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China's Out of Area Naval Operations: Case Studies, Trajectories, Obstacles, and Potential Solutions

by Christopher D. Yung and Ross Rustici with Isaac Kardon and Joshua Wiseman



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Cover: Chinese sailors man the rails aboard the destroyer *Qingdao* (DDG 113) as it arrives in Pearl Harbor, Hawaii, September 6, 2006. *Qingdao* and the Chinese navy oiler *Hongzhehu* (AOR 881) arrived in Pearl Harbor for a routine port visit.

Photo courtesy of U.S. Navy/Joe Kane

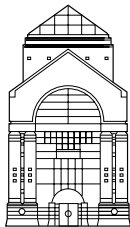
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Executive Summary

This study seeks to understand the future direction of the People's Liberation Army Navy (PLAN) with regard to out of area deployments and power projection. The assessment is based on the history of past PLAN out of area deployments and an analysis of out of area operations of other military forces. Both short- and long-term lenses are employed to understand the scope and direction of China's defense planning and strategic decisions.

The study's assessment of the PLAN's short-term (1- to 5-year) trajectory is based on:

- operational patterns of behavior observed in China's out of area deployments
- analysis of information about the PLAN's current and recent difficulties during these deployments
- the solutions China has applied to address these difficulties
- an assessment of the extent to which the PLAN, PLA leadership, and the Chinese Communist Party (CCP) leadership as a whole are likely to pursue other potential solutions within a 1- to 5-year timeframe.

We apply the same categories to our analysis of case studies of other nations' historical out of area deployments to draw out possibilities for the PLAN's long-term (10-year) trajectory.

Examination of the history of China's out of area operations indicates that the Chinese have been operating out of area since the mid-1970s, they tend to "overprepare" for each out of area deployment, and they conduct deployments not only for operational reasons, but also for carefully calculated political benefits.

The study identifies five categories of challenges that confront all navies operating at long distances from home ports: distance, duration, capacity, complexity of coordination, and hostility of environment. The recent PLAN Gulf of Aden deployment illustrated some of these difficulties. In the absence of a nearby facility or military base, that task force had difficulty maintaining its ships; the ships had difficulty maintaining supplies of fresh vegetables, fruits, and potable water; and personnel did not have access to comprehensive medical care.

From the case studies, we derived specific lessons about how other militaries met the five challenges in conducting out of area operations listed above and assessed whether the Chinese leadership is likely to follow their example. We identified five groups of options:

- access to a facility or base for maintenance, repair, and other logistical support
- self-protection (for example, carrier support, out of area antisubmarine warfare [ASW], or antisurface warfare)
- use of mobile supply depots and floating bases
- intra-task force lift assets (helicopters, lighterage, and landing craft)
- satellite communications.

The operational and strategic implications of our findings are as follows:

- The PLAN still has some ways to go before it can operate effectively out of area. At present, it can effectively replenish at sea, conduct intra-task force resupply, perform long-distance navigation, conduct formation-keeping with competent seamanship, and operate in all weather conditions. The PLAN cannot currently conduct a full-scale joint forcible entry operation, maintain maritime superiority out of area, conduct multicarrier or carrier strike group operations, or provide comprehensive protection against threats to an out of area task force (antiaircraft warfare, ASW, and antisurface warfare).
- The PLAN appears to be expanding its out of area operations incrementally. This will allow the United States, its allies, and other countries time to work out (with each other and with the Chinese) how to respond to opportunities for greater cooperation and potential challenges posed by a more capable PLAN.
- China has an even longer way to go before it can be considered a global military power. In particular, it has no network of facilities and bases to maintain and repair its ships. The possession or absence of such a network may ultimately be the best indication of China's future intentions. If China lacks such a support network, it will have great difficulty engaging in major combat operations (MCOs) far from its shores.

- Experience gained through out of area operations will help make the PLAN somewhat more effective (in areas such as navigation and seamanship) in some of its other operations. However, most of the tasks performed and lessons gained from out of area operations are not directly transferrable to either a Taiwan contingency or a notional out of area MCO. This implies that time spent on conducting nontraditional out of area deployments for a PLAN unit is time away from combat training for a Taiwan contingency or preparing for MCOs out of area.
- A more capable and active PLAN will present new challenges for U.S. policy. On the one hand, the United States wants China to “become a responsible stake holder” in support of international security objectives, which implies a need for greater naval capability to operate out of area. On the other hand, improved PLAN operational capabilities potentially pose a greater military threat to the United States and its allies, especially Asia. The United States has to reassure its allies that it will remain present in the region as a hedge even as Chinese military capabilities improve.

Introduction

On December 26, 2008, three surface combatants of the People's Liberation Army Navy (PLAN) weighed anchor from the Sanya naval base in Hainan Island and set sail for the Gulf of Aden, near the coast of Somalia. Earlier that month, the Chinese Ministry of Foreign Affairs stated the mission of the three-ship task force (two guided-missile destroyers and a comprehensive supply ship) was to take part in a counterpiracy mission off the eastern coast of Africa, where pirates had been threatening shipping.¹ The United Nations (UN) had authorized its members to form an antipiracy task force and sail to the Gulf of Aden to conduct escort and counterpiracy operations,² and the United States and several members of the European Union dispatched warships to participate in the effort. Now, for the first time in several centuries, China was outside of the Asia-Pacific region on an operational deployment. Ministry of Foreign Affairs spokesperson Liu Jianchao was careful to note that China's shipping and economic interests were being threatened and that its actions were simply an effort to help rectify an increasingly vexing problem.³

The task force was to be commanded by Rear Admiral Du Jingcheng, chief of staff to the South Sea Fleet. The ships had strict rules of engagement and were not to fire upon enemy combatants unless fired upon,⁴ nor were Chinese personnel allowed to "search for captured vessels and personnel at sea and carry out armed rescues."⁵ Under the auspices of the UN mandate, the PLAN task force was to provide escorts for shipping that was transiting through the area.⁶ Finally, at a press conference for the departure of the task force, Rear Admiral Du stated that the PLAN task force would conduct independent escort missions, but would not join the U.S.-led task force or other regional organization-sponsored task forces.⁷

Reaction to the announcement was, predictably, mixed. Admiral Timothy Keating, then-commander of U.S. Pacific Command, noted that the PLAN Gulf of Aden task force venturing outside of the Asia-Pacific and possibly interacting with other navies might serve as the impetus for China's renewed military-to-military engagement with the United States.⁸ Some analysts pointed out that the deployment conformed with the "New Historic Missions" laid out by President Hu Jintao in his December 2004 speech to the PLA.⁹ Other analysts noted that the out of area deployment signaled that the Chinese were now engaged in expeditionary littoral warfare, which would "provide important lessons not only in helping the PLAN to counter piracy elsewhere (e.g., the South China Sea) but also in how to wage littoral warfare more effectively against more advanced naval forces (e.g., the U.S. Navy)."¹⁰

Coupled with other recent out of area deployments, the PLAN Gulf of Aden deployment poses some interesting strategic questions for U.S. policymakers. For example, what can we expect the PLAN to do now that it has successfully sailed out of area? What obstacles does the PLAN still

face in conducting such deployments? What solutions is the PLAN currently pursuing to overcome these obstacles? What long-term out of area obstacles will the PLAN still have to face? What are the potential solutions open to the Chinese to adopt? How likely are the Chinese to follow in the footsteps of other great powers in resolving their out of area deployment challenges?

In light of those questions, there are several purposes for this paper. The first is to provide greater historical context and an assessment of China's patterns of operational behavior during its previous out of area operations. The second is to identify obstacles and difficulties that the PLAN is currently experiencing and may continue to experience with its future out of area operations. The third is to give a better sense of the likely long- and short-term trajectory of the operations. The fourth is to identify potential solutions that the Chinese may undertake to increase the effectiveness of such deployments. The final purpose of the paper is to understand the strategic and operational implications of these out of area deployments.

Approach and Methodology

This study is about potential trajectories for future PLAN out of area operations—the likely trajectories and their policy implications for the United States. It uses case studies of previous PLAN out of area deployments and those of other countries, identification of China's strategic objectives, and analysis of obstacles and potential solutions in order to determine the likely trajectories. Both short- and long-term lenses are employed to understand the scope and direction of China's out of area trajectories. Short-term trajectories are easier to assess, collect data on, and evaluate. Because defense planners and others have to make decisions today to procure platforms and weapons systems, deploy forces, and prepare the political ground for the defense decisions being made at present, the astute observer can track the direction that decisionmakers are likely to take on a specific issue area based on the lessons of recent operations, what experts and commentators are saying, what the popular press and public are saying, and what the military or civilian leadership is officially saying.

A long-term trajectory is a much harder concept to predict, and poses a difficult data collection and analysis process. First, even if some national leaders plan beyond a few years, that information is not readily available to outside observers. Second, it is extremely difficult to forecast the security environment in which that trajectory will occur in the upcoming years. Third, China is entering uncharted territory with regard to out of area operations, so its future direction (long-term trajectory) is somewhat unpredictable. The best guide to possible future Chinese directions is to study the experiences of other countries as they began to conduct more ambitious out of area operations.

We can therefore learn about China's long-term trajectory if we examine the experiences of other militaries as they conducted their out of area deployments; collect information about their difficulties and challenges; note the solutions that other militaries have identified through their experiences; and evaluate and assess to what extent the PLAN, PLA leadership, and CCP leadership as a whole are likely to pursue any of these solutions within a 10-year timeframe.

Of all of the analytical processes listed here, the last requires some elaboration. To evaluate if the Chinese leadership is *likely* to adopt a particular out of area lesson or solution, we followed an analytic process. We assessed whether China had embarked on such a program previously, determined if there is a compelling strategic or operational rationale to pursue a particular option, examined whether pursuit of a particular option would lead to political (domestic or foreign) problems in the Chinese context, and determined the resources, manpower, and training requirements of a particular option.

Organization

This paper is divided into four sections. Part one focuses on the history of PLAN out of area deployments beginning in the early 1970s when the most serious efforts got under way. We selected and examined some of the deployments in detail.¹¹ We identified five factors or categories that have posed significant challenges to China's out of area operations: distance, duration, capacity, complexity of coordinating the task force, and hostility of the environment.

Part two focuses on the experiences of other militaries in conducting out of area operations. We selected case histories for the navies of the United States, France, Great Britain, and Russia, presenting potential solution sets that the Chinese could refer to in attempting to overcome the obstacles they will face in the long term. We organized these solutions along the same categories of challenges noted above with particular interest in case histories that stressed the time-distance problem of operations, challenges posed by being away from a home port for extended times, and the problem of sustaining the operation with a viable force over a long period.

Part three analyzes the findings from the previous sections to determine their significance and lay out a range of possible trajectories. Finally, in part four, we present the implications of these findings for U.S. defense policy, combatant commander activities, and other agencies and organizations responsible for watching and managing the U.S.-China strategic relationship.

Sources

For the early history of the PLAN's out of area operations, this paper makes heavy use of the official PLAN history *Dangdai Zhongguo Haijun* (当代中国海军) published in 1987¹²

under the supervision of then-commander of the PLAN, Admiral Liu Huaqing. For later history, we conducted extensive searches (both online and at George Washington University) of Chinese language journals, newspaper articles, and books for specific descriptions of Chinese out of area operations (including port visits, exercises, and maritime security operations) going back 10 years. Finally, we utilized commentaries of various Chinese out of area operations published in China's English-language journal and newspaper articles from such sources as *China Daily* and *Liberation Army Daily*.

History and Case Studies

A Brief History

Early years.¹³ The PLAN was initially made up of a few ships captured from the Kuomintang (KMT) as well as a few tugs and trawlers. Therefore, during its early years, the PLAN was in no position either in terms of ship capability or personnel training to undertake long-distance naval operations. In addition, the geostrategic situation in the first decade of the People's Republic of China (PRC) did not warrant out of area operations. The PLAN's primary military purpose was to prevent the KMT navy from conducting raids and amphibious assaults along the coast of mainland China. Counteramphibious operations did not require the PLAN to equip, train, plan for, and execute long-distance deployments.

It was not until 1972 when Premier Zhou Enlai expressed concern that the PLAN was not sufficiently developed that the Chinese leadership began paying attention to the overall state of its navy. Zhou made arrangements for the National Defense Industry Office and the 6th Ministry of Machine Building to improve the state of the nation's shipbuilding. For its part, the CCP Standing Committee of the Politburo¹⁴ authorized the creation of a Leading Group to study and rectify the shipbuilding problem. The group identified some 400 issues with the shipbuilding industry and the construction of warships.

These early efforts were repeatedly interrupted by political campaigns, the rise and fall of some of the champions of army building (modernization), and the disastrous policies of the Great Proletarian Cultural Revolution.¹⁵ Only after the fall of the Gang of Four and Deng Xiaoping's return to power in the late 1970s was the PLA able to refocus its efforts at quality shipbuilding and naval modernization. In December 1978, the National Defense Industry Office and State Planning Commission decided to form an Engineering Leading Group to address the lack of quality among and the lack of equipment for the five types of vessels in the PLAN fleet (nuclear attack submarines, guided-missile destroyers, conventional submarines, missile attack craft, and submarine chasers).

The mid-1970s to mid-1980s: First blue water operations. Throughout the mid- to late 1970s, the PLAN was also engaging in operational experimentation. At the end of 1976, it dispatched a conventional attack submarine beyond the first island chain.¹⁶ This submarine trained and operated in the Pacific for some 30 days while traveling over 3,000 nautical miles. The account notes that it braved Force 10 winds, crossed archipelagos, and developed procedures for command, control, and training for long-distance submarine operations.

From March to May 1976, the PLAN dispatched two blue water survey ships to the southern Pacific to conduct long-distance oceanographic surveying. Formal blue water training for the PLAN surface fleet began some years later. In 1980, the South Sea Fleet dispatched two destroyers, two frigates, a replenishment ship, and an ocean tug to go through the Balintang Straits (near the Philippines) for blue water training.

In 1980, the PLAN embarked on its largest out of area operation to date. Charged with observing and retrieving the long-range carrier rockets¹⁷ that were to be launched from the mainland, the navy began planning for this western Pacific mission in 1969. The General Staff Department convened a special conference to research blue water hydrometeorological support tasks.

