radar, capable of actively intercepting incoming anti-tank missiles and rockets. Additional armor has been added to the sides of the hull and above the tracks, addressing the poor protection issues of the current ZBD-03 airborne infantry fighting vehicle. In terms of firepower, the vehicle retains a 30mm autocannon and is suspected to be equipped with CM-501GA vertical launch missiles, which enable beyond-visual-range precision strikes, extending the operational depth and independent fire suppression capabilities of airborne forces.

In response to the PLA's updated capabilities, the Taiwanese military has significantly enhanced its own airborne defense capacity.

To strengthen the defense of the Taipei garrison area, alongside improving the Military Police's garrison combat capabilities, plans are underway to progressively integrate the 66th Marine Brigade into the capital's defensive forces.

## **2. Strengthening Counter-Seizure and Defense-in-Depth Operations**

The 66th Marine Brigade's tank and artillery battalions have been reorganized into an UAV battalion and a fire support battalion. One key mission of these units is likely to prevent PLA airborne and air assault operations aimed at seizing control of the garrison area or conducting decapitation strikes against critical targets. From an equipment perspective, this restructuring reflects a shift from traditional armor and artillery area attacks to dispersed, precision, and highly mobile point strikes tailored to counter the fast-paced, small-scale, and lightly armored nature of decapitation operations.

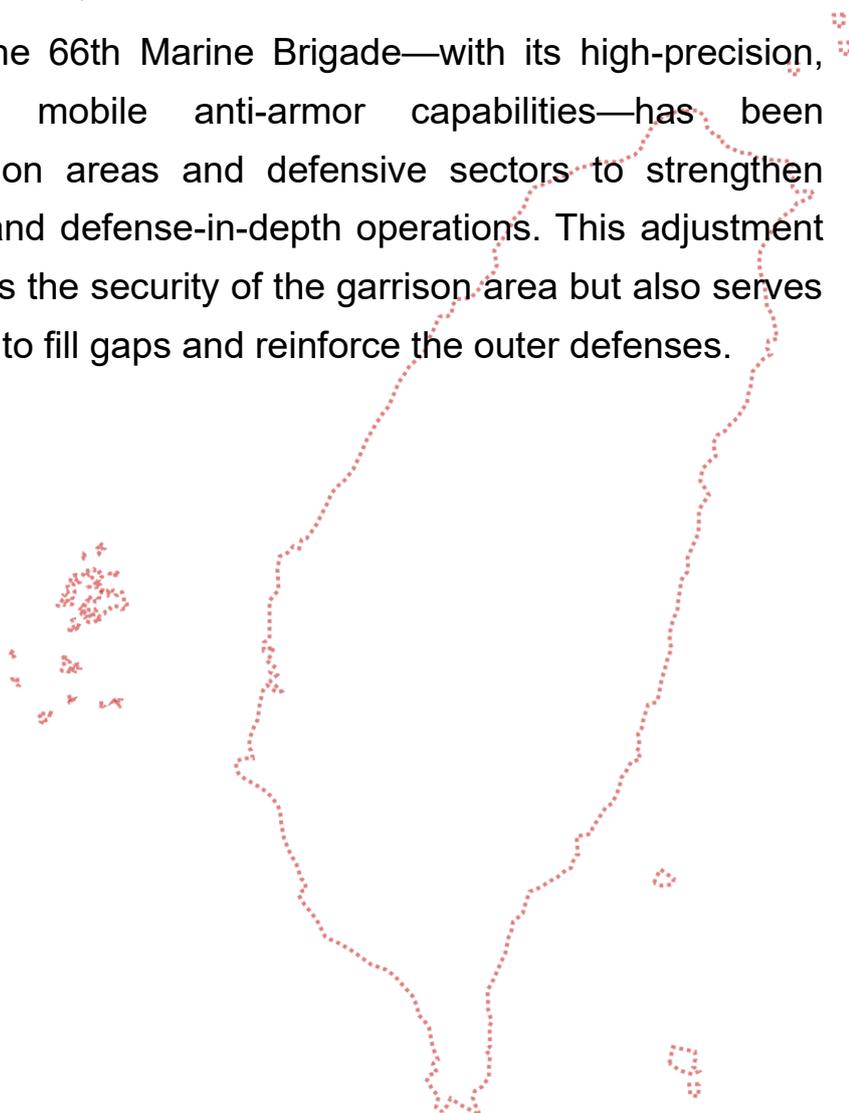
Operating tanks and artillery effectively in densely built urban environments presents significant challenges in terms of mobility and firepower. Replacing these with drone platforms and other advanced assets enhances support for Marine infantry battalions and enables close coordination with Military Police units to conduct garrison defense and defense-in-depth operations.

