

U.S. Naval War College

## U.S. Naval War College Digital Commons

---

CMSI Notes

China Maritime Studies Institute

---

7-16-2024

### **CMSI Note #6: Sharpening the Sword: Chinese Navy Aircraft Carrier Battle Group Defense Zones**

Daniel Clayton Rice

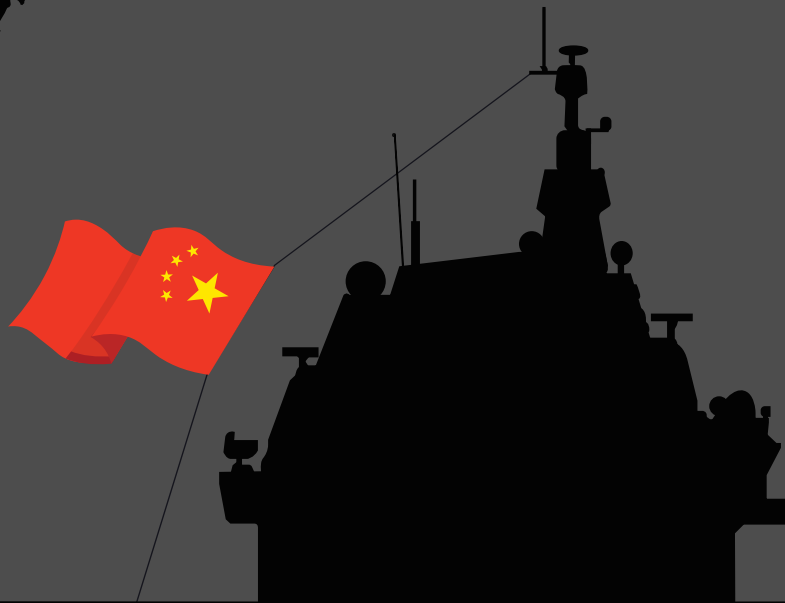
Follow this and additional works at: <https://digital-commons.usnwc.edu/cmsi-notes>

---



中国海事研究所  
China Maritime Studies Institute

# NOTES: 6



**Sharpening the Sword:**  
Chinese Navy Aircraft Carrier Battle Group  
Defense Zones



CHINA MARITIME STUDIES INSTITUTE  
CENTER FOR NAVAL WARFARE STUDIES  
U.S. NAVAL WAR COLLEGE  
686 CUSHING ROAD (3C)  
NEWPORT, RHODE ISLAND 02841



**CMSI NOTE #6 /// 16 JULY 2024**

## **Chinese Navy Aircraft Carrier Battle Group Defense Zones**

**Daniel Clayton Rice<sup>1</sup>**

### **Perspectives and Key Takeaways**

- Chinese state media's Channel 7 recently released a series of videos that described China's aircraft carriers and the carrier battle groups, including their history, composition, and operational theory.
- The videos describe the carrier battle group (CVBG) "Outer Defense Zone" (外防区), also called the "Depth Defense Zone" (纵深防区), as 185 km to 400 km away from the aircraft carrier.
- The "Middle Defense Zone" (中防区), or the "Area Defense Zone" (区域防区) is described as 45 km to 185 km away from the aircraft carrier.
- The video details the "Inner Defense Zone" (内防区), otherwise called the "Point Defense Zone" (点防区), as 100 meters to 45 km away from the aircraft carrier.
- According to the videos, air operations from the carriers are generally divided into two types of flight operations: the "Split wave operational pattern" (分波作业方式) and the "Continuous operational pattern" (连续作业方式).

### **Context**

To commemorate the 75<sup>th</sup> anniversary of the founding of the People's Liberation Army Navy (PLAN), Chinese state media's Channel 7 released a series of videos on 25 April 2024 showcasing PLAN capabilities.<sup>2</sup> The videos were part of CCTV 7's popular military technology series, "Sharpening the Sword." Likely intended for domestic consumption, the videos focused on Chinese navy operations as the PLAN continues "Going towards the Deep Blue (走向深蓝)". Chinese media frequently uses this phrase to describe efforts to expand PLAN fleet operations, which is based on the title of a maritime strategy book sharing the same name.<sup>3</sup>

The video series included a discussion of how CVBGs could be organized for future fleet operations. According to the video, the organization of a CVBG is broken down into three concentric rings centered on the aircraft carrier. Each expanding ring emphasizes different warfare disciplines. Table 1 summarizes these zones. While mission requirements are likely to dictate the composition of specific ships supporting future CVBG operations, the zones depicted in the videos provide a glimpse into the potential organization of CVBG operations.

