



**China Aerospace Studies Institute
Commander's Toolkit for China**

PLA Naval Aviation



PLA Navy History



**Coastal
Defense
1949-1987**



**Near Seas
Defense
1987-2015**



**Near Seas Defense
&
Far Seas Protection
2015 - Present**



Leadership

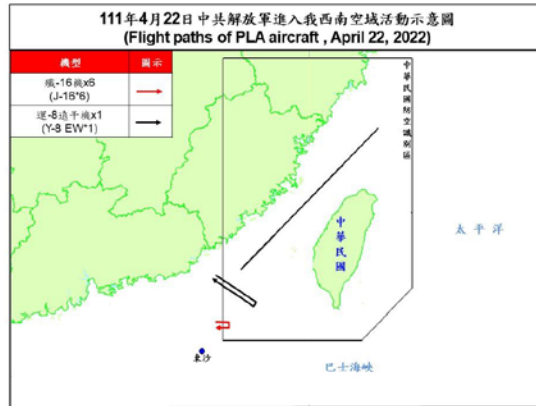


**PLAN Commander
Admiral Dong Jun (董军)**



PLAN Aviation Missions

Maritime Airspace Protection Supporting Coastal and Maritime Surface Operations



Taiwan



**Coastal
Defense**



**Maritime
Sovereignty**



PLAN Aviation Modernization Priorities



Aircraft Carriers



**Carrier-based
Aircraft**



Air Defense



Current Forces – Land-based



Combat

- 4th Gen Fighters
 - J-10A, J-11B
- Attack
 - JH-7
- Bombers
 - H-6

Support

- Special Mission
 - Y-8, Y-9 variants for patrol, AEW&C, ASW, etc.)
- Tankers
 - H-6DU

Rotary

- Z-9
- Z-8/Z-18
- Helix (Ka-28, Ka-31)
- Z-20 (future)



Current Forces – Shipborne



Current

Carrier

- J-15 4th Gen Fighter

Various Ships

- Z-9/Z-8/Z-18/Helix
 - Transport
 - AEW
 - ASW

Future

Carrier

- Stealth Fighter (J-35)
- AEW&C (KJ-600)

