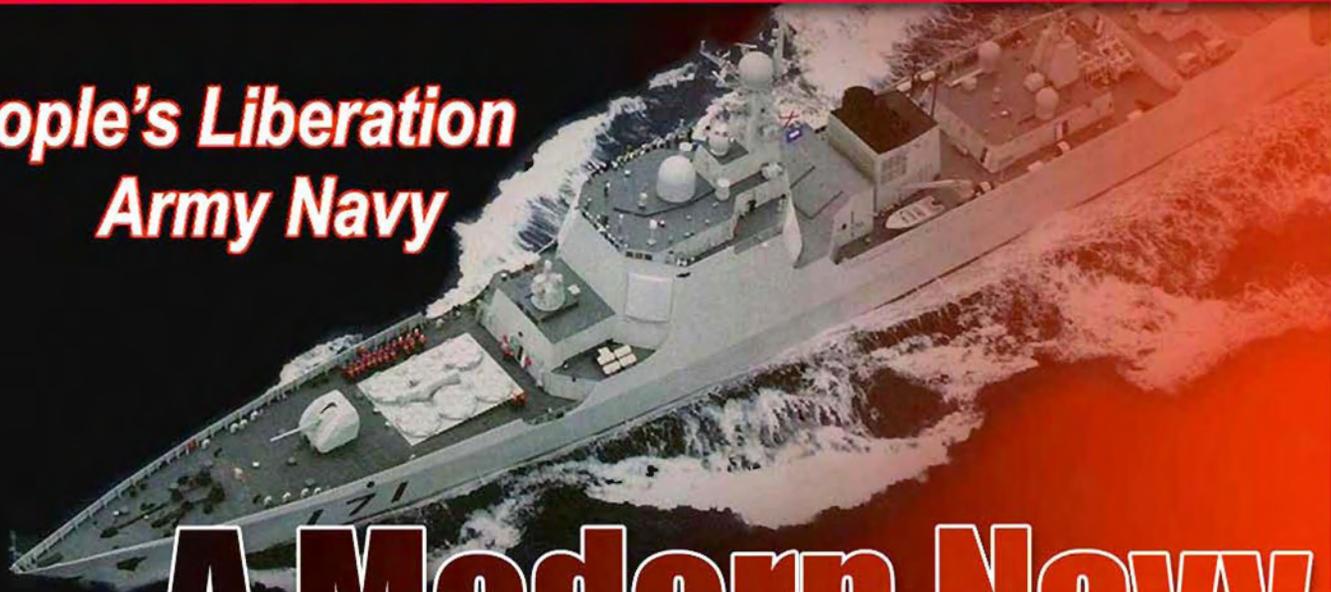


*The People's Liberation
Army Navy*



A Modern Navy with Chinese Characteristics





Table of Contents

Executive Summary.....	1
Introduction: Chinese Naval History.....	3
Chapter One: Strategy - Fulfilling National Missions	5
The Evolution of a Naval Strategy	5
PLA(N) Roles And Missions.....	7
Chapter Two: PLA(N) Structure and Leadership.....	12
Organization	12
Admiral Wu Shengli.....	13
Future Leadership	14
Chapter Three: Procurement - China's Move to Quality Over Quantity	16
Developing Multimission Platforms	17
Anti-Access Developments	26
Low Cost, High Yield Investments	28
Chapter Four: Personnel - Progress Towards a Professional Force	31
China's Personnel Push.....	31
Chapter Five: Training, Exercises, and Joint Operations.....	34
Training and Exercises.....	34
Developing Joint Operations	41
Outlook.....	43
Continuing Modernization	44
The Future Forces	45

Executive Summary

Over the past decade, the People's Republic of China (PRC) has carried out an impressive military modernization effort, providing the People's Liberation Army Navy (PLA(N)) with considerable technological capabilities. Recognizing that it takes more than technology to create a capable navy, China has also actively pursued the modernization of its doctrine, organization, and training with the ultimate goal of developing a professional force. While much work remains, trends in recent years indicate the PLA(N) is beginning to operationalize its modern force, taking on new and more challenging missions.

In response to expanding national interests and revolutionary changes in warfare brought about by long-range precision weaponry, civilian leadership in Beijing began to view the navy as an increasingly critical component of China's national security structure. To support Beijing's objectives regarding Taiwan, to deny an adversary access to the region during times of crisis, and to protect China's vital sea lines of communication, naval power became the key to China's security concerns. In the late 1990s, Beijing embarked on a program to build a modern navy in a relatively short time.

Since the late 1990s, the PLA(N) has purchased military hardware from abroad, built increasingly complex naval platforms in China and made substantial upgrades to aging ships.

The bulk of these efforts has centered around three areas:

Anti-Surface Warfare: The PLA(N) has more than quadrupled the number of submarines capable of firing anti-ship cruise missiles (ASCM), installed missiles with longer ranges and more sophisticated guidance packages on its surface combatants, built over 50 high-speed ASCM-carrying patrol craft, and developed the world's only anti-ship ballistic missile.

Naval Air Defense: Historically a weak area for the PLA(N), its newest combatants now feature mid and long-range surface-to-air missiles, and the *Luyang II* DDG possesses a sophisticated phased-array radar system similar to the western AEGIS radar.

Force Projection: China has increased its underway replenishment capability by 67 percent, allowing greater sustainment of operations far from shore. China has also constructed a large amphibious ship (*Yuzhao* LPD) and a hospital ship (*Anwei* AH), which could be used either for humanitarian relief missions or support to amphibious combat. Finally, China is refurbishing an aircraft carrier bought from Ukraine and plans to build its own within the next five to ten years.

Over the past year, the PLA(N) conducted several operations that demonstrated increased

confidence and proficiency with real world missions in the Chinese littoral as well as in “distant seas.” Perhaps the most significant is the deployment of a series of Task Groups, consisting of two combatants and an oiler, to the Gulf of Aden in order to protect Chinese shipping from piracy. This marks the PLA(N)’s first operational surface deployment beyond waters adjacent to China. While these

deployments are likely to last throughout 2009, it is important to note that none of these operations indicate a desire on the part of the PRC to develop a constant global presence. Beijing’s ambition appears to remain focused on the East Asian region, with an ability to protect the PRC’s maritime interests in distant seas when required.

Introduction:

Chinese Naval History

From the Porcelain Route to the Cultural Revolution . . .
A Long March Toward a Modern Navy

The voyages of Admiral Zheng He during the Ming Dynasty are discussed in both Chinese and Western sources as the historical antecedent of China's present day naval modernization. Chinese sources characterize Zheng's seven voyages between 1405 to 1433 to Southeast Asia and the Indian Ocean as missions of trade, diplomacy and friendship, in contrast to the Europeans who came later as colonizers and conquerors. This historical legacy is often cited as evidence that the world need not fear China's growing maritime power. Admiral Zheng's fleets were composed of huge ocean-going ships, far larger, more numerous and technologically advanced than the caravels of his contemporary Spanish and Portuguese explorers. Seen in this light, Zheng's voyages represent a moment in history when China stood poised to become the world's dominant maritime power, yet decided to turn away.

Though the voyages of Zheng He have recaptured popular attention in Asia and the West, China has not always been a naval power. That is not to say that Chinese history is entirely devoid of maritime tradition. As early as the 7th century, Chinese traders were an active part of the "porcelain route," a maritime equivalent

of the ancient Silk Road that stretched from Guangzhou to the Persian Gulf. Naval engage-



Admiral Zheng He

ments also played important roles in various dynastic histories. However, China did not have a global naval tradition in the mold of the European powers of the 15th to 19th centuries. The Qing Dynasty fell into decline and proved unable to fend off encroachment from foreign powers in the 19th and early 20th centuries during what is today known in China as the Century of Humiliation. Qing naval weakness was highlighted during the Sino-Japanese War of 1894–1895, when a well-equipped but poorly trained

Chinese fleet was destroyed by the Japanese at the mouth of the Yalu River in September 1894.

Naval operations played a minimal role during China's long civil war and in its war against Japan from 1937–1945, but soon after the establishment of the People's Republic, Beijing addressed the need for a maritime force capable of defending the country from potential threats. From its humble beginnings as a coastal defense force to the expanded capabilities and geographic scope of the modern PLA(N), Chinese naval strategy has been driven by the PRC's perception of its security threats.



毛主席挥手我前进

伟大领袖毛主席于一九五八年九月二十日视察海军快艇部队

Chinese Revolution Propaganda Poster: “Chairman Mao waves me forward”
Chairman Mao inspecting naval fast torpedo boat troops on September 20, 1958

In the early years of the PRC's existence, China shaped its defense to contend with perceived threats that were predominantly continental, in particular from the Soviet Union, Vietnam, India and the United States in Korea. Until recently, China lacked the technical and industrial capacity to build a modern navy and lacked sufficient funds to purchase modern systems from abroad. Mao's 1953 assertion regarding the need for “a strong navy for the purpose of fighting against imperialist aggression” was qualified with the statement that the navy had to be built in accordance with industrial and financial realities. The Great Leap Forward and the Cultural Revolution (both of which subjugated scientific and industrial development to ideology), the military's budgetary focus on aircraft and nuclear weapons, and the loss of technical assistance from the Soviet Union following the Sino-Soviet split, all contributed to the difficulties the PRC faced in developing a modern navy.

With the fading Soviet threat and the embracing of domestic modernization, China quickly developed a thriving economy that relied on international trade and something forgotten since Zheng He: sea lines of communication. Additionally, the Chinese leadership came to see an increasingly independent Taiwan as a threat to their pride and authority; “reining in” Taiwan would take a modern navy. The continued legitimacy of the Chinese Communist Party (CCP) rested largely on these two pillars—improving its citizens' lives through sustained economic growth and protecting national integrity. The PLA(N) thus began to take a much larger role in defending the nation's key interests and saw proportionate increases in prestige, power, and funding. To understand how this empowered force now functions, however, one must begin with an examination of the PLA(N) that emerged from the civil war—humbled and focused mainly on self-defense.

Chapter One:

Strategy - Fulfilling National Missions

The Evolution of a Naval Strategy

From its inception in 1949 until the mid-1980s, the PLA(N)'s primary strategic concept was one of "coastal defense." This strategy focused the PLA(N) on defending China's coast from the Soviet Pacific Fleet as a small component of what would primarily be a land war. By 1982, despite the lack of resources and continued focus on continental threats, PLA(N) Commander Admiral Liu Huaqing directed the PLA(N)'s naval research toward "offshore defense."

Offshore defense is a regional strategy that does not advocate replicating U.S. or Soviet "blue-water" naval capabilities. Instead, it calls for naval capabilities suited for China's specific regional maritime interests. While offshore defense has often been generically described as operations within China's 200 nautical mile (nm) Exclusive Economic Zone, Admiral Liu defined China's offshore areas as the Yellow Sea, East China Sea, South China Sea, the seas around the Spratly Islands and Taiwan, the areas inside and outside the Okinawa



When discussing naval strategy, Chinese often refer to the "first" and "second" island chains. The First Island Chain includes Taiwan and the Ryukyu Islands, the Second Island Chain extends from Japan to Guam.

island chain as well as the northern part of the Pacific Ocean. This includes areas outside of the “First Island Chain” as well as the more traditional coastal waters.

Admiral Liu’s strategic vision paralleled the Central Military Commission (CMC)’s adoption of a new military strategy that focused on local wars on China’s periphery instead of one based on a major nuclear confrontation with the Soviet Union.

Since the 1980s, proponents of Liu’s offshore defense strategy have asserted that in order to secure China’s economic interests and defend against foreign threats, China must expand the bounds of its maritime capabilities beyond coastal waters. Events of the 1990s, including the U.S.-led operations against Iraq and Serbia, U.S. intervention in the Taiwan Strait crisis of 1996 and the ongoing modernization of both Japan’s and Taiwan’s navies, highlighted to Chinese strategists both the weakness of China’s maritime flank and China’s vulnerability to long-range precision strike weapons. Specifically, the success of U.S.

weapons combined with the willingness of the United States to intervene in regional conflicts made it clear to Beijing that China was not prepared for the realities of modern warfare. The CMC charged the PLA with developing the ability to fight “local wars under modern high-tech conditions.” In order to do so, the PLA introduced two key concepts to help guide its modernization: “*informationization*” and “*non-contact warfare*.”

After more than 20 years of naval development under offshore defense and the continued influence of informationization and non-contact warfare, many Chinese scholars and PLA(N) strategists now advocate a new strategy for the 21st century, termed “*distant sea defense*.” This new strategy would not bound operations geographically, but rather be defined according to China’s maritime needs.

In addition to the continued protection of maritime interests, advocates of distant sea defense see a respected modern navy as a necessary component of China’s rising international status.

Admiral Liu Huaqing



Admiral Liu Huaqing was the third commander of the PLA(N) (1982–1988) and one of the foremost maritime strategists produced by the People’s Republic of China. Born in 1916, Liu joined the PLA in 1930 and was a veteran of its Long March. His transition from the army to the navy began in 1952, after which he served in a variety of operational and technical assignments including Deputy Commander of the North Sea Fleet, Vice Minister of the 6th Ministry of Machine Building (Ship Building), and Deputy Chief of the General Staff, before assuming the position of PLA(N) Commander in August 1982.

In a military dominated by the “great infantry” concept, Liu was much more than just an army officer serving in naval assignments.