<b>Name of Zone</b>	<b>Distance from Carrier</b>	<b>Primary Capabilities</b>
“Outer Defense Zone” or “Depth Defense Zone”	185 km – 400 km	Submarines, carrier-borne fixed wing aircraft
“Middle Defense Zone” or “Area Defense Zone”	45 km – 185 km	Advanced radars and guided missiles from large surface combatants
“Inner Defense Zone” or “Point Defense Zone”	100 m – 45 km	Terminal defense systems from the carrier and CVBG surface combatants

**“Outer Defense Zone”<sup>5</sup>**

The CVBG “Outer Defense Zone” (外防区), also called the “Depth Defense Zone” (纵深防区) is described as a zone from 185 km to 400 km away from the aircraft carrier. Defending this zone is the responsibility of a variety of carrier-borne fixed wing aircraft as well as submarines. The videos highlight the role of the PLAN’s J-15 multirole fighter within this zone, which is depicted launching and recovering on a PLAN ski-jump ramp type (the PLAN’s Type 001 and Type 002) aircraft carrier. According to the video, the J-15 can be outfitted with a variety of precision strike munitions, with an emphasis on precision anti-air and anti-ship strikes.

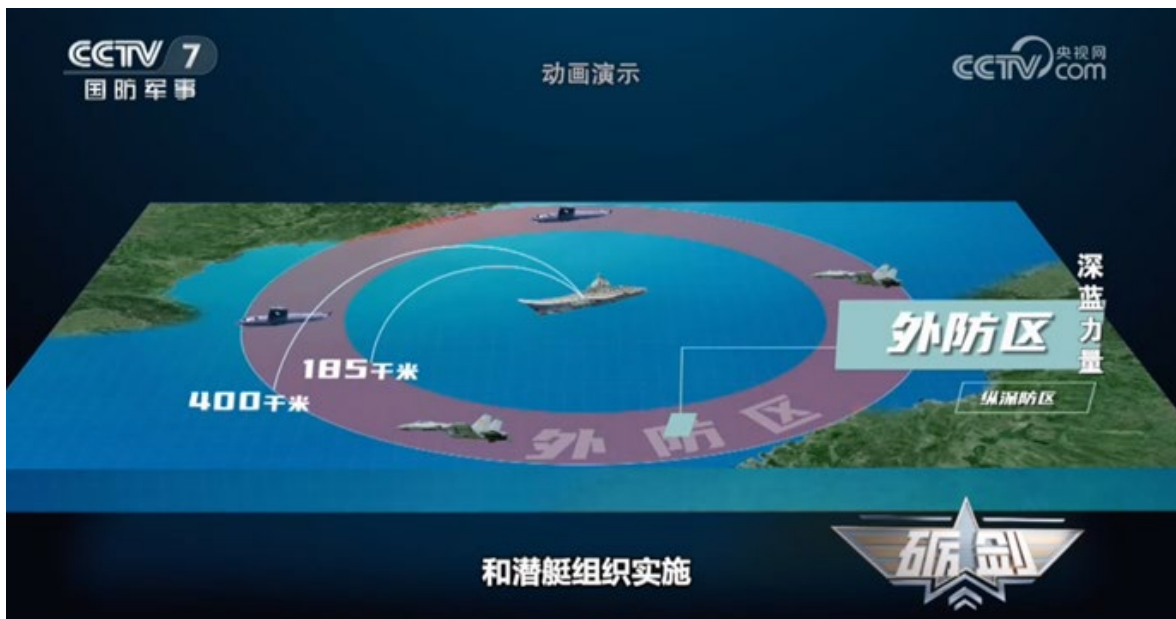


Figure 1. “Outer Defense Zone.”<sup>6</sup>

The video states that within this outer ring, submarines execute “Offense to enhance defense” (以攻代防). Enabled by their stealth and maneuverability, submarines are tasked with surveillance, tracking, and launching surprise attacks on adversary vessels. Other missions for submarines detailed in the video include providing intelligence and screening for adversary submarines that could threaten the CVBG. The command post, which is located on the aircraft carrier itself, coordinates submarine operations and their integration into the CVBG’s operations.

## “Middle Defense Zone”<sup>7</sup>

The CVBG “Middle Defense Zone” (中防区), or the “Area Defense Zone” (区域防区) is the zone from 45 km to 185 km away from the aircraft carrier. The video points out that defense of this zone is the responsibility of large surface combatants (大型水面战斗舰艇).

