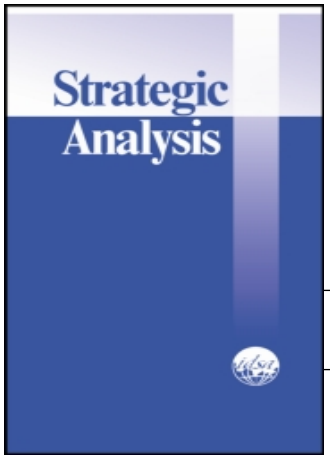

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The Growth of China's Navy: Implications for Indian Ocean Security

Andrew S. Erickson

Abstract

The PLA Navy (PLAN)'s capabilities in key areas (assets, trained personnel, experience) are currently insufficient to support long-range sea lanes of communication (SLOC) defense missions. With sufficient effort, Beijing may eventually overcome these obstacles, but it would probably also have to acquire some form of overseas basing access, which its foreign policy still proscribes. As it works to bridge this gap, China will use 'soft power' diplomacy, trade, humanitarian assistance, and arms sales to increase its influence in the region, thereby preserving the possibility of cooperation with major regional and international actors.

China's rapid naval development raises pressing questions about its future scope and purpose. Examination of Beijing's evolving economic, energy, and geopolitical interests as well as emerging People's Liberation Army (PLA) doctrine suggests a growing concern over the security of sea lanes of communication (SLOC) as far away as the Indian Ocean. The PLAN is yet to establish a significant presence in this region, however; what are its prospects for doing so?

China's maritime commercial and energy requirements appear to have stimulated its leadership to begin expanding the PLA's roles and missions accordingly. In December 2004, President Hu Jintao assigned the PLA two new missions: 'provide a strong strategic support for safeguarding national interests' in such new areas as 'electromagnetic space, outer

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space, [and] the ocean'[1] and 'play an important role in maintaining world peace and promoting common development'.[2] Two years later, Hu referred to China as 'a great maritime power',[3] and declared that China's 'navy force should be strengthened and modernized'[4] and should continue moving toward 'blue water' capabilities.[5] China's 2006 Defense White Paper further states that China's 'Navy aims at gradual extension of the strategic depth for offshore defensive operations and enhancing its capabilities in integrated maritime operations …'.[6] While official statements do not clarify the extent to which China possesses, or might seek to develop, military capabilities to secure its substantial, rapidly growing seaborne energy imports, articles in state and military media have subsequently explained that China's economic growth now requires the PLA to go beyond its previous mission of safeguarding national 'survival interests' to protecting national 'development interests.' Writing in the official journal of the Communist Party of China Central Committee, PLAN Commander Wu Shengli and Political Commissar Hu Yanlin state, 'to maintain the safety of the oceanic transportation and the strategic passageway for energy and resources … we must build a powerful navy'.[7]

Attempting to make sense of these and other data points, the US Department of Defense states that

> Securing adequate supplies of resources and materials has become a major driver of Chinese foreign policy. … China has also strengthened ties to countries that are located astride key maritime transit routes (e.g., the Straits of Malacca). PRC strategists have discussed the vulnerability of China's access to international waterways. Evidence suggests that China is investing in maritime surface and sub-surface weapons systems that could serve as the basis for a force capable of power projection to secure vital sea lines of communication and/or key geostrategic terrain.[8]

The substantial differences between many Chinese and foreign assessments of China's military modernization raise pressing questions concerning the extent to which China possesses, and will seek to develop, naval capabilities, particularly for the scenarios beyond Taiwan (e.g. to secure substantial, rapidly growing seaborne energy imports) in the direction of the Strait of Malacca and even the Indian Ocean. This article will selectively survey the aspects of China's naval development in order to elucidate the trajectory of its growing sea power and its possible implications for the Indian Ocean's security.