## **3. Enhancing Anti-Armor Capabilities within the Capital Garrison**

The Second Garrison Battle Team stationed at Songshan Air Base is equipped with Javelin missiles, while the UAV battalion's Type-II loitering munitions (巡飛彈二型) also possess anti-armor capabilities. Military Police units within the garrison area, however, lack effective means to counter heavily armored forces; they are

equipped with AT-4 rockets and Kestrel rocket launchers but do not have Javelin missiles. Although forces equipped with M1A2T tanks defend northern Taiwan's periphery, if PLA main battle tanks breach these outer defenses and penetrate the garrison area, the Military Police's existing anti-armor weapons would likely be insufficient to repel them. Urban density further complicates the use of air strikes or conventional artillery.

Therefore, the 66th Marine Brigade—with its high-precision, dispersed, and mobile anti-armor capabilities—has been reassigned mission areas and defensive sectors to strengthen counter-seizure and defense-in-depth operations. This adjustment not only enhances the security of the garrison area but also serves as a critical force to fill gaps and reinforce the outer defenses.



## IV. Urban Reserve Brigades' Evolving Reconnaissance Capacity: A Continuing Assessment

Thomas T. Kao

In April 2024, media reports indicated that during a parliamentary inquiry, the Ministry of National Defense confirmed that the Urban Reserve Brigades under the All-Out Defense Mobilization Agency will be issued [850 micro unmanned aerial vehicles](#) (UAVs). According to the 2024 and 2025 defense budget documents, the AODMA plans to procure 850 [commercial-grade micro UAVs](#) with an operational radius of 5 kilometers. These UAVs are capable of day and night reconnaissance and support integration with the Android Team Awareness Kit (ATAK) command and control system. [Based on the defense budget](#), it is estimated that the UAVs will be deployed in pairs with a single remote control unit (the average procurement cost per unit for both Army and AODMA micro UAVs is approximately 850,000 NTD, suggesting a two-drone-to-one-controller setup).

Additionally, the military will establish a foundational UAV operator training base at the Army's Southern Joint Test and Evaluation Center's UAV Training Center and collaborate with the Civil Aviation Administration to conduct intermediate and advanced training, assisting operators in obtaining UAV pilot licenses.

### Features

#### 1. Enhancing Urban Reserve Brigades' Reconnaissance Capabilities through Increased UAV Procurement and Deployment

Currently, the All-Out Defense Mobilization Agency oversees [18](#)

Urban Reserve Brigades (城鎮後備旅), composed of active-duty officers and reserve personnel, tasked with defending the outskirts of various urban areas. Among these, 17 brigades are slated to receive micro UAVs.

Analyzing the planned allocation of 850 micro UAVs to 17 Urban Reserve Brigades, each brigade would receive approximately 25 sets, totaling 50 micro UAVs. Each Urban Reserve Infantry Brigade comprises five infantry battalions, with each battalion expected to be equipped with an average of five sets, or 10 UAVs. Each UAV set includes one operational drone and one backup drone, allowing rapid replacement in case the operational drone is lost or malfunctions, thereby maintaining continuous reconnaissance capability.

In comparison, current active-duty combined arms battalions in the Taiwanese military are equipped with only two sets of tactical short-range UAVs per battalion, totaling six sets or 12 UAVs per brigade. Although micro UAVs offer lower performance than the tactical short-range UAVs assigned to combined arms battalions, the All-Out Defense Mobilization Agency appears to compensate by procuring a greater quantity, thereby enhancing the reconnaissance capabilities of reserve battalions.