Participating in the task force were 6 destroyers, 2 replenishment ships, 2 submarine rescue ships, 2 oceanographic research ships, 4 ocean tugs, and 2 Naval Diving and Salvage Training Center space event support ships, for a total of 18 vessels (and 4 helicopters). The task force was divided into a monitoring task group and an escort task group. Although not providing many details, the official history¹⁸ notes that the sheer number of ships, their different classes, and their diversity of missions and functions posed severe communication and coordination challenges for the task force.

Command personnel for this task force were extremely high-ranking. The principal deputy commander of the PLAN, Liu Daosheng, was the commander. The deputy commander of the navy, Yang Guoyu, was also the deputy commander of the task group.

The task force departed from Wusong Harbor in Shanghai in two detachments on April 28 and May 1, 1980. When the task force reached the Pacific, the area of responsibility supply ships¹⁹ successfully resupplied the destroyers. A total of 14,000 tons of fuel, over 70 tons of food, and over 300 tons of fresh water were exchanged from supply ship to warship.

On May 18, the People's Republic of China successfully launched its long-range test rocket from Chinese territory with the expected landing point to be near Fiji in the southern Pacific area. At 10:30 a.m. on May 18, the carrier rocket had crossed from the northern to the southern hemisphere and splashed down at the expected coordinates. The nearby destroyers

and assigned helicopters immediately raced to retrieve the rocket. Based on the Xinhua news bulletin, on May 19 the Central People's Broadcast Station announced the successful launch and recovery. On May 24, the task group crossed the Equator and arrived back at Shanghai on June 1 and 2.

By 1983, after obtaining approval of the General Staff Department, the navy embarked on its first blue water,²⁰ out of area navigation exercises (to Zengmu Reef, the southernmost islets in the South China Sea). The fleet was organized around the replenishment ship X950 (eventually known as the *Haicang*, a *Fuqing*-class oiler) and the Transport ship Y832 (eventually known as the *Beikang*, a *Qiongscha*-class transport ship). The task group departed from Zhanjiang Base in Guangdong Province and traveled south through the Xisha (Paracel) Islands and subsequently into the Nansha (Spratly) archipelago.

From November 1984 to April 1985, China organized its 1st Task Group to go to Antarctica and the Southern Ocean to carry out research in several scientific fields. As a consequence of this expedition, China established its first scientific exploration base, the Great Wall Station. The stated purpose of the expedition was to understand how mankind "could peacefully utilize Antarctica."²¹ The Antarctica Exploration Task Group was organized around the National Bureau of Oceanography (NBO) research ship *Xianganghong 10* and the navy's salvage and rescue ship J121 (eventually known as the *Changxingdao*). The task group's commander in chief was Chen Dehong from the NBO, and the deputy commanders were Zhao Guochen, chief of staff of the navy's Lushun Base, and Dong Wanying of the NBO's East China Sea Branch. The navy's responsibility was to transport materiel and equipment, assist in the construction of the station, and provide at-sea supply operations.

The official account notes that the inexperience of the PLAN crew led to some significant engine problems. On the morning of November 25, after the task group had entered the Pacific Ocean, the number one cooling cylinder of the right engine of the Rescue and Salvage Ship *Changxingdao* (J121) cracked, the twin support pipes fell, cooling water spilled out, and the situation was dire. The eventual solution was to sail with a "sealed cylinder," which involved shutting down the number one cylinder supplying oil to the right engine and then allowing the remaining eight cylinders to continue operating.

The historical account also noted that the task force had difficulty communicating with Beijing because of the vast distance from Antarctica. Communications specialists listened intently and caught every faint signal night and day, and with the cooperation of a coastal station, they found a time at night, and a specific bandwidth, where communication with Beijing would be clearest and least problematic.

This case history reveals two notable issues. First, at least in this instance, the PLAN was unable to maintain and repair the engines of its warships; indeed, it lacked the capability to construct or deliver an entirely new part. If this was systemic, this could highlight problems with personnel training, difficulties adhering to proper maintenance procedures, and the absence of a supply system capable of providing spare parts rapidly. This is an especially revealing conclusion, given that this was an important mission with the full backing of the Chinese government. Evidence that the PLAN continued to have problems with maintenance can be found in the 2003 Ming submarine disaster, in which poor maintenance practices led to the sinking of a submarine.

Secondly, the communications issues the Chinese navy appears to have confronted on the Antarctic mission illustrate that at least in this instance, the Chinese were not routinely using satellite communications (SATCOM). By this time period, other navies were routinely using satellites to communicate with other ships of task forces and with command headquarters. Had the Chinese been using SATCOM or something close to it, they would not have had these difficulties communicating with Beijing.²²

The mid- to late 1980s: First port visits. To further China's diplomatic interests, the navy was specifically directed to plan and execute visits with a PLAN South Asian task force that called on Pakistan, Bangladesh, and Sri Lanka during the mid-1980s. Admiral Liu Huaqing (PLAN commander), Li Yaowen (political commissar), and Zhang Xusan (deputy commander) personally oversaw the preparations.

The task force was comprised of the guided-missile destroyer (DDG) 132 (eventually known as the *Hefei*) and the replenishment ship X615 (later known as the *Fengcang*). The task force was commanded by the East Sea Fleet commander Nie Kuiju. The mission took place between November 16, 1985, and January 19, 1986, and beyond the standard details of the port call, the official history notes that the sailors of the task force attended lavish banquets and were invited to participate in cultural events. Similar accounts were given for the PLAN task force visits to Bangladesh and Sri Lanka. The official account describes nothing that can be considered out of the ordinary and therefore of interest to those attempting to get a sense of how far China's maritime forces have come and how fast. Recently, however, reports in the Chinese press have surfaced about the difficulties this task force had with its underway replenishment support.

Zhang Wende, the chief designer of the *Fuqing*-class replenishment ship, has indicated in recent interviews²³ that the *Fuqing*-class oiler X615 (*Fengcang*) experienced difficulties as it attempted to supply DDG-132 in 11-level waves.²⁴ The replenishment ship sailed 8,810 nautical miles and provided 14,000 tons in 64 instances. However, it had limited capacity to supply PLAN warships with ordnance, and when the seas were high, it was unable to conduct an

Table 1. PLAN Port Visits, 1985–2006

Dates	Countries Visited	Ships
November 1985	Pakistan, Sri Lanka, Bangladesh	<i>Luda</i> destroyer <i>Hefei</i> 132 and replenishment ship <i>Fengcang</i> 615
March 1989	United States (Hawaii)	<i>Zhenghe</i> training ship
March 1990	Thailand	<i>Zhenghe</i> training ship
October 1993	Bangladesh, Pakistan, India, Thailand	<i>Zhenghe</i> training ship
May 1994	Russia (Vladivostok)	<i>Dajiang</i> sub tender, <i>Changxingdao</i> 121, <i>Luda-II</i> destroyer <i>Zhuhai</i> 166, and <i>Jiangwei</i> frigate <i>Huainan</i> 540
August 1995	Russia (Vladivostok)	<i>Jiangwei</i> frigate <i>Huaibei</i> 541
August 1995	Indonesia	<i>Luda-II</i> destroyer <i>Zhuhai</i> 166, <i>Jiangwei</i> frigate <i>Huainan</i> 540, and one replenishment ship
July 1996	North Korea	<i>Luhu</i> destroyer <i>Harbin</i> 112 and <i>Luda</i> destroyer <i>Xining</i> 108
July 1996	Russia (Vladivostok)	<i>Luhu</i> destroyer <i>Harbin</i> 112
February 1997	United States (Hawaii, San Diego), Mexico, Peru, Chile	<i>Luhu</i> destroyer <i>Harbin</i> 112, <i>Luda-II</i> destroyer <i>Zhuhai</i> 166, replenishment ship <i>Nancang</i> 953
February 1997	Thailand, Malaysia, Philippines	<i>Luhu</i> destroyer <i>Qingdao</i> 113, <i>Jiangwei</i> frigate <i>Tongqing</i> 542
April 1998	New Zealand, Australia, Philippines	<i>Luhu</i> destroyer <i>Qingdao</i> 113, training ship <i>Shichang</i> 82, replenishment ship <i>Nancang</i> 953
July 2000	Malaysia, Tanzania, South Africa	<i>Luhu</i> destroyer <i>Shenzhen</i> 167, replenishment ship <i>Nancang</i> 953
August 2000	United States (Hawaii, Seattle), Canada	<i>Luhu</i> destroyer <i>Qingdao</i> 113, replenishment ship <i>Taicang</i> 575

Table 1. PLAN Port Visits, 1985–2006 (cont.)

May 2001	India, Pakistan	<i>Luhu</i> destroyer <i>Harbin</i> 112, replenishment ship <i>Taicang</i> 575
August 2001	France, Italy, Germany, Great Britain, Hong Kong	<i>Luhai</i> destroyer <i>Shenzhen</i> 167, replenishment ship <i>Fengcang</i> 615
September 2001	Australia, New Zealand	<i>Jiangwei</i> frigate <i>Yichang</i> 564, replenishment ship <i>Taicang</i> 575
November 2001	Vietnam	<i>Jiangwei</i> frigate <i>Yulin</i> 565
May 2002	South Korea	<i>Jiangwei</i> frigate <i>Jiaxing</i> 521, <i>Jiangwei</i> frigate <i>Lianyungang</i> 522
May 2002	Singapore, Egypt, Turkey, Ukraine, Greece, Portugal, Brazil, Ecuador, Peru	<i>Luhu</i> destroyer <i>Qingdao</i> 113, replenishment ship <i>Taicang</i> 575
October 2003	Brunei, Singapore, Guam	<i>Luhai</i> destroyer <i>Shenzhen</i> 167, replenishment ship <i>Qinghaihu</i> 885
November 2003	New Zealand	<i>Jiangwei</i> frigate <i>Yichang</i> 564, replenishment ship <i>Taicang</i> 575
May 2004	Hong Kong	8 vessels
November 2005	Pakistan, India, Thailand	<i>Luhai</i> destroyer <i>Shenzhen</i> 167, replenishment ship <i>Weishanhu</i> 887
August 2006	United States, Canada, Philippines	<i>Luhu</i> destroyer <i>Qingdao</i> 113, replenishment ship <i>Hongzehu</i> 881

Source: <www.globalsecurity.org/military/world/China/images/plan-fp04.jpg>.

underway replenishment side by side. Zhang indicated that the *Fuqing* and the DDG were eventually able to conduct an astern replenishment.²⁵

The official account mentions the poor weather conditions that confronted the task force on its return journey to China. The wind was between Force 8 and Force 9 and gusted to Force 11.²⁶ The destroyer was tossed about and the bow was lifted so high that one could see the keel. The 20,000-ton X615 (*Fengcang*) replenishment ship was also battered. After 3 days and

3 nights, the ships emerged from the storm relatively undamaged. The task force, despite the extremely poor weather, was able to successfully carry out supply operations during a Force 8 storm for the first time, with no mention of the difficulty that the replenishment ship was having conducting a side by side resupply included in the official report.

The difficulty that the South Asian friendship task force had in performing side by side resupply in poor sea states suggests that this task force was able to perform its mission only in a fair weather environment. The ability to conduct such replenishment, even in the poorest sea states, is a necessary skill given the possibility that the two ships could have come under air, surface, or submarine attack while under way. The chief designer of the *Fuqing* also revealed that this replenishment ship does not seem to have sufficient (if any) ability to resupply the destroyers with armaments, suggesting that this class of ship would have proven inadequate as a supplier of ordnance had the task force been involved in MCOs and required resupply of ammunition and other ship readiness preparations.

Following a visit to Hawaii by the training ship *Zhenghe* in 1989, China's out of area port visits expanded significantly during the next decade. A comprehensive list of the PLAN's port visits is displayed in table 1.

The 1990s: Joint exercises and the Somalia noncombatant evacuation operation. In early 1991, escalating violence from a civil war in Somalia drove many embassies in Mogadishu to request extraction due to unsafe conditions. The Chinese embassy and consulate requested help in evacuating its personnel. The PLAN had no assets capable of assisting the embassy, so the Chinese government reached out to the state-owned China Ocean Shipping Company to aid in the evacuation. The company diverted one of its cargo ships (the *Yongmen*), sailing from Europe through the Gulf of Aden, to orchestrate the rescue of Chinese personnel in both Mogadishu and Kismayo.

As a result of the large number of people needing to be evacuated, a lack of navigation charts, and the high level of danger on the piers, the Chinese hired two tug boats to ferry people from the piers outside Mogadishu to the boat. The option of using the life rafts from the *Yongmen* was rejected due to the time it would require to ferry all the passengers as well as the danger associated with such small boats in rough seas. After loading all the people from Mogadishu, the *Yongmen* set sail for Mombasa, Kenya. After unloading the first batch of passengers in Mombasa, the *Yongmen* was dispatched to Kismayo, Somalia, for a second evacuation. The port at Kismayo was too small for the *Yongmen* to dock. As a result, the crew hired a large fishing vessel and another tug to transfer the evacuees to the *Yongmen*, which then sailed back to Mombasa to unload the rest of the civilians.²⁷

From this case history, we note that in the early 1990s, the PLAN was incapable of conducting an out of area noncombatant evacuation. Not only did it lack the necessary ships, but

also the naval personnel had yet to be trained in operations of this kind due to the PLAN's inexperience operating out of area. The long distances alone virtually eliminated China's ability to respond to it adequately, requiring its merchant fleet to step in. We can also see from this specific case that while merchant vessels are useful substitutes for naval surface combatants, they also have their shortcomings. The *Yongmen* lacked personnel who could risk operating small boats in rough seas (as would be expected of a boatswain of any other navy) or serve as a security force to escort citizens from shore points to the ship. Furthermore, it is unclear what assets were available on board the *Yongmen* to transport personnel. In fact, given the nature of the *Yongmen*—a merchant vessel, not a warship equipped for multiple contingencies—it is safe to say that had Chinese citizens in Somalia been unable to get to points along the shore, and had they remained stranded inland, the Chinese government would have had no means to get them out.