Various Ships

- Z-20
 - Force Protection
 - ASW



Current Forces – Air Defenses



Ground

- Radar Brigades
- SAM Brigades
 - HQ-9, HQ-9B
- ECM Brigades

Ship

- HHQ-9
- Phased-array Radars



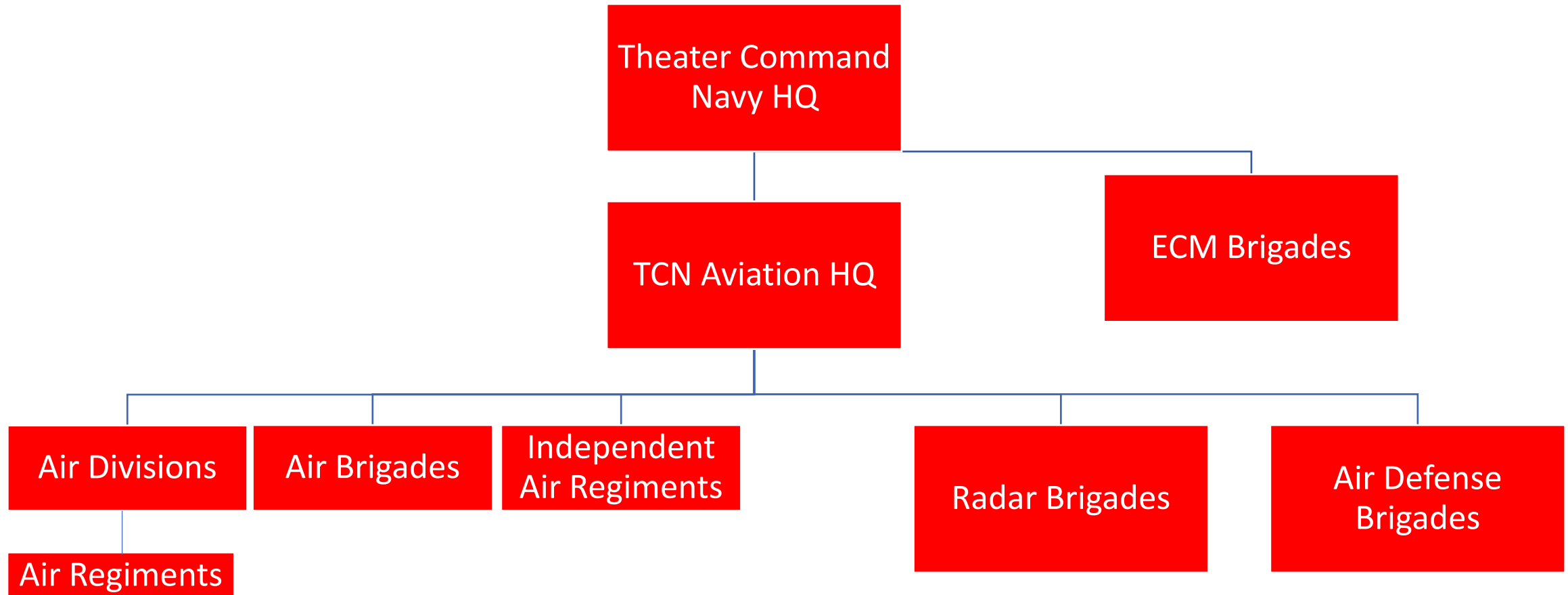
Naval Aviation Force Employment



- Near Seas Anti-Access and Area Denial (A2/AD)
 - Far Seas Protection

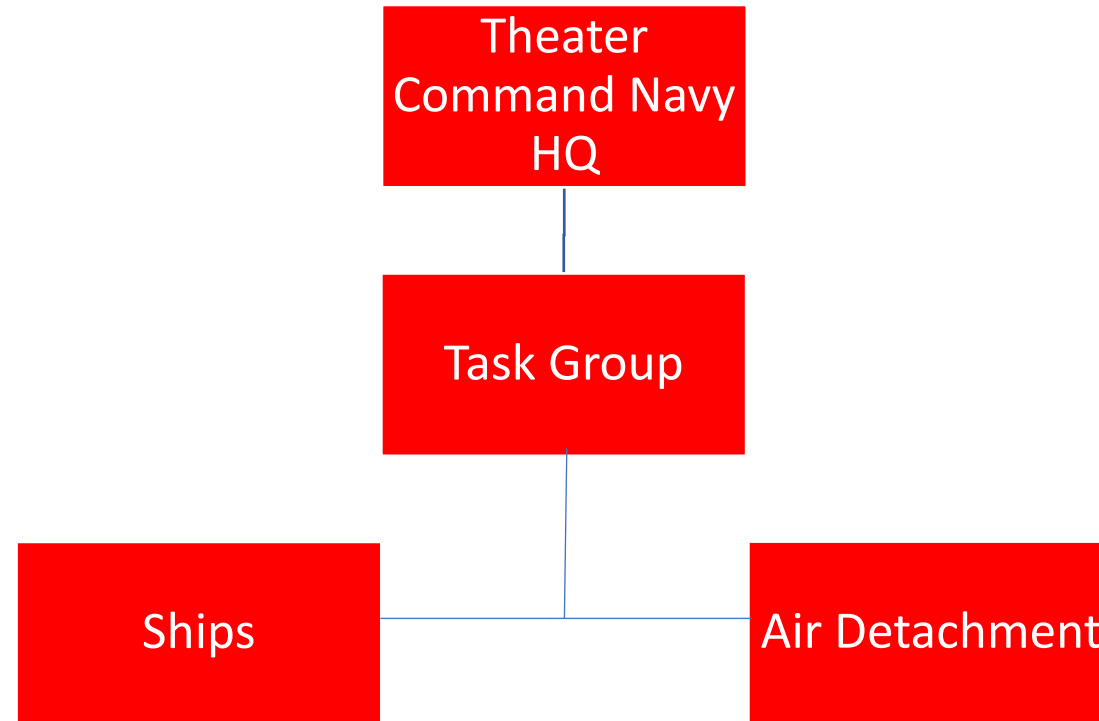


Naval Aviation Organization – Peacetime





Naval Aviation Organization – Wartime





PLA Navy Marine Corps Aviation



- Aviation brigade to support vertical landing operations
- Equipped with Z-8, Z-9 helicopters, potentially Z-10, Z-20 in future
- Possible operations from new YUZHAO LPDs/YUSHEN LHAs