Instead, Liu proved himself to be a forward thinking maritime strategist who developed the PLA(N)’s current strategy of “offshore defense,” began the now robust program of naval diplomacy and foreign engagement, and laid the intellectual and technical foundations for the rapidly modernizing PLA(N) of today. In the final phase of his military career, Liu served on the Central Military Commission, where he would eventually become the senior vice chairman and one of the most powerful men in the Chinese military behind then-CMC Chairman Deng Xiaoping.

PLA(N) Roles and Missions

The same pressures that drove the development of offshore defense also drove a re-evaluation of the traditional missions the PLA(N) must be prepared to execute. The navy's missions are derived from the CCP's *Military Guiding Theory*—strategic guidance to the military that outlines the PLA's role in China's national strategy. An element of the *Military Guiding Theory* is the concept of the military's "historic missions," which are designed to identify and safeguard China's national interests. In 2004, Chinese President Hu Jintao revised these historic missions in order to address issues of expanding strategic interest to China. Building on the guidance set down by former President Jiang Zemin, Hu emphasized the PLA's responsibility to protect "state sovereignty, security and territorial integrity" and to safeguard "the interests of national development above anything else." In addition, President Hu emphasized the need to develop capabilities to address a variety of non-traditional security threats to include "anti-terrorism, safeguarding stability, dealing with sudden incidents...safeguarding peace" and other "diverse military tasks."

The Naval Role in the Cross-Strait Problem

For the past 15 years China's naval development has been primarily focused on improving its capabilities to deter Taiwan's moves toward independence and to successfully reverse Taiwan's actions should deterrence fail. The PRC continues to view reunification with Taiwan as an unalterable long-term goal for reasons involving historic claims, national pride, domestic stability, and geostrategic posture. China has not forgotten the prominent role the United States played in the three previous Taiwan Strait crises (1954–5, 1958 and 1996), and remains concerned the United States will intervene in any future crisis as well. Beijing perceives that the prospect of such intervention emboldens Taiwan pro-independence groups,

"Informationization" describes China's military effort to incorporate modern technology into all aspects of operations. It recognizes that modern, long-range weapons require fast and accurate means for coordinating data over long distances. A military adept in informationized warfare would be able to effectively control and coordinate forces with speed and precision, while inhibiting the enemy's ability to do the same. Thus informationization includes means to protect one's own information, such as modern command and control systems, as well as means to disrupt the information of the adversary, such as cyber attacks and electronic jamming. The greater coordination between multiple naval units and "smarter" weapons enabled by informationization gives rise to a key element of modern warfare referred to in the PLA as non-contact warfare.

"Non-contact warfare" involves employing platforms and weapons in precision strikes from outside of an enemy's "defended zone," reducing the risk to friendly platforms. Similar to U.S. doctrine that emphasizes parallel attacks against key nodes within an enemy's system, Chinese writings on non-contact warfare stress non-linear attacks against the entirety of an enemy's operational and strategic depth, causing an opponent to lose the ability and will to resist. From a naval perspective, non-contact warfare is demonstrated by the PLA(N)'s development and acquisition of long-range weapons to be launched from ships, submarines, aircraft, or shore-based platforms as well as the associated detection and targeting capabilities required to employ these weapons to their fullest capacity.

"Distant sea defense" While coastal defense and to a certain extent offshore defense have either an explicit or implied geographical limitation (that the PLA(N) would only operate a certain distance from China), distant sea defense has no such limitations regarding distance from the mainland. The PLA(N) would be required to be able to defend China's maritime interests whether they were close to home or on the other side of the world. This is not to say China will develop a global navy like the United States, but that the PLA(N) would be required to have a basic global reach to defend China's specific needs, such as the anti-piracy patrols in the Gulf of Aden.



Luyang II Class Guided-Missile Destroyer leading a formation

potentially limits China's political and military options, and raises the risk of a Taiwan crisis escalating into a wider Sino-American conflict. China remains wary of U.S. long-term intentions in the region and strongly prefers to avoid a crisis in which the U.S. might move to become a guarantor of Taiwan independence.

For these reasons, China's modernization efforts have principally focused on preparing for a Taiwan conflict, with a large portion directed at developing capabilities to deter, delay, and if necessary degrade potential U.S. military intervention. To this end, China has built or acquired a wide array of advanced platforms including submarines, major surface combatants, missile patrol craft, maritime strike aircraft, and land based systems employing new and sophisticated anti-ship cruise missiles. China is also developing the world's first anti-ship ballistic missile, a system specifically designed to defeat U.S. carrier strike groups.

Chinese leaders hope that simply possessing these military capabilities will deter pro-independence moves, or should deterrence fail, that they will permit a range of military options that can be tailored to the specific situation. A military strategist at Beijing's Academy of Military Sciences recently stated, "We can resolve a crisis if we are in a position to deter." This focus on crisis resolution highlights a strategic shift with respect to Taiwan that occurred as Hu Jintao gained power. The old goal of "compelling reunification" became one of "preventing independence," thus allowing for much greater flexibility in dealing with Taiwan.

However, should a near-term Taiwan Strait crisis occur where China feels it must resort to military force, it has a wide range of military options which would include significant PLA(N) involvement. These include large-scale exercises and missile demonstrations similar to the 1996 crisis, blockades of Taiwan's ports, and amphibious assaults on

some of Taiwan's offshore islands. The PLA(N) would also play a role in a campaign designed around missile and air strikes on Taiwan with the level of naval involvement dependent on the scope and intensity of the campaign.

Moving Beyond Taiwan

President Hu Jintao's 2004 expansion of the PLA's "historic missions" opened up new avenues for the navy. Two of the professed missions—safeguarding China's expanding national interests and ensuring world peace—represented a significant adjustment to China's national defense strategy and broadened its definition of security to include new geographic and functional areas beyond the PLA's traditional territorial security missions. The emergence of these missions *levied new requirements on the PLA(N) to prepare for contingencies beyond the immediacy of*

Taiwan, such as addressing China's economic dependence on sea lines of communication (SLOC). China's Defense White Papers chronicle this shift in concerns. The last two papers in particular, describing China's views of security issues in 2006 and 2008, highlight missions outside of the traditional sphere. The 2008 Defense White Paper characterizes the PLA as expanding its operational range and mission flexibility and becoming increasingly involved in international security. The 2008 paper also conveys China's intent to gradually develop the capabilities to operate cooperatively in the open ocean and contend with non-traditional security threats, an aspiration exemplified by current PLA(N) participation in efforts to combat piracy in the Gulf of Aden. Levying requirements on the PLA(N) for military operations other than war will allow for greater international



cooperation in areas such as counterterrorism, counternarcotics trafficking, disaster relief, and humanitarian assistance.

Protecting Maritime Sovereignty

The Chinese government claims sovereignty over the majority of the East and South China Seas, citing such evidence as historical maps dating back to the Ming Dynasty (1368 to 1644). In addition, Chinese scholars point out that prior to the founding of the PRC, China's nationalist government traced a dotted line in 1947 depicting its boundary in the South China Sea which is often referred to as the "cow's tongue" because of its shape.

China also claims that its continental shelf naturally extends into the East and South China Seas, giving it a legal right to extended sea claims under the 1982 United Nations Convention on the Law of the Sea (UNCLOS). Beijing uses this argument to bolster its claim to sovereignty over most of the South China

Sea, including the Paracel and Spratly Islands, as well as most of the East China Sea extending to the Okinawa Trough. The 200 nm Exclusive Economic Zone (EEZ) permitted under UNCLOS results in overlapping claims for many states in the region and therefore maritime disputes continue between China and at least five of its neighbors. Because China's claims also extend beyond its EEZ, most countries do not recognize these claims and view them as excessive.

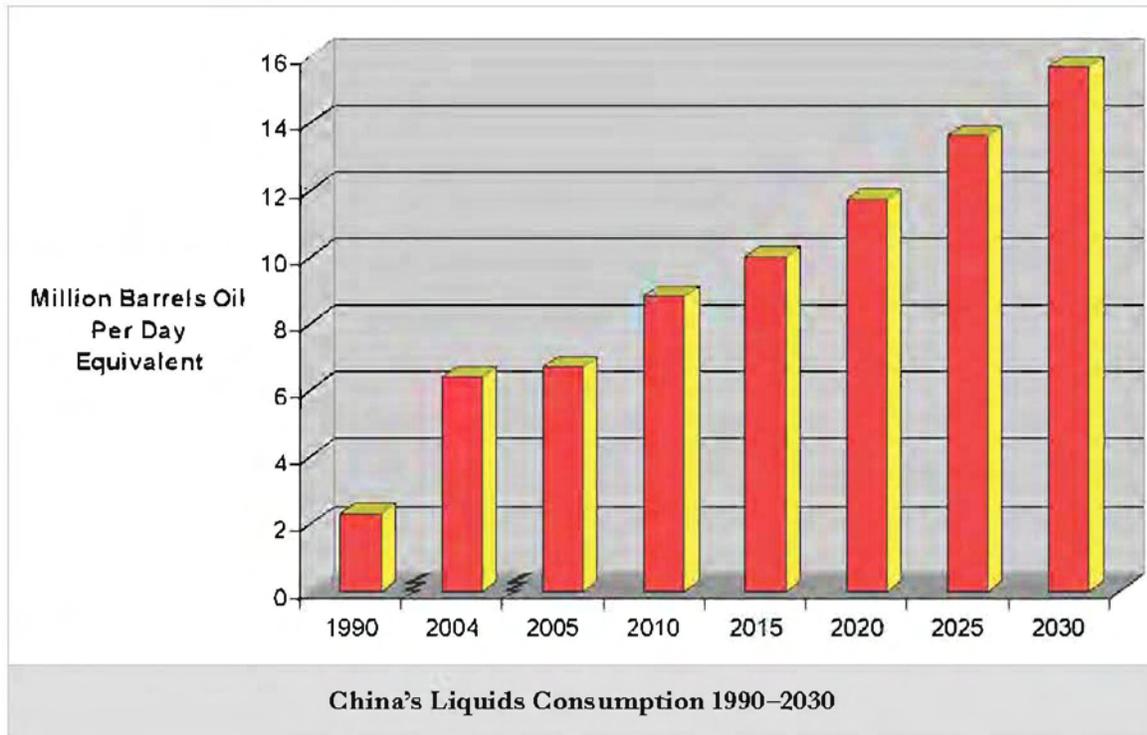
China's strategic interests in the East and South China Seas include preserving access to extensive fishing resources and securing access to potentially vast deposits of oil and natural gas. While Beijing prefers to use diplomacy and economic influence to protect maritime sovereignty, this is also a key mission for the PLA(N), which regularly patrols in most of China's claimed territory. These areas are also patrolled by four separate civil maritime organizations that function independently within the Chinese government. These entities are responsible for various aspects of law enforcement and peacetime coastal defense within China's claimed EEZ, and collectively operate an extensive array of boats, ships, helicopters and maritime patrol aircraft.

Sea Lane Protection

Perhaps even more critical to China's continued economic growth than defending sea-based resources is the protection of its SLOCs. It is along these strategic routes that the overwhelming majority of China's foreign trade—over 90 percent by volume and over 80 percent by value—is transported. Due to its strong economic growth, the PRC became a net crude oil importer in 1993, a dependency which continues to grow. Over the next 15 years, China's demand for foreign oil is expected to grow steadily while its domestic supply will stagnate, requiring an ever-increasing reliance on foreign imports for its crude oil needs. China's continued economic development and



This map details China's claims in the South China Sea.



modernization, which are deemed essential to ensure the stability of the CCP's one-party rule, have made protecting these SLOCs a key mission of the PLA(N).

China's continued prosperity depends upon the steady flow of resources and material from foreign suppliers. Any disruption of key chokepoints or disturbance along any of the SLOCs has the potential to affect China's economy. SLOC protection, however, is not just a matter of deploying ships to chokepoints to ensure that they remain open, but requires the capability to sustain a maritime presence in strategic locations in order to respond to potential incidents. When Hu first called for this capability in his 2004 expansion of the historic missions, concerns over the Malacca Strait dominated discussion of SLOC security. Hu described this as China's "Malacca Dilemma," highlighting that approximately 90 percent of China's imported crude oil transits this vital strait. Today, however, China's

SLOC security concerns extend to even more distant waters.

The PLA(N)'s counter-piracy operations in the Gulf of Aden demonstrate the intention of China's leadership to ensure the security of China's SLOCs. Based partly on the impact of regional piracy on Chinese shipping and partly on Beijing's desire to be seen as a responsible stakeholder in ensuring maritime security, the counter-piracy deployments are part of a wider international effort to protect shipping during transits through the strategic sea lane of the Gulf of Aden into the Indian Ocean. China's participation serves several purposes: first, it is in line with the mission requirements of the PLA(N) to protect the PRC's strategic interests; second, it provides the opportunity for the PLA(N) to develop and refine the operational capabilities it needs for "distant seas" operations; and third, it enhances China's image as a responsible member of the global community.