Area of Operations

The proper extent of China's maritime development and the direction of its future naval force projection are being debated in Chinese academic and policy circles with unprecedented sophistication and intensity.[9] 'Island chains' in the Western Pacific are regarded by many Chinese naval thinkers as both benchmarks of China's progress in maritime force projection and fortified barriers that China must continue to penetrate to project maritime power.[10] Like some of their Chinese counterparts, the US Naval War College professors James Holmes and Toshi Yoshihara envision a different direction for the PLAN power projection: south and west along the strategic sea lanes through Southeast Asia and along the subcontinent. However, they caution that '(a) capabilities will not match Chinese intentions any time soon; (b) Chinese naval ambitions in the Indian Ocean region will run afoul of those of India, another rising great power operating far closer to home; and (c) whatever its leanings in the abstract, Beijing must tend to matters in East Asia before it can apply its energies to building up naval forces able to vie for supremacy in the Indian Ocean region'.[11] In order to test these assumptions, it is useful to examine the Chinese analysts' views of Indian Ocean security challenges and what the PLAN would actually have to accomplish to establish a more robust presence there.

Towards the Indian Ocean?

Many Chinese analysts worry that India may use its dominant position in the Indian Ocean to 'effectively prevent any outside great power's Navy from entering the Indian Ocean'[12] and thereby threaten China's seaborne energy supplies.[13] 'Geostrategically speaking, the Indian Ocean is a link of communication and oil transportation between the Pacific and Atlantic Oceans', states a Chinese analyst. 'India is just like a giant and never-sinking aircraft carrier and the most important strategic point guarding the Indian Ocean.'[14] A Chinese analyst has characterized the Andaman-Nicobar archipelago's 244 islands as a 'metal chain' [铁链] that could be used to blockade the Malacca Strait's Western exit.[15]

A variety of Chinese naval publications scrutinize India's naval development.[16] Of particular concern to Chinese analysts is India's growing interest in, and ability to, project power eastward towards the Strait of Malacca. One representative article reports on India's recent establishment

of a Far Eastern Fleet, heightened operational presence in the Andaman Sea and the Malacca Strait area, and growing joint exercises with the US Navy.[17] Another Chinese analyst observes with concern, 'Tankers carrying China's oil imports pass through Indian Navy-controlled seas every day.'[18] The US, Japanese, and Indian fleets are believed by another analyst to 'invariably constitute overwhelming pressure on China's oil supply'.[19] Yet another article maintains that until 'the Chinese navy's ocean-going squadrons can achieve some kind of force parity with the navies of major powers in the Indian Ocean, the security problem of China's oil transport routes and straits cannot be resolved'.[20]

How then might China attempt to guard against these perceived sea lanes of communication (SLOC) vulnerabilities? A 2001 textbook written by Chinese National Defense University's scholars titled *Campaign Theory Study Guide* suggests that defending China's resources, rights, and territorial integrity of its maritime periphery will increasingly necessitate joint naval campaigns. Information[21] and air superiority will be necessary to achieve sea control.[22] To protect the Chinese ocean transport, the PLAN may be required to 'annihilate enemy heavy naval groups so that the enemy is not able to make use of his long range naval forces and firepower and to destroy the enemy ocean transport and supply system…'.[23] This will require the PLAN to extend its area of operations: 'Offshore combat stresses that the front lines of the first chain of islands is a primary battlefield for our offshore waters which should be seized and held to our advantage.'[24]

'During deep-sea SLOC defense combat', the authors maintain, 'the loss of superior coastal conditions and the presence of numerous disadvantageous factors mean that the threat from enemy transportation disrupting forces is great'.[25] Limitations include 'relatively low integrated mobility, less desirable reconnaissance and early-warning capacity, and limited marine control area, which make it difficult for us to discover the enemy's forces in a timely manner'.[26] To improve deep sea SLOC protection in the future, China should 'endeavor to establish a contemporary, integrated and offensive, new, special mixed fleet with an aircraft carrier as core and missile destroyers (or cruisers) and nuclear attack submarines as backbone forces'.[27]

The 2006 version of 战役学 [*The Science of Campaigns*], an operationally and tactically focused doctrinal textbook, offers similar recommendations.