In 1996, a PLAN three-ship task force visited Hawaii and San Diego. It was comprised of the *Luhu* destroyer (*Harbin* 112), a *Luda-II* destroyer (*Zhuhai* 166), and the replenishment ship *Nancang* 953. Although it was not the first time the PLAN visited Pearl Harbor, it was its first visit to the continental United States and exemplified its growing capabilities and self-confidence. Despite the pomp and ceremony of the port call, naval observers who went on board the three ships pointed out some of the glaring deficiencies of the task force. They noted that the ships held large volumes of bottled water, indicating that the vessels were unable to desalinate sea water.²⁸ The interiors of the ships were made of plywood, which made the ships vulnerable to shipboard fires, a grave liability in a hostile environment.²⁹ The European systems on board (including the engine and other critical components) were not designed to work together.³⁰ The observers also noted that the manuals on board were written in English. In short, while the historic visit represented a leap forward for the PLAN, the ships were still only able to operate in a permissive environment and would not have been survivable in a conflict or an otherwise hostile environment.

The 2000s: PLAN participation in joint exercises and its first out of area deployments. By the turn of the new century, the PLAN appears to have been directed to begin formal exercises with its neighbors and to increase its efforts in military diplomacy. On May 20, 2002, the *Qingdao* guided-missile destroyer and *Taicong* comprehensive supply ship conducted the PLAN's first journey around the globe. Visiting Singapore, Egypt, Turkey, Ukraine, Greece, Portugal, Brazil, Ecuador, Peru, and French Polynesia, the task force traveled 33,000 kilometers over the course of 132 days.³¹ During this voyage, the PLAN also conducted a joint exercise with the French navy. As a tool for promoting engagement and goodwill between China and many nations of

other regions, this global circumnavigation was a master stroke. At the same time, problems did emerge that revealed a continuing problem with Chinese shipbuilding. During the voyage, the task force suffered a breakdown in its diesel engine on board the *Qingdao*,³² but the task force lacked personnel with the technical skill to repair the engine. To the likely embarrassment of PLAN leadership, German technicians had to be flown in to perform the repairs.³³

In October 2003, the PLAN participated with the Pakistani navy in a joint search and rescue (SAR) exercise in the East China Sea near Shanghai.³⁴ This was the first time a Chinese and foreign naval force participated in a joint exercise focusing on nontraditional maritime security issues.³⁵

In November 2004, a *Shenzhen*-class destroyer and *Weishanhu* supply ship visited Pakistan, India, and Thailand. This task force passed through five ocean regions, four straits, the northern Indian Ocean, and the Arabian Sea, for a total of 40 days traversing some 10,000 nautical miles. The ships passed through the narrow Malacca Strait on November 12. On November 13, they began their transit to Pakistan. This involved 3 days of drilling at sea, including China's first ever SAR mission in the Arabian Sea. At this time, the Indian navy expressed an interest in exercising with the PLAN. The two navies conducted a SAR exercise on a commercial vessel in distress under Sino-Indian command, featuring coordinated efforts to put out a simulated deck fire.³⁶

In November 2005, the PLAN took part in a combined UN exercise with Pakistan, India, and Thailand. This exercise—which involved the *Shenzhen* missile destroyer and *Weishanhu* supply ship—allowed China to test its Global Positioning System, continuous global navigation, supply expenditures, and ability to handle adverse weather conditions.³⁷

In August 2005, the PLAN also took part in joint military exercises with Russia. The Peace Mission 2005 joint military exercise took place near Vladivostok and China's Shandong Province. The navies participated in 8 continuous days of exercises, which included a sea blockade, amphibious landings, and forced isolation combat operations.³⁸

In August 2006, the *Qingdao* guided-missile destroyer 113, *Hongzhehu* supply ship 881, and a third warship crossed the International Date Line to visit the United States (Pearl Harbor and San Diego) and Canada.³⁹ The ships set sail from Qingdao on August 21. They traveled via the Yellow Sea and East China Sea, encountering bad weather near the Miyako Strait as they headed to the Pacific Ocean.⁴⁰ In total, the task force traveled 17,000 nautical miles over the course of some 70 days to cross the Pacific and back, traversing three straits in the process.⁴¹ After its port visit in Pearl Harbor, the task force pulled into San Diego for a 3-day friendly visit and joint exercises.

As mentioned earlier, the Gulf of Aden deployment began in December 2008. Since the initial three-ship task force to the Gulf of Aden, five additional PLAN task forces have rotated into theater to relieve the ships conducting escort operations. The deployment appears to have gone well: neither Chinese nor Western press reports about the operation indicate that the task force had suffered any substantial setbacks, catastrophic engine failures, or personnel casualties. The task force managed to do what the Chinese government asked of it: namely, to conduct the operation with little or no reliance on the bases and facilities of the countries of the region. The initial task force deployed to the Gulf of Aden for over 100 days without a port call until its return trip, when it stopped in Singapore (after being relieved from duty in the Gulf of Aden). The Ministry of National Defense Information Office disclosed that the task force has participated in dozens of escort missions and has worked with the other navies of the counterpiracy coalition. The Chinese press describes ship visits with the navies of Korea, the United States, and nations of the European Union. The PLAN task force initially had limited exposure to and connection with the U.S. Combined Task Force 151, but that has gradually expanded. Perhaps the most significant news is that China has apparently agreed to take up a leadership position in Shared Awareness and De-confliction, the European Union counterpiracy coalition.⁴²

Chinese naval and military analysts believe that this deployment is one of the best indicators of how well the PLAN is doing in terms of out of area deployments.⁴³ Liu Da Guang of China's National Defense University, interviewed on this subject, argued that the PLAN would be testing the following: development of tactics against small vessels such as speed boats, rapid response and deployment capabilities, specialized warfighting capabilities for such nontraditional threats as piracy, capability to conduct combat operations in tandem with other states, and validation of the PLAN's peacetime training program.⁴⁴ In reality, we have seen few of these challenges met by PLAN task forces. The Chinese navy has successfully escorted its own and foreign merchant vessels through pirate-infested waters, but has done little else.

Recent articles by Chinese observers also suggest that while the deployments have been largely successful, the PLAN "still has far to go."⁴⁵ First, the navy is still having difficulty preserving fresh fruits and vegetables. Several commentators have noted that this issue must be tackled because the morale of sailors operating far from home is at stake.⁴⁶ Subsequent articles have described PLAN visits to the navies of other countries for the purpose of discussing such topics as preserving food while out to sea.⁴⁷

Second, some articles noted that the task forces had difficulty maintaining and repairing the ships in the absence of repair facilities and dry docks.⁴⁸ This is a crucial shortcoming. Had

one of the ships suffered a major mechanical failure, such as significant damage to one of its propellers or its engine, the PLAN, with no facility in the vicinity to conduct major repairs, would have had no choice but to return the ship to China. Even relatively minor repairs requiring parts that had not been brought along would have had major repercussions for the force's capabilities. In the absence of a robust logistics network that could deliver parts relatively quickly, at best the PLAN's operational effectiveness could have been degraded, and at worst, the task force could have accepted the embarrassing option of pulling into a port in East Asia or the Persian Gulf to get the ship repaired for an exorbitant price.

Third, Chinese observers have noted the relatively limited use of one of the work horses of naval operations, the helicopter.⁴⁹ Helicopters are frequently used for intra-task force supply to transport personnel between ships, conduct search and rescue, serve as safety vehicles for other air operations, hunt mines, and serve as reconnaissance for the task force. The Gulf of Aden deployments each enjoyed the use of two helicopters, a woefully inadequate number given the tasking in this forward operating environment.⁵⁰

Fourth, Chinese articles suggest that the PLAN currently lacks the capacity to maintain a robust cycle of rotation. Li Jie writing in *China Daily* suggested that:

*great effort is needed to increase the country's hardware equipment quantity and quality. Experience indicates that owning a fleet of sophisticated and well-performing large- and medium-sized warships suitable for long-distance voyage is the key to a successful overseas escort mission. Without a sufficient number of vessels, it would be absolutely impossible for China to dispatch a naval formation to the distant Gulf of Aden while maintaining its own daily drills, war readiness, and necessary experiments around the country's coastal areas.*⁵¹

Fifth, although no Chinese commentators specifically mention any incidences of difficulties arising from the absence of access to medical care, a few predicted that the lack of such care would have a negative impact on crew morale and health. Rear Admiral Yin Zhuo, for example, made such an observation in an interview,⁵² and one article noted that the PLAN was specifically studying the issue of how to improve health care for its sailors.⁵³

Finally, one Chinese observer has noted that the long logistics and supply lines between PLAN task forces and China make this a key vulnerability of Chinese out of area operations. Again, Li Jie writes, "past anti-piracy experience in the Gulf area . . . indicates that China's navy should make bigger efforts to further shorten its material and armament

supply cycle to guarantee its success, and, if necessary, set up some coastal refuel and maintenance stations.”⁵⁴

Among expected factors making out of area deployments especially challenging, we note that the Gulf of Aden deployment illustrated how duration, capacity, and distance continue to bedevil PLAN long-distance operations. Duration is important because the Chinese have yet to resolve the problem of preserving foodstuffs and other consumables over long periods. Distance figures prominently because China lacks nearby facilities and bases to which it can send vessels for maintenance and repair. And operations tempo/capacity is relevant because China currently lacks enough ships to simultaneously deploy out of area and in waters proximate to the Chinese mainland in the event of a domestic contingency.

Chinese Solutions to Short-term Out of Area Challenges

There has been no shortage of opinion in the Chinese press on what the PLAN should do about its shortcomings in out of area operations.⁵⁵ In most instances, the commentators mentioned above provide a laundry list of changes that the navy should consider to improve its overseas naval operations. In addition, members of the Chinese navy themselves have weighed in on the subject. The following are some of the more prominent recommendations:

Gain access to port facilities. The most prominent suggestion came from Admiral Yin, who in an article published in December 2009 opined that many of the difficulties experienced by the Gulf of Aden task force could have been resolved if it had full access to a naval base. Admiral Yin also noted that it is difficult to store fruits and vegetables for more than “half a month on board a ship.” It is also hard to store potable water for long periods.⁵⁶ These problems, of course, would not be serious if the navy had frequent access to a base.

Similarly, Admiral Yin noted that permanent access to a forward naval facility would have greatly assisted the task forces in the maintenance and repair of ships, in providing stable communications with Beijing, and in allowing consistent access to medical facilities for the sailors. Finally, Yin noted that the capacity problem could be eased with access to a facility. One long deployment is feasible, but multiple 4-month deployments are a terrific drain on morale and resources. The strain of these deployments could be eased with port call, maintenance, and repair services offered by forward port facilities. Such a port call/repair/maintenance arrangement “ought to be normalized.”⁵⁷

Modify the preparation of food served at sea. A few articles suggested that the navy should alter the way food is prepared at sea. One commentator noted that Chinese food is particularly problematic when it comes to preservation and pollution prevention because

of the oils naturally found in it. The same articles suggested that scientific testing, extensive research, and alteration would result in food that can last longer at sea.⁵⁸ The article noted that a short-term solution is to have PLAN crews eat more “Western-like” food that is easier to preserve. Another article noted that PLA logistical experts are attempting to use information technology (informatization of food stocks) to preserve food for longer periods without sacrificing taste.⁵⁹

Increase the number and use of helicopters in out of area task forces. According to Li Jie, a *China Daily* naval commentator, “Given that helicopters enjoy good mobility and overpowering advantages over warships in fighting small-scale and moving pirates, foreign naval formations are usually equipped with some large and medium sized vessels carrying a good number of helicopters. This greatly benefits the escorting missions under rapidly changing and complicated maritime conditions.” Li goes on, “Compared with their foreign counterparts, the Chinese naval fleet patrolling the Gulf of Aden, however, is equipped with only two helicopters.” Li’s suggestion is to significantly augment the number of helicopters assigned to the out of area task forces and then make heavy use of them.⁶⁰

Interestingly, U.S. Navy destroyers and frigates each have a maximum of two helicopters per platform. It is therefore a puzzling observation for the Chinese to make that the PLAN’s out of area task force is “woefully inadequate.” It might be that given the absence of a robust network of bases and facilities upon which the PLAN can rely, the Chinese navy is even more reliant on underway logistical support—hence the perception that their intra-task force logistical supply needs are falling short because the task force only has two helicopters.

Significantly increase the number of surface combatants and provide stable capacity of ships to normalize the deployments to out of area regions. Li Jie advocates increasing the quality and quantity of the navy’s surface fleet: “Great effort is needed to increase the country’s hardware equipment quantity and quality. Experience indicates that owning a fleet of sophisticated and well-performing large- and medium-sized warships suitable for long-distance voyages is the key to a successful overseas escort mission. Without a sufficient number of vessels, it would be absolutely impossible for China to dispatch a naval formation to the distant Gulf of Aden while maintaining its own daily drills, war readiness, and necessary experiments around the country’s coastal areas.”⁶¹ This ship capacity problem can only be addressed by continuously designing, developing, and producing modern warships. This, of course, includes the ability to design and produce warships with an indigenously manufactured engine. A highly capable ship is considerably less valuable if the PLAN is unable to fully maintain and repair its engines. The bottom line is that the Chinese have both a quantity problem and a quality problem with their naval force structure.

Obtain access to better out of area medical care. Admiral Yin's prescription to address the need for better out of area medical care was to obtain access on a more permanent basis to a facility presumably with a hospital or some other form of medical services.⁶² Other articles have called for the improvement and provision of medical services on board the comprehensive supply ship attached to the Gulf of Aden Task Force.⁶³ Finally, one commentator called for the deployment of China's hospital ship to accompany the destroyers on the Gulf of Aden deployment.⁶⁴ Subsequently, the *Peace Ark*, one of China's hospital ships, did deploy to the Gulf of Aden to provide medical support to the Gulf of Aden Task Force and to the countries of the region.

Provide SATCOM for all out of area deployments. Just before the deployment of the counterpiracy task force, Admiral Wu Shengli, the PLAN commander, demanded that the task force be given 24-hour satellite and communications coverage. China's sailors, he argued, deserved nothing less than the best communications support the PRC could provide.⁶⁵ We can infer that China's naval forces lacked this capability at least until that point. Although the Chinese debate whether their command and communications systems should be centralized in Beijing or decentralized to the operating commander on scene,⁶⁶ in aggregate, Chinese commentary seems in favor of providing the ships of the task force with better and more modern satellite communications and access to computer networks.⁶⁷ This conclusion is wholly consonant with the mantra of being able to fight wars under "informatized" conditions.

