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Sea Dragon Refits Its Armor

The Type 076 Amphibious Assault Ship Ushers in a New Era¹

By Yin He²

At the close of 2024, the first of China's next-generation Type 076 amphibious assault ships was launched at Hudong-Zhonghua Shipyard in Shanghai. Named the People's Liberation Army Navy (PLAN) *Sichuan* with hull number 51, this milestone concluded the PLAN's major combat equipment development for the year.

China's navy only began to develop and construct modern amphibious assault ships around 2017. While the first generation of Type 075 ships (an initial batch of four vessels) was still being rapidly constructed, work commenced on the second-generation Type 076 in less than six years. This demonstrated the Chinese navy's urgent need for large-scale amphibious operations equipment and the high priority placed on it. More significantly, compared to the Type 075, the Type 076 represents a qualitative leap in design concepts, technological sophistication, combat capabilities, and mission functionality. It will serve as a crucial component of the Chinese navy's future long-range strike and deterrence capabilities.



Launch ceremony of the Chinese navy's Type 076 amphibious assault ship Sichuan

¹ 银河 [Yin He], 蛟龙蛻甲：开启新时代的 076 型两栖攻击舰 [“Sea Dragon Refits Its Armor: The Type 076 Amphibious Assault Ship Ushers in a New Era”], 舰载武器 [Shipborne Weapons], no. 6 (June 2025), pp. 9-22.

² **Translator's Note:** *Shipborne Weapons* is a magazine published by the 中国船舶集团 郑州机电工程研究所 [China State Shipbuilding Corporation's Zhengzhou Electromechanical Institute], which is involved in the Chinese naval shipbuilding industry. “Yin He” is pseudonym.

Having already acquired the Type 075 amphibious assault ship, which boasts technical performance on par with the world's most advanced vessels of its kind, why did the Chinese navy develop and construct the larger-tonnage Type 076 within such a short timeframe? Clearly, this move was closely tied to the operational requirements of the Chinese navy and its strategy for future development.

At the beginning of the 21st century, the Chinese navy began formulating a new-era plan for the development of major naval combat equipment based on anticipated strategic developments, operational requirements, regional security circumstances, and threats posed by potential adversaries. Based on these priorities, the development of large amphibious operations platforms and aircraft carriers became paramount. Driven by the Taiwan issue and the need to achieve complete unification of the motherland, the large amphibious operations platforms have been a key area of development for the navy since the 1990s. However, long constrained by funding, technology, and operational doctrine, development stalled at the stage of ordinary small and medium landing ships. Even after the beginning of the 21st century, the navy's largest amphibious landing platform remained the 4,000-ton Type 072 tank landing ship. Although the Type 072 possesses considerable transport capacity (it is able to carry a battalion-sized landing force or a company-sized force of medium tanks and/or armored vehicles in a single trip), its operational mode remains fundamentally unchanged from traditional World War II-era landing operations (i.e., flat beach assault landings).

However, in the 21st century, for operational environments like the Taiwan Strait, the Type 072 tank landing ship is ill-suited to serving as a primary landing asset. The terrain surrounding the island of Taiwan is not flat, and it offers an extremely limited number of suitable locations for flat-beach landings (less than 5 percent of potential landing sites are suitable). These scarce, favorable landing points are also obviously where the island of Taiwan's military defenses are most robust and its anti-landing firepower is most concentrated. Moreover,

-----p. 10 begins-----

the U.S. Navy, given its extensive experience with amphibious warfare, recognized this limitation early. Consequently, by the 1960s, it had developed a fleet of amphibious assault ships and landing platform dock ships. Those platforms featured enhanced carrying capacity and were capable of rapidly executing both flat landings (primarily using high-speed mechanized landing craft and air-cushioned landing craft) and vertical landings (primarily using helicopters). By the mid-1980s, the U.S. military had established an amphibious force that included more than 30 dock landing ships and more than ten amphibious assault ships, which together were capable of conducting division-level, three-dimensional amphibious landings on 90 percent of the world's coastlines.



Chinese navy Type 072-3 Tank Landing Ship



Chinese navy Type 072A Tank Landing Ship

For the Chinese navy, although the distance between the island of Taiwan and the mainland ranges from 100 kilometers on the west to 300 kilometers on the east, the complex topography imposes higher demands on amphibious operations and equipment. Consequently, rapid horizontal and vertical landings capable of bypassing geographical constraints and defensive firepower at beachheads have become essential capabilities for the Chinese navy. They would ultimately enable it to conduct operations involving island encirclement, integration of air and sea capabilities, and rapid brigade-level landings. Developing and equipping a new generation of amphibious platforms that meet modern operational requirements—featuring large cargo capacities and rapid horizontal/vertical landing capabilities—became the prerequisite for achieving this goal. That was the original intent behind the Chinese navy's early 21st-century development of the first-generation Type 071 amphibious dock landing ship.

The Type 071 is a large dock landing ship with a tonnage of approximately 23,000 tons, measuring about 200 meters in length and 26 meters at the beam. Powered by diesel engines, its maximum speed is around 22 knots. Embodying a "balanced loading" design philosophy, each of these ships carries a load that includes a balance of landing needs: personnel, equipment, operational supplies, and other combat units. In one trip it can transport 500 to 800 marines, dozens of combat vehicles, and hundreds of tons of operational supplies. Capable of conducting

independent amphibious operational tasks, upon landing, each Type 071's load forms a complete and independent combat force.

In terms of landing methods, the Type 071 abandoned the traditional beach assault model. It primarily conducts "over-the-horizon" landings, launching its high-speed hovercraft and transport helicopters from offshore locations tens of kilometers away from the landing point. The vessel's massive well deck can carry up to four high-speed air-cushioned landing craft, with each carrying 50 tons of supplies and equipment. Within 30 minutes, it can land four main battle tanks, eight armored vehicles for infantry, and 20 light, high-mobility vehicles. While transporting heavy equipment, the landing craft's side compartments can also accommodate 60 to 80 landing personnel. Thus, a single wave of four air-cushioned landing craft can deliver a landing force with formidable combat capabilities that can rapidly and independently conduct assaults.