Chapter 12, 'Joint Blockade Campaign', emphasizes the need to achieve objectives rapidly in a complex battle environment by jointly implementing an air, maritime, and information blockade.[28] In order to 'achieve and maintain campaign sea control', the PLA should 'establish an integrated air and sea monitoring and controlling system'.[29] China's 'Air Force, conventional missile forces, submarine forces and surface combat ship force' should implement 'barrier' (e.g. sea mine), 'firepower', and 'armed force' blockades on the enemy's naval ports and bases.[30]

But what would these missions actually entail, and to what extent is the PLA(N) actually able to carry them out? China's capabilities are clearly growing, but its naval intentions—at least beyond asserting control over its claimed territorial waters, to include Taiwan—remain opaque. To date, perhaps to preserve strategic flexibility or for lack of leadership consensus, Beijing has declined to release much relevant information, making it necessary to examine the PLAN forces themselves for more concrete indications of its maritime development trajectory and strategic intentions.

PLAN Power Projection Indicators

The Chinese naval development to date has centred on preparing for a Taiwan contingency and ensuring that China can defend its other sovereignty claims along its resource-rich maritime periphery.[31] A critical question, then, is: what directions might PRC naval development take if one looks 'beyond Taiwan' and factors in longer-term strategic trends, including growing Chinese global economic interests and the capacity to defend them? Several indicators may help outside observers gauge China's intentions with regard to both the degree and geographic focus of any development of blue water SLOC defense capability.[32]

Undersea Warfare

The submarine force currently appears to 'the most important element' of the PLAN development[33]: a relatively cost-effective means of challenging even a technologically superior surface fleet.[34] From 1995 to 2006, China commissioned 36 submarines.[35] Between 2002 and 2004, the PLAN launched 13 submarines from four different classes: two classes of indigenously designed diesels (*Song*/Type 039 and *Yuan*/Type 041) and two

classes of nuclear vessels (the *Shang*-class/Type 093 SSN and *Jin*-class/Type 094 SSBN).[36] By the end of 2006, the PLAN also received eight formidable *Kilo*-class Project 636M diesel submarines purchased in 2002 (and associated weaponry)[37] to add to the two Project 877EKM and two Project 636 variants it already operates.

Meanwhile, China's second-generation nuclear submarines are gradually appearing in the Internet photos.[38] Apparently constructed in Huludao shipyard, possibly with the Russian assistance, two 093s were launched in 2002 and 2003 and may have begun sea trials in 2005 and 2006, with service entry dates of 2007 and 2008, respectively. If China's nuclear submarines are given adequate acoustic and propulsion capabilities and properly operated—and hence effective—the actual number that China constructs and deploys will offer an insight into its naval and nuclear strategies. The US Office of Naval Intelligence (ONI) states that the 093 constitutes 'an effort to improve the PLA(N)'s ability to conduct anti-surface warfare at greater ranges from the Chinese coast than its diesel submarine force offers'.[39] The 093 may become a key PLAN sea control platform; deployment of sufficient numbers could indicate an intention to achieve at least a limited undersea presence as far away as the Indian Ocean.

The key indicator that China plans to develop an expanded SSN fleet for operation beyond 'local' waters would be signs of increased construction at recognized facilities (e.g. at Huludao, China's only demonstrated nuclear-capable shipyard). Because China to date has built SSNs at only one shipyard, construction at more than one shipyard might indicate a change in aspirations.

Surface Combatants

'While China's submarine force is well suited to interdiction', explains the ONI, 'protection of SLOCs with a submarine force is more challenging. To effectively protect shipping, a visible and demonstrable naval capability, generally based on surface combatants with the endurance and range to operate farther from shore for an extended period of time, is preferable'.[40] Having recognized its overall naval weaknesses in air defence and surface warfare, the PLAN has since the early 1990s deployed 'nine new destroyer and frigate designs…an undertaking with few parallels by any country in recent decades'.[41]