Chapter Two:

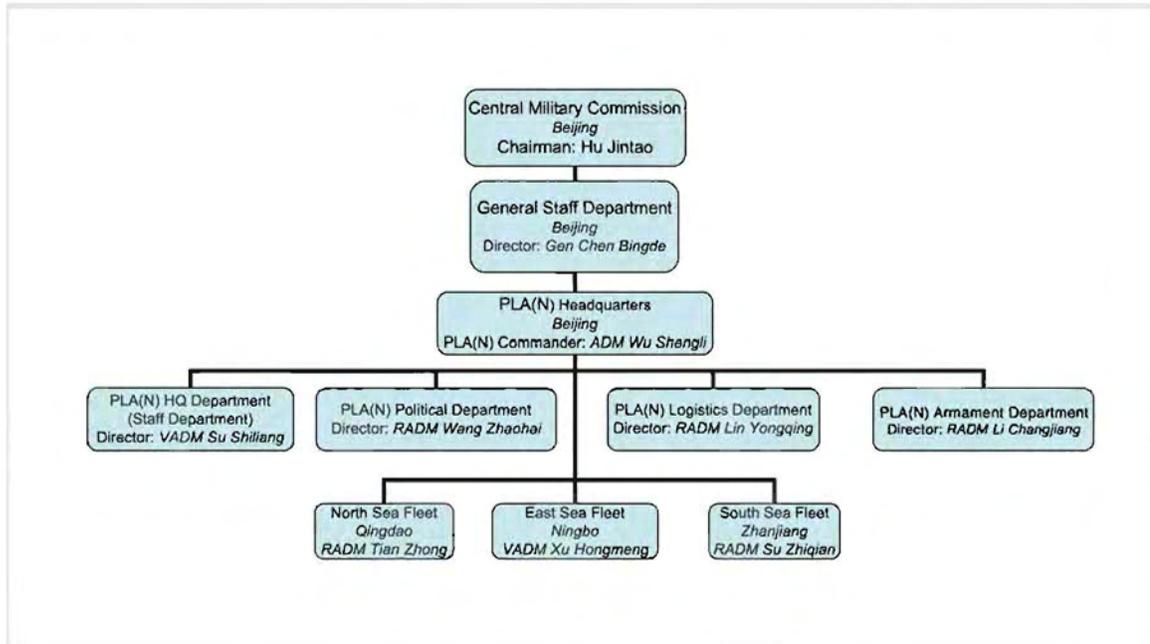
PLA(N) Structure and Leadership

Organization

The Central Military Commission (CMC) sits at the top of China's national command structure. Chaired by PRC President Hu Jintao, this group oversees and sets policy for China's armed forces. The CMC consists of the heads of each of the General Departments of the PLA, the commander of each of the armed services, and other selected officers.

Immediately below the CMC are the four General Departments of the PLA: General Staff Department, General Political Department, General Logistics Department, and the General Armament Department.

The PLA(N) Headquarters in Beijing is subordinate to the General Staff Department and consists of four first-level departments which provide critical support to the operational fleets. The Headquarters Department oversees overall PLA(N) operations, training, communications, and intelligence; the Political Department is responsible for all political work including discipline, officer assignments, propaganda, and security; the Logistics Department handles construction of facilities, technical support to naval vessels, fuel, health care, finance, transportation, and other critical areas related to supply; and the Armament Department provides technical support to all PLA(N)





equipment and weapons systems from concept development to retirement.

The PLA(N) has three geographically-oriented fleets to direct its day-to-day operations. The North Sea Fleet, headquartered in Qingdao, is responsible for the Bohai, Yellow Sea, and the northern portion of the East China Sea. The East Sea Fleet, headquartered in Ningbo, covers the majority of the East China Sea and the Taiwan Strait. The South Sea Fleet, headquartered in Zhanjiang, is responsible for the South China Sea.

Admiral Wu Shengli: Building a Powerful Navy

During a meeting of the PLA Navy Party Committee in late 2006, President Hu Jintao called for a “powerful” and “combat ready” navy. It is the job of current PLA(N) Commander and CMC member, Admiral Wu Shengli, to build such a force.

ADM Wu shares President Hu’s concerns for developing a navy that can address China’s security requirements for the 21st century. Wu has been the most vocal and successful advocate of a greatly expanded mission for the PLA(N) since Admiral Liu in the 1980s.

- At the 2004 National People’s Congress, then-South Sea Fleet Commander Wu called for the creation of a special “maritime exploration” research group, possibly to support China’s disputed maritime claims in the South China Sea.
- In a 2007 article published in an official CCP journal, Wu and then-PLA(N) Political Commissar ADM Hu Yanlin wrote that “the ocean is the large passageway for international interactions and the sustainable strategic resource reservoir for humans. In order to protect...resource development... scientific tests, to maintain the safety of

Admiral Wu Shengli



Admiral Wu Shengli was born in Zhejiang Province in August 1945. ADM Wu's father, a high-ranking official in the Zhejiang provincial government, gave him the name *Shengli* ("victory") in celebration of the defeat of Japan. ADM Wu joined the PLA in 1964; like many of the current leadership class of the Chinese military, he entered the service shortly before China's Cultural Revolution. His "princeling" status as the son of a high-ranking official may have assisted ADM Wu early in his military career, but it appears that his capabilities—not his lineage—have been the key to his subsequent advancements. ADM Wu is a career surface warfare officer who has commanded a destroyer flotilla, a naval support base, and held several shore-based positions including East Sea Fleet Deputy Commander and South Sea Fleet Commander. In 2004, ADM Wu was promoted to Deputy

Chief of the General Staff Department (GSD). While at GSD, ADM Wu was probably responsible for national defense mobilization issues. ADM Wu was appointed PLA(N) Commander in August 2006 and appointed to the CMC in October 2007. As such, ADM Wu commands all Chinese naval forces, including the Navy Air Force and China's two Marine brigades.

the...strategic passageway for energy and resources...and effectively safeguard our national maritime rights, we must build a powerful navy."

Foreign Engagement

ADM Wu has met with dozens of foreign defense and naval officials over the course of his career. Now, as Commander, he appears determined to transform the PLA(N) into a more cosmopolitan organization. In ADM Wu's first year as Commander, the PLA(N) participated in multilateral exercises hosted by Pakistan, Singapore, and Australia. In 2007 and 2008, the PLA(N) and the Japanese Maritime Self-Defense Force held reciprocal port calls for the first time in over 50 years. In 2008, ADM Wu led a PLA(N) delegation to Japan, India, South Korea and Thailand. He has held five exchanges with the United States since becoming PLA(N) Commander.

In addition to leading the PLA(N) through a period of intense modernization, ADM Wu has expanded its operations. Under his

guidance the PLA(N) has accomplished several important missions, including the anti-piracy deployments to the Gulf of Aden, which represent the PLA(N)'s first long duration operational deployments outside of the First Island Chain. Other noteworthy operations under ADM Wu's leadership include significantly increased submarine and surface combatant deployments, security for the 2008 Olympic Games, and relief efforts following the Sichuan Earthquake. ADM Wu is likely to still be at the helm of the PLA(N) in the 2010–2012 timeframe when China is expected to commission its first operational aircraft carrier.

Future Leadership

Following ADM Wu's eventual retirement, Vice Admiral Ding Yiping, currently PLA(N) Deputy Commander, is a strong candidate to become the next PLA(N) Commander. Like ADM Wu, VADM Ding is a "princeling general" who spent his career in the PLA(N)'s surface warfare track. As North Sea Fleet Commander, VADM Ding was one of the few



**PLA(N) Deputy Commander
Vice Admiral Ding Yiping**

North Sea Fleet senior officers whose career survived the aftermath of a submarine disaster in 2003 in which the entire crew perished. His promotion to Navy Chief of Staff and Deputy PLA(N) Commander in 2006 occurred at the same time as ADM Wu's promotion to PLA(N)

Commander. Since his arrival at PLA(N) HQ, VADM Ding has been mentioned in official Chinese press as becoming "one of the most important commanders of important naval operations."

Chapter Three:

Procurement - China's Move to Quality Over Quantity



Luyang II Class Guided Missile Destroyer and Jiangwei II Class Frigate

The PLA(N) surface force is one of the largest in the world, and its capabilities are growing at a remarkable rate. In the past decade, the focus of China's naval procurement has shifted from large numbers of low-capability, single-mission platforms to a smaller force of highly capable, multimission systems. In the 1990s, the PLA(N) began to acquire a variety of advanced aircraft, submarines and surface ships, as well as associated modern weapons, sensors and combat systems. Using a combination of imported

technology, reverse engineering, and indigenous development, the PRC rapidly narrowed the technology and capability gaps between the PLA(N) and modern navies. Despite continuing challenges in some aspects of command, control, and communications, today's PLA(N) shows increased competency when operating farther from shore and in all of the major warfare areas—in stark contrast to a decade ago when the PLA(N) was a moderately capable anti-surface coastal defense force with marginal

anti-air warfare (AAW) and anti-submarine warfare (ASW) capabilities. Likewise, the PLA Navy Air Force (PLANAF) is significantly expanding its capabilities to allow China to project air power farther from shore, eventually in a carrier-based capacity. China is undertaking a program to both operationalize an incomplete former Soviet *Kuznetsov* class aircraft carrier (likely as a training platform) and build an indigenous carrier to join the fleet between 2015 and 2020. The PLA(N) of the near future will be a well-rounded, multimission force capable of regularly operating beyond its local geographic region in the Western Pacific.

Developing Multimission Platforms

Over the past 10 years, the PLA(N) has undertaken a comprehensive modernization campaign, paying particular attention to developing anti-surface warfare (ASuW) capabilities, both in surface and submarine development. The surface force has also invested in developing a credible AAW capability in order to sever dependence on land-based air defense and enable missions in more distant seas. While ASW has not received the same level of effort, noteworthy steps have been made. Overall, China is making significant progress in transforming its navy from a coastal defense force

The Old and the New



Luda Class Destroyer



Jiangkai I Class Frigate

with moderate anti-surface capability to one with true multimission potential.

PLA(N) Surface Force

China's naval surface force currently consists of an eclectic mix of modern and legacy platforms, utilizing a variety of weapons, sensors, and overlapping capabilities. During its rapid technological advancement, the PLA(N) has imported "proven" high-capability platforms from abroad (primarily Russia), while concurrently producing advanced indigenous platforms using both imported and domestic engineering, weapons and sensors. The force strength in 2009 consists of approximately 26 destroyers, 48 frigates, more than 80 missile-armed patrol craft, 58 amphibious ships, 40 mine warfare ships, 50 major auxiliaries, and over 250 minor auxiliaries and service/support craft.

In recent years, the most notable upgrade to the PLA(N) surface force has been its shipboard area-air-defense (AAD) capability. Only a decade ago, the longest-range shipborne surface-to-air missile (SAM) was the *Crotale*-based HHQ-7 (~7nm). Currently the PLA(N) operates new ships with four different SAMs with varying degrees of AAD capability. These include the *Sovremenny I/II* and *Luyang I* class destroyers (DDGs) with the Russian SA-N-7 (~12-20nm), the *Luzhou* DDG with the Russian SA-N-20/RIF-M (~80nm), the *Luyang II* DDG with Chinese HHQ-9 (~55nm), and the *Jiangkai II* class frigate (FFG) with the new vertically-launched HHQ-16 (~20-40nm). These SAM systems are linked on their respective platforms with advanced air-surveillance systems, including the Russian *Tombstone* and *Top Plate* and Chinese *Dragon Eye* phased-array radar.

Platform	Total Number
Diesel Attack Submarines	53
Nuclear Attack Submarines	6
Nuclear Ballistic Missile Submarines	3
Destroyers	26
Frigates	48
Amphibious Ships	58
Coastal Patrol (Missile)	80+

The development of a sea-based AAD capability is critical to the PLA(N)'s aspirations of operating in "distant seas." It allows PLA(N) combatants to operate outside of shore-based air defense more confidently, with long range SAMs capable of engaging air targets outside of air-to-surface weapons range. It also increases the efficiency of the surface force by allowing a single ship to focus on air defense for an entire group.

In addition, the PLA(N) has upgraded its ability to engage surface ships through the acquisition of advanced anti-ship cruise missiles (ASCMs)

and over-the-horizon targeting (OTH-T) systems. Four *Sovremenny I/II* DDGs carry the SS-N-22 *Sunburn* (~130nm), while the *Luyang II* DDG is fitted with the newly de-

veloped YJ-62 (~120nm) and most other combatants carry the YJ-8A ASCM (~65nm). The use of shipboard helicopters, the *Mineral-ME* radar, and datalinks give the PLA(N) an improving capability to carry out OTH-T operations.

Although the PLA(N) surface fleet has only a moderate ASW capability, it has improved in recent years with the addition of modern towed-array sonar and embarked helicopters. The smaller "submarine chaser" patrol craft that China operated in large numbers during the 1970s and 1980s are no-longer emphasized, and most have been phased out in favor of more capable frigates, helicopters and maritime patrol aircraft.

At the same time the PLA(N) has built up its long-range capability, it has also reinforced its coastal defense and near-littoral strengths with the introduction of the highly-capable *Houbei* class guided-missile patrol craft (PTG) in 2004. The *Houbei* utilizes a wave-piercing catamaran



Kuznetsov CV Hull 2 undergoing renovation at Dalian

China's Carrier Program

Beijing recognizes the role a modern navy plays in a nation's international status. China is the only permanent U.N. Security Council member without an aircraft carrier, while other nations such as India, Thailand, and Brazil operate carriers. Though aircraft carriers are viewed in the U.S. as instruments of force projection, Chinese military and government representatives have stated aircraft carriers are necessary for protecting China's maritime territorial integrity. In particular, aircraft carriers would allow the PLA(N) to operate more securely outside the envelope of Chinese land-based air defenses.

Beginning in early 2006, PRC-owned media has reported statements from high-level officials on China's intent to build aircraft carriers. At the March 2009 National People's Congress, former PLA(N) Political Commissar Admiral Hu Yanlin stated that China is capable of building aircraft carriers and that increasing security demands require their acquisition. Press statements by China's military and defense-industrial establishment also indicate that research and development for carrier construction is underway.