Naval Aviation Training Priorities

- Aircraft carrier training
 - Western Pacific deployments/replenishment
 - Aircraft operation
- Air intercept
- Maritime strike
- Emphasis on joint operations
 - But coordinated PLAN/PLAAF training rarely observed



Naval Aviation Personnel

- Naval Aviators
 - Naval Aviation University (NAU) for undergrad and flight training
 - Over 1/3 recruited from Naval Teenagers Aviation School program
- Carrier-borne Fighter Pilots
 - Began recruiting high school students as cadets in 2020
 - Undergrad->land-based flight training->carrier-based flight training
- Professional Military Education
 - Officers receive PME at battalion, regiment, division
 - Corps level: command college or PLA National Defense University
 - Emphasis on STEM fields



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PLA Naval Aviation

PLA Navy History (Slide 2)

From the PRC's founding in 1949 until the mid-1980s, China's strategic concept for PLAN operations was limited to "coastal defense", which emphasized defending China's coast from amphibious invasion, presumably by Taiwan and U.S. forces.

Beginning in the late-1980s, the PLAN established a strategy of "Near Seas Defense", which focused on regional goals and deterring a modern adversary from intervening in a regional conflict. Near Seas Defense is often associated with operations in the Yellow Sea, East China Sea, and South China Sea.

In the 2010s, the PLAN also began to focus on developing "far seas" naval capabilities, and as its surface vessels reached further from China's shores, so did its aviation forces. Photo here is of China's first carrier, *Liaoning*, operating as part of a task group in the South China Sea, but it has also conducted training in the Western Pacific beyond the first island chain.

PLA Navy Aviation-specific milestones:

- 1952 – PLAN Aviation Branch founded
- Late 1990s – increased flights over water, including Taiwan Strait
- 2012 – PLAN's first aircraft carrier
- 2020– marked increase in flights (with PLAAF) in Taiwan ADIZ and occasionally over centerline

Resources:

Rice, Jennifer and Robb, Erik, "The Origins of "Near Seas Defense and Far Seas Protection", China Maritime Studies Institute, February 2021, <https://digital-commons.usnwc.edu/cgi/viewcontent.cgi?article=1012&context=cmsi-maritime-reports>.

Office of Naval Intelligence, "The PLA Navy: New Capabilities and Missions for the 21st Century", 2015, <https://apps.dtic.mil/sti/citations/ADA616040>.

Leadership (Slide 3)

Dong Jun was promoted in September 2021 to PLA Navy Commander after six months as PLAN Deputy Commander. Relatively little is known about Dong, but he appears to have only commanded a single unit at an unspecified time, apparently having been promoted on the merit of his success as a staff officer.

Resource:

Allen, Kenneth W., Blasko, Dennis J., and Corbett, John F., "Assessment of the PLA's 3-Star Promotions in September 2021", China Aerospace Studies Institute, September 20, 2021, <https://www.airuniversity.af.edu/CASI/Display/Article/2780853/assessment-of-the-plas-3-star-promotions-in-september-2021/>.

PLAN Aviation Missions (Slide 4)

The PLA has broadly described PLAN aviation missions as maritime airspace protection and support of surface ship operations in coastal and maritime areas, but it would likely be expected to play a role in several of the strategic missions associated with the PLAN as a whole, such as various Taiwan-related scenarios, coastal defense, and protecting maritime sovereignty, including in disputed areas in the East and South China Seas.

PLAN Aviation Modernization Priorities (Slide 5)

The PLAN launched its third aircraft carrier, the *Fujian*, in June of 2022. This carrier features a catapult launch system which should allow it to operate with a variety of special mission aircraft, an improvement from China's first two carriers, whose ski-jump configuration limits them to operating with only J-15 fighters. A fourth carrier is reportedly also under construction and may be nuclear powered, unlike the first three.

The PLAN is also working to improve and expand its contingent of carrier-based aircraft. This includes upgraded versions of its carrier-based J-15 fighter, including modifications for catapult takeoff and a version designed for electronic warfare (EW). While China's current carriers operate with only the J-15, future catapult-enabled carriers should be able to support KJ-600 AEW&C aircraft and the J-35 stealth fighter.