Rapidly upgrading its previously backward destroyer fleet, China has built five new classes of destroyers since the early 1990s.[42] As naval expert Ronald O'Rourke observes, 'China to date has commissioned only 1 or 2 ships in each of these five classes, suggesting that a key purpose of at least some of these classes may [have] been to serve as stepping stones in a plan to modernize the PLA Navy's surface combatant technology incrementally before committing to larger-scale series production'.[43] ONI extrapolates that

> The long-range [marinized SA-20 surface-to-air missiles] SAM systems [that China's *Luzhou* and *Luyang* II destroyers] possess will provide Chinese surface combatants with an area air defense capability as they operate farther from shore and outside of the protection of land-based air defense assets. Under the protection afforded by these advanced area air defense destroyers, which are also equipped with long-range ASCMs, the Chinese Navy can operate combatants such as two recently acquired *Sovremennyy* II [destroyers]. These long-range engagement and air defense capabilities now being fielded by the PLA(N) give China a significantly improved capacity for operations beyond the littoral in support of SLOC protection.[44]

China's inventory of frigates has, likewise, substantially improved since the early 1990s, with major upgrades taking place both within and among the four successive indigenously built classes—some of which (unlike PLAN destroyers) have entered 'larger-scale series production'.[45] If Beijing intended to rapidly build a surface fleet (e.g. to support more distant operations), it would likely select a single design for large-scale production.[46]

The Chinese shipyards are rapidly increasing their technical proficiency and can build moderately capable modern surface combatants equipped with long-range SAMs. Yet to date, the most Chinese shipyards have focused primarily on profitable commercial construction. Large-scale production of a dedicated class of surface vessels has not occurred.[47] The PLAN's construction of multiple classes with several vessels in each suggests that previous vessel classes were not sufficiently sophisticated to justify large-scale production. If China's leaders choose to dedicate a larger portion of their nation's growing shipyard capacity to military construction, this might indicate that the PLAN is both technologically satisfied and looking to expand rapidly its blue-water-capable fleet.

Even the best fighting ships will remain worthless for blue water combat operations unless they can be refuelled, repaired, and re-supplied at sea far from China's coast. A PLAN decision to expand its auxiliary fleet—particularly long-range, high-speed oilers, tenders, and replenishment ships—could also indicate the blue water ambitions.

Air Power Projection

To defend its assets in an Indian Ocean SLOCs and deter those of rivals, the PLA would need airpower to support ocean surveillance and targeting, particularly over-the-horizon (OTH). China's new indigenous fourth-generation J-10 multi-role fighter has entered serial production, is in service in the PLAAF units, and has demonstrated in-air refuelling capability through publicly documented exercises. The J-10 is thought to be based on Israel's discontinued *Lavi* (which itself exploited the US F-16 technology) and to approach performance parameters of Washington's F-16 and Brussels' *Eurofighter*[48] with its 125-km radar detection range.[49]

Despite this significant improvement in indigenous aviation development, China continues to import its most advanced aircraft from Russia. To extend the range of some of its 2,300 operational combat aircraft, of which over 700 may be capable of conducting some form of operations against Taiwan without aerial refuelling,[50] China uses 12–20 H-6 variants of Russia's *Tupolev* Tu-16/Badger as aerial refuelling tankers.[51] These will be supplemented by 8 *Ilyushin* Il-78M four-engined tankers ordered in September 2005,[52] the deployment of which 'will extend the range and strike potential of China's bomber and fighter aircraft'.[53]

Sukhoi has developed an improved naval aviation-specialized variant of its Su-30 for the PLANAF. Designated the Su-30MKK, the 24 received by the PLANAF so far have an impressive combat radius (1,600 km without refuelling; 2,600 or 3,500 km with one or two IL-78 refuellings, respectively). Assuming proper basing for IL-78 tankers, multiple in-flight refuelling could thus enable the Su-30MKK to cover the South China Sea persistently, or even range towards Guam or the Strait of Malacca, though this would impose manifold operational challenges.[54] Given its lack of overseas bases and limited unrefuelled range of its aircraft, the PLA is far from being able to project air power beyond the South China Sea.

Aircraft Carrier Aspirations?