In 1998 China purchased an incomplete former Soviet *Kuznetsov* class aircraft carrier, which has been undergoing renovation since 2002 at Dalian Shipyard. This carrier is expected to become operational in the 2010 to 2012 timeframe, and will likely be used to develop basic proficiencies in carrier operations. Though the construction of an indigenous aircraft carrier has yet to be publicly announced, the PRC will likely have an operational, domestically produced carrier sometime after 2015.

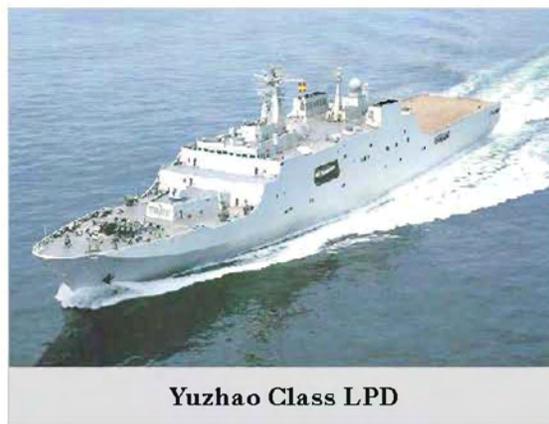
China continues to show interest in acquiring Russian Su-33 carrier-borne fighters, and Russian press reporting from 2006 indicated China wanted to purchase up to 50 aircraft. Recent press, however, suggests that talks between the two countries have stalled because of China's insistence on purchasing an initial batch of only a few aircraft. Despite these reports, it is too soon to dismiss a contract for the aircraft as China is clearly interested in pursuing a carrier aviation program. Some press indicates that China obtained one Su-33 from Ukraine earlier this decade. If the reports are true, it is possible that China could apply that technology to its own carrier aircraft program.



Houbei Class Patrol Craft

hullform, probably based on a commercial fast-ferry design, and water jet propulsion to attain considerably better seakeeping, speed, and mission flexibility than the older *Osa* and *Houku* missile boats that they replaced. The relatively low construction, operating, and crew costs of the *Houbeis* have allowed China to build well over 50 to date, with more under construction. Furthermore, the *Houbei*'s ability to patrol coastal and littoral waters and react at short notice allows the PLA(N)'s larger combatants to focus on offshore defense and out-of-area missions without leaving a security gap along China's coastline. *Houbeis* are equipped with four YJ-8A ASCM (~50nm), a 30mm Gatling gun, and possibly a man-portable air defense system (MANPAD). They can exceed 50 knots and cruise in rougher seas than similarly-sized monohull patrol craft.

The number of China's amphibious ships has remained steady in recent years, but during the last decade a program was initiated to replace most of the vintage *Yuliang* LSM and LST 511 class ships with newer, more capable units—including the *Yuting II* class LST and *Yunshu* class LSM—which have better seakeeping, longer endurance, better reliability, and larger loadouts. In 2007 China commissioned its first *Yuzhao* class amphibious transport dock (LPD), signaling a developing capability for expeditionary warfare and over-the-horizon amphibious assault.



Yuzhao Class LPD

China is significantly upgrading its fleet of ocean-going auxiliaries in support of longer range operations. A decade ago the PRC had only a small number of ocean-going auxiliaries, most of which were research ships. With forces operating farther from shore in recent years, the PLA(N) added two new *Fuchi* class replenishment oilers—one of which joined the anti-piracy deployments to the Horn of Africa. Several other large auxiliaries have recently been added to support specific and growing missions of importance to China: the *Anwei* AH (humanitarian relief), the *Danyao* AF (island resupply), the *Yuan Wang* 5&6 AGM (satellite and rocket launch telemetry), and the *DaJiao* ASR (advanced submarine rescue). In addition, a number of specialized research and survey ships have entered service recently, including the PLA(N)'s first Small Waterplane Area Twin Hull (SWATH) hullform.

PLA(N) Submarine Force

Since the mid-1990s, the PRC has emphasized the submarine force as one of the primary thrusts of its military modernization effort. The PLA(N) envisions a more lethal force equipped with advanced weapons and sensors, capable of sustained long-duration patrols and able to avoid detection by opposing forces. Beijing believes that such a force would provide a powerful conventional and strategic deterrent in both peacetime and war.



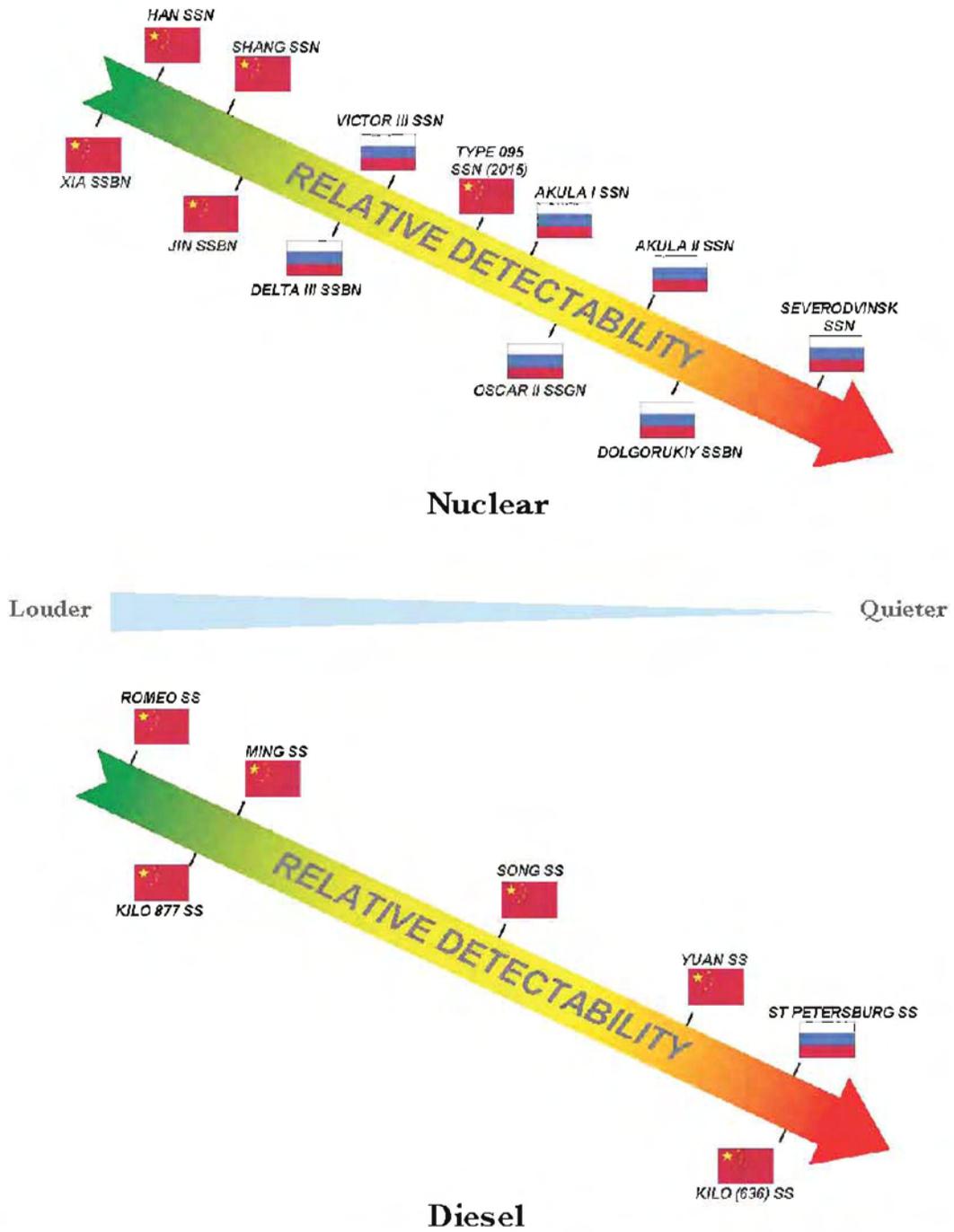
Song Class Submarine

As PLA(N) strategy and capabilities have changed, Chinese submarine procurement has focused on smaller numbers of modern, high-capability boats. In keeping with the overarching PLA(N) strategy of the time, the 1980s submarine force featured a relatively high number of low-technology platforms. Now there are fewer submarines in the PLA(N) inventory than there were at any point in the 1980s. Currently, the submarine force consists of six nuclear attack submarines, three nuclear ballistic missile submarines, and 53 diesel attack submarines. Over the next 10 to 15 years, primarily due to the introduction of new diesel-electric and air independent power (AIP) submarines, the force is expected to increase incrementally in size to approximately 75 submarines.

The different platforms in the submarine force reflect the various missions envisioned by the PLA(N). Diesel-electric submarines

are regularly used for patrols along major sea lanes within China's regional seas and into the Philippine Sea. In wartime, these platforms can also be prepositioned along critical SLOCs in order to interdict opposing forces. China's newer SSBNs are designed to provide the PRC with a credible second-strike capability. Due to superior endurance and increased speed capabilities over diesel-electric submarines, China's small SSN force will most likely be used for long-range Intelligence, Surveillance, Reconnaissance (ISR) and ASuW in the approaches to China's regional seas. Other missions, including protection for both China's fledgling SSBN force as well as support to any future aircraft carriers are possible, although the expected small force size would presumably restrict the number of submarines that could be assigned those missions. The most capable SSNs are likely to be used for patrol operations of longer duration and distances in the Pacific and possibly Indian Oceans.

Submarine Quieting Trends



The PLA(N) is currently transitioning from older, less reliable attack submarines like the *Romeo SS*, *Ming SS* and *Han SSN* to the more modern *Kilo SS*, *Yuan SS*, *Shang SSN* and the *Type 095 SSN*. These more advanced platforms include larger weapons loadouts, better weaponry, improved quieting, and more advanced computer processing. The *Song SS*, *Yuan SS*, and *Shang SSN* are the PLA(N)'s newest indigenous submarines, and the first to be designed to employ the YJ-82 ASCM in addition to the traditional weapons loadout of torpedoes and mines. The *Yuan SS*, China's most advanced diesel submarine, possibly incorporates quieting technology from the Russian-designed *Kilo*. It may also be fitted with an AIP system, which enables a diesel submarine to operate for significantly longer periods of time without surfacing to recharge its batteries. China is further expanding its current force of nuclear attack submarines by adding five advanced *Type 095 SSNs* to the current inventory of SSNs in the coming years.

China is also developing a near-continuous at-sea strategic deterrent with the *Jin SSBN* program. The *Jin* class is being built as a follow-on to China's first generation *Xia SSBN*. The more advanced *Jin SSBN* will carry the new JL-2 submarine launched ballistic missile (SLBM) (~4,000nm). The JL-2 SLBM has an increased range over the *Xia's* JL-1 SLBM and

is capable of reaching the continental United States from Chinese littorals. The *Jin SSBN* with the JL-2 SLBM gives the PLA Navy its first credible second-strike nuclear capability.

People's Liberation Army Navy Air Force (PLANAF)

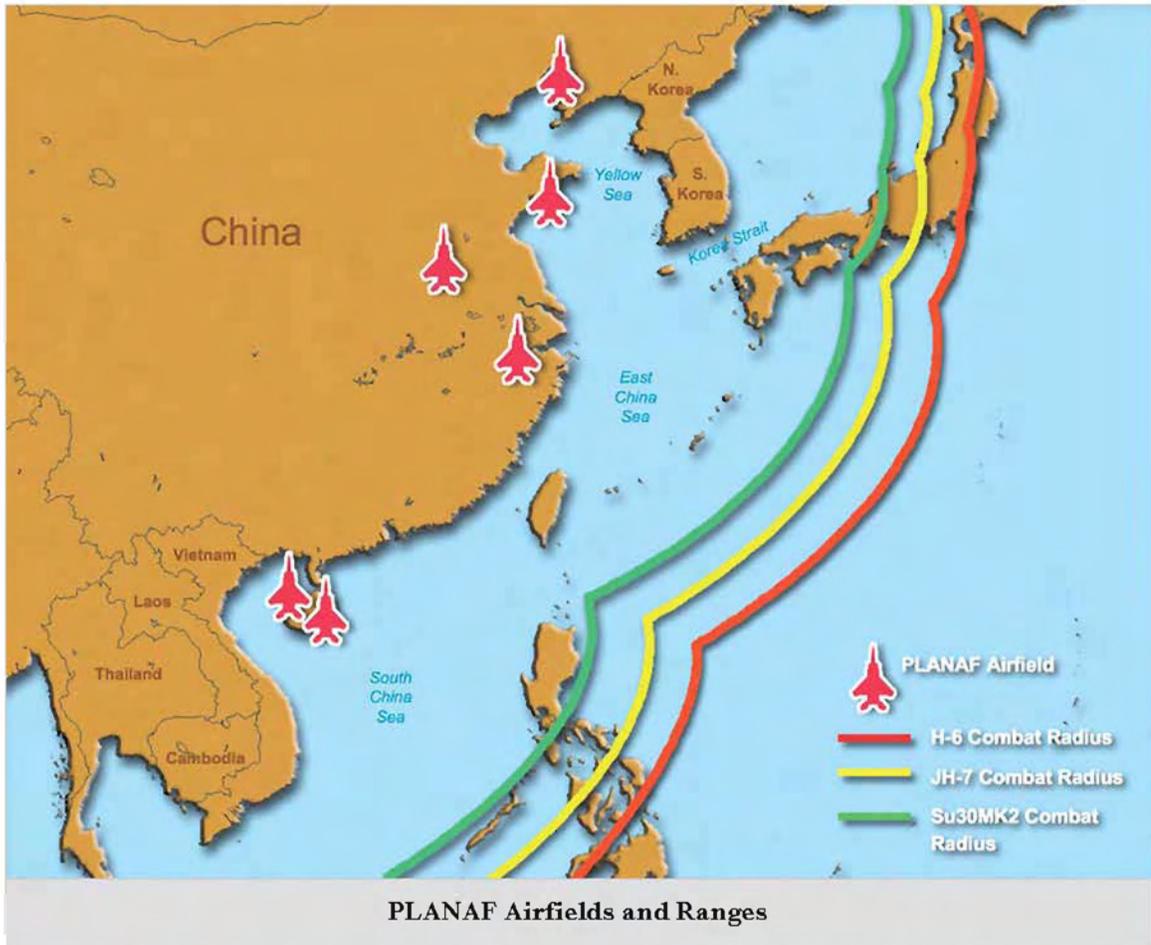
The PLANAF provides the Chinese Navy with its own air capability independent from the People's Liberation Army Air Force (PLAAF). Originally designed to provide air cover for navy ships at sea, this role has begun to receive less emphasis with the advent of newer navy combatants with more capable air defense systems. Now the PLANAF's role has expanded to cover maritime patrol, anti-submarine warfare (ASW), maritime strike, logistical support, and even airborne early warning. With the exception of a handful of shipborne helicopters, the PLANAF remains a land-based force; however, the impending acquisition of an aircraft carrier promises an even larger role for the force in the future.