Produce additional and new underway replenishment ships. The lifeline of the PLAN's out of area operations is its comprehensive supply ship force. A shortage of these types of ships means an absolute limit in the number of out of area missions the PLAN can undertake. By extension, increased missions and requirements abroad cannot be undertaken if the navy does not increase the number of supply ships in its inventory.

Summary

In this section of the report, we noted the difficulties the PLAN has confronted in its attempts to operate far from Chinese shores; we categorized those challenges and highlighted their manifestation in the case studies we selected. We also highlighted Chinese suggestions to address some of these short-term challenges. The results of part I give us a sense of China's short-term out of area operational trajectory. In part II, we identify some aspects of the potential universe of solutions available to the navy over the long term, providing a sense of China's long-term out of area operational trajectory.

Other Military Case Studies

Introduction

To provide the context from which Chinese naval planners may approach out of area operations, this section studies several cases from the expeditionary experiences of Great Britain, the United States, Russia, and France. These case studies are presented in chronological order, beginning in the late 19th century, and focus on the five core challenges navies confront in conducting out of area operations: distance, duration, capacity, complexity of coordination, and hostility of environment. Also included in these histories are studies that focus on the selected country's use of airpower to conduct out of area operations. While not directly naval operations, such cases provide lessons for the application of airpower in their out of area operations more broadly speaking. Although the Chinese may approach these challenges differently, their close attention to historical precedents could inform their judgments on how out of area deployments can be managed.⁶⁸

Foreign Out of Area Case Studies

The Asiatic Squadron: 19th Century. One of the most intriguing 19th-century examples of out of area operations is that of the U.S. Navy's Asiatic Squadron, which was the sole U.S. naval presence in the Far East from 1835 until 1902 when it was renamed the Asiatic Fleet. The squadron's primary mission was to protect American interests in China.⁶⁹ During this period, the Asiatic Squadron operated in the Western Pacific without U.S.-controlled facilities capable of sustaining major fleet operations, instead relying almost exclusively on commercial access and leased sites.⁷⁰ This was an economically viable arrangement because Navy shore support involved small leased facilities (for example, warehouses and piers), obviating the need to maintain, protect, and staff a large establishment ashore.⁷¹

Access to such facilities had its disadvantages, however. Most directly, U.S. access was denied by various host nations during the American Civil War, Sino-Japanese War, and Spanish-American War, thus cutting off access to coal, supplies, and repair facilities during hostilities.⁷² The political repercussions of the loss of access rights is a salient lesson for other militaries attempting to project power out of area using leased facilities.

The vast distances that separated the Asiatic Squadron from the U.S. mainland meant that ships and Sailors had either to spend a significant amount of time transiting between the Asian ports they frequented and the U.S. homeland, or endure extended periods away from home. The Navy chose the latter path, stationing ships in these locales for as long as 3

or 4 years. The Navy also chose to swap crews or individual Sailors in the midst of deployments—sending some home on commercial vessels—while keeping the ship on deployment for longer times.⁷³

Central Pacific Theater of World War II: 1941–1945. The main logistical challenge in the Central Pacific Theater during World War II was distance. A vast ocean lay between Hawaii and Admiral Chester W. Nimitz's⁷⁴ objectives in the Western Pacific.⁷⁵ Unlike previous actions, Washington was not able to rely on short supply lines from forward bases. In response to this challenge, the United States vastly improved its sea basing by building service squadrons of repair ships, tugs, minesweepers, concrete fuel barges, barges loaded with general stores, and ammunition lighters (flat bottomed barge).⁷⁶ These floating bases included enough food to supply 20,000 personnel for 30 days and vehicle fuel for 15 days.⁷⁷ In the Central Pacific, as the amphibious forces secured new islands, supplies needed to prosecute the war were moved forward by the coordinated efforts of three service squadrons.⁷⁸ This division of labor greatly aided in the Navy's ability to keep its logistics flexible and responsive to the needs of the combatants. The study of the Central Theater illustrates the importance of adaptability in logistics and the ability to carry out major operations with exceedingly long supply lines—provided the military can provide adequate force protection.⁷⁹

This force protection required a robust antisubmarine warfare capability to sanitize the operating area of enemy submarines—or at least provide a basic level of safety against lurking attack submarines; a fast carrier task force to provide combat air patrols for amphibious forces and other surface units operating in the area and to strike airfields and aircraft on shore to prevent those same aircraft from attacking U.S. forces; and sufficient numbers of surface combatants to protect the rest of the surface fleet operating near enemy anchorages.

Southwest Pacific Theater of World War II: 1941–1945. The Southwest Theater presents a classic study in logistics. The invasion forces in this theater never were far from their supply bases because as the front moved north up New Guinea, so did the supply depots and logistic bases. Furthermore, due to the fence strategy employed by General Douglas MacArthur (more commonly referred to as island hopping), each new location seized was strategically important because it provided either space for an airstrip or a natural harbor.⁸⁰ The first offensive in the theater, the Battle of Buna, proved essential to formulating the basics of MacArthur's island hopping strategy: "the movement forward of air power by successive bounds in order to gain local air superiority, provide adequate air cover for the advance of surface elements, and isolate each successive enemy position prior to the final assault by all arms."⁸¹ The tactical use of aircraft both to resupply troops and project power made the few islands capable of supporting airstrips

invaluable. Additionally, the dense jungle terrain was often impassable to armor and artillery, which made assaulting heavily fortified islands enormously costly. Thus, the Southwest Theater required the United States to keep air support as close to the forward line as possible and by-passing and isolating heavily fortified islands, thus providing air cover for resupplying ground forces; in several battles across the Pacific, this cover was the deciding factor. The incremental advance of ground-based air assets suggests one solution to the challenges posed by fighting a largely naval campaign without aircraft carrier support.

MacArthur's airbase-centered Southwest Pacific advance was made possible by a number of additional factors. First, he had to have competent engineers who could construct the above mentioned airbases quickly and quietly. Secondly, MacArthur's air commander, George Kenney, repeatedly came up with innovations that allowed the air forces to stretch the operational distances of their fighters and bombers.⁸² Third, the movement of Army ground forces in conjunction with Army air forces and airfields was supplemented by amphibious forces (7th Amphibious Force) and Army airborne forces. All of these forces moved up New Guinea as a coordinated force keeping the Japanese off balance and second guessing where MacArthur would strike next.

The British experience in the Pacific: 1945. Unlike the American Navy, the British neglected their fleet auxiliaries in the interwar period.⁸³ As a result, the British navy in the Pacific had a relatively short range of operation away from their forward bases. Additionally, this lack of emphasis on auxiliaries meant that the techniques used for underway replenishment were outdated (for example, the British still used stern to bow replenishment rather than the more sophisticated side by side replenishment mastered by the U.S. Navy).⁸⁴ Recognizing this deficit, the Royal Navy eventually authorized the construction of fleet repair ships and floating dry docks to make British mobile bases viable operational hubs rather than simply resupply points.⁸⁵ By the end of the war, the British had moved from an overreliance on forward basing to an overreliance on sea basing: "The British exhibited a predilection for sea-basing support to the fleets rather than the combination of advance bases ashore and service support forces afloat close to the area of operations practiced and refined by the Americans over several years. The requirement proved problematical: floating dry docks took time to build or move, ships were not available in sufficient numbers to fill out the necessary fleet train, and the demands of the operating fleets were grossly underestimated."⁸⁶ In addition to all the problems created by the neglect of underway replenishment, the British faced the problem of operational range. Their ships were designed for operations around Europe with close base support. As a result, they had limited fuel storage capacity to deal with the vast expanses of the Pacific. Throughout the

limited action the British saw in 1945 in support of the Okinawa invasion, the fleet was holding on by a shoestring. On multiple occasions, the British fleet could barely sustain operations at the same intensity as the U.S. fleet and often came dangerously close to running out of fuel.⁸⁷

The British experience offers a strong cautionary tale regarding molding a navy for one type of operation without consideration of the operational conditions of other potential theaters of war. The British navy was built to defend the British Isles, function in the Mediterranean, and defend select territories abroad such as Singapore and Hong Kong. An overspecialization on these discrete missions made the British operationally inept in the Pacific. Their fleet could not have functioned without U.S. logistics and tankers.

Soviet naval out of area operations: 1960s–1970s. The naval operations of the Soviet Union in the Mediterranean and Middle East are probably the best case studies for the impact of bases on out of area operations. The Soviet Fifth Fleet (5th *Eskadra*) is a particularly well-documented case study of basing options and their impact on fleet readiness. The primary metric used by several Soviet navy watchers was number of ship-hours in theater. The 5th *Eskadra* increased from an average of 600 ship-hours a year in the Mediterranean to 5,400, a leap achieved through the use of sea-based anchorages⁸⁸ over the course of 1963–1966.⁸⁹

Another marked jump in number of ship-hours occurred with improving Soviet relations with Egypt. Because the Egyptians had a major naval base at Alexandria, better relations resulted in an all-time Soviet high of 18,700 ship-hours in the Mediterranean in 1971.⁹⁰ After the Egyptians withdrew basing rights, Soviet ability to sustain operations dropped significantly: by 1977, the fleet size was down to 45 ships—an 8-year low.⁹¹

One interesting tactic developed by the Soviets during the Cold War was the option of sailing tenders or supply ships just outside the territorial waters of North Atlantic Treaty Organization (NATO) countries, anchoring in those locations, and then having those tenders serve as comprehensive supply ships for Soviet surface combatants shadowing the navies of Alliance countries. These tenders could provide maintenance, repair, supplies, and other logistical support.

One commentator on Soviet naval doctrine at this time noted that an assessment of Soviet out of area operations needs to account for two significant facts. First, Soviet naval doctrine was based on the assumption that the opening moments of any battle at sea would be decisive. Accordingly, the Soviets were confident that navy combat missions could be accomplished without extensive or sustained logistical support.⁹² Second, in 1974, 60 percent of Soviet out of area operations fuel support was provided by merchant tankers.⁹³ The relative ease with which Soviet merchant tankers could procure supplies in NATO ports in countries such as Italy increased Soviet operational ability because they did not rely exclusively on allied countries.

The Falklands War: 1982. This conflict is one of the most documented logistics operations in modern warfare; it also offers some of the most valuable lessons regarding the problems of out of area operations without proper land-based assets. Due to the rapid onset of the war, the Royal Navy stowed cargo as it arrived with the result that the majority of the cargo was loaded incorrectly and without proper manifests detailing where the equipment was located in the cargo holds.⁹⁴ This haste led to a 12-day restow at Ascension Island, a British base on lease to the United States.⁹⁵ Due to disjointed communications and logistical bottlenecks, once the conflict actually started, the British were unable to maintain air superiority. As a result, British leaders changed the operational plan that required civilian ships to maintain close proximity to the landing zones. The change produced numerous logistical problems, not the least of which was large amounts of fuel and ammunition stored in the open on beachheads.⁹⁶ Given these logistical shortcomings, the use of Ascension Island as restowing point was critical to the overall success of the British campaign. Nevertheless, the distance between Ascension and the Falklands created operational problems, specifically the inability to create air superiority and execute the British operational plan accordingly.

Grenada: 1983. Operation *Urgent Fury* commenced in 1983 for the purposes of evacuating U.S. medical students trapped on the island and subject to martial law (including a shoot-on-sight order for anyone seen on the streets). Under the auspices of protecting its citizens, the United States launched an invasion of the island with the 82^d Airborne, Marines, and Special Forces. Despite stiff resistance from the Grenadian army and Cuban workers and military advisors, combat operations lasted only a couple of days. Due to the close proximity of Grenada to the United States, American forces were able to recover from mistakes made as a result of poor operational planning, relying particularly on the use of Barbados as a refueling point.⁹⁷

Many of the commentaries on Operation *Urgent Fury* suggest that if it had taken place anywhere besides the Caribbean, it would not have been nearly as successful. It is, however, a great case study for joint operations and the difficulties that arise when standard operating procedures are ignored and logisticians, as well as other key personnel, are kept out of the planning stages. Several valuable insights can be drawn regarding what is needed to execute a “no-plan” war under the auspices of joint operations, such as interoperability of communications and refueling gear, joint forces command on the island rather than using the Navy once ground operations are under way, and scheduling all air traffic to the island through one source in order to correctly prioritize the receipt of aircraft.⁹⁸

Libya: 1986. Operation *El Dorado Canyon* was initiated as a direct result of the 1986 nightclub bombing in Germany that killed four people (three of whom were U.S. Servicemembers)

and wounded 230 more. After determining that Libya had supported the terrorist attack, President Ronald Reagan ordered an airstrike on targets directly linked to Libyan leader Muammar Qadhafi and his sponsorship of terrorism. Four targets were selected in Libya, and the U.S. Air Force and Navy were both utilized in the strike. The United States lost a single plane in the attack.

Operation *El Dorado Canyon* is a good illustration of the limitations of current U.S. base structure and the convenience of close base support for missions. The airstrike on Libya was greatly complicated by both France and Spain denying U.S. overflight requests, requiring the Air Force, based in England, to fly around the continental mass of Europe, through the Strait of Gibraltar, and only then onward to attack Libya. This was a 4,600-mile round trip requiring numerous mid-air refueling operations. Beyond the logistical complications of flying great distances and trying to arrive in sync with seabased airstrikes, the elongated route allowed Malta to notify the Libyans of the pending airstrike.⁹⁹ In addition to these timing difficulties and the loss of the element of surprise, two other major problems are evident. First, the long route caused guidance errors in the planes' armaments, making precision attack on targets much more difficult.¹⁰⁰ Second, as a result of unplanned use of afterburners during the airstrike, several of the aircraft became dangerously low on fuel, creating numerous problems in finding the tankers to refuel.¹⁰¹

The raid on Libya also illustrates the advantages of joint command and the importance of interoperability among Services. The overall operation was planned through the U.S. European Command staff.¹⁰² Admiral Frank Kelso, then-Commander 6th Fleet and NATO Commander Naval Striking Force and Support Forces Southern Europe, was operationally in charge of the mission. To overcome interoperability issues, the Navy and Air Force exchanged liaison officers in the planning stages.¹⁰³ In a practice run of the mission, 6th Fleet rehearsed procedures to prevent friendly fire incidents. During the actual mission, there was a naval aviator aboard the Air Force command plane, and an Air Force colonel aboard the 6th Fleet command ship.¹⁰⁴ In addition to two strike groups with targets in Libya, the Navy provided the combat air patrols and protection furnished by aircraft against attack by other aircraft, anti-surface-to-air missile operations, and four E-2C Hawkeyes for long-range surveillance, strike coordination, fighter control, and SAR coordination.¹⁰⁵ As a result of this cooperation, there were no incidents of friendly fire, and the Navy was able to immediately commence a SAR mission for the downed Air Force plane.