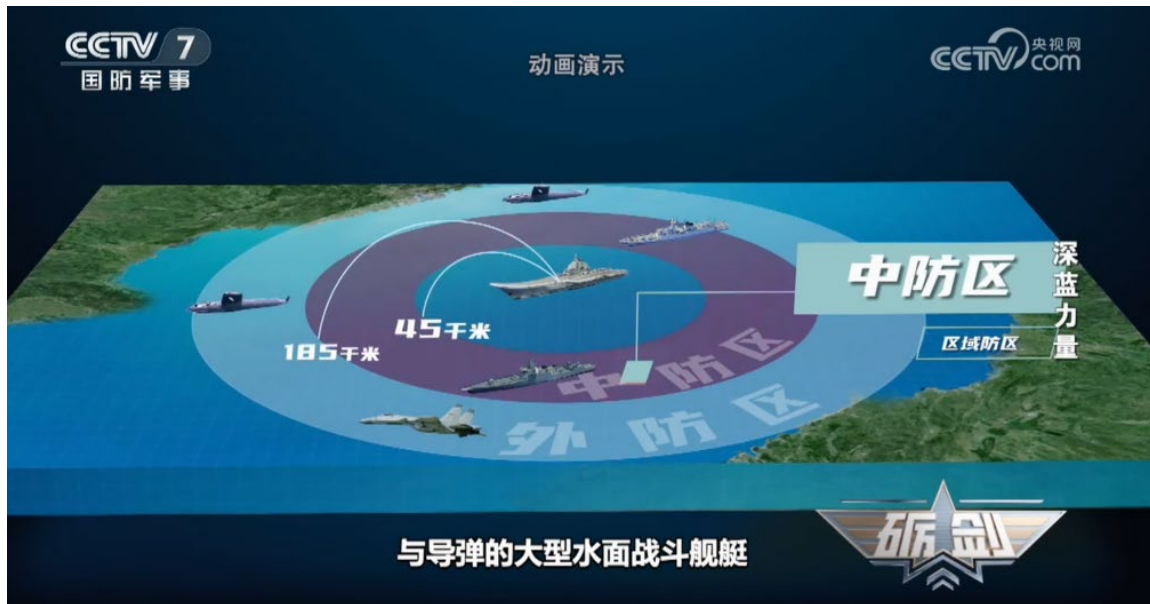


Figure 2. “Middle Defense Zone.”<sup>8</sup>

The video discusses the role of several CVBG surface combatants within this zone, to include the Type 052D (or LUYANG III) destroyer and the Type 054A (JIANGKAI) frigate. It describes the LUYANG as the battle group’s “sword-carrying guard” (带刀守卫) and refers to the JIANGKAI as the “constant bodyguard” (忠诚卫士/贴身保镖). It points out that the Type 052D’s weapons systems (a 64-cell universal VLS, the 24-cell HHQ-10 SAM, a 30mm close-in weapons system, and a 130mm main cannon) enhance the offensive and defensive flexibility for the carrier battle group because it is capable of several missions, to include anti-air, anti-ship, and naval gunfire support. The video also states that the Type 052D is equipped with advanced radar systems that can track air targets out to at least 100 km and can track multiple air and sea targets simultaneously which makes this a key platform providing situational awareness for the CVBG. Noticeably absent from the videos is any discussion of the Type 055/RENHAI cruiser, arguably the PLAN’s most capable surface platform.

The Type 054A is described as a defensive platform with anti-submarine warfare as its primary mission. The video noted that the *Liaoning* CVBG normally includes two Type 054As and the video featured its ASW systems, to include the Yu-8 rocket-assisted torpedoes, flight deck, and hangar for its K-28 and Z-9 helicopters. Armed with its primary weapons systems (a 32-cell VLS system that can employ with a variety of missiles to include the Yu-8 rocket-assisted torpedo and the HQ-16 surface to air missiles, and a cross-stack of two four-cell YJ-83 ASCM), the Type 054A has the responsibility to stop the enemy sub-surface, surface, aircraft, or missiles that “slip through the net” (漏网之鱼).<sup>9</sup> The video also points out that the Type 054A can also be armed with land attack cruise missile as well as smoke screen capabilities to obscure the CVBG.