Tanker aircraft, whatever their rate of acquisition, will themselves need bases from which to operate. If Beijing is unwilling or unable to change its policy against overseas bases, that leaves deck aviation as the only means of credibly projecting air power into the Indian Ocean. The Chinese shipyards can build aircraft carrier-sized vessels, albeit of uncertain sophistication. If China acquires or builds an operational aircraft carrier, it would indicate an ambition to conduct the blue water operations. Naval aircraft operations are very difficult to master, however, and the construction of the carrier and its escorts, as well as their maintenance, would be extremely expensive.[55] Moreover, China would be starting far behind India in this regard, with its decades of experience in carrier operations—it is no coincidence that Chinese analysts have followed Indian carrier development with particular interest.[56]

Were China to project substantial power into the Indian Ocean, it would most likely have to move beyond its current focus on submarines to develop a navy that also included large-deck aviation. What are China's plans for carrier development? A senior Chinese official has stated to the author that although he had 'been an advocate of aircraft carriers for many years because we need them', until recently carriers had 'not been the best use of national resources' because China 'lacks an escort fleet', thereby making any carrier a vulnerable target. In 2004, the official declared to a group of Western academics that there was an internal political and military consensus that Beijing had no intention of developing an aircraft carrier. In 2006, however, the official stated that 'China will have its own aircraft carrier' in 'twelve to fifteen years'. He explained this rapid shift by stating that over the past two years the subject of aircraft carrier development has become a 'heated internal debate' in Beijing as Chinese national interests have grown, the SLOC security has increased in importance, there is increasing potential need for the Chinese non-combatant evacuation operations (NEOs), and 'air coverage' is essential to achieve 'balanced naval forces'.[57]

Another important indication of serious consideration of deck aviation development in Beijing is the 2006 statement by deputy director of the PLA General Armament Department's Science and Technology Commission, Lieutenant General Wang Zhiyuan, that the PLA 'will conduct research and build aircraft carriers on its own, and develop its own carrier

fleet. Aircraft carriers are a very important tool available to major powers when they want to protect their maritime rights and interests. As China is such a large country with such a long coastline and we want to protect our maritime interests, aircraft carriers are an absolute necessity.'[58] According to State Commission of Science, Technology and Industry for National Defense Huang Qiang, 'China has the capability of building an aircraft carrier, but it is still unknown when one will be built'.[59] Major General Zhang Zhaozhang has been quoted as saying, 'It's not difficult for China to build an aircraft carrier. The difficult part is the maintenance costs, its cost-effectiveness and the chance of survival in warfare.'[60]

The decommissioned Soviet-built carriers that China has acquired thus far, likely to inform future indigenous design, appear to have little war-fighting value. *Minsk* and *Kiev* have since become theme parks. *Kiev* last went to sea in 1989, and has not operated for almost two decades. It is not seaworthy, and it seems highly unlikely that it could be rapidly refurbished. It appears similarly doubtful that *Varyag*, despite being the largest and most advanced Soviet carrier design, could be made useful operationally. *Varyag*, like *Kiev*, would undoubtedly require enormous amounts of work (e.g. installing engines) before it could go to sea and conduct any mission. The Internet photos of this ship in Dalian shipyard do not suggest that level of effort, so it appears that at least for now, China does not intend to use *Varyag* as a sea-going warship. It could conceivably be used as a pilot and deck crew training vessel or target of sorts, as well as a 'test platform' for general research and China's development of relevant ship-board systems, but preparing it to go to sea on its own power would be a difficult, expensive, and a highly visible endeavor. Ultimately, *Varyag* may be retrofitted with a power plant, shafts, and screws (which it was said not to have at time of sale to China), so that it can go to sea in some limited capacity. A modestly capable *Varyag* might become a centrepiece of the PLAN diplomacy, humanitarian operations, and disaster relief.