The Chinese navy's Type 071 amphibious transport dock ship Changbaishan

For vertical assault capabilities, although the Type 071 is a conventional dock landing ship, it also features a large hangar and flight deck. The hangar can accommodate four 13-ton Z-8 transport helicopters, while the flight deck allows takeoff and landing for two helicopters simultaneously. Assuming that each helicopter can transport 20 people or four tons of combat supplies per trip, they can deliver 80 landing personnel or 16 tons of combat supplies to the landing point within 30 minutes. While the transport capacity of four helicopters is significantly lower than that of four air-cushioned landing craft, their advantages in speed, flexibility, and maneuverability are irreplaceable. When necessary, the Type 071 can replace transport helicopters with armed helicopters (such as six six-ton Z-10s) to provide accompanying aerial fire support for landing forces. (Under fully loaded conditions, the Z-10 can remain airborne for more than two hours within a range of 50 kilometers). This not only removes the longstanding limitation in which armed helicopters could only provide air support in a "land-to-land" mode (which is also the primary reason the Z-10 attack helicopter has extremely high range requirements but certain deficiencies in firepower and protection capabilities), but also achieves the goal of more effectively and quickly eliminating enemy ground fire points and fortifications,

-----p. 11 begins-----

both at initial landing sites and at shallow penetrations beyond the front line. This can further ensure the smooth progression of landing operations and the rapid consolidation of the landing

zone, helping to establish secure beachhead positions and create conditions for the rapid and safe landing of subsequent landing forces and equipment.



The stern of the Chinese navy's Type 071 dock landing ship features a hangar and flight deck and is capable of accommodating four large helicopters

These capabilities were unattainable when the Chinese navy only operated the Type 072 tank landing ship, and at that time were even beyond the reach of a Chinese naval landing formation comprised of multiple landing vessels of various types. Owing to the Type 071 dock landing ship's outstanding performance and formidable carrying capacity, the Chinese navy constructed eight vessels of this class in the approximately ten years between 2006 and 2017. All of those entered into service by 2020, establishing an amphibious dock landing ship force second only to the U.S. Navy in scale and capability, in addition to achieving a qualitative leap in the Chinese navy's amphibious warfare capabilities.

As the Type 071 amphibious transport landing ships entered into mass production, in light of the need to further improve amphibious landing capabilities and strengthen vertical landing capabilities (along with their accompanying aerial fire support capabilities), around 2015 the Chinese navy also initiated a program to construct amphibious assault ships—often referred to as the "golden partners" (黄金搭档) of amphibious dock landing ships.

The amphibious assault ship originated as a large-scale amphibious warfare platform developed by the U.S. Navy in the 1960s to address the unique demands of amphibious operations. While retaining all functions of a dock landing ship, it significantly enhances helicopter transport capacity and shifts the primary operational mode from the flat landing of a dock landing ship to a helicopter-based vertical assault. After all, less than 20 percent of the world's coastlines are suitable for traditional landing craft to conduct beachhead-seizing landing operations. Even with the later introduction of high-speed air-cushioned landing craft, which increased this proportion to 70 percent, in theory their operational use is still greatly limited by terrain and the numerous anti-landing fortifications at landing sites.

With the continuous post-war development and improvement of helicopter technology, vertical landings eliminated the challenges faced by platforms using flat landing methods. Helicopters

became the core of the first wave of landing forces in modern amphibious operations, leveraging attributes such as their high flight speed, strong maneuverability, and ability to land regardless of terrain. Each amphibious assault ship, equipped with dozens of helicopters (typically 20 to 40), can deliver hundreds of landing personnel and dozens of tons of combat supplies to a landing zone in a single trip. Like dock landing ships with formidable flat landing capabilities, they serve as iconic indicators of a nation's prowess in modern naval amphibious warfare.

Following World War II, the U.S. Navy constructed three types of amphibious assault ships, totaling 22 vessels. Currently active are seven 40,000-ton *Wasp*-class vessels and two 45,000-ton *America*-class ships. These platforms can carry 30 to 40 helicopters of various types (ranging from 8-35 tons) alongside vertical/short takeoff and landing fighters (initially employing the older AV-8B, but gradually transitioning to the more advanced fourth-generation F-35B³ starting in 2015). Beyond executing traditional amphibious operations, these ships can function as medium-sized aircraft carriers by deploying advanced F-35Bs—this is the low-cost "lightning carrier" plan proposed by the U.S. Navy. This capability is intended to better address low-intensity maritime and air conflicts and mitigate the growing problems associated with the U.S. Navy's large aircraft carrier deployment gaps; amphibious assault ships are currently the most critical maritime deterrent force for the U.S. Navy besides its aircraft carriers.



The USS America amphibious assault ship, with F-35B stealth fighters capable of vertical/ short takeoff and landing parked on its deck

For the Chinese navy, having mastered the technologies for dock landing ships, building more technologically advanced and functionally complex amphibious assault ships with enhanced air

-----p. 12 begins-----

assault capabilities has been a natural progression. The technological complexity of amphibious assault ships significantly exceeds that of the Type 071 dock landing ship. Although numerous

³ **Translator's Note:** The F-35B is a 5th generation aircraft.

advanced foreign designs have served as references, the Chinese navy, guided by practical requirements, did not commence construction of the first-generation Type 075 until more than a decade later, in 2018.

The Type 075 is a large amphibious assault ship approaching 40,000 tons, with a length of approximately 235 meters, a beam of about 31 meters, and a maximum deck width of roughly 36 meters. Powered by diesel engines, it achieves a maximum speed of about 23 knots. The ship's bridge is positioned on the starboard side, following standard amphibious assault ship layout. In addition to facilities similar to those of the Type 071, such as a dock, vehicle bay, and crew quarters, it also features a newly designed large hangar and a straight flight deck. The well deck is capable of carrying two air-cushioned landing craft or eight next-generation mechanized high-speed landing craft; approximately 40 armored vehicles of various types, and 400 to 600 amphibious assault personnel.

The ship can carry 20 to 25 helicopters in its deck and hangar combined, with the flight deck capable of simultaneously handling takeoffs and landings for six large helicopters. It can complete the loading and offloading of all helicopters within 30 minutes and can rapidly deliver a battalion-sized landing force or nearly 100 tons of combat supplies to the landing zone in a single wave. Its air transport capacity is eight to ten times that of the Type 071 dock landing ship (which is capable of carrying four helicopters), completely addressing the latter's clear shortfall in vertical landing capabilities.

Leveraging China's globally leading shipbuilding and systems support capabilities, the Type 075's construction has been exceptionally efficient. The first four vessels were completed in under five years (with each ship taking at most approximately three years from construction to entering service; one took less than two years). By 2025, when the final, fourth vessel is delivered, the Chinese navy will possess eight 23,000-ton dock landing ships and four 40,000-ton amphibious assault ships, achieving a historic leap in the technology and scale of its amphibious combat forces. It will become the world's second combat force, after the U.S. Navy, capable of independently conducting organic battalion- and brigade-scale amphibious landings in the far seas.

In terms of scale and delivery capabilities alone, the Chinese navy already possesses the ability to conduct rapid landings at some locations on the island of Taiwan. However, a huge gap remains between its current capabilities and the requirements of a full-scale military operation, particularly in division-level amphibious landing capabilities. This means that, for the foreseeable future, the scale of both the Type 071 amphibious transport dock (and subsequent vessels) and the Type 075 amphibious assault ships will need to be further expanded. That is particularly true in the case of amphibious assault ships, in which the gap between current capabilities and operational requirements is even more significant.