## “Inner Defense Zone”<sup>10</sup>

The CVBG “Inner Defense Zone” (内防区), also referred to as the “Point Defense Zone” (点防区), ranges from 100 meters to 45 km away from the aircraft carrier. This CVBG defends this zone with the point defense and close-range air defense systems of the surface combatant escorts and the aircraft carrier itself. The video notes that at the center of the three zones is the aircraft carrier, which serves as the command-and-control center, information collection center, and intelligence center vessel for the entire battle group.

The carrier is normally accompanied by a replenishment oiler such as the Type 901 FUYU or Type 903A FUCHI comprehensive resupply ships to support the carrier and the other surface combatants during extended operations. According to Chinese media, the Type 901 and Type 903A replenishment ships are key “force multipliers” (深蓝“倍增器”) that will facilitate future CVBGs in blue water operations.<sup>11</sup>

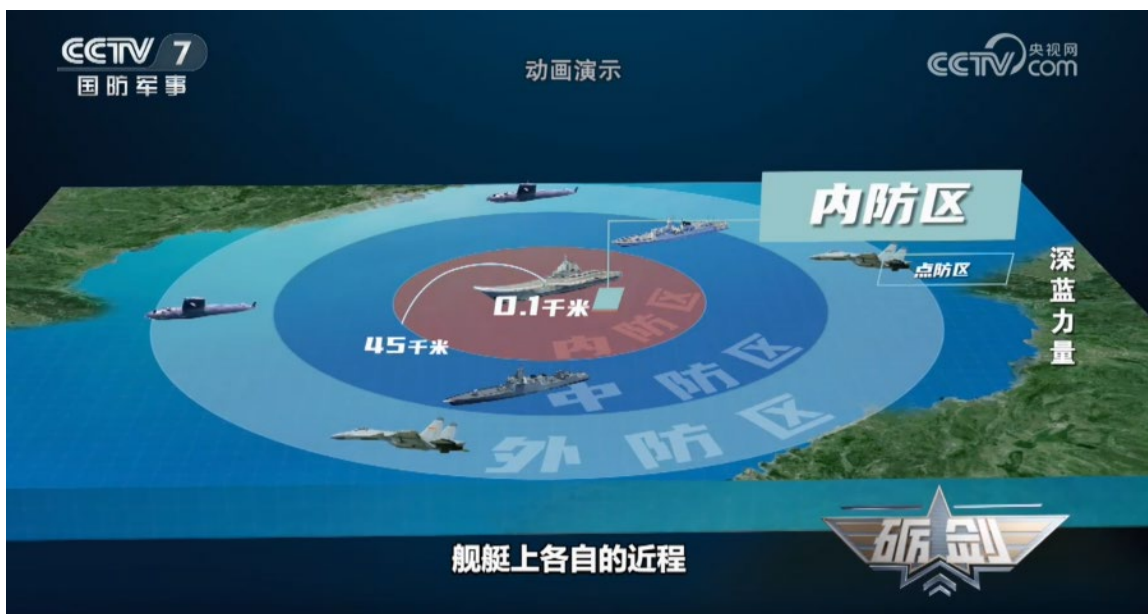


Figure 3. “Inner Defense Zone.”

## CVBG Air Wing Operations Flight Patterns<sup>12</sup>

According to the video, air operations from the carriers are generally divided into two types of flight operations: the “split wave operational pattern” (分波作业方式) and the “continuous operational pattern” (连续作业方式). During “split wave operational patterns,” there are two periods of airwing flight operations. These two periods do not intersect or overlap. Between the two periods, there is time for preparation, separating the individual waves, rearming, and aircraft maintenance. The “split wave operational pattern” is used for long-range operations (远程作战), such as saturation strike-type missions (饱和攻击)<sup>13</sup> on an opponent, and each cycle can last several hours. Due to the wave-like nature of these operations, the video describes these operations as more suitable for seizing control of airspace<sup>14</sup> (夺取制空权) and concentrated surprise attacks. This method, according to the video, could also be used to provide firepower support for amphibious operations (两栖作战火力支援).<sup>15</sup> Aircraft launch and recoveries are consecutive or intertwined during the “continuous operational pattern.” The intent of this type of flight operations is to maintain a constant air presence when an adversary is in proximity to PLA forces. Turnaround efficiency during these operations is rapid, which reduces time for

rearming and maintenance of aircraft. Additionally, the video implies that rotary wing aircraft could be integrated into such operations and have an anti-surface role or even be used to target other aircraft.