Regardless of its inspiration, the acquisition of a PLAN carrier vessel would be merely one relatively simple milestone in achieving operationally useful aerial power-projection capabilities. Also required are breakthroughs in hardware (e.g. sea-based aviation and mid-air refuelling), software (e.g. the PLAN doctrine and the PLANAF service culture), and training (e.g. carrier deck takeoff and landing and ant-submarine warfare (ASW)). Without major improvements in ASW, for instance, any PLAN carrier would be an easy target for competently manned diesel-electric or

nuclear-powered attack submarines. China does not appear to have made significant progress in correcting its ASW weakness, however. Although its newer large surface combatants certainly can carry helicopters, and might carry ASW helicopters, none appear to have modern hull-mounted active or towed passive sonars. There is also little evidence that China is devoting much effort to developing planes equivalent to the US P-3 maritime patrol aircraft. Thus the PLAN and ASW capabilities, while perhaps slowly improving, cannot yet be counted on to provide a reasonable degree of security in the open waters.

China would probably build only carrier(s) if it decided to operate much farther away from shore, perhaps to defend an Indian Ocean energy SLOCs. Otherwise, there would seem to be little point from a combat operations perspective. A PLAN carrier would have little role in a near-term Taiwan scenario, as a land-based PLAAF and PLANAF aircraft could cover all required air operations across the narrow Taiwan Strait. Unless China were able to produce and incorporate a range of carriers and escort vessels in a cohesive and effective concept of operations, it is difficult to envision them as the centrepiece of PLAN doctrine in future decades. In the process of mastering jet aviation off carriers, for instance, the US Navy lost nearly 800 aircraft in 1954 alone. This annual toll was reduced to 22 by 1999, but a force with less experienced aviators flying less sophisticated aircraft would likely suffer a higher attrition rate.[61] Given the inherent challenges in blood and treasure, then, it is almost inconceivable that China could soon emulate the American conception of a carrier-centric navy in any meaningful way. A senior Chinese official has further emphasized to the author that 'China will not try to compete with the United States in the open sea. Even twenty PRC carriers cannot compete with US nuclear carriers'.[62] Similar caution is readily apparent in a PLAN journal article:

> … whether or not to acquire an aircraft carrier and when to acquire one must be considered with particular care, and a correct strategic decision must be made well in advance. Making the wrong strategic choice would amount to gambling with the nation's fortunes. … America's absolute aircraft carrier advantage has already been established—how other countries develop aircraft carriers is a defensive action. There is only a little space for late developing countries to develop aircraft carriers.[63]

It must be emphasized, however, that China has an array of options besides either building a major aircraft carrier or not building one at all.

China's military views many things, including aircraft carriers, broadly. In some ways, smaller deck aviation platforms (such as China's new amphibious warfare ship *Yuzhao*) are more appropriate to use than aircraft carriers. This 'Type 071' LPD (as it has been called unofficially) was launched on December 21, 2006, and subsequently fitted out. Richard Fisher describes the Type 071 as 'the PLAN's largest indigenously designed combat ship to date'.[64] The Type 071 has 'a large stern helicopter flight deck and a hangar'.[65] It thus joins a growing number of Chinese combat vessels that can support at least one helicopter. China may thus experiment with different types of ships. A Chinese deck aviation platform might have many functions other than war fighting, such as use in humanitarian missions, naval diplomacy, or rescuing of the Chinese overseas.

Indian Ocean Bases?

While Beijing has thus far shown no tangible interest in doing so, the acquisition of reliable, US-style overseas bases in the Indian Ocean region would also indicate intent to protect key oil SLOCs military. China is already bolstering these interests using non-military means. Writing in *China Military Science*, a PLAN senior captain relates,

> … During the 1990s, China constructed harbor wharves in the eastern Indian Ocean in Burma [and] cleared the Mekong waterways, in order to gain access to the sea in [China's] southwest… China invested US$ 1 billion to construct a deep water port [at Gwadar], in order to establish a trade and transport hub for Central Asian nations, and simultaneously expand China's geostrategic influence.[66]