However, based on the technological sophistication and transport capacity of the existing Type 075, it still suffers from the problem of having surplus loading/transport capability and insufficient fire support capability. This limitation stems largely from the fact that it is essentially an upgraded version of the Type 071 dock landing ship, a type of "naval contingency response" craft. Although this type of ship was produced relatively recently, the Chinese navy is "not particularly satisfied" with this type of amphibious assault ship.

After all, the amphibious landing operations the Chinese navy will face in the future will be complex, high-risk military actions. Especially with modern anti-landing weapons increasingly offering better performance, longer strike ranges and more effective concealment, the threats to landing forces have reached unprecedented levels. Although the landing point and surrounding areas will be subjected to repeated strikes by shore-based, ship-based, and air-based firepower before landing operations commence, it is still impossible to avoid hidden or remaining fire points and anti-landing equipment striking the landing forces. This necessitates maintaining continuous friendly aerial fire support forces over the landing site throughout the entire landing phase (whether land-based aviation, ship-based aviation, or armed helicopters).



The 075-class amphibious assault ships Guangxi (Hull No. 32) and Hainan of the Chinese navy



The first ship of the Chinese navy's Type 075 amphibious assault ship, the Hainan

-----p. 13 begins-----



The Chinese navy's Type 075 amphibious assault ship with multiple helicopters parked on its deck

Considering the location of operations, the grouping of organizations, the density of aircraft, and the rapid reaction capabilities involved, neither shore-based nor ship-based aviation can achieve 24-hour "on-call" aerial fire support. Meanwhile, few attack helicopters are deployed on amphibious ships (typically the ratio of transport helicopters to attack helicopters is about 5:1), and the attack munitions they carry are generally light and small, making them less than ideal for striking hardened targets. Therefore, their role is relatively limited, and they cannot independently shoulder the heavy responsibility of air support. Precisely for this reason, when conducting extensive amphibious landing operations missions, even the U.S. Navy requires full support from naval aviation or the air force to ensure smooth progress in the landing operation.

On the basis of this consideration, starting in the 1970s, the U.S. Navy began carrying AV-8As (a U.S.-produced version based on British "Harrier" vertical/short-distance takeoff and landing fixed-wing fighter technologies; amphibious assault ships generally carry four to six of them) on amphibious assault ships in order to strengthen their air-to-ground strike and support capabilities. Although this ship-based aircraft lagged behind the fixed-wing ship-based fighter jets and attack aircraft equipped on aircraft carriers of the time in terms of technical performance, for amphibious landing operations within a range of a few hundred kilometers, its 800-kilometer combat radius when using short takeoffs, its weapon payload of about three tons, and its loiter time of no less than three hours met the needs of close air support missions. The AV-8A's approximately 454kg bombs and air-to ground missiles were particularly effective at destroying hardened ground fortifications, high-value targets, and long-range anti-landing weapons. That is a strike capability far beyond what attack helicopters using anti-tank missiles or large-caliber rockets can bring to bear.

When necessary, the AV-8A could also carry AIM-9L short-range air-to-air missiles to perform air superiority missions within a certain range (by the 1990s, the AV-8B also integrated the AIM-120A medium-range air-to-air missile). Unique among world militaries, this ultimately provided the U.S. Marine Corps with its own air power, independent of both the air force and navy ship-based aviation (and considering the limited number of aircraft carried on other platforms, the Marine Corps is also equipped with a certain number of land-based aircraft).

It is precisely due to the U.S. Marine Corps' specific requirement for vertical and/or short take-off and landing (V/STOL) fighters that the U.S. had to consider developing one when it started to design its fifth-generation multi-role fighter (the JSF project, later the F-35 program). This is the main reason why the F-35 fighter eventually developed into three different variants.

With development of the next-generation F-35B complete, this stealth fighter, which technically meets fifth-generation standards, obviously endowed amphibious assault ships with stronger naval and air combat capabilities. Even with the same four to six aircraft, the F-35B far exceeds the AV-8B in combat capability, strike effectiveness, and mission functionality. It also possesses obvious advantages when facing fourth- and 4.5th-generation fighters. It is fully capable of performing ground attack, air support, and air interception missions under more complex conditions. This significantly enhances the offensive and defensive capabilities of the U.S. Marine Corps and is the main reason why the U.S. Navy's amphibious assault ships hold leading positions in combat functions, technological capabilities, and battlefield adaptability.

For the Chinese navy, although the potential area for future landing operations is not far from the mainland, it is still necessary to strengthen the aerial strike and support capabilities accompanying amphibious landing formations. If China continues to build follow-on vessels to the Type 075, the Chinese navy could potentially expand its fleet of amphibious assault ships to a size comparable to that of the U.S. Navy before 2030. However, additional Type 075 ships would only further enhance the Chinese navy's vertical landing capabilities; amphibious landing capabilities incorporating air support would not be fundamentally improved. With the proliferation of the F-35B, the ability of amphibious assault ships worldwide to carry fixed-wing aircraft has become a major trend. The Chinese navy must also consider this factor when developing amphibious assault ships, which is likely an important reason why the Chinese navy is not in a rush to implement a plan to construct follow-on vessels to the Type 075.



The AV-8A “Harrier” vertical/short takeoff and landing ship -based fighter jet, previously operated by the U.S. Marine Corps



The U.S. Marine Corps' F-35B "Lightning" II V/STOL ship-based fighter

-----p. 14 begins-----

The limitations of attack helicopters, such as their short operational range, low flight endurance, slow response time, and weak firepower cannot be completely solved simply by increasing their numbers. In most cases, fixed-wing aircraft carrying heavy ordnance still offer the best strike capability against ground targets and high-value ground equipment located at or near landing points. For the foreseeable future, it is unrealistic for China to develop a high-performance V/STOL fighter similar to the F-35B and deploy it on amphibious assault ships. The urgency of such a project falls far short of the level requiring immediate breakthroughs in the relevant technologies. This is also the main reason why the Chinese navy did not continue mass producing the Type 075 amphibious assault ship and turned instead to developing the next-generation Type 076 amphibious assault ship.

The Type 076 holds a more important strategic position than other amphibious assault ships. After all, judging from over half a century of post-war U.S. Navy aircraft carrier development and the effects of their combat applications, the immense combat and deterrence advantages demonstrated by this type of large-scale naval and air combat equipment will remain irreplaceable for a long time.

Furthermore, with the application of numerous new technologies, both aircraft carriers and ship-based aircraft will offer increasingly powerful combat capabilities, and they will continue to be important symbolic assets for major naval powers in the future. The Chinese navy began its journey to developing aircraft carriers by refitting the Soviet-made *Varyag*. On September 25, 2012, it was renamed the *Liaoning* and entered active service (Type 001, hull no. 16), marking the end of China's history in which it lacked large, modern aircraft carriers and officially making China a member of the world's "aircraft carrier club."