## Conclusion

The PLAN is entering into what Chinese media often refers to as the “three carrier generation” (三航母时代) - when it will have three operational aircraft carriers that can be employed to project power.<sup>16</sup> In the PLAN’s “three carrier generation”, the PLAN will likely deploy its CVBGs deeper into the western Pacific and possibly into the Indian Ocean. Many of these deployments are also likely to be experimental, serving as a proving ground to test PLAN power projection capabilities. The disposition of the three zones described in the Sharpening the Sword video series may be one of several ideas the PLAN is experimenting with as it integrates CVBG into routine fleet operations. The videos seem to suggest that operational insights can potentially be gleaned through observations of CVBG operations. The type of flight operations – split wave or continuous operational pattern – may reveal the PLAN’s training focus and the disposition of surface ships around the carrier may indicate the tasks and responsibilities assigned to individual ships. While far from authoritative, these videos provide a window into possible PLAN thinking about the organization and structure of current and future carrier battle group operations.



Figure 4. Images of China’s aircraft three carriers in its “three carrier generation”. From top to bottom: CV-16 Liaoning, CV-17 Shandong, and CV-18 Fujian.<sup>17</sup>

<sup>1</sup> The views expressed here are the author's alone. They do not necessarily represent the perspectives of the Department of Defense or the Naval War College. The author is the China Political and Military Strategy Subject Matter Expert at the Brute Krulak Center for Innovation and Future Warfare, Marine Corps University.

<sup>2</sup> CCTV 7 is the primary Chinese state media channel for coverage of the People's Liberation Army and national defense and military affairs. See Li Xia, "CCTV's national defense, military channel to debut in August," *Xinhua*, July 26, 2019, [https://web.archive.org/web/20190726140830/http://www.xinhuanet.com/english/2019-07/26/c\\_138260803.htm](https://web.archive.org/web/20190726140830/http://www.xinhuanet.com/english/2019-07/26/c_138260803.htm); The PLAN's 75<sup>th</sup> anniversary was 23 April, 2024.

<sup>3</sup> See: Chao Xing, "走向深蓝" 见证大国复兴 ["Going towards the Deep Blue"], *Chinese Communist Party News Network Theory*, April 24, 2019, <http://theory.people.com.cn/n1/2019/0424/c40531-31046463.html>; Zhang Zhaozhong, 走向深蓝 [Going towards the Deep Blue] (Guangdong: Guangdong Economic Publishing House, 2011); and Zuo Chaosheng and Chen Huiling, 走向深蓝 [Going towards the Deep Blue], *China Geological Survey Guanghai Bureau*, April 17, 2014, [https://www.cgs.gov.cn/xwl/cgkx/201603/t20160309\\_283366.html](https://www.cgs.gov.cn/xwl/cgkx/201603/t20160309_283366.html).

<sup>4</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power] ], National Defense and Military Channel, CCTV 7, April 25, 2024, <https://tv.cctv.com/2024/04/25/VIDE7G3CZxwGs1hfZ4W2fa7Z240425.shtml>.

<sup>5</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 2:05.

<sup>6</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time 2:07.

<sup>7</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 2:18.

<sup>8</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 2:18.

<sup>9</sup> Eric Wertheim, China's Multipurpose FFG, US Naval Institute, June 2020, <https://www.usni.org/magazines/proceedings/2020/june/chinas-multipurpose-ffg>.

<sup>10</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 2:40.

<sup>11</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 9:04.

<sup>12</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 6:24.

<sup>13</sup> Saturation strike missions are described in Chinese military texts as strikes from a combination of weapons systems designed to overwhelm the adversary's air defense capabilities, to include simultaneous attacks by ships, aircraft, and/or the rocket forces.

<sup>14</sup> Control of the air (制空权) is a broad definition used by the PLA and encompasses the different levels of control in this domain. For more information on this topic see the following: Derek Solen, "The PLA Reconceptualizes Control of the Air," *China Brief*, Volume 12, Issue 13 (July 21, 2023), <https://jamestown.org/program/the-pla-reconceptualizes-control-of-the-air/>.

<sup>15</sup> 《砺剑》深蓝力量 [Sharpening the Sword: Deep Blue Power], Time: 7:35.

<sup>16</sup> 《砺剑》大国航母 深蓝逐梦 [Sharpening the Sword: Great Power Carriers, Pursuing the Dream], *National Defense and Military Channel*, CCTV 7, May 2, 2024, <https://tv.cctv.com/2024/05/02/VIDETi0dmLoU0wogWarLbEZQ240502.shtml>.

<sup>17</sup> 《砺剑》大国航母 深蓝逐梦 [Sharpening the Sword: Great Power Carriers, Pursuing the Dream], Time: 2:16.