Desert Shield/Desert Storm: 1990–1991. Operation *Desert Shield* provided circumstances that the United States and its allies quickly capitalized on. The use of Saudi Arabia as a staging area gave the coalition force several distinct advantages. Saudi Arabia had spent

the previous 20 years overbuilding its infrastructure for such contingencies. This meant that the country had a surplus of airfields and underutilized port facilities as well as a strong road network. This greatly aided in the offloading of goods from both ships and airplanes, allowing for a greater turnover at port. Also, the Saudis gave the coalition unlimited access to food, water, and fuel. This reduced the logistical load on the ships and aircraft bringing in supplies from the United States and Europe. The final factor that was uniquely advantageous to sea transport was uncontested U.S. dominance in the seas. As a result of the Iraqi defensive battle plan and a lack of any credible naval assets, chartered merchant ships could sail through the Persian Gulf with little fear of attack. Furthermore, the fact that it was a UN-sanctioned mission greatly reduced the political issues surrounding the conflict. This status made more merchant ships available and allowed them to be contracted on the spot market rather than through special arrangements.

Despite the advantages afforded by Saudi Arabia, the United States still faced a serious shortfall regarding its transport capacity. It had to charter 19 roll-on/roll-off cargo ships to augment the 17 that it had in its Ready Reserve Force.¹⁰⁶ Additionally, of the 213 dry cargo ships that supported *Desert Shield/Desert Storm*, 43 percent were foreign flagged.¹⁰⁷ In some cases, crews had to be removed from the ships because they refused to sail into the Persian Gulf.

The British contribution to the coalition against Iraq required the movement to the Gulf from the United Kingdom and Europe of some 15,000 vehicles and 400,000 tons of freight. Almost 90 percent of the total went by sea using 110 chartered vessels, only 5 of which flew the British flag.¹⁰⁸ This overt reliance on foreign vessels led the British to seek agreements with flag of convenience governments (Bahamas, Liberia, and Vanuatu, each of which have only a handful of militarily useful ships on their registers) to keep British-owned ships available to meet national emergencies. However, these agreements only made four ships available, one of which withdrew from the agreement.¹⁰⁹ The French were in a more difficult position than the British in their attempt to transport men and materiel to Saudi Arabia. To augment their capacity, the French had to charter 49 merchant ships and 37 B747s for deployment and sustainment operations.¹¹⁰

Operation Sea Angel (Bangladesh): 1991. On April 29, 1991, one of the deadliest cyclones on record hit Bangladesh. The storm destroyed the country's main port in the district of Chittagong and caused substantial infrastructure damage through much of the country. An estimated 130,000 people died as a result of the cyclone. On May 10, one of the largest humanitarian relief operations ever undertaken began. In *Operation Sea Angel*, the United States diverted the 5th Marine Expeditionary Brigade (MEB) and its associated amphibious force to the Bay of

Bengal where it orchestrated and carried out the relief operations. The brigade was already in the area as it was just returning from participation in Operation *Desert Storm*. In total, the operation lasted just under a month and is credited with saving 200,000 lives.

There are several lessons to be learned from this operation. Essentially, the problem in Bangladesh and indeed in many humanitarian relief operations was not a lack of supplies but rather lack of adequate infrastructure to transport supplies to affected areas. In most of the countries hit by natural disasters, nongovernmental organizations are already hard at work and usually have a strong connection to the local area with a good understanding of how to operate successfully.¹¹¹ The 5th MEB was so useful and successful because it had adequate transportation and communications equipment. In this instance, forward deployed amphibious forces proved effective responders not only to conflict situations but also to natural disasters.

The 5th MEB was able to use its amphibious vehicles and a large number of helicopters to transport the needed supplies to the affected areas. Additionally, due to the high transportation capacity, the military was able to leave a small contingent of people in Bangladesh at night. This reduced the risk of disease and also allowed the Bangladeshi government to present the image of coordinating and being in charge of the relief operation.¹¹² Additionally, the ability of the 5th MEB to coordinate all air traffic through the use of advanced communications systems greatly added to the efficacy of the operation. There were some problems due to the AM frequency used by Bangladeshi airplanes, but as a result of the advanced satellite communications used by the Marines and the broad spectrum equipment available to the Army, the international aid effort was fairly easy to coordinate; local demands were reported accurately and in a timely fashion back to the relief headquarters in Chittagong.¹¹³

Operation Amaryllis: 1994. At 11:30 p.m. on April 8, 1994, the French government issued orders to commence Operation *Amaryllis*, a noncombatant evacuation operation (NEO) prompted by the Rwanda genocide. The purpose of this operation was to seize and control the international airport in Kigali and prepare to evacuate 60 persons chosen by the French ambassador. By 10 a.m. on April 14, the last of the French forces had withdrawn from Rwanda. The operation was considered a resounding success, extracting 1,250 civilians from Kigali.

Three main factors accounted for the favorable outcome. The first was the strong working relationship with the Hutu government—among both the moderates and the extremists who committed the genocide. This allowed the French military to move about fairly freely early in the operation. Second, as a result of forward basing, France could mobilize troops quickly and have a large contingent on the ground within 24 hours of the decision to start the NEO. Ninety-one percent of the troops involved were introduced from

locations within Africa. This element of time allowed the French to rapidly extract their personnel before the situation deteriorated beyond their control. Finally, the French had 24 military advisors in Kigali who cleared the main runway at the airport, allowing the troops to land.¹¹⁴ The Germans have studied this case in depth and have revamped their standard operating procedures for NEOs as a result. However, they have the advantage of being able to use European bases as a forward staging area near potential hot spots. This is not the case for non-European powers.¹¹⁵

Tsunami humanitarian assistance/disaster relief (HA/DR): 2004–2005. On December 26, 2004, one of the worst earthquakes ever recorded struck off the Indian coast. The resulting tsunami caused an estimated 228,000 deaths in 14 countries, with the most casualties occurring in Indonesia, Sri Lanka, and India. The response to the disaster was prompt and impressive, with close to \$1.8 billion donated by January 1. Between December 27, 2004, and March 16, 2005, the United States dispatched more than two dozen ships to aid in Operation *Unified Assistance*. Fifty-seven U.S. helicopters flew over 2,200 missions, while U.S. fixed-wing aircraft (mostly C-130 and C-17 cargo planes) flew over 1,300 missions shuttling relief supplies from U.S. ships and other staging areas to hard-hit towns and villages.¹¹⁶

The lessons learned from Operation *Sea Angel* were reinforced by U.S. operations in response to the tsunami. The military proved invaluable to relief operations in four respects. First, its ability to coordinate air traffic and manage the complexity of multiple missions on a large scale was instrumental. Second, due to its sophisticated communication equipment and experience in large-scale logistics, the military was uniquely suited to work as a mediator between all the factions that tried to deliver aid. Third, the ability to bring a large quantity of operational helicopters into the disaster area and repair and maintain them greatly increased the number of sorties that could deliver aid to afflicted areas. Finally, the tsunami relief effort is considered by many to be a validation of the seabasing concept.¹¹⁷ The Navy's ability to provide aid in the form of food, clothing, water, and medical treatment without a large ground presence illustrated the efficacy of the concept. By not creating supply dumps on land, the Navy was able to increase the inherent soft power gained from these missions, decrease the risk to troops and civilians, and allow the host government the appearance of authority in responding to the disaster.

Assessment of Other Military Out of Area Operations

These cases pose similar challenges to those that the PLAN faces while operating far from its shores. All navies, regardless of nationality or level of development, must confront the mul-

tiple challenges of distance, duration, capacity, degree of coordination, and hostility of environment when they conduct out of area deployments.

Distance. Several cases illustrate the difficulty of operating far from home bases and attempting to maintain air and maritime superiority. Because the Royal Navy lacked a sufficient number of aircraft carriers during the Falklands campaign and possessed no nearby airfields, it was hard pressed to generate the number of sorties necessary for solid air superiority over the operating area. Distance also was a crucial factor in the Central Pacific campaign. America's ability to design a logistics system across vast distances in the Pacific Ocean to permit the consistent resupply of its troops was instrumental in its military success.

Duration. Navies sustaining themselves for long periods while operating out of area have traditionally had to rely on their ability to maintain or repair equipment, keep their sailors healthy through sustained medical treatment, and keep task forces supplied with food, water, fuel, and spare parts. Militaries have addressed these duration challenges through a number of techniques. In the 19th century, the U.S. Navy signed long-term lease agreements with foreign countries and kept its ships out for 3 to 4 years at a time. It addressed crew morale issues that resulted from keeping ships away from home ports for long periods by swapping crews or sending individual Sailors home on commercial vessels. The Soviets used floating supply bases, which docked just outside of the territorial waters of adversarial states. During World War II, the U.S. Navy used floating bases and service squadrons to address its "duration" challenges.

Capacity. Force structure sufficiency has been a challenge to all militaries tasked with meeting national security needs with limited resources. In the case of navies, deploying a sufficient number of ships, aircraft, and personnel to perform a large number of missions has always been difficult. This challenge is particularly acute when it comes to performing a large number of missions while at the same time operating out of area. The militaries in our out of area case studies addressed this problem in a number of ways. Some supplanted military shipping with merchant vessels; others provided for a ready reserve of civilian aircraft to fly military lift missions to areas of conflict; and still others prepositioned military equipment in depots on foreign soil to ease the lift requirements that would be created in case of national emergency.¹¹⁸

Degree of coordination. Coordination and communication are central elements of any military operation. The ability of a command to effectively and rapidly communicate intentions to subordinates and other commands has often been a large component of success or failure of a mission. Coordination becomes particularly challenging for out of

Table 2. Universe of Potential Solution Sets

Distance	Duration	Capacity	Complexity of coordination	Hostile environment
Access to neutral airfields	Extended (3 year) deployments	Merchant fleet to supplement lift	Satellite communications	Security detail for noncombatant contingencies
Access to neutral ports	Swap crews, not ships	Civilian reserve aircraft	Liaison officers serving on staffs of other services	Carrier air for air superiority and combat air patrol
Establish bases on acquired territory	Medical facilities, hospital care	Prepositioned equipment	Access to neutral facilities	Access to neutral airfields
Secure overflight rights	Tender/supply ship just outside of territorial waters	Access to neutral ports/bases		Out of area antisubmarine warfare
Aerial refueling	Service squadrons			Joint forcible entry operations/ amphibious assault
Underway replenishment	Access to neutral repair facilities			Floating bases, floating dry docks, and service squadrons
Prepositioned equipment				
Carrier air for air superiority and combat air patrol				

area operations. Units operating at greater distances from home bases lose the benefit of the communications infrastructure of the home nation. The problem of degraded communications is addressed in diverse ways in the case studies. One answer to this difficulty is the use of communications satellites by forward deployed ships or other military units. Another approach deemphasizes technology and focuses on the human element of coordi-

nation, embedding liaison officers with the different operational units as the U.S. military did in support of the Libya raid when it exchanged officers between the U.S. Air Force and Navy commands.

Hostility of environment. Of all of the challenges augmented in an out of area environment, the greatest is combat. It is difficult enough when a military unit is physically attacked by the enemy; this difficulty is exacerbated if that unit also lacks enough ships or aircraft (capacity) to complete assigned missions, or if that unit is relying on supplies traveling long distances.

The case studies identify the importance of adequate capability in protecting the forces operating out of area. This has meant developing an effective defensive capability in such areas as antiair warfare, antisubmarine warfare, and antisurface warfare. It has also meant that when executing nonmajor combat missions that nonetheless pose some level of security threat, those militaries learned how to provide security to noncombatants during NEOs and how to secure and prepare airfields for evacuation of citizens. Finally, the other militaries learned that a good defense also requires an effective offense. As was evident from the World War II case studies, the ability to attack the enemy's air, surface, and subsurface forces is perhaps the best guarantee that the corresponding force is protected from the enemy. Thus, these cases emphasize the need to develop joint forcible entry operations, major amphibious assault capabilities, carrier forces, and their corresponding air wings and associated strike assets.

These challenges offer numerous lessons and present the possibility of diverse solutions to similar obstacles. Table 2 summarizes these lessons and solutions.

Summary and Conclusion

In part II of this report we examined a number of case studies of other militaries' experience with out of area operations. We found that all of these militaries experienced five common areas of difficulties: distance, duration, capacity, degree of coordination, and hostility of environment. Our cases revealed that the militaries examined arrived at sets of solutions to assist in overcoming these difficulties. The militaries, in other words, did not uniformly tackle these hardships but in some instances arrived at diverse solutions to overcome the same problems. In part III of this report, we examine to what extent the Chinese are inclined to follow these solutions.

Analysis

In this section, we analyze the findings from the previous sections to determine tactical and operational significance. To get a sense of China's short-term trajectory for its out of area deployments, the study:

- observed the pattern of China's out of area deployments to tease out operational patterns of behavior
- collected information about the PLAN's difficulties in its out of area deployments
- took note of the Chinese-identified solutions to their out of area challenges
- evaluated the extent to which China's leadership is likely to pursue any of these identified solutions within a 1- to 5-year timeframe.

The long-term trajectory is assessed using the same criteria but includes assessments of non-Chinese actors over a 10-year timeframe.