Subsequently, based on operational requirements and the need for technological development, the Chinese navy used the *Liaoning* as a blueprint for building a fully domestically produced carrier of the same type, the *Shandong*. The overall design and structure of this ship are basically the same as the *Liaoning*, but the *Shandong* incorporates improvements to the internal structure and layout, as well as the installation of more advanced radar and electronic equipment. Its overall technological level is significantly superior to the *Liaoning*. This carrier was delivered to the Chinese navy on December 17, 2019 (Type 002, hull no. 17), making China one of the few

countries in the world to operate two aircraft carriers. It also effectively enhanced the Chinese navy's long-range operational and deterrence capabilities, playing an important role in the transformation of the Chinese navy's development strategy.

However, compared with large, advanced aircraft carriers in other countries, the *Liaoning* and *Shandong* still have obvious performance deficiencies and are limited in the number and types of ship-based aircraft they can carry. This means that if the Chinese navy wanted to narrow its gap with the rest of the world in the field of aircraft carriers or reach world-class levels, continuing to build subsequent ships based on the *Liaoning* and *Shandong* makes little sense. Ultimately, around 2018, construction began on the Chinese navy's newest, catapult-equipped 80,000-ton aircraft carrier. This ship not only has more tonnage, it is also equipped with advanced electronic equipment in addition to electromagnetic catapults and arresting gear. Its overall technological level has already caught up with the U.S. Navy's *Ford*-class carrier, which is known as the "most advanced in the world."



The Chinese navy's Type 075 amphibious assault ship no. 3, the Anhui

On June 17, 2022, this large aircraft carrier held its launch ceremony and was officially named the Type 003 *Fujian*, hull no. 18. After nearly two years of outfitting work, the ship began its first sea trial on May 1, 2024, and has completed seven sea trials to date. If everything goes smoothly, the ship will undergo two to three more sea trials and could be officially delivered to the Chinese navy by the end of 2025. The *Fujian* will make China the second country in the world, after the United States, capable of independently building large, catapult-equipped aircraft carriers. Coupled with the powerful air and naval combat capabilities possessed by its more than 60 next-generation ship-based fighters (such as the 4.5th-generation J-15B and the fifth-generation J-35), early warning aircraft, and electronic warfare aircraft the J-15D—which has caught up with or perhaps even partially surpassed the primary combat aircraft currently in service with the U.S. Navy—it will comprehensively enhance the Chinese navy's far-seas combat and sea-air confrontation capabilities. This development indicates that the Chinese navy's aircraft carrier technology has reached that of the world's cutting edge.

Recent reports from foreign media have indicated that, after completing the construction of the Type 003 *Fujian*, the Chinese navy has already begun developing plans for its successors. The

Type 003 still retained many traces of Soviet carriers in its structural design in order to limit technical risks and structural complexity. Although the ship has demonstrated powerful technological and operational capabilities, there are still some problems that could not be avoided at the time it was constructed. It still has significant limitations compared to the U.S. Navy's newest 100,000-ton *Ford*-class aircraft carrier. Therefore, the Chinese navy's next aircraft carrier will likely be a further improved and enlarged version of the existing Type 003. The tonnage will increase to the 90,000- to 100,000-ton range, the hull structure and design will be further optimized, the number of ship-based aircraft will be increased (the total may reach over

-----p. 14 begins-----

70), and it will use four electromagnetic catapults and three elevators. This would represent another historic breakthrough for the Chinese navy. There are even rumors that this 100,000-ton supercarrier may be the first in China's fleet to adopt nuclear propulsion, which would make it the world's second large aircraft carrier design to do so. This would have a profound impact on both the Chinese navy and the development of aircraft carriers around the world.



Frontal view of the Chinese navy's Fujian after launch

Regardless of whether the rumors about the Chinese navy's carrier development are accurate, it is indisputable that the Chinese navy is striving to build a carrier fleet that incorporates world-class technology. Assuming roughly equivalent levels of technology, a sufficient numerical superiority becomes a crucial factor in balance of power on the battlefield. After all, after more than half a century of development and accumulation, the U.S. Navy has established a powerful maritime combat force composed of eleven 100,000-ton supercarriers. Even if the Chinese navy develops rapidly, for a long time it will remain difficult to overcome the U.S. Navy's existing advantage in this field. Although China possesses top-tier global shipbuilding capabilities and its two shipyards in the north and south can build simultaneously, it will still be difficult to increase the number of catapult-equipped carriers to a level comparable to that of the U.S. Navy within 15 to 20 years. For the Chinese navy, which currently lacks neither funding nor technology, time is the most important determining factor in the rapid development of its carrier fleet.

Even if China is able to draw on its advanced shipbuilding industry and optimized organizational management capabilities to keep construction times for its aircraft carriers under four years from construction to launch, it would still take at least three years to complete the outfitting, sea trials, and delivery required to reach initial operational capability. Therefore, achieving that goal still presents immense difficulties.

Therefore, it is obvious that the Chinese navy today would still be at a significant disadvantage in the Western Pacific when facing a potential external intervention force consisting of two to three 100,000-ton supercarriers and an equal number of “lightning carriers.” That is why the Chinese navy needs to quickly identify the most realistic solution for rapidly enhancing its ability to counter foreign carrier strike groups.

Judging from the many unusual design features demonstrated on the newly launched Type 076, the Chinese navy is taking bold, experimental measures to address this problem. If the ship performs exceptionally well in subsequent tests, receives positive feedback, and proves effective after it is put in service, over the next 10-15 years the Type 076 will likely become among the most important large integrated surface combat platforms in the Chinese navy. Since that process will not affect the normal progress of subsequent aircraft carrier development, China will be able to follow a completely different path from that of American and European amphibious assault ships.



Aerial view of the Fujian undergoing sea trials

-----p. 16 begins-----

Balance Between Tradition and Innovation

Amphibious assault ships have been developing for almost 60 years. While some improvements have been incorporated, for instance V/STOL fighter jets—which involved optimizing the structural design of hangars to accommodate various types of helicopters as well as fixed-wing fighters)—the overall concept and basic designs have not changed much. Although some countries have added ski-jump decks to improve the combat capabilities of V/STOL fighters, the overall designs are basically convergent, from the various amphibious assault ships developed by the U.S. Navy to the so-called "multi-role assault ships" built by some European countries in the 21st century.

The basic design of the Chinese navy's new Type 076 amphibious assault ship does not appear to have undergone any radical changes, which would have increased design complexity and construction costs, prolonging the construction cycle. Contrary to speculation by many media outlets, it did not adopt the large overhang and angled deck design characteristic of aircraft carriers. To some extent, it is still an optimized version of the Type 075.