The PLAN has also focused in recent years on improving air defense for its surface fleet. Newer ships, such as the LUYANG-III class destroyer and RENHAI class cruiser "feature modern combat management systems and air surveillance systems such as the Sea Eagle and Dragon Eye phased-array radars". These systems allow one or two vessels to provide air defense for an entire task group, allowing surface forces to more safely operate outside of shore-based air defenses.

Current Forces – Land-based (Slide 6)

Photos, left to right: J-11B, H-6J, KJ-500, Ka-28 ASW variant

For more details on these systems, see CASI's PLA Aerospace Power Primer.

Current Forces – Shipborne (Slide 7)

Photos, left to right: J-15 ski-jump takeoff from carrier *Liaoning*, YUSHEN class LHA, unofficial photo of J-35 carrier-based stealth fighter

As noted above, the transition to catapult-assisted takeoff on the PLAN's third carrier, launched June 2022, should allow the PLAN to use a broader array of carrier-based aircraft, such as the KJ-600 AEW&C and the J-35 stealth fighter.

The PLAN is also developing naval variants of the multi-role Harbin Z-20 helicopter, which have been observed armed with air-to-ground/surface missiles and ASW equipment. These variants are expected to be operable across the PLAN's growing fleet of helicopter-capable combatants, significantly improving force protection for these vessels.

Current Forces – Air Defenses (Slide 8)

While the PLAAF is responsible for air defense over most of China, the PLAN is responsible for regional coverage in three areas surrounding Qingdao, Ningbo (extending into the East China Sea), and Zhanjiang

(extending throughout Hainan's claimed territory). To support this mission, the PLAN operates a ground-based radar brigade in each of the three TCNs and at least two SAM brigades operating HQ-9 and HQ-9B SAMs. These mobile SAMs have a range of roughly 120 nautical miles (160 for HQ-9B) and operate with the HT-233 engagement radar. The PLAN has also deployed these SAMs to disputed features in the South China Sea.

In addition to airborne and shipborne self-protection jammers, the PLAN also operates Electronic Countermeasures (ECM) brigades in each of its three TCNs. PLA reporting has highlighted these brigades training with various ground-based mobile equipment to track and jam simulated "enemy" aircraft and counter missiles. Although public information on ECM and EW equipment is limited, these are presumed to be modern EW systems capable of targeting large portions of the electromagnetic spectrum.

A naval variant of the HQ-9 known as the HHQ-9 is fielded by the PLAN's larger and more advanced surface vessels such as the LUYANG-III class destroyer and RENHAI class cruiser. These combatants feature modern combat management systems and air surveillance systems such as the Sea Eagle and Dragon Eye phased-array radars. These systems allow one or two vessels to provide air defense for an entire task group, allowing surface forces to more safely operate outside of shore-based air defenses.

Naval Aviation Force Employment (Slide 9)

Photos, left to right: PLAN coastal defense missile regiment simulating strike against "enemy" reconnaissance aircraft, KQ-200 ASW aircraft, aircraft carrier *Liaoning* conducts replenishment in Western Pacific

PLAN aerospace forces play a role in both aspects of the PLAN's "Near Seas Defense and Far Seas Protection" strategy. PLAN ground-based radar, air-defenses, and aircraft integrate into overall efforts for anti-access and area denial (A2/AD) in China's near seas, including combat aircraft for conducting combat air patrols and maritime strike as well special mission aircraft for AEW&C and ASW. PLAN ASW variants have been consistently observed monitoring key maritime chokepoints as the PLAN pursues undersea superiority within the first island chain.

As the PLAN further develops its aircraft carrier force and operating concepts, carrier formations and their aviation forces will be central to the PLAN's ability to project power into far seas. The carrier *Liaoning* has begun to lead formations outside the first island chain, and while the *Shandong* has remained closer to PRC shores, it is reportedly also preparing for high seas testing. As noted above, future catapult-equipped carriers will provide carrier formations with better options for AEW&C, ASW, and more advanced fighters. During wartime, well-equipped and coordinated carrier formations could help the PLAN counter adversary interdiction of its key sea lines of communication (SLOC) and potentially be a component of strikes on high-value targets inside the adversary's "strategic depth".

Naval Aviation Organization – Peacetime (Slide 10)

Special Mission Aircraft are assigned to regiments subordinate to divisions, while helicopters, bombers, and UAVs are assigned to independent regiments that appear to report directly to TCN Aviation HQ in each Theater.