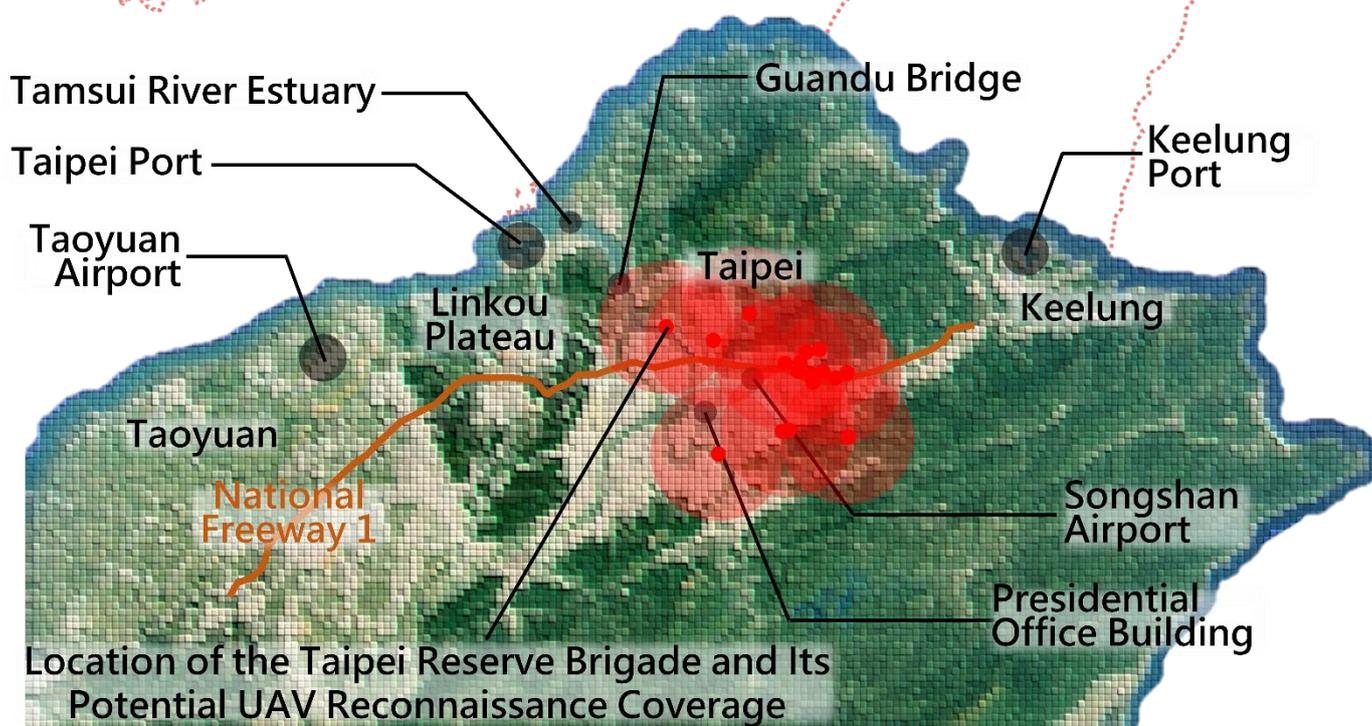
## **2. Effective Expansion of Early Warning Coverage through UAV Reconnaissance by Urban Reserve Brigades**

Micro UAVs are reconnaissance platforms that represent a significant upgrade over traditional reconnaissance equipment, such as binoculars, previously assigned to scout squads. With UAVs, reserve units will greatly enhance their reconnaissance capabilities. In the future, scout squads can use UAVs to conduct early reconnaissance for infantry companies, reducing the risk of personnel exposure to enemy fire during ground reconnaissance

and mitigating the inefficiency of foot patrol searches.

For example, within the Taipei Reserve Brigade, micro UAVs with a 5-kilometer operational radius enable infantry battalions stationed around Shilin to monitor enemy activity in the Beitou and Guandu areas, while those deployed near Neihu and Nangang can surveil the Xizhi region. Based on early warning intelligence, these units can rapidly adjust their troop and firepower deployments accordingly.