Operational Patterns of Behavior

The history of PLAN out of area operations provides insight into the organization's operational behavior. Table 1 gives some interesting clues about PLAN preferences in the planning of such deployments. First, the Chinese tend to use the same ships to conduct their out of area missions. While some variance is noted, they relied heavily on the *Luhu*-class destroyers *Harbin* and *Qingdao*, and the *Luhai*-class destroyer *Shenzhen*. The concentrated use of a select few replenishment ships is even more noteworthy. Only the *Nancang*, *Taicang*, and *Fengcang* were used between 1985 and 2002. This pattern changed slightly at the early part of the 21st century with the arrival of the *Weishanhu* and *Qinghaihu* as out of area fleet support ships. In large part, the PLAN's use of the same destroyers and supply ships reflects the fact that the Chinese only possessed a limited number of the most modern surface combatants and replenishment ships. These were utilized repeatedly until a newer class of ship was procured. We can expect the *Luyangs* and *Luzhous* to receive this assignment over the coming years.

Another observation is that the Chinese tend to "overprepare" for these operations. This could be a significant shortcoming if the PLAN proves incapable of conducting out of area deployments without much time to prepare. The early histories show the Chinese forming multiagency task forces to meticulously study the expected operation, sponsoring detailed research and analysis efforts to analyze the mission, and then, in some cases, conducting premission reconnaissance trips or rehearsals. This observation is also supported by the level of attention that the PLAN appears to give to these deployments. In almost every out of area deployment, the navy appears to have assigned a commanding officer of high rank to

lead the task force. These missions have included the commander of one of the fleets or the deputy commander of the PLAN. Lastly, the ships involved in these missions tend to be the newest surface combatants in the Chinese inventory. With the exception of a rare dispatch of a *Luda* destroyer (one of the oldest classes of PLAN ships), the navy is using its newest surface combatants to conduct its out of area operations.

The PLAN also appears to operate incrementally. The earliest out of area deployments show the PLAN operating further out and gradually adding on to earlier missions each time it deploys. The PLAN did not take part in a foreign port visit until 1985, almost a decade since it first started doing out of area deployments. The PLAN's first joint exercise was not until two decades after it began deploying out of area, and the first long-distance combat mission (the Gulf of Aden deployment) took place almost three decades after the PLAN first started operating out of area.

The PLAN also takes carefully calculated political risks with these deployments. In its earliest days, these ships conducted such tasks as retrieving long-range rockets and going to Antarctica far from the prying eyes of foreigners and journalists. This posed almost no international political risk to the Chinese leadership, since the press was not present (or had a minimal presence) for these missions. When the PLA began conducting port visits in the mid-1980s, these were largely flag-waving exercises with little operational content. As the PLAN gained in proficiency and became comfortable with the skills that its sailors and ship captains were developing, the navy began to take part in bona fide operational exercises. This is illustrated by some of the out of area activities and exercises in the past decade. Finally, the decision to deploy a PLAN task force to the Gulf of Aden exhibits a navy that is at greater ease with its operational capabilities and willing to engage in out of area combat operations—and evidently willing to expose itself to greater political risk.

But the first few deployments show that Beijing is still tightly controlling the operational scope of out of area missions—if only to keep a tight rein on the political ramifications of the actions of the task force. For example, none of the ships of any of the deployed task forces to the Gulf of Aden engaged in significant combat operations despite an opportunity to use force against the pirates who kidnapped Chinese merchant sailors from the *De Hai Xin*. The CCP preferred the politically less risky path of paying the ransom.

Applicability of Out of Area Operations Skills to Other PLAN Missions

Today, most of the PLAN's combat training (and associated logistics) focuses on Taiwan scenarios and antiaccess/area denial; this makes sense since Taiwan remains Beijing's highest

Table 3. Notional Nontraditional, Taiwan, and Out of Area Major Combat Operation (MCO) Naval Missions

Gulf of Aden deployment	Notional out of area MCO	Taiwan contingency
Seamanship	Seamanship	Seamanship
Navigation	Navigation	Navigation
Formation-keeping	Formation-keeping	Formation-keeping
Command and control	Command and control	Command and control
Sector monitoring	Sector monitoring	Sector monitoring
Search and rescue	Search and rescue	Search and rescue
Long-distance logistics	Long-distance logistics	Mainland logistics
Escort shipping	Escort shipping	Local air superiority
Intra-task force supply	Intra-task force supply	Special forces insertion/ extraction
Replenishment at sea	Replenishment at sea	Local ASW (PLAN bases)
Vertical replenishment	Vertical replenishment	Local ASUW (bases)
Littoral force protection	Carrier operations	Local AAW/combat air patrol (bases)
Visit board search seizure	Air to air refueling	Antiaccess/area denial
Direct action	Task force antisubmarine warfare (ASW)	Mine warfare (mine countermeasure and offensive)
Small boat operations	Task force antisurface warfare (ASUW)	Missile strike
	Task force antiaircraft warfare (AAW)/combat air patrol	Shore to shore (landing craft)
	Maritime missile defense	Mainland tactical control of aircraft
	Mine countermeasures	2 ^d Artillery missile support
	Aircraft strike	Damage repair/salvage
	Ship to shore operations (L-class and landing craft)	Ordnance reload
	Maritime tactical control of aircraft	Chemical/biological defense
	Naval gunfire support	
	Damage repair/salvage	
	Ordnance reload	
	Chemical/biological defense	

Sources: For the Taiwan mission, see Eric McVadon, "PRC Exercises, Doctrine and Tactics Toward Taiwan: The Naval Dimension," in *Crisis in the Taiwan Strait*, ed. James Lilley and Chuck Downs (Washington, DC: NDU Press, 1997), 249–276; Michael McDevitt, "The Strategic and Operational Context Driving PLAN Building," in *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, ed. Roy Kamphausen and Andrew Scobell (Carlisle Barracks, PA: U.S. Army War College, September 2007), 481–522; Bernard D. Cole, "Right-Sizing the Navy: How Much Naval Force Will Beijing Deploy," in *Right-Sizing the People's Liberation Army*, 523–556. For the nontraditional out of area missions, see Zhou Yong et al., "Shipboard Helicopters Make Positive Contributions in Gulf of Aden," *Liberation Army Daily*, February 26, 2010; Li Jie, "China's Navy Still Has Far to Go," *China Daily*, August 14, 2009, available at <www.chinadaily.com.cn/opinion/2009-08/14/content_8568918.htm>; You Ji, "Naval Humanitarian Assistance Operations Anchored in Military Operations Other Than War," paper presented at *Chinese and American Approaches to Non-Traditional Security: Implications for the Maritime Domain*, U.S. Naval War College, Newport, RI, May 4–5, 2010; Andrew Erickson and Michael Chase, "Informatization and the Chinese People's Liberation Army Navy (PLAN)," presented at the National Defense University, RAND, CAPS, and CEIP Chinese navy conference, November 29–December 1, 2007; "Expert: Anti-Piracy Mission Can Test PLAN High-Seas Combat Capabilities" (专家: 出兵打海盗可检验中国海军的德的远洋战力), available at <www.ah.xinhuanet.com/news/2008-12/24/content_15269944.htm>; "Yin Zhuo: The PLAN should build a long-term supply base in Djibouti" (尹卓: 中国海军应在吉布提建立长期补给基地), available at <http://cn.china.cn/article/n494656,fe393f,d2477_12053.html>.

For a list of missions for major combat operations, see Commander, U.S. Naval Surface Forces, Instruction 3502.1D, July 6, 2007; Joint Publication (JP) 3–02, *Joint Doctrine for Amphibious Operations* (Washington, DC: The Joint Staff, September 19, 2001); *Major Combat Operations Joint Operating Concept Version 2.0* (Washington, DC: The Joint Staff, December 2006), C1–C20; and JP 3–0, *Joint Operations* (Washington, DC: The Joint Staff, September 17, 2006, incorporating change 2, March 2010).

foreign and defense priority. By contrast, most of the out of area operations conducted or contemplated involve nontraditional security missions. How much of what the navy has done in the Gulf of Aden and its other out of area deployments is applicable to a Taiwan contingency? Similarly, how much of the PLAN's out of area experience is applicable to other long-distance MCOs? Table 3 lists the tasks and missions associated with a Taiwan scenario, an out of area MCO, and the PLAN's current Gulf of Aden deployment. The similarities in the lists in table 3 illustrate which tasks the PLAN can transfer from its experiences in out of area deployments to other missions. The differences in table 3 illustrate which tasks the PLAN still needs to develop in order to conduct major combat operations out of area and which Taiwan-related missions/tasks are not being exercised or practiced by navy forces conducting far-removed operations.

As table 3 illustrates, there is some overlap in the PLAN out of area missions and the tasks/missions associated with Taiwan and the expected tasks/missions for an out of area MCO. These include navigation, seamanship, formation-keeping, and command and control of forces, among others. PLAN officers and sailors practicing these skills during an out of area deployment obviously can take these skills with them to meet a Taiwan contingency. However, the more apparent observation from table 3 is that the missions are largely different and

Table 4. Continuum of Out of Area Operations

Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
“Baby Steps”	Military diplomacy	Noncombatant contingency operations	Out of area low intensity conflict	Major combat operations
Surveillance ¹	Show the flag	Noncombat evacuation operations	Counterpiracy operations	Maritime supremacy
Reconnaissance ²	Port visits	Humanitarian assistance/ disaster relief	Escort operations	Carrier operations
Training	Exercises with other militaries	Maritime peace-keeping	Freedom of navigation operations	Out of area anti-submarine/ antisurface/anti-aircraft warfare
Experimentation		Other support missions	Maritime intercept operations	Out of area joint forcible entry operations/amphibious assault

¹ *Surveillance* is the systematic observation of aerospace, surface or subsurface areas, places, persons, or things by visual, aural, electronic, photographic, or other means.

² *Reconnaissance* is a mission undertaken to obtain by visual observation or other detection methods information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area.

unrelated. Most of the experience the PLAN is gaining in the Gulf of Aden and from other out of area task forces is not transferrable to other PLAN missions (and vice versa). The PLAN training focus on antiaccess/area denial has minimal impact on the nontraditional security tasks the navy performs during its Gulf of Aden deployments. Similarly, many more capabilities (carrier operations to include flight deck operations and tactical control of aircraft) will need to be developed by the PLAN if it is to be effective at conducting out of area MCOs. The MCO list of tasks displayed in table 3 could serve as a crude tally of indications and warnings for the Intelligence Community to keep tabs on China’s out of area trajectory.

The Continuum of Out of Area Operations

The case studies also suggest that there is a continuum of out of area operations. Both the PLAN case studies and those of the other militaries illustrate that the growth and development

of a nation's out of area capabilities and consequently the missions it undertakes follow a predictable path, illustrated in table 4. Navies beginning to do out of area deployments start with reconnaissance missions, training, and experimentation. They progress to activities that can be categorized as military diplomacy, such as port visits and exercises with other navies. From there, these out of area navies progress to noncombatant contingency operations. Examples of these missions are HA/DR, maritime peacekeeping operations, and other support missions such as refueling the ships of other navies. These navies then move on to conduct out of area low intensity conflict operations. These involve escort operations, counterpiracy, freedom of navigation operations (FONOPS), and maritime intercept operations. Finally, at their most developed, the out of area navies are capable of conducting MCOs while far from their home shores.

U.S. Navy ships, for example, were conducting reconnaissance raids and maintaining surveillance of commerce raiders and pirates as early as the 18th century. Although the U.S. Navy engaged in major combat operations with the Royal Navy and with the Confederate navy in the 19th century, these engagements cannot be considered out of area operations. Its most famous military diplomatic action, the next stage of development, was the global circumnavigation of the Great White Fleet in 1907. By the early 20th century, Navy ships conducted peacekeeping operations in South America when they sailed to both sides of the Isthmus of Panama to deter war between Panama and Costa Rica. The Navy also conducted the famous NEO of U.S. citizens during the Boxer Rebellion in China. Examples of low intensity combat operations in the guise of escort operations can be found just prior to World War II when U.S. Navy ships escorted civilian vessels to England in 1941. Finally, major combat operations were demonstrated by the Navy's conduct of a two-ocean war with the Axis powers during World War II.

The PLAN also began its out of area operations with such basic undertakings as surveillance and reconnaissance missions, training, and experimentation. These initial operations served as "feelers" to educate the nascent navy. These were followed by military-diplomatic or "show the flag" missions, including port visits, participation in naval reviews, and exercises with other militaries. Although the PLAN has yet to conduct a NEO or formally participate in a maritime peacekeeping operation, it has participated in exercises to practice the latter and has professed an interest in being able to conduct the former. Unquestionably, China has the platforms to execute these missions.

The next stage in our constructed continuum is out of area low intensity conflict operations. These include counterpiracy operations and escort operations (in which the PLAN is now taking part). The Chinese navy is conceivably capable, or soon will be, of performing maritime intercept operations, counterdrug patrolling, and FONOPS.

At present, China seems to have a capability that is on the verge of entering into the fourth stage of this continuum.¹¹⁹ Is it inevitable that China will get to the fifth stage? That is, will the PRC develop the capabilities to engage in MCOs far from home? Given that each of the nations has followed a similar long-term trajectory, it is probable that China will follow such a path. At the same time, it is worth emphasizing that when the five challenge factors discussed throughout this report are applied to the continuum of operations displayed in table 4, we obtain some interesting results. A large-scale NEO with a considerable degree of difficulty coordinating large numbers of forces and personnel (stage 3) would be much more challenging than a smaller-scale low intensity conflict such as the PLAN antipiracy mission now under way (stage 4). With the five challenge factors equal, however, table 4 does represent the gradual increase in difficulty of these out of area missions and serves as a useful tool for policymakers and the Intelligence Community to assess China's out of area trajectory.

China's pursuit of every out of area option identified by the lessons of other militaries is *not* inevitable. The Chinese leadership will pick and choose its options to suit Chinese interests. We next evaluate the likelihood that China's leadership will pursue one particular out of area option over another.

The PLAN and Its Out of Area Options

Table 2 displays a number of potential solution sets available for long-term PLAN planning about out of area operations. Some solutions will have greater appeal to the Chinese leadership than others for political and strategic reasons. Some will have significant technical and operational challenges that may require years of steady attention before they become feasible. We evaluated each option displayed in table 2 by examining whether the PLA has already initiated programs or activities associated with a particular out of area solution; assessing whether a strong operational or strategic rationale accompanies a specific solution; identifying legal or political constraints associated with the pursuit of a specific solution; and then determining which technological challenges the Chinese would confront if they pursue the option. This set of issues guided our final assessment of the likelihood that Chinese leadership will follow up on particular solutions.