Fighters and fighter/bombers are assigned to brigades directly subordinate to TCN Aviation HQ in each Theater.

ECM Brigades are subordinate to their TCN HQ, while Radar and Air Defense Brigades are subordinate to that TCN's Aviation HQ.

Naval Aviation Organization – Wartime (Slide 11)

Wartime OPCON is likely much more flexible than ADCON. Each TCN would assign individual ships to task groups (e.g. a carrier task group). Any aircraft associated with ships under a task group (helicopters or fighters) will be part of a detachment subordinate to the task group itself.

PLA Navy Marine Corps Aviation (Slide 12)

The PLAN also maintains a subordinate Marine Corps (PLANMC) with an aviation component. While previously the PLANMC had to rely on other parts of the PLAN for the use of helicopter assets, it now boasts its own 7th Aviation Brigade, which the PLAN established in 2017. The PLAN expects these aviation forces to support vertical landing operations into the adversary's depth. Its pilots appear to be a mix of previously PLAA helicopter pilots transferred to shipborne operations and PLANMC cadets who graduated from the Army Aviation College. The PLANMC has been equipped with a limited number of Z-8 and Z-9 helicopters, likely transferred from the PLAN, and begun training with PLANMC air assault capable units. Other helicopter types could join the force in the future. The brigade currently contains at least two flight squadrons (飞行大队) and an aircraft maintenance group (机务大队), but will gradually grow in size as more helicopters and pilots are delivered. These may include the Z-20 medium lift helicopter to provide a flexible multi-mission platform and the Z-10 for close air support. PLANMC pilots have been observed training with a PLAN YUZHAO LPD (landing amphibious dock) in day and night operations, including nighttime hot refueling. The PLAN's new YUSHEN LHAs are also expected to be essential platforms for PLANMC air assault and vertical landing operations.

Resource: Conor M.Kennedy, The New Chinese Marine Corps: A "Strategic Dagger" in a Cross-Strait Invasion, China Maritime Report 15 (Newport, RI: Naval War College China Maritime Studies Institute, October 2021).

Naval Aviation Training Priorities (Slide 13)

PLAN aviation training priorities have generally aligned with the warfighting concepts described above. Much focus is given to carrier training, and the two current carriers have frequently conducted simultaneous but separate drills—potentially a precursor to more coordinated maneuvers. In late 2021, the Liaoning conducted a replenishment exercise in the Western Pacific with one of the PLAN's new FUYU fast combat support ships (AOEs), which were built specifically to support extended aircraft carrier operations.

Although the PLAN continues to emphasize joint operations and PLA media has highlighted examples of coordinated training between PLAAF and PLAN aircraft, such training still appears to be rare. Even independently however, ground-based PLAN fighters and bombers form a key part of China's near seas regional defense strategy, and these platforms routinely conduct air intercept and maritime strike training.

Naval Aviation Personnel (Slide 14)

Most PLAN aviators attend the PLAN Naval Aviation University (NAU/海军航空大学) for undergraduate education and training, and all receive NAU flight training.

A major source (39% in 2021) of NAU cadets is the Naval Teenagers Aviation School (NTAS) program, which provides early aeronautical classes to students in 14 high schools nationwide.

The PLAN especially emphasizes training for its carrier-borne fighter pilots. Prior to 2020, carrier-borne fighter pilots were mainly sourced from seasoned pilots in PLAN units, but the PLAN is now also recruiting high school students as cadets bound for these aircraft. After completing their bachelor's degree, these

cadets will complete land-based flight instruction and then transition to carrier-based training. During flight instruction, the student to instructor ratio is usually between three and four to one, but may reach as high as six to one. Occasionally, PLAAF pilots will also transfer from PLAAF aviation brigades to one of the PLAN's carrier-based fighter units.

As for the overall PLAN, aviation officers receive professional military education (PME) at the battalion, regiment, division, and potentially corps levels. PLAN aviation officers complete tactical-level education below the division level and thereafter attend PME back at NAU. At about the corps level, officers may attend command college or joint PME at the PLA's National Defense University (NDU). In recent years, PLAN PME has begun to focus more on science, technology, engineering, and math (STEM) fields as opposed to a previous system of majoring only in the warfare discipline to which an officer was assigned.