Helicopters

The PLANAF operates three main helicopter platforms: the Z-9C, the Z-8, and the Russian Ka-28 *Helix*. The Z-9C is the PRC's primary naval helicopter, used chiefly for ASW and search and rescue (SAR) operations. The Z-9C can also be fitted with surface search radar to detect surface ships far beyond the range



PLA(N) Z-9C landing on Luyang I DDG-169



of shipboard radar systems, and can engage surface ships with the ET-52 torpedo. The Z-9C is a licensed copy of the French AS 365 *Dauphin*, and although early models were assembled with imported components, by the 1990s over 70 percent of the Z-9C was produced with Chinese components. There are now approximately ten active Z-9Cs in the PLANAF inventory.

Although the Z-9C remains the principal PLANAF helicopter, the Ka-28 *Helix* is also used extensively, as highlighted by its role as the shipborne helicopter support for the Horn of Africa anti-piracy deployment. China acquired the *Helix*, the export variant of Russia's Ka-27, in conjunction with the purchase of the *Sovremennyy* class destroyers. While slower than the Z-9C, it can carry nearly double the cargo load. The PLANAF

operates eight Ka-28s off of the *Sovremennyy* and *Luyang* DDGs for ASW and SAR roles.

The Z-8 is a Chinese-licensed copy of the French SA-321 *Super Frelon*. The Z-8 is a medium lift helicopter performing troop transport, ASW, ASuW, minesweeping, and minelaying missions. The Z-8 is significantly larger than the KA-28 and the Z-9C, providing a greater cargo capacity, but also limiting its ability to deploy on PLA(N) combatants.

Fixed-wing Aircraft

The PLANAF has made great strides in fixed-wing aviation over the last two decades, not only significantly upgrading the quality of its fighters, but also expanding the types of aircraft it operates. This force was founded upon high technology imports, primarily but not exclusively from Russia, but recent years have



PLANAF JH-7 aircraft on approach to landing

seen significant gains in domestic production and competitiveness.

The PLANAF's fighter inventory is comprised of the indigenous J-8 interceptor and the highly successful Su-30 *Flanker*. Both the PLAAF and PLANAF use various types of *Flankers*, which were acquired between 1992 and 2002. Of particular note is the PLANAF's Su-30-MK2. In 2002, China purchased 24 of these aircraft, which feature both an extended range and maritime radar systems. This allows the MK2 to strike enemy ships at long distances, while still maintaining a robust air-to-air capability. The J-8 interceptor is a more limited, but still effective all-weather air-to-air combat aircraft. Built in China, it was originally based on Russian designs but has since undergone significant upgrades. Like the *Flanker*, China operates several versions of this aircraft. The J-8 is perhaps best known in the West as the aircraft that collided with a U.S. Navy EP-3 reconnaissance aircraft in 2001.

For maritime strike, the PLANAF primarily relies on variants of its H-6. The H-6 is a licensed copy of the ex-Soviet Tu-16 *Badger* medium jet bomber, maritime versions of which can employ advanced ASCMs against surface targets. Some H-6s have been modified as tankers or drone launchers, increasing the PLANAF's flexibility and range. The PLANAF also employs variants of the JH-7,

an indigenously produced tandem-seat fighter/bomber, for maritime strike. Updated versions of the JH-7 feature a more capable radar and additional weapons capacity, enhancing its maritime strike capabilities.

In addition to combat aircraft, the PLANAF is expanding its inventory of fixed-wing Maritime Patrol Aircraft (MPA), Airborne Early Warning (AEW) and AEW and Control (AEW&C) aircraft. China has achieved significant new capabilities by modifying several existing airframes. The Y-8, a Chinese-licensed version of the ex-Soviet An-12 *Cub*, forms the basic airframe for several special variants. The Y-8X is the primary Chinese MPA, and AEW and AEW&C aircraft have also been based on this basic airframe. The AEW and AEW&C aircraft feature various types of radar designed for both air and surface detection and tracking. Based on the much larger Russian-made IL-76 transport, the PLAAF's KJ-2000 Airborne Warning and Control System (AWACS) aircraft is similar in capability to the Y-8 AEW&C variants. All of these aircraft play a key role in providing a clear picture of surface and air contacts in the maritime environment. As the navy pushes farther from the coast, long-range aircraft capable of extended on-station times to act as the eyes and ears of the fleet become increasingly important.

Anti-Access Developments

Much of China's military modernization effort has been driven by Taiwan contingency planning. In order to deter or counter third-party intervention, in the mid-late 1990s China began fielding a comprehensive command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capability (the most visible part of which is the expanded Chinese space program) and began to focus on modern submarines. China also engaged in a large-scale expansion of its cruise and ballistic missile capabilities across the board, building large numbers of short range ballistic missiles capable of targeting Taiwan. Alongside the expansion of its anti-ship cruise missile inventory, China also initiated ground-breaking research into targeting an aircraft carrier with a ballistic missile.

Anti-Ship Ballistic Missiles

The PRC has been conducting advanced research into an anti-ship ballistic missile (ASBM) program since the 1990s. This ASBM may be a variant of the DF-21 Medium Range Ballistic Missile (MRBM), with the capability to perform a mid-course ballistic correction maneuver to update the target's location, and then guide a Maneuvering Reentry Vehicle (MaRV) to the target. An ASBM's long range, high-reentry speed (Mach 10–12), radical maneuvers, and munitions designed to attack aircraft carrier sub-systems combine to create a complex threat.



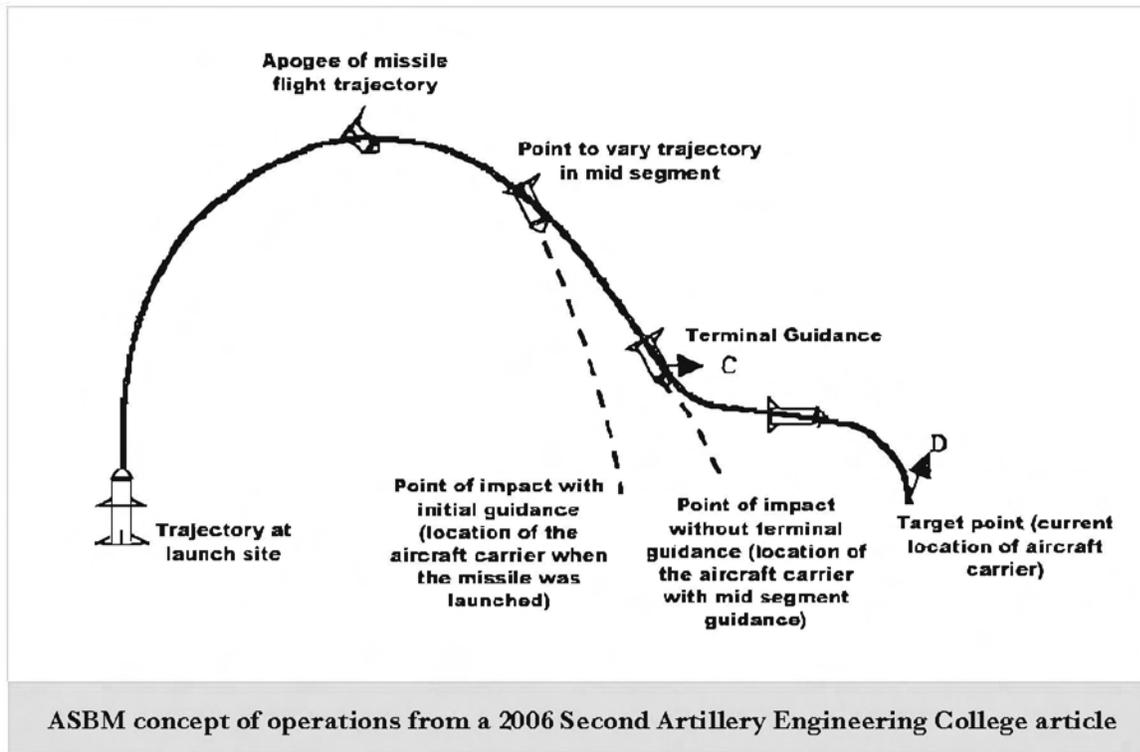
New DF-21 variant on TEL with nose cap

Research in the 1990s examined the multiple problems associated with detecting, tracking, targeting, and finally hitting an aircraft carrier with a ballistic missile. This research examined various systems that may be required: satellite reconnaissance, over-the-horizon radars, unmanned aerial vehicles (UAV), relay satellites, a C4ISR fusion center to merge all the ocean surveillance data, and finally a missile capable of performing a large terminal maneuver and delivering a guided MaRV payload.

Chinese studies suggested a missile able to conduct a mid-course boost maneuver, which could change the missile's ballistic trajectory, would be able to successfully engage a maneuvering target at long range. Research further noted how—if the maneuver were guided by a target update—such a change in trajectory would not only aid in finding and maneuvering the missile to hit the carrier, but would also complicate interception by projected ballistic

PLA Second Artillery

Established in 1966, the Second Artillery controls the PLA's nuclear and conventional strategic missiles. Its assets range from hundreds of conventionally armed short-range ballistic missiles to nuclear armed intercontinental ballistic missiles capable of targeting the majority of the Earth's surface.



missile defenses. Researchers considered that aircraft carrier sub-systems, such as catapults, arresting wires, topside electronics, and elevators, would be vulnerable to “mission kill” strikes by sub-munitions deployed from an ASBM, and that the aircraft carrier’s deck itself could be penetrated by a ballistic missile arriving at high speed.

Chinese papers have described hypothetical engagements between the U.S. Navy and an ASBM version of the DF-21 MRBM, variants of which have been in service with the PLA Second Artillery since the 1990s. The original variants of this missile were canister mounted and transported on a mobile erector launcher (MEL), but more modern variants are mounted on highly mobile transporter erector launcher (TEL), and feature an extended nose cap that could deliver a MaRV payload.

Anti-Ship Cruise Missiles

The PLA(N) continues to increase its maritime strike capability through domestic ASCM research and development programs,

and through the acquisition of advanced foreign ASCMs and launch platforms.

Missile designs are focused on increasing the missile’s range and employment flexibility in addition to improving its ability to penetrate ship defensive systems. ASCMs are deployed on multiple launch platforms: surface combatants, submarines, aircraft and coastal defense sites, and provide the PLA(N) with a multilayered maritime strike capability.

The extended reach of PLA(N) ASCMs is illustrated by the acquisition of the formidable SS-N-22 *Sunburn* and SS-N-27 *Sizzler* from Russia and the recently fielded domestically developed YJ-62 and YJ-83. Prior to these advances, the subsonic YJ-8A had the longest range of any ASCM in the PLA(N) inventory at ~65nm. A new version of this missile, the YJ-83, has been introduced with an increased range of ~95nm. With a range of ~150nm, the YJ-62 further increases the reach of the PLA(N). This subsonic, sea-skimming missile is designed to sink or disable medium to large size ships. These domestic ASCM developments



The C602 can be land or ship-launched

have been supplemented with the SS-N-27 (~120nm) and the SS-N-22 (~130nm).

Along with extended ranges, the PLA(N) has likely increased missile employment flexibility as well. The C602, and perhaps others, uses an inertial navigation system integrated with Global Positioning System (GPS) updates. These improved navigation capabilities allow a missile to fly a pre-programmed, indirect flight path to a target. This in turn allows for the possibility of launching multiple missiles in a coordinated attack, arriving at targets simultaneously and from different angles. Multiple missiles approaching the target at the same time from different directions increase the likelihood of penetrating a ship's defensive systems. The ability to engage targets at long ranges brings substantial advantages, but employing long range ASCMs requires effective over the horizon (OTH) targeting. China may be planning to use OTH radar, satellites, and UAVs to detect targets and relay the information to the missile launch operators. ASCM terminal seekers should be capable of homing into a target once the missile seeker has identified the target in flight.