Access to neutral ports. China is likely to pursue this out of area option, and is indeed already pursuing it to a limited extent. Chinese foreign policy has repeatedly stated that the nation's troops will never occupy or be formally stationed at bases abroad, but that has not precluded the Chinese from temporarily making use of facilities of friendly nations. The subject is politically sensitive enough that the Chinese initially refused to use facilities in Africa during its first Gulf of Aden deployment, but they have since relaxed this restriction. Thus far, this access has been restricted to temporary use of facilities to refit and refuel surface combatants. Nonetheless, the operational difficulties that emerge in the absence of access to foreign facilities or

bases make an operationally and strategically compelling case for the PLA and CCP leadership to seriously consider this option.

Access to neutral airfields. China is unlikely to pursue a more controversial approach to basing in which PLA Air Force (PLAAF) or PLAN Air Force (PLANAF) aircraft would make use of neutral airfields. Thus far, we have seen no evidence that Beijing and its neighbors have arrived at any such agreement. Politically, this is a sensitive issue for Beijing since an arrangement of this sort flies in the face of its claim that it will not permanently station troops in foreign territory. Technically, it also poses challenges in that China would have to provide some kind of supply line to maintain and repair the aircraft. Strategically, it does not make sense for the aircraft to be isolated from airbases in China, leaving them vulnerable to attack—when there does not appear to be a specific mission for such aircraft. At present, there does not seem to be a compelling rationale for China's leadership to explore this option.

Secure overflight rights. Currently, it is unlikely that China will make such a request of any of its neighbors. Beijing has never asked another country for the right to fly combat aircraft across its airspace for the purpose of attacking a third country. Obviously, this would have some political sensitivity, seeing as it is counter to China's self-proclaimed image as a peace-loving state with no ambitions to initiate conflict with its neighbors. Technically, China has to overcome other challenges such as developing its aerial refueling capability and its bomber force before this becomes a viable option. But such an approach has enough potential for political repercussions that at present there is little prospect of Beijing pursuing it. Finally, with its large ballistic missile force, China has no pressing operational or strategic reason to shift its strike capability to bombers and other manned aircraft and, therefore, no need for overflight rights.

Prepositioning equipment. China is unlikely to pursue the option of prepositioning military equipment on the sovereign soil of another country.¹²⁰ The United States has prepositioned large quantities of equipment in its maritime prepositioning ships and in selected locations across the globe (for instance, Norway), but there does not appear to be any Chinese "prepo" program in the works or in negotiation. Furthermore, since the Chinese do not advertise themselves as ready to engage in global conflict, they have not engaged in developing the capability to store military equipment on merchant vessels deployed all over the globe, nor have they secured the right to store military equipment in foreign territory. In addition, all of the noted Chinese sensitivities about stationing troops permanently on foreign soil apply to this option. China would have to station some of its personnel permanently on foreign soil if only to guard and maintain the large stockpile of military equipment that it has staged. Lastly, China would have to explain the purpose of stockpiling a large set of military equipment far from its shores and

close to someone else's. There are no compelling operational or strategic rationales for Beijing to pursue this option.

Establish bases on acquired territory. Given our prior observations about the Chinese position on stationing troops permanently on foreign soil, this option is highly unlikely. There is a compelling strategic rationale *not* to acquire the territory of another sovereign state. At present, China's grand strategy is to continue to modernize and develop economically—that is, to develop within the international system as it is constructed now. To violate the sovereignty of another state is to directly challenge the international system, and hence, the authority of the other great powers—especially the United States. China simply has no pressing reason to do that now or in the near future.

Aerial refueling. China at present has an air-to-air refueling capability and is likely to develop it further to support out of area operations. The Chinese converted a number of H-6 bomber aircraft into refueling assets. The PLAAF has 10 tankers and the PLANAF has 4. These numbers are insufficient to conduct a massive air-to-air refueling operation to keep bombers and fighter aircraft airborne for any significant time.¹²¹ There is a strong possibility that the PLAAF will soon acquire Russian Il-78s and use them for additional tankers, but that deal has reportedly stalled.¹²² The PLAAF and PLANAF aerial refueling tanker fleet suffers from a number of technical shortcomings. First, the H-6 tankers are incompatible with the Su-30, the aircraft currently with the longest legs. Secondly, at present it would difficult for PLAAF tankers to support naval aircraft since the two services rarely train with one another. Finally, to fully exploit aerial refueling in support of a long-range air mission, the Chinese would have to sort out a number of operational issues and procedures (for example, air intercept control, combat identification, early warning, joint coordination, and rules of engagement).¹²³ In short, the Chinese have some technical capability, but they also have significant operational issues to work out. They do have a compelling operational rationale to pursue this option. With carrier operations requiring years to fully develop, and with the increased importance of air operations for the conduct of modern war, the PLA has a great need to extend the ranges of its aircraft to cover the possible expeditionary missions that it might find itself involved in.

Underway replenishment. The PLAN is likely to continue improving the underway replenishment capability it has maintained since the 1980s. The 2002 global deployment and current Gulf of Aden mission demonstrate that these are functional capabilities. Yet the PLAN lacks capacity for underway replenishment or comprehensive supply ships to sustain a large force out of area. At present, the PLAN has only three comprehensive supply ships in its inventory¹²⁴—hardly enough to sustain a significant number of surface combatants out of area at the

same time.¹²⁵ Nonetheless, it continues to procure these types of ships, train its sailors in underway replenishment operations, and test the capabilities of the replenishment force by continuing to give it greater challenges. As China's economic interests abroad continue to expand, the PLAN has been required to operate further out from the mainland, creating a corresponding need for supply ships to allow surface combatants to operate far from home.

Extended deployments. An inexpensive option for any force seeking to address the problem of duration in out of area operations is to simply keep its force out longer, but China does not appear likely to pursue it. That option reduces the number of ships required and saves time since the ships would not have to periodically travel back to their home ports. The U.S. Navy followed this path in the 19th century when it lacked overseas bases; it routinely kept its ships out of area for 3, 4, and even 5 years. There is currently no evidence that China intends to follow a similar path. A ship kept out of its homeport for multiple years does save time and costs and addresses capacity issues; however, it still needs maintenance and repair. This requires access to a dry dock or a major commercial shipping facility. China does appear to be in the process of securing temporary access to facilities for routine maintenance, refit, and resupply; however, at present there is no evidence that the nation has secured agreement to any facility for its warships for an extended time. Absent such agreements, the PLAN cannot keep its ships out for long periods without having them break down and decay. Chinese observers have noted that China simply lacks the ship capacity to both credibly defend its territorial waters and conduct out of area operations.¹²⁶ Keeping two to three ships forward would certainly help with the capacity problem as we noted above, but then the Chinese will have been confronted with the political sensitivity of having their sailors and soldiers permanently or close to permanently stationed on foreign soil. They will also contend with the issue of crews.¹²⁷ Keeping a ship out for years is certain to have a deleterious impact on morale. So overall, the costs of keeping a ship and crew out for an extended time seem to outweigh the benefits.

Swapping crews, not ships. Another 19th-century innovation is the swapping of crews and individual crew members without rotating the ships, keeping the ships out of area for long periods but not the sailors themselves. China is unlikely to swap crews instead of ships as a means to deal with capacity issues. All of the previously noted difficulties of keeping ships out of area for an extended time would still apply to this option, with additional considerations about positive impact on crew morale. There is no evidence that the Chinese have ever entertained this idea. Swapping crews, of course, has some negative costs. Crews that have not trained or "worked up" with their ships will take some time to move up the learning curve. Swapping part of the crew and not the rest, or staggering the swap, will make integrating the entire crew into an effective

fighting force difficult. Finally, “crew swap” is the rationale of a navy that is downsizing or attempting to make greater use of the same number of ships in the force. This is what drove the U.S. Navy in attempting its crew swap experiment in 2004 and 2005.¹²⁸ There is no evidence that China is attempting to conserve the number of ships it has. In fact, all the trends suggest that China’s shipbuilding program will steadily increase the number of surface combatants in the PLAN for some years to come.¹²⁹

Supplementing combat lift with merchant shipping. One proposed out of area option that China is likely to undertake is the use of merchant shipping as a supplement and perhaps even as a substitute for assault shipping or amphibious lift. China has long been known to be planning to use merchant ships as such a supplement for a Taiwan contingency.¹³⁰ It is therefore not difficult to imagine it using merchant shipping as a supplement to some future contingency (possibly Taiwan) in which its amphibious lift was insufficient to carry the needed number of ground forces to some objective. Of course, the examples of other navies using merchant shipping as supplements to amphibious lift have all been in MCOs in which the operation was so large that it exceeded the amount of amphibious lift available to the militaries involved. Outside of the Taiwan contingency, China’s use of merchant shipping in support of military operations would probably be on a much smaller scale (for example, a South China Sea scenario involving one of the Spratlys or Paracel islets, an HA/DR operation, or NEO).

Civilian reserve aircraft. Given China’s historic use of civilian shipping during times of national emergency,¹³¹ it is conceivable that during a military operation, civilian aircraft might be called in to help the PLAAF with an operation. Although there is no evidence of a formal Civilian Reserve Aircraft Force (CRAF), civilian aircraft might be sent to Africa for a NEO, for instance—just as the French used commercial aircraft during Operation *Amaryllis*. In some distant scenario, Chinese civilian aircraft might help supplement the transporting of troops just as U.S. troops are transported by CRAF to friendly airports where they then deploy to conflict sites. Because such contingencies as NEOs or HA/DR may demand a significant number of aircraft (perhaps more than the Chinese military possesses), there is a compelling strategic and operational rationale for China to make use of CRAF.

Access to medical facilities and medical care. China’s hospital ships were originally developed for the purpose of treating casualties during maritime-related conflicts. Recently, the Chinese have stated that such assets could be used for international humanitarian assistance and other expeditionary operations.¹³² These assets have already been deployed with the counterpiracy task forces to provide mobile medical- and healthcare for the sailors as well as the locals.¹³³ Such an option, however, would be extremely expensive to maintain. In his proposal for

improving the Gulf of Aden task force operations, Admiral Yin argued that access to a forward facility would provide the task force's sailors access to better healthcare.¹³⁴ The bottom line for this assessment is that there is a real and compelling operational and strategic rationale for the PLAN to get access to good and sustainable medical care while operating out of area, and we should expect China to move expeditiously on this front.

SATCOM. The Chinese military already makes use of satellites to communicate among its own forces. This capability is not widely spread across the PLA, but the technical capability is already resident in some army and navy units. What is lacking is sufficient SATCOM equipment distributed across the force and services. This issue is not as simple as the Chinese government distributing SATCOM equipment to all PLAN ships deploying to the Gulf of Aden. In considering these nuances, the Central Military Commission (CMC) and General Staff Department (GSD) are weighing the benefits of increased connectivity with the loss of centralized control that such a setup would bring about.¹³⁵ Putting a CMC or GSD liaison officer on board the deploying flag ship can work only if these deployments remain a unique and special operation. If they become routine—that is, if the Chinese conduct many of these types of operations simultaneously—then having a liaison officer (LNO) on board for all major tactical and operational decisions would be unworkable.

Liaison officers embedded with other staffs. There is plenty of evidence to suggest that the PLA is comfortable with the concept of embedding LNOs of one service or staff within the organizational structure of a subordinate, superior, or equally ranking staff. The deputy commanders of some Military Regions, for example, are officers of other services. The Gulf of Aden deployment also contains evidence that the PLA is comfortable embedding representatives of other staffs with the operating forces. Chinese accounts of the counterpiracy mission mention representatives from the CMC or GSD on board the ships of the Gulf of Aden task force. The bottom line is that for the purposes of facilitating communications and coordination, the PLA and CCP are likely to pursue the option of embedding personnel with the staff of the task group commander.

Tender/supply ship just outside territorial waters. This tactic of last resort was practiced by the Soviets at the height of the Cold War, but only when they were deprived of access to facilities from friendly or neutral countries. Nonetheless, there is little to restrain the PLAN from undertaking a similar approach should it need to. At present, the use of a comprehensive supply ship to provide the Gulf of Aden task forces with as much maintenance, repair, and supplies as possible is analogous to the Soviet practice. There is, therefore, no existing legal, political, or technical limitation to the Chinese utilizing this technique to enhance their out of area capabilities. In addition, given China's current maritime territorial disputes with its Southeast Asian

neighbors in the South China Sea, it has a compelling strategic and operational rationale to use merchant and other supply ships to restock PLAN destroyers and other surface combatants that might be called upon to remain out to sea for lengthy periods of time.

Service squadrons. Fielding a special logistics group designed to support PLAN out of area operations is also a highly probable development. China's use of comprehensive supply ships to sustain and repair other task force vessels shows nascent capability in this field. This option, developed by the United States during World War II, helped the Navy provide supplies across vast distances of the Pacific Ocean. There is little regional political sensitivity toward China's development of this capability, and there do not appear to be any technological obstacles preventing the PLA from developing it. Finally, this option would be operationally and strategically attractive to the Chinese if the nation were to engage in a major maritime conflict.

Security detail for noncombatant operations. China is likely to pursue this option. The most recent PLAN deployment to the Gulf of Aden suggests that this capability has already been developed. The special operations forces deployed with the Gulf of Aden task force for participation in maritime security missions could just as easily be deployed ashore to secure airfields or escort Chinese citizens to shore points for evacuation. The use of a PLA marine corps brigade to get to victims of the 2008 earthquake in Sichuan Province¹³⁶ could—with the development of fixed-wing airlift capabilities—be used to fly to a conflict-torn country's airport, secure it, and assist in the evacuation of Chinese noncombatants.