**Illustrative Map of the Potential Reconnaissance Range of Taipei Reserve Brigade's Micro UAVs**  
(Based on Recent Urban Reserve Call-Up Locations)



## Implications

Equipping Urban Reserve Brigades with micro UAVs significantly enhances their reconnaissance capabilities and addresses the limitations of reserve infantry scout squads, which have traditionally relied on foot patrols and visual observation to detect enemy activity. Each UAV system includes a backup drone to ensure continuous surveillance operations.

However, as enemy capabilities continue to develop and evolve, Urban Reserve Brigades should not only field micro UAVs but also plan to acquire integrated reconnaissance-strike tactical UAVs and first-person view (FPV) drones to maintain a comprehensive and effective reconnaissance and strike capability.

### **1. Micro UAVs Provide Reconnaissance Capabilities but Lack Strike Functions**

Micro UAVs are reconnaissance platforms and lack the integrated reconnaissance-strike capability to detect and directly engage targets. Additionally, Urban Reserve Brigade infantry battalions are only equipped with 120mm mortars, which have limited range, so micro UAVs primarily serve a reconnaissance role and cannot rapidly or effectively attack and destroy targets.

For example, during the early stages of the Russia-Ukraine war, grenades were sometimes mounted directly on reconnaissance UAVs to achieve a reconnaissance-attack effect. More recently, reconnaissance UAVs identify battlefield targets and then guide FPV suicide drones and other attack UAVs to engage them, forming a “hunt-kill” kill chain. Both approaches enable UAVs to directly destroy enemy targets without relying on artillery fire support.

In other words, equipping Urban Reserve Brigades with micro UAVs represents a first step in enhancing combat capability, while fielding armed attack UAVs is a future force modernization goal.

## **2. Micro UAVs Currently Unable to Integrate with Common Operational Picture**

Micro UAVs possess the capability to connect with the Android Team Awareness Kit (ATAK) command and control system, enabling real-time transmission of drone footage and enemy positions via satellite or network links directly onto digital maps. This creates a shared battlefield picture for commanders to reference when planning fire missions or adjusting troop deployments.

However, Urban Reserve Brigades currently rely exclusively on radios for communication and lack satellite or network-based systems, preventing them from transmitting data via digital data links. As a result, they must relay enemy information verbally through radio to higher command echelons, which significantly limits the effective use of UAV-derived intelligence. Moreover, these brigades do not possess brigade-level reconnaissance UAVs capable of conducting longer-range intelligence collection. The lack of integrated intelligence systems and independent long-range reconnaissance capabilities severely restricts the overall effectiveness of UAV operations.

For example, on the Russia-Ukraine battlefield, Ukrainian forces use [the Gis Arta system](#) to rapidly relay frontline target data to rear artillery units via Starlink, enabling swift fire missions to destroy enemy units. Ukraine has also developed [the Delta battlefield common operating picture system](#), integrating UAV reconnaissance, satellite imagery, and other intelligence sources to

guide artillery, attack drones, and ground forces in striking enemy units.

Therefore, developing data links and a shared battlefield picture centered on UAVs is an indispensable future path for Urban Reserve Brigades.

### **3. Urgent Development Required for Fiber-Optic Signal Transmission in UAVs**

The micro UAVs equipped by Urban Reserve Brigades are commercial-grade drones operating on the 2.4 GHz and 5.8 GHz frequency bands, which are common civilian frequencies and thus susceptible to electromagnetic interference. Experience from the Russia-Ukraine conflict demonstrates that UAVs are vulnerable to electronic warfare and electromagnetic jamming. Consequently, both sides have developed fiber-optic cable-linked UAVs, especially attack-oriented FPV suicide drones, to avoid remote control signal disruption during target engagement.

In defensive operations, the Taiwanese military will face a challenging electronic warfare environment, making it difficult for wireless-controlled UAVs to operate effectively. Therefore, the rapid development of UAVs using fiber-optic cable signal transmission is essential.

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