This ship type still adopts a high freeboard and through-deck design with a well deck, vehicle deck, personnel living quarters, and hangar inside the hull—all of which are basic characteristics of modern amphibious assault ships. However, to increase internal space and flight deck area, the overall size and tonnage of the Type 076 have been significantly increased. Based on commercial satellite imagery, foreign media have speculated that the Type 076 is over 260 meters long (more than 30 meters longer than the Type 075) and approximately 35 meters at the beam (about three meters wider than the Type 075). Due to the expanded flared structures on both sides of the vessel, the width of its deck is now almost 50 meters (nearly 13 meters wider than the Type 075), making it the amphibious assault ship with the widest deck in the world today.

When the Type 076 was launched, official reports stated its full-load displacement was over 40,000 tons. Based on its massive hull size and a draft exceeding eight meters, some speculate that the full-load displacement of the Type 076 may exceed that of the slightly smaller, 45,000-ton *America*-class amphibious assault ship. If true, that would make the Type 076 world's largest amphibious assault ship in the world based on displacement.



The launched lead ship of the Chinese navy's Type 076 amphibious assault ship, the Sichuan

The Type 076's larger hull size and displacement indicate that its capacity for personnel, supplies (e.g., fuel and provisions), and equipment (including amphibious landing equipment, combat equipment, and aviation equipment) will represent an increase of nearly 12,000 tons over that of the Type 075. Living conditions onboard may also be improved. Together these improvements, in addition to enhancing the capabilities of V/STOL fighters, will effectively strengthen the Type 076's overall design and its long-range operational capabilities.

Although the Type 076's hull size and displacement have increased significantly, its through-deck design means that it does not require any construction technologies that are fundamentally different from those needed for the Type 075. This allowed it to go from keel laying to launch in only about 18 months, only slightly longer than was needed for the Type 075. Compared to the construction times for amphibious assault ships of similar tonnages abroad (such as the U.S. Navy's *Wasp*- and *America*-class ships), which range from three to five years, the Type 076 reflects China's powerful shipbuilding capabilities and advanced technological capabilities, creating the conditions for rapid, large-scale construction and outfitting in the future.

Of course, in addition to retaining some conventional designs, the next-generation Type 076 obviously offers improvements over the Type 075. This is reflected in some aspects of its structure and design, as well as in its incorporation of newer technologies and equipment. These improvements give the Type 076 technological sophistication and powerful multi-mission capabilities that are completely different from existing amphibious assault ships.

New Twin-Island Superstructure and External Elevator Design

Since the emergence of amphibious assault ships, the single-island design has remained largely unchanged, due to a combination of traditional design philosophy and structural considerations. On conventionally powered aircraft carriers, the islands are quite large and occupy a significant portion of valuable deck space. Their impact is even more serious on carriers with smaller hull dimensions and tonnages. For example, the British Royal Navy's 20,000-ton *Invincible*-class light aircraft carriers built in the 1970s had hull lengths of just over 200 meters, but their island lengths were close to 75 meters (with widths of approximately 11 meters), occupying 38 percent of the entire flight deck's surface. In contrast, although the island length of the Russian 50,000-ton *Kuznetsov* aircraft carrier is also close to 70 meters (with a width of about nine meters), it only occupies five percent of the flight deck surface.

-----p. 17 begins-----



The islands of the Invincible-class light aircraft carriers previously operated by the British Royal Navy were very large, which was detrimental to the operation of aircraft on the flight deck

The British Royal Navy's next-generation *Queen Elizabeth*-class aircraft carriers adopted a unique (at the time) twin-island design, splitting the traditional integrated island into forward and aft sections. The forward island primarily houses the navigation bridge, which is responsible for the daily navigation of the carrier and integrates the functions of the command bridge. The aft island primarily houses the aviation bridge, which is responsible for the command, scheduling, traffic control, and flight control of the carrier's aircraft.

Each island on the *Queen Elizabeth*-class aircraft carriers is less than 25 meters long and around ten meters wide, occupying less than 250 square meters of deck space. Given that the flight deck area of this class is around 16,000 square meters, the islands take up less than two percent of the total surface area. If the ship were to adopt a single integrated bridge design, its overall length would reach 60 to 65 meters. Although that increase would not significantly increase the amount of deck the island would occupy, it would substantially increase the overall volume and weight of the island. That change would increase the island's weight, decrease its wind resistance, degrade airflow across the deck, and make it less stealthy.

Furthermore, the twin-island design can significantly reduce the electromagnetic compatibility problems caused by the concentration of many radar and electronic devices on the island. As is well known, modern aircraft carriers (including other large- and medium-sized combat ships) are equipped with anywhere from a dozen to several dozen such devices. They play an important role in modern naval and air combat by performing tasks such as detection, surveillance, tracking, reconnaissance, jamming, and communications. It can be said that the normal functioning of these devices is a prerequisite for a warship being capable of applying its full combat capabilities (or for a single shipborne weapons system being able to fully utilize its combat capabilities). However, due to the increasing variety of modern electronic equipment and the complexity of the operational environment, the question of how to better solve the electromagnetic compatibility problems involved in operating the large number of radar and electronic devices on warships remains a cutting-edge challenge requiring in-depth research to identify potential solutions.

For some countries with advanced radar and electronic technologies, electromagnetic compatibility has already been significantly improved through the use of phased-array systems, planar/conformal arrays, dual-band or multi-band radars, integrated radio frequency systems, and broadband satellite communication/datalink technologies. However, the most direct solution is actually to reduce the number of radar and electronic devices installed on an island and increase the distance between radar antennas. Obviously, a twin-island design can to a large degree alleviate compatibility problems.

Of course, the decisive factor in whether to adopt a twin-island design is the power plant. Currently, conventional power plants for aircraft carriers generally only include steam turbines and gas turbines. The former is represented by the Russian *Kuznetsov* aircraft carrier, while the latter is represented by the *Queen Elizabeth*-class carriers.

Aircraft carriers around the world have consistently adopted a single-island design, largely determined by the type and layout of the power plant. For example, for carriers using steam propulsion, considering factors such as the ship's center of gravity, internal layout, safety, and survivability, their power plants (including steam turbines and boilers) are generally located in the middle of the hull. At the same time, in order to minimize the length of the intake/exhaust ducts for the propulsion system, placing the island on the starboard side of the hull and adopting a single-island design is the simplest, most reasonable option. It is worth noting, however, that aircraft carriers using nuclear power do not face these issues and can position their island forward or aft as needed, offering greater flexibility.



The British Royal Navy's Queen Elizabeth aircraft carrier adopted a twin-island design

Although the Queen Elizabeth-class carriers use two 36-megawatt (about 48,000 horsepower) MT-30 gas turbines for their propulsion system, their significantly reduced size and weight allow for more flexible placement. Therefore, the two engine rooms are placed far apart from each other, which significantly improves their survivability.