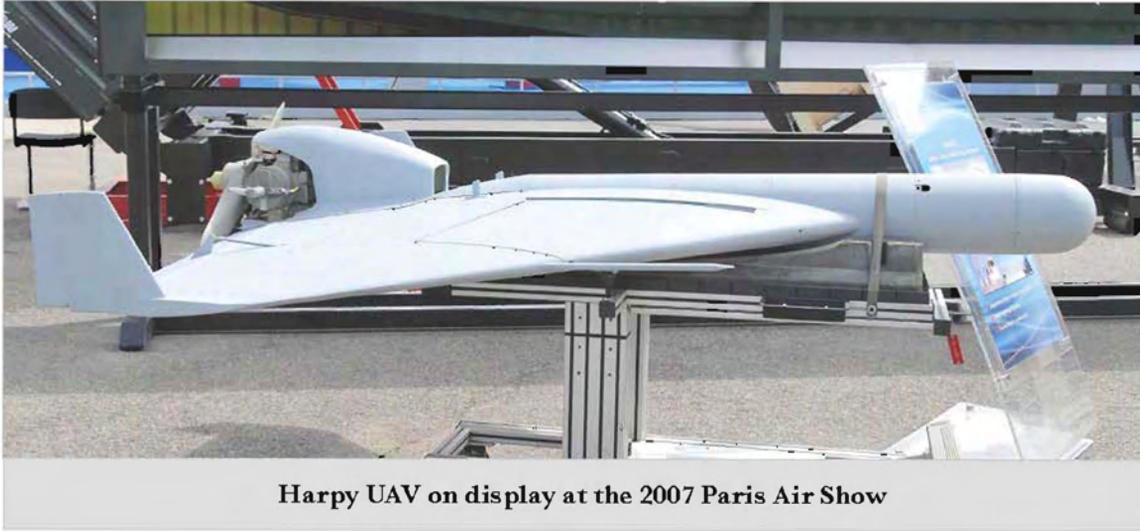
China continues to focus on developing ASCM capabilities with the emphasis on faster, longer range and more flexible missiles with improved electronic systems and terminal evasion maneuvers. Future ASCMs are expected to continue to advance seeker capabilities including the expanded use of millimeter wave seekers and the possible use of coherent radar seekers that allow enhanced countermeasure discrimination. The continuing development of ASCMs with improved design features such as supersonic speed, evasive maneuvers, and advanced terminal seekers will present ongoing challenges to navies throughout the region.

Low Cost, High Yield Investments

While China has placed considerable effort in acquiring and developing advanced systems like those described above, Beijing recognizes these are complex and expensive programs. China is also actively pursuing programs which are much lower in price, but still highly effective.

Unmanned Aerial Vehicles

China is developing UAVs that have the potential to bring multimission capabilities to



Harpy UAV on display at the 2007 Paris Air Show

the maritime environment. In recent years, Chinese officials have openly touted the benefits of UAVs, such as low manufacturing costs, lack of personnel casualties, and inherent “stealth-like” characteristics. Of note are the CH-3 (which has reportedly been fielded with operational units) and China’s unmanned combat aerial vehicle (UCAV) concepts. Not only can the CH-3 provide real time video for various intelligence purposes, it is being advertised with the ability to carry out strike missions with two on-board anti-tank missiles. The UCAV concepts reportedly being developed can not only perform intelligence gathering and strike missions, but an air-to-air capability is also noted as a primary mission. Overall, China is openly highlighting the importance of UAVs in modern warfare and is allocating resources to develop multimission candidates for this role.

China has reportedly purchased the Israeli-made *Harpy* UCAV. *Harpys* are “fire and forget” weapons designed to loiter in a patrol area, detect enemy radar and engage targets in any weather condition. After identifying a radar emitter, the *Harpy* executes an almost vertical dive and detonates just above the target. The small, relatively inexpensive and independently operated air vehicles have the ability to stay in the air for extended periods of time

and can be launched from trucks or potentially from surface ships.

Naval Mines

Mining operations can be a relatively low-cost, high-value force multiplier. China has learned the importance of mine warfare from several decades of observation. Libya’s mine-laying in the Red Sea in 1984, which damaged 11 commercial vessels; Iran’s Arabian Gulf mining during the “Tanker Wars,” which damaged USS SAMUEL B. ROBERTS in 1988; and Persian Gulf mining in 1991, which damaged USS TRIPOLI and USS PRINCETON—these incidents serve as reminders that mining operations remain an extremely effective operational form of warfare that can cause difficulties for even the most advanced navies.

The PLA(N) has moved from an obsolete mine inventory consisting primarily of pre-WWII mines to a robust and modern inventory including moored, bottom, drifting, rocket propelled and intelligent mines. The PLA(N)’s more advanced mines feature microprocessors for better targeting and integrated sensors to resist sweeping. The mines can be laid by submarines (primarily for covert mining of enemy ports), surface ships, aircraft, and fishing and merchant vessels.

Although the PLA(N) considers its mine countermeasure (MCM) capabilities to be relatively advanced, including continued practice in complex, joint environments and during Emission Controlled (EMCON) conditions and nighttime sweeping operations, China still recognizes mines could be a major difficulty for its future naval operations. The PLA(N) has recently launched a new minesweeper, the *Wóchi* MHS, and may be developing an indigenously produced version of the *Pluto Plus* Mine Neutralization Vehicle (MNV) with magnetic and acoustic sweep gear. This indicates the PLA(N) is maturing into a more capable naval force by improving its capability

to protect its waters from mines, in addition to clearing minefields Chinese forces may have sown during a conflict.

As with many other naval platforms, components and weapons systems, the PRC is expanding its domestic research and development for underwater weapons, moving away from past reliance on imported systems and technology. In addition, the PLA(N) has reportedly developed a maintenance inspection program for the upkeep of existing mine stockpiles. This is a necessary evolution to ensure that the more advanced mines using microprocessors and batteries are operational when needed.

Chapter Four:

Personnel - Progress Towards a Professional Force



Chinese sailors man the rails aboard Luhu class destroyer Qingdao (DD 113).

To operate and maintain its growing array of advanced platforms, the PLA(N) needs a highly trained force of officers and sailors. In recent years, the PLA(N) has begun robust recruiting, retention, and training campaigns to reduce reliance on conscripts and raise the quality of its personnel. In addition to improving the raw talent entering the armed forces, China is developing a non-commissioned officer (NCO) corps in order to capture technical knowledge and improve the retention of enlisted sailors. China is making noteworthy progress in these areas, and its ability to continue this momentum will be a significant factor in the long term operational effectiveness of the PLA(N).

China's Personnel Push

Prior to 1999, poorly educated volunteer conscripts, primarily from rural areas, made up the majority of PLA(N) personnel. In 1999, a revised Military Service Law changed the service time of these conscripts from four years to two and increased the length of time NCOs could serve from 16 to 30 years. The PLA(N) also extended the maximum age of service for NCOs up to 55. These changes were implemented for two reasons: to deal with the fruition of the nation's one-child policy and to develop a dedicated NCO corps similar to western militaries. With the implementation of the one-child policy in 1979, parents of conscripts had a difficult time coping with four years of separation

1999 Military Service Law Grade Designations

NCO Grade	Rank	Years in Rank	Total Time in Service
Junior Level	Grade 1	3 years	1-3 years
	Grade 2	3 years	4-6 years
Intermediate Level	Grade 3	4 years	7-10 years
	Grade 4	4 years	11-14 years
Senior Level	Grade 5	5 years	15-19 years
	Grade 6	9 years	20-30 years



- Most NCOs are Grade 1 or 2
- 40% of all PLA(N) personnel are NCOs
- NCOs account for 65–80% of enlisted personnel aboard ships

from their only child. Since 1999, the PLA(N) has decreased the numbers of conscripts and increased the number of NCOs to approximately 40 percent of all PLA(N) personnel.

To become an NCO, conscripts must complete individual applications and be recommended, evaluated, and approved by their unit. Further advancement is based on a series of academic and physical tests. With force modernization providing more modern and complex systems and equipment, NCOs are taking on an expanded role, performing jobs previously done by conscripts and officers. NCOs now account for between 65 to 80 percent of all enlisted personnel on board ships and serve as squad leaders, mess officers, conscript trainers, and technical experts.

In addition to changes in the enlisted corps, the PLA(N) is downsizing its officer corps in order to create a higher caliber force. PLA(N) officers are expected to lead and to demonstrate operational skill and professional, political, and technical knowledge in a complex, modern environment. To realize these expectations, the PLA(N) has expanded such programs as National Defense Scholarship Program, similar to the U.S. Reserve Officer Training Corps (ROTC), increased technical training at PLA(N) naval academies, nurtured the development of training and education in the fleet, and focused on increasing the number of higher degrees (Masters and Doctorates) within the officer corps.

Education and training of personnel within the PLA(N) is also increasing. Conscripts who join the PLA(N) are now only given basic training before reporting to their specific unit, while training and education of NCOs has expanded to take advantage of the longer NCO service periods. New education and training programs include online, short-term, and on-the-job training opportunities as well as improvements in NCO academies and support training bases. Sailors have access to new study rooms at naval training and support bases. Study rooms are often equipped with computers, libraries, political lectures, military newspapers, and internet access. Ad-hoc and on the job training has been expanded with a push toward the redundancy of specific skill sets within a unit. Professional Military Education (PME) is pushed at both the officer and NCO grades.

In order to attract and recruit more qualified personnel, the PLA(N) pursues available media and educational opportunities to create

favorable impressions of the navy. In 2007, the PLA(N) issued new uniforms to all ranks, attempting to create a more modern image. Understanding the increasing competition from the civilian sector in a growing economy, the PLA(N) has also increased pay, subsidies, and allowances and has begun to address quality of life issues in attempts to recruit and retain more qualified personnel.



With the changing dynamics of the approximately 290,000 PLA(N) personnel, issues associated with manning, quality of life, education, recruitment, and retention will continue to be a significant area of

concern for the PLA(N). The PLA(N) has responded by reevaluating old policies, redefining the role of the NCO, and looking for new methods to recruit and retain quality personnel. The PLA(N) can be expected to continue to emphasize personnel improvements, focusing on education, training, reorganization, and ultimately, higher standards of performance in order to ensure its ability to operate as a modern and effective force.

Chapter Five:

Training, Exercises, and Joint Operations

Over the last several years, more complex and realistic scenarios in individual unit training and integrated, multiplatform exercises have enhanced the PLA(N)'s ability to successfully tackle the complexities of modern warfare. Additionally, the PLA(N) is placing greater emphasis on long range surface and submarine patrols, which allow expanded opportunities to practice the technical and tactical skills that will be required in modern wartime operating environments.

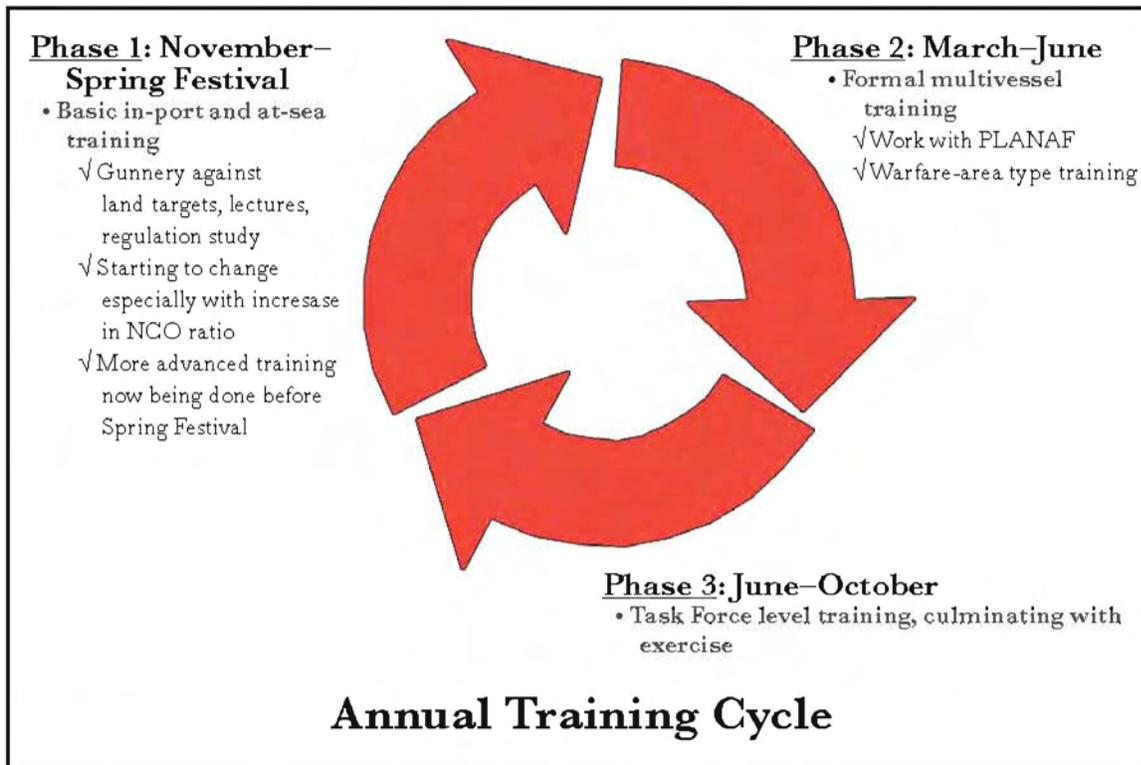
At the same time, China has highlighted the importance of developing a true joint capability—labeled Integrated Joint Operations—and has begun developing the appropriate doctrine. In 2004, a major step was taken with the elevation of the commanders of the navy, air force, and Second Artillery to full membership in the CMC, where previously only the army consistently had full representation. Emphasis on jointness has been noted in exercises, professional education, and logistical planning, yet significant challenges still exist. Progress continues to be hampered by a decades-old domination of the Chinese military by the army, which remains at many levels.