But while some Pakistani analysts likewise characterize the commercial port of Gwadar and any future associated pipelines as having geostrategic value,[67] China is currently far from having anything close to a naval base beyond Chinese waters. In the specific case of Gwadar, as Holmes and Yoshihara point out, Islamabad might not wish to risk this prized economic asset in armed conflict, particularly when it might be 'outflanked' by foreign military assets in any case. Moreover, 'the port is not readily defensible. The terminals occupy a small peninsula, connected to the mainland by a narrow spit of land, around half a mile across at its narrowest point. Slowing or halting the flow of oil and other cargo out of the port facility should present few problems for a superior naval power—a

vulnerability that is surely not lost on US and Indian naval strategists. Until and unless the PLAN can defend Gwadar against cruise missiles or naval air strikes emanating from the sea, the port's strategic worth will be less than it might appear for Beijing.'[68]

To sustain a serious naval presence in the Indian Ocean, the PLAN would need to expand substantially its at-sea replenishment capacity and also secure basing rights in locations such as Pakistan, Burma, and perhaps Sri Lanka or Bangladesh.[69] India and other naval powers would likely oppose an overt Chinese naval presence in the Indian Ocean region, and might pressure these countries not to accept the Chinese forces.

Even if China did eventually gain basing rights in an Indian Ocean littoral state, the major moves on China's part to bolster its strategic position could provoke a wide variety of countervailing pressures. Were a conflict to erupt, such bases would almost be impossible to defend from the Indian or the US naval or air attack. India already has a formidable naval force with some assets that its Chinese counterpart utterly lacks, including the aircraft carrier *Viraat* and TU-142 long-range maritime patrol aircraft, which have tracked Russian-made warships transiting the Indian Ocean on their way to China.[70] If China did intend to defend its oil shipments in the Indian Ocean (assuming that these were being carried on the Chinese-flagged tankers), therefore, the PLAN would likely need SSNs and surface warship battle groups, perhaps including aircraft carriers, to achieve its objectives. China would also have to be able to rapidly locate and destroy very quiet submarines in the open ocean, something it cannot currently do.[71] In short, the military operational barriers to China entering the Indian Ocean are very high. Moreover, even if Beijing did somehow overcome the aforementioned obstacles and obtain overseas bases, it would have to modify radically its foreign policy to permit this practice, as the current PRC foreign policy proscribes explicitly overseas basing of the Chinese military forces.

Blue Water Training

Finally, China would need to bolster substantially long-distance deployments and training in order to achieve high levels of operational proficiency and maritime presence in the strategic areas. Such operations are complex and expensive. Intensive, realistic, and frequent training is

critical to build the institutional experience and human expertise that undergird successful blue water naval operations.

Undersea Warfare

While digital training and simulations can be useful, there is no substitute for taking submarines to sea and testing weapons. The Chinese submarine exercises have increased in sophistication in the recent years and currently encompass such categories as command and control, navigation, electronic countermeasures, and weapons testing.[72] Even as exercises increase in sophistication, it is important to recall that the PLAN has, for some time, pursued nuclear submarine missions of extended duration. In his recently published memoirs, Admiral Liu Huaqing relates that he raised the priority of long duration exercises for the PLAN nuclear submarines in order to test all parameters of these new capabilities.[73] Apparently as part of these expanded activities, during the mid-1980s a Han SSN conducted a mission of 90 days[74] that broke the 84-day undersea endurance record previously set by USS *Nautilus*.[75]

Based on the photos and anecdotal evidence, the Chinese submarines go to sea frequently, if not usually for extended periods. The extension of their missions' range and duration may well proceed unevenly. One study draws on declassified the US Navy data to suggest that the Chinese submarines conducted six patrols in 2007, tying an all-time high first achieved in 2000. This apparently represented a significant increase over the two previous years, as only two patrols were reported in 2006 and none are thought to have occurred in 2005.[76] As *Jane's* explains, 'A patrol in this vernacular would seem to equate to a sustained seagoing deployment—lasting weeks at a time—to perform a specific task or mission, for instance: to "track and trail" other submarines; participate in naval defence operations in coastal or extra-coastal areas; collect intelligence; or shadow surface units.'[77] According to one analysis cited by *Jane's*, however, ' "such relative inactivity…can at least partly be explained by probable ambiguity about what constitutes a patrol"… given the rapid introduction to service of new submarines, "it would be surprising if it was not proving difficult to build up the necessary levels of training and experience before more frequent out-of-area deployments can be undertaken." '[78]