-----p. 18 begins-----

In this case, if a single-island design were still used, the space occupied by the intake/exhaust ducts of the two gas turbines inside the ship, the length of the pipes, and the funnel required on the island would still result in an overall island length of more than 60 meters. In a twin-island

design, each island corresponds to an engine room, and the corresponding ducts can be arranged vertically so that they are the shortest possible length. This minimizes the size of the islands while ensuring the normal operation of the engines, saving at least several hundred square meters of deck space compared to a large single-island design.



Side view of the British Royal Navy's Queen Elizabeth aircraft carrier, showing the considerable distance between the twin islands

Although the twin-island design also has problems such as occupying a large amount of space, requiring a complex design, and imposing higher costs, these are relative to nuclear-powered carriers that can keep island volume, dimensions, and weight within an ideal range. For carriers powered by gas turbines, and where hull size and tonnage are not large enough (especially those with tonnages of only 30,000 to 40,000 tons), the twin-island design is currently ideal. This is also the primary reason that many countries' light and medium carriers—and even some multi-role assault ships—currently incorporate twin-island designs. One example is the Italian Navy's *Trieste* amphibious assault ship, which was commissioned in December 2024.

Therefore, it is not surprising that the Type 076 also adopted a twin-island design. It still uses a traditional through-deck design, so the size of the island has a greater impact on the effective area of the flight deck than on an aircraft carrier. Although the size of the Type 076's hull has been significantly increased, the use of a single island would still occupy far more deck space than expected.

The U.S. Navy's *America*-class amphibious assault ship, which is similar in size and tonnage to the Type 076, upgraded its propulsion systems from the steam turbines of the *Wasp* class (the first seven ships) to gas turbines. However, the layout, location, and intake/exhaust ducts of the engine room on this ship did not significantly change. Accordingly, the updated propulsion system did not require changes in the size of the ship's island. That island is massive—approximately 90 meters long and 12 meters wide—and occupies nearly 14 percent of the deck's surface. It is also covered with numerous antennas in a cluttered arrangement, giving it arguably the largest radar cross-section of the entire ship.



The Italian Navy's amphibious assault ship Trieste also employs a twin-island design



The USS America amphibious assault ship of the U.S. Navy features a large, cluttered single island with a substantial radar cross-section, which is highly detrimental to its stealth capabilities

If the Type 076 also adopted a single-island design, the island would be larger than that of the diesel-powered Type 075 (its island is about 66 meters long and 9 meters wide, covering an area of nearly 600 square meters, occupying about 8 percent of the deck area)—the air intake of a gas turbine is several times that of a diesel engine, there would be more intake/exhaust ducts, and it would take up more space. Even considering that the island would be integrated into the hull, the area occupied on the flight deck would far exceed that of the Type 075. At the same time, due to the needs of future maritime battlefield environments, the radars and electronic equipment on the Type 076 will obviously have more numerous and complex functions and types than those of the

-----p. 19 begins-----

Type 075. Therefore, it is important to consider how to ensure the reasonable installation and arrangement of various radar and electronic devices within a single island, such that all systems can operate efficiently under high-intensity conditions. It is also important to consider the problem of ensuring the electromagnetic compatibility and integration of the ship's electronic systems. The impact of a huge island on the ship's overall stealth capabilities and turbulence in the airflow across the deck would also be more significant. To a certain extent, the twin-island design can limit or even solve these problems.



Close-up of the Type 076 amphibious assault ship's twin-island design



The Type 076 amphibious assault ship has excellent stealth performance

The twin islands visible on the launched Type 076 illustrate how its overall design concept is similar to that of the British Royal Navy's *Queen Elizabeth*-class carrier, although the island position is closer to the middle of the hull (the *Queen Elizabeth*-class carrier's is closer to the bow). The spacing between the two islands is also smaller. The forward island is larger overall, with a length of about 28 meters (housing the navigation bridge); the aft island is smaller, with a length of about 15 meters (housing the aviation bridge). Both islands are roughly ten meters wide, so the total footprint of the two islands is around 450 square meters. Its effectiveness is very clear: even after meeting the higher intake and exhaust demands of its power plant, the island footprint of the Type 076 has been reduced by nearly 25 percent compared to that of the Type 075.

If we assume, as foreign media speculate, that the flight deck area of the Type 076 is close to 13,000 square meters, then the twin islands only occupy 35 percent of the total deck area, far less than the islands of the Type 075 and the *America* class. The Type 076's twin islands also adopt a low-observability design with an X-shaped, multi-faceted structure. Compared to traditional designs that slope inward or outward, the new islands offer better radar wave reflection. The overall size of the front island is larger, both because it needs to house larger exhaust ducts and because of the need to install a large amount of radar and other electronic equipment. The fully enclosed main mast, which also adopts a stealth design, is equipped at the top with a new double-

sided active phased array radar that has a diameter of three meters. The middle of the mast also integrates more than ten phased array radar panels (with functions such as air search, surface search, electronic reconnaissance, jamming, communications, identification of friend or foe, and data links). The aft island, in contrast, only needs to accommodate a smaller integrated mast—equipped with one small, double-sided rapid-scan active phased array radar, some other radar panels, and some integrated radio frequency systems—so its size can be better controlled while still meeting the requirements for exhaust ducts and the layout of the aviation bridge.

It can be said that China has basically solved the electromagnetic compatibility problems among various radar and electronic devices in complex electromagnetic environments through the comprehensive implementation of arrays, integration, and integrated radio frequency technologies in radar and electronic equipment. The use of twin islands has also played a significant role in achieving this goal.

In addition to the Type 076's unique twin-island design, the ship also features a distinctive dual outboard elevator system. As large combat platforms carrying aircraft, amphibious assault ships are typically designed with one or two elevators for transporting aircraft, personnel, and various other materials between the flight deck and the hangar.



The USS Iwo Jima amphibious assault ship previously operated by the U.S. Navy employed side-mounted elevators, significantly improving the efficiency of aviation operations

Early amphibious assault ships (and even some light, medium-sized aircraft carriers) used inboard elevators due to considerations of technical complexity, cost, and suitability for installation. Those elevators were essentially no different from those used on aircraft carriers during World War II. However, inboard elevators have drawbacks. They compromise the structural integrity of the ship's deck, occupy valuable flight deck space, reduce the efficiency of

-----p. 20 begins-----

deck and hangar operations, and make it difficult to accommodate new types of aircraft. Therefore, when the U.S. Navy designed the first-generation *Iwo Jima*-class amphibious assault ships in the 1960s, they adopted side elevators similar to those used on large aircraft carriers. This not only solved the problem of needing large openings in the flight deck that compromised the deck's strength, but also removed the need to occupy valuable deck and hangar space, in addition to removing a source of interference with takeoff and landing operations on the flight deck. Furthermore, a relatively small outboard elevator can easily transport a larger aircraft – whether a large helicopter or a fixed-wing fighter, because one end faces outboard. That