Training and Exercises

Over the last eight years PLA(N) training has become increasingly complex and realistic. Historically, PLA(N) training was heavily influenced by the annual conscription cycle,

with major training stand-downs occurring in late-November and lasting through the early part of the new year. The current training cycle still follows this basic pattern, but as the PLA(N) depends less on conscripts and evolves into a professional force, the fleets are able to conduct more sophisticated training early in the year and maintain a higher state of readiness throughout the year. The PLA(N) training year begins in earnest following the annual Lunar New Year holiday in late-January/early February. During this early phase of the training year, the primary focus is on flotilla integration and basic warfare skills including gunnery, navigation, and formation training. As the year advances, basic skills training transitions to multidiscipline warfare training, to include a focus on anti-air, surface, and submarine warfare. Training and exercises during this time of year may include opposing force and multiple task force operations or integrated training among air units, surface ships, and submarines. By mid-year, PLA(N) units in each of the three major fleets will conduct at least one major fleet-level exercise featuring simulated or live-fire weapon launches, and one major fleet-level amphibious exercise.

At the climax of the training year in late summer or early fall, coordinated training and exercises featuring multiple aircraft, surface combatants, and submarines at the fleet level are common. During the last quarter of the



year, training is occasionally conducted at the multifleet level and features multiple task forces or opposing force demonstrations. Multifleet training typically includes multiple live-fire weapon launches. Late summer often brings multiservice or joint amphibious training along the PRC coastline, in particular along the Nanjing and Guangzhou Military Regions. In addition to naval forces, these exercises commonly feature units from the PLA, PLAAF, and occasionally the Second Artillery.

The 2009 *Outline for Military Training and Evaluation* emphasizes realistic training conditions, training in electromagnetic and joint operating environments and integrating new, advanced technologies into the force structure. The relative lack of realism and quality of PLA training has been a concern of Chinese military planners for a number of years. As a result, the military is heavily emphasizing the development of tactical training curricula and exercise scenarios resembling actual combat conditions as closely as possible.

Increasing complexity in PLA(N) exercises is measured through a variety of means, to include scale and frequency of training, as well as the diversity of tasks accomplished during each training evolution. For example, many high profile exercise evolutions that occur early in the training year feature cross-platform (air, surface, and sub), multidiscipline warfare training vice the more traditional individual unit, single discipline warfare focus of the past. Often times these exercises occur with little preparation and unfold over a short period of time. The diversification of tasks is further complicated by the conditions under which the training is conducted, such as low visibility and poor weather conditions, night versus daytime training, and operations featuring hostile electronic warfare conditions.

The PLA(N) and PLAAF routinely incorporate “opposing forces play” into exercises and, in some cases, design training that compels officers to make quick decisions and deviate from scripted exercise plans. Surface, submarine, and aviation units are increasingly



Marines in ranks during a training demonstration

emphasizing “long-range navigation training in unfamiliar sea areas.” The intent is not only to enhance operator tactical proficiency in war-fighting skills, but also to gain familiarity with the rigors of long-duration operations in unfamiliar environmental conditions.

Surface, submarine and aviation training increasingly emphasizes the completion of multiple objectives during single underway periods or sorties, likely in an effort to not only expand training diversity and complexity, but also maximize training while limiting wear on the platform. As part of integrated opposed force play, exercises stress the use of the PLA(N)’s newest anti-ship cruise missiles by ships and submarines, and the use of torpedoes by helicopters, ships, and submarines. Operations by ships and helicopters are being gradually integrated into ASW training, and frequently include evasion training for the target submarine. Submarines practice a variety of operations, including surveillance, approach and attack, and the use of various environmental features to reduce their detection by ASW

forces. PLAAF and PLANAF training has emphasized greater diversity in skills and the implementation of improved tactics to accommodate new technologies. Aviation training includes practicing tactical combat capabilities, airborne intercept control as well as the use of datalinks and electronic attack. Moreover, the PLAAF and PLANAF have opened more advanced training centers and are increasingly using modern combat and operations simulators to augment training for both operators and technical personnel. To support better coordination and integration of force operations from shore, more realistic command post exercises are being undertaken to improve officer planning and decision-making skills.

Over the last ten years, the PLA(N) has held a series of exercises featuring coordinated warfare and campaign level training. Many of these exercises include the development and testing of new operational and tactical concepts, such as surface ship formation strikes against large enemy formations, submarine mine laying and concealed attacks, long-range



A Luda I Class destroyer and two Jiangwei II Class frigates perform underway replenishment with a Fuchi Class replenishment oiler.

ASuW attacks by PLANAF maritime strike aircraft, and joint blockade and multiservice amphibious training. While professional military education and classroom training constitute a significant portion of a typical PLA(N) sailor's development and professionalization, at-sea training and exercises form the main pillar from which his skills are advanced and further developed. PLA(N) training and exercises are categorized by five major types: inspection, demonstration, research, tactical, and campaign.

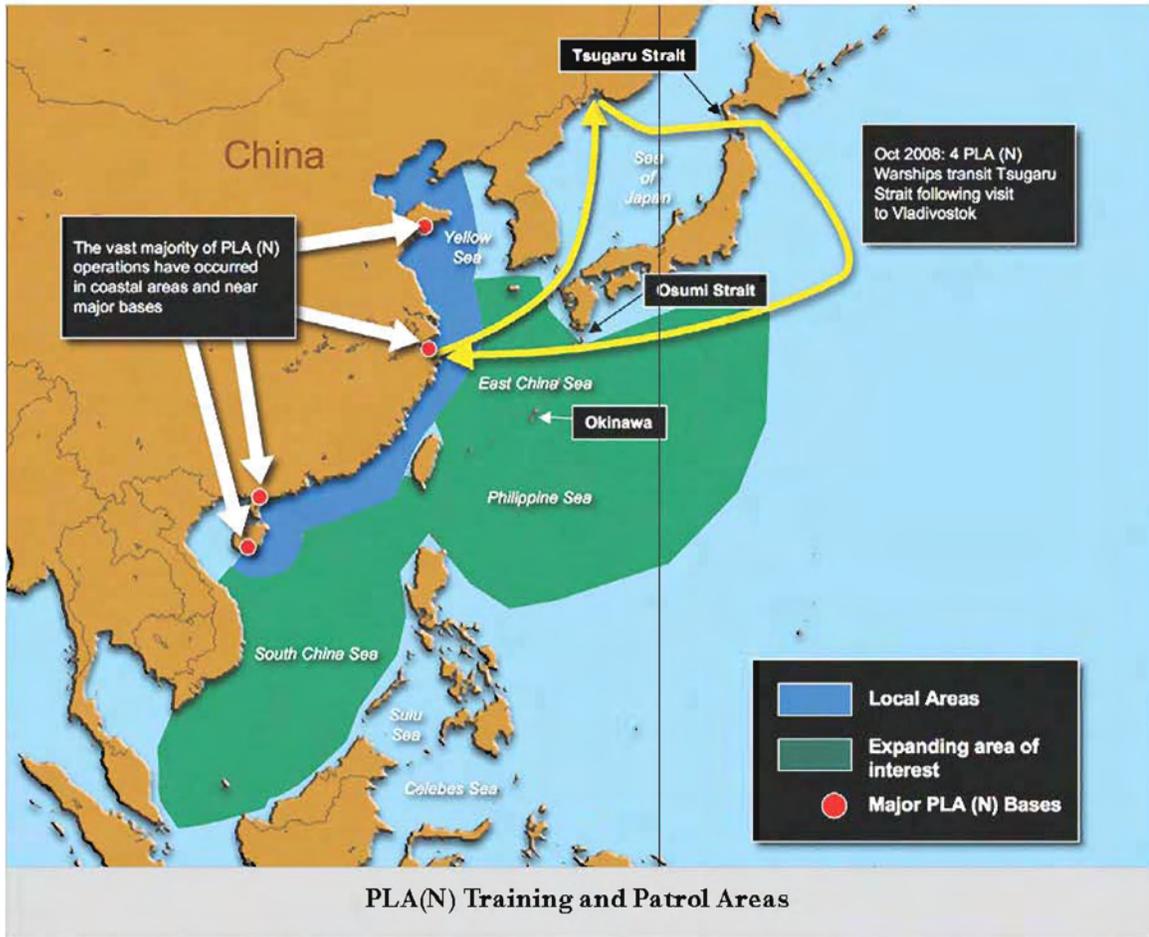
Inspection Exercises – Designed to inspect unit-level command and political character, identify problem areas, incorporate lessons learned, and make appropriate changes to training and combat readiness.

Demonstration Exercises – Intended to demonstrate tactical concepts, organizational

and command methods, and combat activities for observers to follow and implement.

Research Exercises – Designed to test and evaluate new weapons and technical equipment under tactical and mobile situations; research and investigate combat and training methods under modern conditions; conduct theoretical evaluation of new organizational structures for military forces; evaluate rules, regulations, and teaching materials; and examine the practicality of combat preparations. One of the most recent research exercises took place in July 2008 and featured aircraft attacking naval ships in an electronic jamming environment.

Tactical Exercises – Intended to improve the command and organizational capability of commanders and to improve the combat capability of combat units, and are usually



scenario specific. Tactical exercises focus on providing detailed instruction in the basic tactical principles and methods necessary for successful at-sea operations. Tactical training forms the foundation for more advanced campaign-level training later in the training year.

Campaign Exercises – Larger-scale exercises with a specific campaign association (e.g. offshore island seizure, anti-ship campaign), designed to improve the command and organization of commanders and the operational capability of combat units. Campaign exercises are the highest form of operational unit training, and generally build upon the basic foundation provided by tactical training throughout the training year. The largest of these exercises, such as SPIRIT 2002 and EAST SEA 6, are

covered by Chinese press, and portions are often observed by senior members of the CMC.

Through the early 2000s, major PLA(N) exercises were generally conducted at or near the end of a “training quarter” (i.e. April, August, and November) of the traditional training cycle. However, the PLA(N) has recently conducted fleet-level and occasional multifleet level exercises on a more regular basis, often times early in the training quarter. This shift demonstrates the growing capability of the PLA(N) and a general improvement in overall readiness and year-round combat proficiency.

Modern Chinese exercises also frequently feature operations in a “complex electromagnetic environment” (CEME). Training in a CEME is viewed as a critical element in the conduct

of modern, “informationized” warfare. GSD directives specifically call for increased focus on electronic warfare, information dominance, and use of advanced electronic systems. In an attempt to improve the realism and complexity of training over the last several years, PLA(N) training and major exercises have included a greater number of “live” or “hostile” electronic environments. In addition, PLA(N) ships, submarines, and occasionally aviation units exercise and train in simulated nuclear, biological, and chemical environments.

Alongside tactical training that increasingly attempts to simulate the conditions of real combat, much greater emphasis is also being placed on training in simulated wartime logistics support. Such training includes the dispatch of salvage and rescue forces to conduct rescue of crews, vessel towing, and the salvage and repair of ships and submarines simulating battle damage. Exercises simulating in-port and underway resupply, refueling, medical support, and weapons loading are also conducted regularly among submarine and surface units.



PLA(N) submarines train with helicopters

Such training is consistent with recent years’ military command directives that emphasize the need to improve the capabilities of shore-based infrastructure and naval auxiliary units to support ships, submarines, and helicopters in wartime operations.

Classroom training and the use of shore-based simulators also form a critical component of the PLA Navy’s training and exercise curriculum. The PLA(N) has at least one vessel training center in each of the three fleets. Vessel training centers are responsible for providing both theoretical and practical training at the unit or formation level, including instruction on basic concepts such as damage control, logistics, and navigation, as well as more advanced subjects such as large-scale formation training. The vessel training centers also provide refresher training for units returning from major overhaul or maintenance. The course of instruction builds upon concepts learned in previous sessions, and becomes increasingly more complex as the unit advances to the next subject. The vessel training centers have enabled PLA(N) units to maintain higher levels of readiness and to maintain general proficiency year-round, and have become an important component of the PLA(N)’s training and exercise regimen.

Like the vessel training centers, shore-based simulators play a critical role in maintaining unit readiness and proficiency at the command staff, fleet, and flotilla-level. Simulators are located in each of the three fleets, the largest being the Combat Simulation Center at the Nanjing Naval Command College. Advanced shore-based simulators provide training in a variety of tactical areas such as navigation, formation maneuvering, fire control and radar operations, weapons employment, and advanced C4ISR operations. Computerized simulators also provide advanced training in multidiscipline (i.e. AAW, ASuW, ASW) combined arms (air, surface, and submarine)

operations as well as opposing force training. PLA(N) personnel frequently utilize classroom simulators while ships are undergoing maintenance or overhaul, or early in the unit's readiness cycle.

Greater confidence in tactical proficiency levels, enabled by these developments in training methods and procedures, has increased the Chinese military's willingness to participate in bilateral and multilateral exercises. In 2005 forces from the PLA, PLAAF, and PLA(N) hosted Russian military forces in PEACE MISSION 05. In turn, Russia hosted PEACE MISSION 07, which represented the first time PRC forces exercised in a foreign country, and China hosted a third iteration of the exercise in July 2009. Such cooperation is not limited to Russia; in 2007 PLA(N) warships participated in Pakistani sponsored AMAN 07 and Singapore sponsored IMDEX 07, the first multilateral exercises for the PLA(N). The PLA(N) also participated in AMAN 09 in Pakistan. PLA(N) ships routinely conduct bilateral search and rescue exercises with foreign warships during visits to foreign ports or visits by foreign ships to Chinese ports.