Naval Aviation

Since 2002, PLANAF training has been increasingly rigorous, with exercises involving extended duration as well as increasing unfamiliar conditions and on-the-spot decision making: 'pilots fly more long-distance, over-water, cross-border missions during the day and night. Many of the flights are at minimum altitude (i.e. below 100 meters) or low altitude (above 100 meters) and in poor weather conditions. Vessels with helicopters have focused on helicopter operations during day and night that are gradually moving further from the vessel.'[79]

Despite the recent efforts, it remains unclear how capable of joint coordination China's different services are, particularly in over-water operations. While the educational requirements for PLANAF pilots, already higher than those for most other PLAN forces, were raised to a PLAN academy bachelor's degree in 2001, the organization as a whole has traditionally been poorly funded and apparently at least a portion of its pilots fly only a fraction of the hours that their peers in the United States, Japan, and India do.[80] Integrating operations between a highly regimented and rigidly structured PLAAF and an immature and the sea-based PLAN contingent would require technological and service-culture innovations, as well as exercises less carefully scripted than has been usual, to develop the requisite interoperability and coordination both among the PLA services and the PLAN's ground-based naval air and surface/subsurface assets. Air operations are also particularly dependent on effective C4ISR. While China may be able to employ a variety of strategies to conduct centralized C4ISR operations near its territory, it may find it difficult to attain similar results further afield, where information assurance is more elusive.

Remaining Disparities

While China has the platforms already, and is in the process of acquiring the training, to be a formidable force in its home littoral, amassing the platforms and operational proficiency to be a credible blue water SLOC defender will require many times the capital and human investment necessary to become a strong littoral power. The PLAN is gradually improving its training variety and sophistication, but far more work is necessary for it to be able to operate its increasingly complex platforms and weapons systems in real combat conditions anywhere, let alone far

from China's shores. There are some indications that the PLA exercises are moving towards jointness, but it remains unclear how successful the PLA has been in actually accomplishing its goals. A *People's Navy* article acknowledges that 'our current training level has not fully met the requirement of winning the local maritime warfare … the training intensity and difficulty are not fully commensurate with the real war requirements, the training system has not yet met the requirement of training under a condition of informatization, the relatively low aptitude of the naval personnel remains a prominent issue, [and] training support building still lags behind.'[81]

Conclusion

As foreign researchers consider the possibility of China attempting to project naval power away from its littoral, through the South China Sea, and even towards the Indian Ocean, they must account for the PLAN's remaining difficulties, as outlined above. Today, the PLA(N) simply does not have enough of the right assets, trained personnel, or experience to credibly execute the ocean surveillance and the long-range SLOC defense missions necessary to safeguard militarily its growing interests in the Indian Ocean. As the US Department of Defense has concluded, 'At present, China can neither protect its foreign energy supplies nor the routes on which they travel, including the Straits of Malacca….'[82]

This study, therefore, supports Holmes and Yoshihara's contention that while China's interests in the Indian Ocean region will continue to increase, China's ability to use naval power to safeguard those interests will remain limited for now by Beijing's preoccupation with asserting sovereignty over Taiwan and the rest of its maritime periphery, and India will continue to be the dominant naval presence in the Indian Ocean.

It will be difficult for Beijing to increase seriously its military capabilities in the Indian Ocean region without acquiring some form of overseas basing access, which would necessitate a major change in its foreign policy. A 'grey area' may gradually emerge in which China appears to have growing 'base-like' access, surveillance assets, and information collection connections but insists that its policy has not changed. For now, however, China will likely use 'soft power' diplomacy, trade, humanitarian assistance, and arms sales as the primary means to increase its influence in the region. Strategic concerns are unlikely to vanish, and political differences may

well persist. But it must be remembered that India, China, and the United States share many common interests, and there is likely to be much room for cooperation in a wide variety of areas.

Notes

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