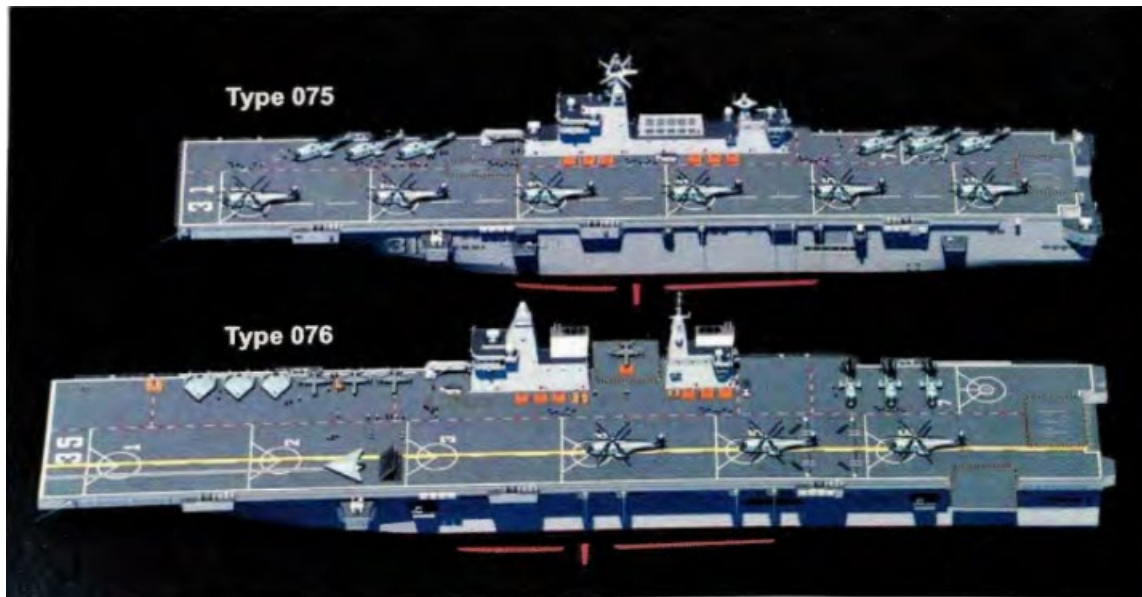
capability clearly offers great advantages by improving both the efficiency and the combat capabilities of amphibious assault ships.

When designing and constructing the Type 075, for various reasons the Chinese navy still chose to incorporate two inboard elevators. The forward elevator is approximately 20 meters long and seven meters wide with a carrying capacity of about 15 tons, capable of transporting one large, 13-ton helicopter. The aft elevator is approximately 15 meters long and 14 meters wide with a carrying capacity about 30 tons, capable of transporting two large 13-ton helicopters. Although this type of elevator has no problems in terms of carrying capacity and the stern elevator can better accommodate larger aircraft, aircraft takeoff, landing, and movement on the deck is impacted when both elevators are in use. Fortunately, because the Type 075 mainly carries helicopters of various kinds, that impact is acceptably limited.

One can speculate based on official reports that the Type 076 will be capable of carrying fixed-wing aircraft—both manned and unmanned—in addition to helicopters. The common characteristic between manned and unmanned fixed-wing aircraft is their large size and weight; those in the former category usually have fuselages longer than their wingspans, while those in the latter category generally have wingspans longer than their fuselages. They therefore require larger elevators. Although outboard elevators are structurally more complex and inferior in terms of cost, maintenance needs, and resistance to wind and water compared to inboard elevators, they are the optimal choice for the Type 076 considering the ship's operational requirements and the types of aircraft it will need to carry. The dual elevators also make its external appearance somewhat similar to that of an aircraft carrier.

The two elevators on the Type 076 are located on the starboard side amidships (between the two islands) and on the port side stern. They are approximately 17 meters long and 14 meters wide, making them about 20 percent larger than the Type 075's rear elevator (both have a carrying capacity of up to 30 tons). They can transport two 13-ton helicopters simultaneously, which could potentially improve the efficiency of aircraft handling by nearly 30 percent over that of the Type 075. Furthermore, they reduce the space the elevators occupy on the flight deck while still meeting the ship's needs for transporting large aircraft; only 60 percent of the elevator area occupies space on the flight deck. The elevators' size can also meet the parking and transport requirements of fixed-wing aircraft with lengths under 20 meters and wingspans under 12 meters (with wings extended or folded). This suggests that the Type 076 will be able to carry a diverse range of aircraft and accommodate upgrades and replacements with future generations of ship-based aircraft, including both helicopters and fixed-wing aircraft.

The Type 076 was also designed with an increased number of ammunition magazines on board in order to accommodate a large number of fixed-wing aircraft operating in combat. This change significantly improves the ship's ability to handle larger and heavier airborne munitions. Multiple large ammunition elevators at the front and back of the flight deck can also meet the requirements for rapidly loading multiple kinds of munitions onto various kinds of fixed-wing aircraft. That enables large groups of fixed-wing aircraft to have improved capabilities for attack and sustained combat.



Unlike the Type 075, which uses inboard elevators, the Type 076 amphibious assault ship utilizes side-mounted elevators

-----p. 21 begins-----

Combined Diesel-Electric and Diesel or Gas (CODELADOG) Propulsion System

The Type 076 has higher performance requirements than the Type 075, and its tonnage and dimensions have increased significantly. The Type 075 still uses a conservative all-diesel power plant and a traditional propulsion method, primarily to reduce costs and limit development complexity. In terms of both technology and performance, the Type 075's power system obviously cannot meet the development needs of the Type 076. The Type 076 possesses the foundation needed to adopt the technological improvements in China's new generation of naval power systems.

Although no official information has been released about the Type 076's power system, it can be inferred from the Type 076's use of a twin-island design and the development of related, domestically produced high-power naval propulsion systems that it likely uses a relatively advanced, mature, and reliable CODELADOG propulsion system. Due to its intended role, combat tactics, and mission requirements, the Type 076 places higher demands for an advanced the propulsion system, its power output, and the ship's overall power supply. Gas turbines are the preferred option given their small size, light weight, high power output, and high thermal efficiency. Based on related technological developments and applications of gas turbines abroad, this choice is also a trend in the technological development of future high-performance amphibious assault ships.

Based on the current twin-island design of the Type 076, it can be inferred that its power plant is similar to that of the British Royal Navy's *Queen Elizabeth*-class aircraft carrier, which adopts a widely spaced compartment layout, although the distance between the two compartments on the Type 076 is likely shorter. Judging from the number of exhaust ducts inside the two funnels on the twin islands, there are probably two gas turbines serving as the primary engines. Those are

most likely the GT-25000 gas turbines (now collectively referred to as CGT25-M) used on the Type 055 destroyers.