PLA(N) Naval Patrols

While the PLA(N) has been conducting long-range naval surface and submarine patrols since at least the early 1980s, trends over the last few years suggest a greater emphasis on establishing a more routine patrol presence both within and outside of China's regional waters. Likewise, long-range patrols are emphasizing greater realism and complexity in operations that include tactical training while underway. Over the last few years, the PLA(N) has conducted surface deployments to the Sea of Japan, South China Sea, Philippine Sea, Eastern Pacific and, for the first time in China's modern naval history, deployed task groups made up of two combatants and a naval auxiliary to the Gulf of Aden to support anti-piracy operations. During routine patrols, PLA(N) ship groups



Joint service image from the PLA 2008 calendar

are undertaking more complex training and are conducting real-world operations that include deep water ASW, joint steaming navigation under various conditions, underway replenishment and anti-piracy operations against small boats.

When compared to the historical levels of the last two decades, the number of submarine patrols over the last few years has more than tripled. Submarine patrols, like the long-range surface combatant patrols, are emphasizing familiarity with navigation of new sea areas among other military and security missions. While regional seas remain a key area of concentration for these patrols, submarines are more regularly venturing into the Philippine Sea and Western Pacific. The widely reported use of the Osumi Strait near Japan by a patrolling PLA(N) diesel submarine returning from the Philippine Sea in 2003 and operations by nuclear and diesel-powered submarines near Okinawa in 2004 and 2006 reveal efforts of the PLA(N) submarine force to establish familiarity with navigation routes that may be of use in wartime.

Developing Joint Operations

In modern wars, it is critical for individual military services to work as a cohesive team. This often requires considerable changes in thought, doctrine, military culture, and equipment; however, such changes allow a military to coordinate and leverage the strengths and capabilities of each service into a functioning whole that is greater than the sum of its parts. A significant part of the modernization of China's military has been the development of what the PLA calls Integrated Joint Operations. Until recently, "jointness" in the PLA meant that different services operated toward a common goal in a joint or combined campaign, but their operations were separated by time and space. However, years of studying U.S. military operations and observations of modern warfare in general have convinced the PLA's leadership of the need for greater integration between the services to include enhanced joint operations at the tactical level.

Important doctrinal publications, such as the PLA National Defense University Press *Science of Campaigns*, are placing a higher priority on joint warfare. The 2004, 2006, and 2008 Defense White Papers highlight the

importance of Integrated Joint Operations, stating joint operations are the basic form of modern warfare and bring the operational strengths of different services into full play. The PLA's General Staff Department has promoted the 2009 *Outline for Military Training and Evaluation* as the new starting point for the adoption of Integrated Joint Operations. In addition to doctrine, a number of the PLA Professional Military Education (PME) institutions are increasing the level of Joint PME within the Chinese military. In November 2006, the command academies of the army, air force, navy, Second Artillery, and Nanjing Military Region signed a cooperative agreement to accelerate the development and education of joint commanders. According to official PLA press, at least a few senior military officers and a small number of mid-grade officers in China have attended the academies of sister services, although it is unlikely this practice is as widespread as it is in the U.S. military.

Despite a rhetorical, doctrinal, and academic commitment to the development of Integrated Joint Operations, the PLA appears to be making only sporadic progress at the operational



PLA Army, Air Force and Navy participate in a joint parade.

level. In terms of tactical training, official PLA press has published a number of articles on joint training exercises that have included photographs of army attack helicopters flying air cover for navy ships in support of amphibious landing exercises as well as discussion of army, air force, and militia elements operating in the same command post during air defense training. According to one article, air force and navy personnel operated together to provide logistics and targeting support during an air force over water strike training exercise. In addition to the long standing amphibious warfare focused EAST SEA-series conducted in the Nanjing Military Region during the summer months, in 2006 the PLA implemented an annual live fire exercise series entitled LIANHE (joint) with subsequent exercises taking place in 2007 and 2008.

The exercises focused on sea crossings and amphibious landings and were led by forces from the Jinan Military Region with elements from the army, navy, and air force. Press reports also claim that successful cooperation between the services during earthquake relief operations in 2008 was a direct result of the development of Integrated Joint Operations capability.

However, a number of reported instances of joint training are in fact opposition force training. For example, PLAAF aircraft attacking PLA(N) surface vessels or PLAAF aircraft acting as targets for PLA air defense forces are sometimes reported as “joint training.” Such opposition force play does not

require the level of tactical and operational coordination between services needed if operating in concert toward a common goal. China also reports exercises of any type with a foreign military as “joint” even though many of these training evolutions involve only small numbers of personnel from one service.

In non-tactical areas such as logistics, the PLA is trying to increase operating efficiency through greater jointness. Under an order issued by Hu Jintao, the Jinan Military Region was chosen to lead the development of a theater-level joint logistics system. The “Great Joint Logistics” scheme was officially announced in April 2007 with the Jinan MR serving as a test case for the other six military regions in the PLA.

Though the PLA appears committed to pursuing Integrated Joint Operations, the historic dominance of the army over other services may be making the transition more difficult. Some officers have complained that the ongoing dominance of the “great infantry” concept across the military has affected the development of joint operations and training and that as long as this way of thinking is prevalent, progress toward true Integrated Joint Operations will be hindered. To achieve true Integrated Joint Operations, the PLA will need to successfully create a spirit of teamwork throughout the services by developing the training, doctrine, procedures, and equipment needed to foster it.

Outlook

In the next 10–15 years, the PLA(N) will continue to modernize and incorporate new technologies into its force, improving China's ability to contribute to Asia's security in accordance with the PRC's historic missions. The PLA(N) has made substantial progress over the past decade in moving from a strategy

of coastal defense to a more forward-leaning naval strategy of off-shore defense. While China's new capabilities and long range missions bring new challenges to fully utilize integrated and highly technical systems, the PRC has identified and is systematically working to address many of these issues.



Sailors from the PLA Navy Anwei Class hospital ship Daishandao (AH 866)



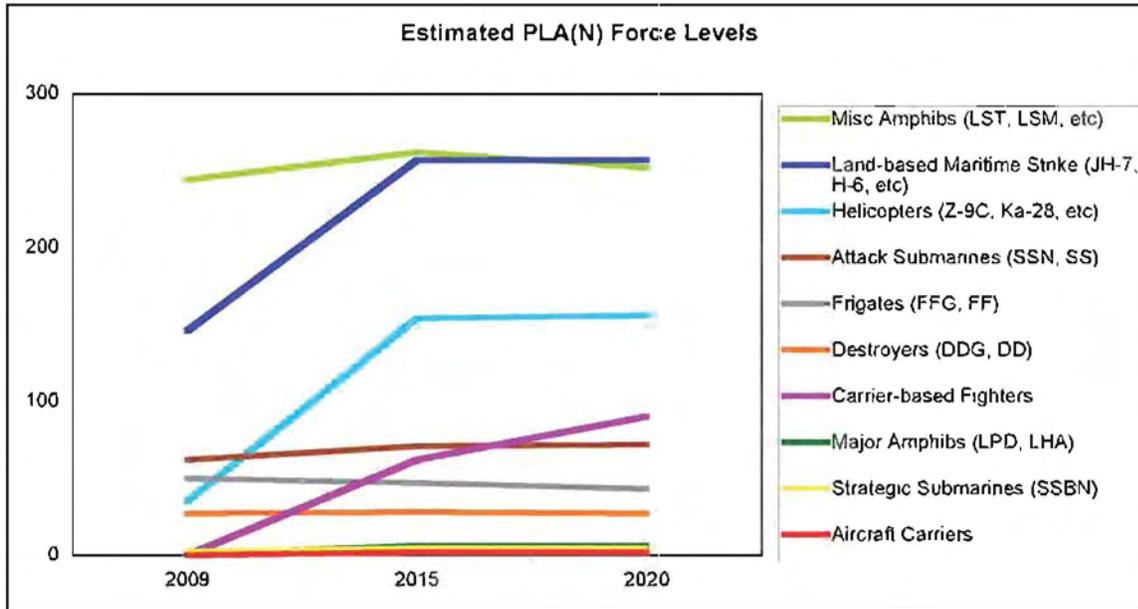
Artist's rendering of possible future Chinese aircraft carrier design

The East Asia region includes numerous hot spots and potential conflicts that challenge China's interests. Preparing for a Taiwan contingency remains the top priority for PLA(N) modernization efforts. Challenges to China's sovereignty in the South and East China Seas, China's need to secure access to vital sea lanes in the region, and increased domestic and international pressure to play a larger role in international security efforts befitting China's status as a rising power require China to prepare for multiple future contingencies. As the PLA(N)'s role expands—both in geography and in scope—beyond Taiwan, China will increasingly need to train and equip itself for varied future mission sets.

Continuing Modernization

The PLA(N) has made a number of significant advances in streamlining and integrating its command structure, modernizing training

regimens, improving tactical proficiency, and incorporating many new platforms and systems into its maritime war-fighting doctrine. Expanded and more realistic training will continue to emphasize development of command-and-control systems, whose integration and interoperability have yet to catch up with the sophistication of the PLA(N)'s newest surface platforms. China has also identified joint operations as a key area requiring improvement. In the air defense role, the PLA(N) will address the problem of integrated air defense, which remains a major challenge. While the *Luyang II* and *Luzhou* destroyers represent formidable long-range threats to aircraft, the majority of the PLA(N)'s surface combatants still only possess limited air defense capability, and the PLA(N) needs to develop a sophisticated, layered air defense for its most advanced combatants. To supplement its surface force, China will likely expand the



operations of the PLANAF, continuing to improve its long-range, over water, maritime strike capability. Finally, while the PLA(N) has invested heavily in modernizing its submarine force and has one of the largest forces in world, submarines still play a fairly peripheral role in most fleet-level, multifleet and inter-service exercises. The PLA(N) is expected to emphasize progress in these areas in the next 5–10 years.

China has recently increased both the frequency and geographic range of submarine and surface vessel patrols, operating outside of the PLA(N)'s local operating areas with greater regularity. Currently the PLA(N) does not routinely practice multivessel coordinated missions in the waters where they state they will likely be operating in wartime, namely into the deeper waters of the South China Sea, near Taiwan, or along straits and chokepoints of the Ryukyu Island Chain. As the PLA(N) gains both the confidence in its ability to operate modern platforms at extended ranges and the ability to facilitate joint operations, China's long-range naval operations will become increasingly complex.

In order to operationalize such combined naval warfare capabilities outside regional waters, modern navies require robust and integrated C4ISR support systems. China has made C4ISR modernization a top priority and PLA(N) "informationization" is progressing well, but continued progress is needed.

The Future Forces

In the next 10–15 years, the PRC will continue to make progress toward building a naval force with regional missions beyond Taiwan. As outlined in the 2008 Defense White Paper, the PLA is increasing its focus on military operations other than war. As a result, PLA(N) missions in the coming years are expected to expand beyond the primary emphasis on Taiwan and the South China Sea, adding new but limited requirements for protection of the sea lanes beyond China's own waters, humanitarian assistance/disaster relief, and expanded naval diplomacy.

Of these missions, the first two will continue to require a strong, modern conventional force capable of conducting operations in a high-tech environment. The PRC's recent

emphasis on quality over quantity, combined with the central theme of “informationization” to seamlessly integrate C4ISR operations with weapons, will result in a future force structure increasingly dominated by sophisticated platforms capable of operating as a joint force. Of note, the future order of battle is expected to include one or more aircraft carriers, as well as guided-missile-equipped destroyers and frigates, SSBNs, SSNs, AIP submarines, and fourth-generation maritime strike aircraft.

As newer and more capable platforms replace aging platforms, the PLA(N)’s total order of battle may remain relatively steady, particularly in regard to the surface force. Newer surface platforms equipped with increasingly advanced anti-surface and anti-air missiles, communications, and ISR systems will likely enable more efficient and effective operations with a comparably-sized force. Based on recent production trends and publicly stated mission objectives, the submarine and naval air forces may increase in the next 5–10 years before leveling off. Because approximately three-quarters of the current submarine force will still be operational in 10–15 years, new submarine construction is expected to add approximately 10 platforms to the force. All new attack submarines will likely be equipped with advanced cruise missiles. Similarly, the PLANAF order of battle may continue to increase as the force grows into its maritime strike and anti-submarine warfare missions, with particular emphasis on a carrier air wing, ASCM-equipped H-6 and JH-7 type aircraft, and helicopters able to embark on surface combatants.

Humanitarian assistance and naval diplomacy missions may leverage conventional naval forces, but are more likely to concentrate on flexible expeditionary and multimission capabilities able to respond quickly to crises and provide logistical support at extended ranges from shore. The PRC is unlikely to build ships exclusively for humanitarian assistance missions; however, multimission ships like the *Yuzhao* LPD and *Anwei* AH hospital ship will be key assets in support of humanitarian or diplomatic missions.

New capabilities, such as long-range cruise missiles, advanced surveillance systems, and datalink communications capabilities, will serve as significant force multipliers over the next 10–15 years. As a result, even if naval force sizes remain steady or even decrease, overall naval capabilities can be expected to increase as forces gain multimission capabilities. Proficiency in joint operations, such as integrated air defense, will further augment total force capabilities by providing flexible and redundant options to defend naval missions.

China’s military modernization program has brought a range of new capabilities to the PLA(N). The pace of this modernization has been enabled by China’s economic growth, access to advanced technology in the international market, and clearly defined national-level objectives for naval developments. While the pace of modernization may slow, China remains committed to continued development of naval capabilities to support China’s growing maritime interests.





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