The GT-25000 is currently the most technologically advanced and powerful gas turbine in service, with a maximum output of 35,000 horsepower (about 26 megawatts). The Chinese navy's largest destroyer, the Type 055, uses four of these turbines. Even with its tonnage approaching 13,000 tons, the 140,000-horsepower power plant allows it to achieve excellent maneuverability and navigation performance. Furthermore, because the propulsion system offers exceptionally high reserve power, the Type 055's power generation capacity is more than four times that of the Type 052D destroyer. This capability ensures sustained, high-intensity operation of various large onboard radar systems, weapon systems, and electronic countermeasure systems without compromising basic navigation performance or maneuverability. This is one of the main reasons that the Type 055 is considered one of the most powerful, technologically advanced, and future-proof destroyers in the world.



The powertrain of the Type 076 amphibious assault ship is highly advanced



The GT-25000 gas turbine engine is powerful and an excellent naval propulsion system

Although the tonnage of the Type 076 amphibious assault ship has increased to over 40,000 tons, its two GT-25000 gas turbines can still output nearly 70,000 horsepower (approximately 52 megawatts). That is slightly lower than the U.S. Navy's *America*-class amphibious assault ships, which uses two 40,000-horsepower (approximately 30 megawatt) LM-2500+ gas turbines, but 70,000 horsepower can still ensure the Type 076 can maintain a maximum speed of no less than 23 knots at full power.

The auxiliary power system of the Type 076 consists of six 6,000-horsepower diesel generator sets (approximately four megawatts each). It is primarily used for low- to medium-speed combat navigation and for the entire ship's daily power supply. Due to the significant advantages in

efficiency that diesel engines offer, the Type 076 will be very economical when operating at speeds below 15 knots, which increases the platform's range and deployment lengths. Two high-power propulsion motors drive two propellers via drive shafts. Although this does not completely eliminate the traditional drive shaft system, both the space occupied and the length of the shaft are greatly reduced, effectively improving the utilization of internal space. At the same time, the system can be started up more quickly, and its response speed and reliability have significantly improved.

From the perspective of improving the reliability and stability of the entire power plant, the Type 076's power system is simpler than a fully integrated electric propulsion system. Based on the real-world performance of integrated electric propulsion systems used on foreign warships and the problems they have encountered, there is still room for further refinement of this technology. Although the Type 076 has significant advantages in technology and performance, reliability and stability are most likely the primary considerations for a front-line combat ship. Those needs are probably the primary reason why the Type 054B frigate ultimately employed a technologically simpler diesel-electric power system, even though it was initially rumored to have employed an integrated electric propulsion system. The power system currently used on the Type 076 can meet demanding operational requirements in both function and technical performance. While meeting those requirements, it significantly reduces technical risks, which facilitates faster research and development, production, and construction. That speed ensures the rapid generation of combat capabilities after delivery.

Furthermore, considering that the Type 076 will be the first to use an electromagnetic catapult and arresting gear system, a highly efficient rapid energy storage and integrated power management system is essential even beyond its powerful power generation capabilities. The emergence of the Type 003 *Fujian* aircraft carrier, which also uses conventional power coupled with electromagnetic catapult and arresting gear systems, indicates that China has achieved a comprehensive breakthrough in this cutting-edge technological field. That is the main reason the Chinese navy is confident in using these advanced technologies on the Type 076.

-----p. 22 begins-----



The Type 076 amphibious assault ship employs electromagnetic catapult and arresting gear technology, enabling it to launch fixed-wing aircraft



The Type 076's power system is fully capable of meeting the requirements for electromagnetic catapult and arresting gear

Research from both foreign and domestic sources indicates that the four electromagnetic catapults on the U.S. Navy's *Ford*-class nuclear-powered carriers require at least 27 megawatts of power when working at full load. In comparison, the three electromagnetic catapults on the Chinese navy's Type 003 *Fujian* require roughly 20 megawatts of power under similar conditions. That means that each catapult requires only around seven megawatts of power. The Type 076's power system can theoretically provide a total power output of over 75 megawatts when all of its engines are being used for power generation. Even if a 20 percent reserve is maintained and 60 percent of the ship's power is used for normal navigation, radar, onboard weapons, and daily shipboard operations, the Type 076 still has more than 10 megawatts of power available to ensure the normal operation of the electromagnetic catapult and arresting gear systems. Therefore, using those systems on a platform other than an aircraft carrier does not actually place excessive demands on the ship's power system. The more challenging technical problems lie in ensuring rapid energy storage and charging/discharging capabilities. In this area, the United States is pursuing flywheel approaches to energy storage, while China is pursuing supercapacitor approaches. Supercapacitors offer advantages over flywheels such as smaller sizes, lighter weights, higher power densities, better environmental adaptability, maintenance-free operation, and longer lifespans—in short, supercapacitors offer better stable, high-speed, high-energy output capabilities in short time periods.

According to reports from foreign media, the Chinese navy has equipped each electromagnetic catapult on the Type 003 *Fujian* aircraft carrier with six sets of supercapacitors. When fully charged, each set can guarantee the full-load launch requirements of three ship-based aircraft. When each of the six sets are used alternately, it is possible to achieve the rapid launch of 18 ship-based aircraft in a short period of time. If all three electromagnetic catapults on the *Fujian* are operating at full power, under extreme conditions, they can launch all of the ship-based aircraft within 30 minutes (the *Fujian* can carry 60 aircraft; excluding various helicopters, there are no more than 50 fixed-wing aircraft). In terms of aircraft sortie rate alone, the *Fujian* already surpasses the U.S. Navy's *Nimitz*-class nuclear-powered aircraft carriers, which are equipped with four steam catapults. More importantly, the charging time for each set of supercapacitors is extremely short. Under normal circumstances, they can be fully charged in one hour, and in 30 minutes they can be charged to 80 percent, which is sufficient to launch two fully loaded aircraft.

This demonstrates extremely strong capabilities in maintaining high-intensity, continuous use, which significantly improves the efficiency of aircraft sorties.

Therefore, if the Type 076 is configured with six sets of supercapacitors, it can also launch 12 aircraft (of various medium and heavy ship-based types) in a short period of time. If the weight of the aircraft is smaller (such as a takeoff weight of 5-15 tons, which requires less energy), then each set of supercapacitors can launch two to three times more aircraft. That would be more than sufficient regardless of the types of aircraft the Type 076 ultimately carries. Coupled with the efficient power management and distribution advantages offered by the advanced medium-voltage direct current integrated power system, the Type 076's complete power system should be among the world's leading amphibious assault ships in terms of both technology and performance. If the navy considers further improving the performance of its power plant in the future, the Type 076 can be equipped with two 30-megawatt next-generation gas turbines, which would improve its overall performance by more than 20 percent. That upgrade would effectively meet the navy's requirements for higher speed, greater maneuverability, and increased power redundancy. (To be continued...)



China's domestically developed Gongji-11 (GJ-11) unmanned aerial vehicle cannot be ruled out as a future payload for the Type 076 amphibious assault ship