Carrier strike groups and carrier aviation. China has repeatedly denied rumors that it intends to develop a carrier battle group capability along with associated air assets. Such rumors and denials have existed since the late 1970s. Over the last few years, however, the Chinese press has devoted more attention to the possibility of a PLAN carrier. Naval analysts and spokespersons have been more forthcoming about the PLA leadership's belief that the PRC ultimately needs an aircraft carrier.¹³⁷ There is, additionally, a consensus within the U.S. China-watching world that the PLAN will announce that it will proceed in that direction.¹³⁸

There is a clear strategic and operational rationale for an aircraft carrier capability. China would need a carrier to provide air cover far out to sea for its expeditionary missions—such as the defense of maritime claims in the South China Sea, or for the sea line of communication (SLOC) protection mission in the Indian Ocean.¹³⁹ Such tasks, however, could be handled by three medium-sized helicopter/short-takeoff vertical-landing aircraft carriers—the kind already possessed by a few nations. A carrier would also prove useful in HA/DR, NEO, and other nontraditional security missions.¹⁴⁰ Because of the utility of these less ambitious carrier

deployments, the question of whether the Chinese military progresses from minimal carrier capability toward deploying multicarrier sea control assets is difficult to predict.

In addition, the simple acquisition of a carrier deck does not immediately purchase carrier capability. The Chinese will still have to acquire the aircraft (which it has begun to do) that are carrier compatible, develop the forces and weapons systems to defend the carrier, and train the air wings to operate off the ship. In addition, since the Chinese are experiencing significant growing pains with regard to supplying ships out of area, we can expect similar or even more acute issues in developing the logistical procedures necessary to supply, refuel, and maintain an aircraft carrier at sea. Moreover, the Chinese are still politically sensitive about announcing these observations too soon or too abruptly. The CCP leadership recognizes that there are regional political repercussions from making such an announcement. In short, it is likely that the leadership will pursue this out of area option within a decade, and the PLAN will soon have its carrier deck. It will be some years, however, before it has a multicarrier force (that is, three or more platforms and associated air wings) capable of sustaining major combat operations out of area.

Antisubmarine warfare. At present, China has only one critical strategic and operational rationale for possessing an out of area ASW capability:¹⁴¹ to protect its shipping and the SLOCs between the Persian Gulf and Chinese waters.¹⁴² It does have reasons to develop ASW capabilities in the Western Pacific, if only to address the threat of U.S. submarines operating near Taiwan during a contingency. However, the Chinese do not appear to have devoted many resources or much energy to developing ASW to hunt U.S. submarines as part of antiaccess/area denial operations. Fully developed ASW would help protect Chinese merchant ships and other flagged vessels heading to China with petroleum and other valuable minerals against adversary submarines seeking to disrupt the flow of traffic in the Persian Gulf or Indian Ocean.¹⁴³ A scenario involving enemy submarines attempting to interdict Chinese merchant vessels probably entails MCOs between China and some other national power (though the likelihood of this scenario taking place is extremely low).

At present, China's ASW capability is very poor. Its conventional and nuclear submarines were not designed with out of area combat missions in mind, nor are the PLAN's exercises focused on this mission. China has acquired a few of the technological tools necessary to play in ASW, but its ships and sailors have simply not been focused on this particular mission. China has a strategic rationale to continue to develop its submarine force because it still needs to keep the U.S. Navy at bay with antiaccess capabilities.¹⁴⁴ Effective ASW is expensive in terms of platforms and equipment and requires an expenditure of funds and training time. Given the

demands of the ASW mission and absence of a compelling strategic rationale to develop an out of area ASW capability, China is unlikely to pursue this capability.

Amphibious assault and amphibious lift. At present, China does not possess a pressing strategic and operational rationale for an out of area joint forcible entry operation (JFEO) capability. It is difficult to conceive of a scenario in which its armed forces would be expected to board large deck amphibious ships, sail hundreds of miles, and conduct joint operations against a sovereign power for the purposes of inserting ground forces on foreign shores. However, as years of analysis and commentary on the Taiwan Strait issue should attest, China does have a compelling strategic and operational rationale to possess or be in the process of developing a joint forcible entry capability to settle the Taiwan issue. These are two separate matters. For out of area operations, China has no compelling reason to develop amphibious forces described by practitioners as “ship to shore.”¹⁴⁵ For a Taiwan scenario, China does have a strong rationale to develop “shore to shore” amphibious capabilities. Therefore, the procurement of enough landing craft to place multiple divisions of PLA on the island of Taiwan makes operational and strategic sense.

To complicate this discussion further, China does have a compelling operational and strategic rationale to conduct amphibious operations out of area on a much smaller scale. There are maritime territorial disputes in the East and South China Seas that the PLAN could help address, but this would not require a full-fledged JFEO capability. Thus, the procurement of a limited number of large deck amphibious ships (for example, the *LHA*-class) and associated smaller deck amphibious ships (*LSDs* or *LPDs*) makes sense from the point of view of a nation attempting to protect its maritime territorial claims, willing to sail long distances to rescue citizens during NEOs, and conducting HA/DR missions out of area.

China does not currently possess a robust amphibious assault force. Its entire inventory of amphibious ships and landing craft can, at most, land two mechanized infantry divisions of PLA troops. It has recently been modernizing its capability via the acquisition of *LPD*- and *LSD*-class amphibious ships.¹⁴⁶ Nonetheless, the PLAN lacks the capacity to conduct large-scale amphibious operations out of area and at distant shores. Not only is the PLAN lacking in the sheer number of amphibious ships necessary for large-scale amphibious operations, but it also lacks the landing craft (both conventional and cushioned), aircraft that are amphibious ship compatible, and crews trained in amphibious operations. These will take years, if not decades, to develop and field. Even if the PLAN decided to procure all of the amphibious capabilities listed above, it would take years of concentrated

Table 5. China's Propensity to Adopt Short-term Solutions

Capability	In development or already possesses?	Compelling operational and strategic rationale	No political constraints	Few operational constraints	Few training or personnel constraints	Able to produce more of a current inventory	Does not lack R&D know-how	Foreign acquisition opportunities	Overall assessment
Food preservation improvement	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Very likely
Development of new replenishment ships	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Very likely
Expand helicopter use in naval operations	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Very likely
Increased access to host nation facilities	Yes	Yes	No	Yes	Yes	N/A	N/A	N/A	Very likely
Construct more ships with indigenous engines	Yes	Yes	Yes	Yes	N/A	Yes	No	Yes	Very likely
Expand surface ship capacity	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Very likely
Expand satellite communications use	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Very likely

training to conduct the associated missions (see table 3). The PLAN's Gulf of Aden deployments would provide relatively little help in training for amphibious assault.

There are also potentially unfavorable political implications if the Chinese attempt to develop an amphibious force too quickly. It would signal to the rest of the region that China is seeking to resolve its Taiwan problem fast through the use of force, and its South China Sea territorial problem as well. China could also be seen as seeking to project power far beyond its traditional sphere of influence. Thus, the rapid pursuit of amphibious power projection capability would certainly lead to many objections from the countries of the region.

Political repercussions aside, China currently has the technological and shipbuilding capacity to construct a large amphibious force replete with landing ships and craft and the other components that make large-scale amphibious operations feasible.

Summary and Conclusion

Tables 4 and 5 summarize our assessment of China's propensity to adopt the previously mentioned out of area options. As table 5 shows, the ideas being debated in the Chinese press and within the PLAN leadership itself—the short-term recommendations to improve PLAN out of area operations—have a likelihood of being adopted by the PLA and the CCP leadership for strategic, political, and technical reasons. Although it is difficult to assign time lines to such activities, we can probably expect to see significant improvement in these areas within a decade.

The story is mixed, however, with regard to China's long-term out of area options. As table 6 shows, some options such as the continued development of aerial refueling, use of merchant ships to supplement combat lift, and floating supply bases have a high likelihood of being adopted by the civilian and military leadership. Other options have positive advantages but would require further debate and development before the Chinese leadership forges ahead with acquisitions and training programs. These options are "likely" to be adopted but require additional effort to become a reality. These include the carrier program and development of PLAN amphibious assault capabilities. Finally, some options simply are unlikely to be adopted by the Beijing leadership either because there is no sound strategic rationale behind them, there are huge associated political risks or constraints, or the technological hurdles are simply too high at present. Examples include acquiring foreign territory to establish naval bases, obtaining overflight rights, establishing prepositioned equipment in foreign territory, and swapping crews instead of ships.

Strategy, Operations, and Policy

Implications

This assessment of China's out of area operations generates a number of strategic and operational implications for the U.S. policy community. These are listed and discussed below.

We can expect the PLAN to act incrementally for now. The PLAN approach over the past four decades can be characterized as one of caution in operational behavior and “incrementalism” in the development of capabilities. This behavior is likely to continue for the foreseeable future. We can expect the PLAN to continue its out of area deployments, gradually increasing the types of tasks and missions that Chinese task forces execute. We should not expect a dramatic shift in PLAN missions or sudden surges in levels of activity.

China's behavior within its own back yard may be an exception to this rule, however. As Beijing becomes more confident in its operational abilities, it may make dramatic moves within the Asia-Pacific region to score political and foreign policy points with its immediate neighbors, particularly the countries with which it has maritime territorial disputes.¹⁴⁷ The PLAN's most recent 10-ship show of force in the East China Sea meant to signal to Japan that China still lays claim to those waters is one such example.

The PLAN is still wrestling with the five challenge factors. The Chinese navy still has some fundamental obstacles to overcome (associated with the five challenge factors discussed throughout this report) before it can operate effectively out of area: duration issues (notably maintenance and repair problems) still plague the PLAN's long-distance deployments; the inability to preserve fresh fruits and vegetables and potable water has long-term effects on morale and crew performance; and absence of sustained and reliable medical care will eventually have a deleterious effect on sailors. Coordination and communication issues still complicate PLAN operations. Command and control is still largely centralized and controlled by the General Staff Department or the Central Military Commission; the Gulf of Aden task force made use of satellite communications but not all PLAN ships are so equipped. Capacity problems also confront the navy leadership. As noted by the Chinese press, the Gulf of Aden task forces lack helicopters, the work horses of naval operations. The capacity of the surface combatant force is not robust enough to sustain both these out of area operations and a contingency close to home. Finally, distance remains a significant obstacle to out of area effectiveness. Long-distance supply lines have meant the task forces could not rapidly get access to spare parts or other supplies, complicating maintenance and

Table 6. China's Propensity to Adopt Long-term Solutions

Capability	In development or already possesses?	Compelling operational or strategic rationale	No political constraints	Few operational constraints	Few training or personnel constraints	Able to produce more of a current inventory	Does not lack R&D know-how	Foreign acquisition opportunities	Overall assessment
Carrier operations	Yes	Yes	No	No	No	No	Yes	Yes	Likely
Aerial refueling	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Very likely
Acquisition of foreign territory	No	No	No	N/A	No	N/A	N/A	N/A	Unlikely
Prepositioning equipment	No	No	No	No	N/A	N/A	N/A	N/A	Unlikely
Overflight rights	No	No	No	N/A	No	N/A	N/A	N/A	Unlikely
Crew swap	No	No	Yes	No	N/A	N/A	N/A	N/A	Unlikely
Extended deployments	No	Yes	No	No	No	N/A	N/A	N/A	Likely
Anchoring off territorial waters	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	Very likely
Using merchant ships for lift	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Very likely

Long-distance anti-submarine warfare	No	Maybe	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes	Unlikely
Joint forcible entry operations/amphibious assault	Yes	Yes	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Likely
Extensive satellite communications	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Very likely
Security detail for noncombat evacuation operations	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	N/A	Very likely
Access to neutral ports	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	N/A	Very likely
Access to neutral air fields	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	N/A	N/A	N/A	Likely
Civilian reserve aircraft	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	Very likely
Liaison officers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Very likely
Extensive medical out of area operations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A	N/A	Very likely

repair. The long distance to home bases has increased the operational tempo of the task force ships, thus increasing costs and having a negative impact on sailor morale.

China is not close to developing into a global military power. China is gradually developing its navy so it can sustain operations out of area. Given the likelihood that the PLA and CCP leadership will choose to pursue the short-term options listed in table 4, we can expect the PLAN will be able to conduct noncombatant contingency operations (NEOs and HA/DR) and low intensity conflict operations (for instance, escorting, FONOPS, and more robust counter-piracy and maritime security operations) by 2020. Additionally, we can expect the Chinese to utilize their newly acquired hospital ships and amphibious assets (*LPDs, LSDs*) to perform traditional noncombat out of area operations. The PLAN's hospital ships, like U.S. hospital ships, are an ideal platform to project Chinese "soft power" into the Asia-Pacific and beyond by conducting medical assistance missions to underdeveloped countries, medical exercises with various militaries, and, of course, HA/DR missions. These emerging missions not only conform to the "New Historic Missions" laid out by President Hu Jintao in 2004, but they also reflect the emphasis on military operations other than war specifically mentioned in the PLA's 2008 Defense White Paper.

The operations described here do not make a global military power with a robust power projection capability. China still lacks the network of bases and facilities to perform major repairs on ships—a capability it would badly need in major combat operations even with a small power. As table 3 pointed out, the missions and tasks performed by the PLAN Gulf of Aden task force are insufficient to reinforce all the skills needed by the navy to execute a Taiwan operation or a notional out of area MCO. Among tasks the PLAN would have to perform to effectively undertake an out of area MCO are: carrier operations including flight deck operations and tactical control of aircraft, ship to shore operations including well deck operations, and aircraft strike missions. None of these tasks are being exercised or learned through the Gulf of Aden deployment.

Experiences gained through out of area operations do not necessarily transfer to PLAN Western Pacific missions. Basic experience derived from out of area operations will help make the PLAN more effective in some of its other operations close to home. Thus, a navy that has practiced long-distance navigation, basic seamanship, formation-keeping, sector monitoring, and search and rescue obviously could perform these tasks better and with greater professionalism when it comes to a Taiwan contingency. However, as noted above, most of the tasks performed and lessons gained from out of area operations are not directly transferrable either to a Taiwan contingency or an out of area MCO. This implies that time spent on conducting non-traditional out of area deployments for a PLA navy unit is time away from combat training for

a Taiwan contingency or preparing for major combat operations out of area. The larger implication for U.S. policy is that naval cooperation with China will do exactly as advertised—contribute to the maritime security of the global commons—and not inadvertently help the PLAN become more lethal in a Taiwan contingency.

A PLAN that is exercising with more navies could present complications for U.S. security cooperation. China is having more military to military contacts with many more of the nations of the Asia-Pacific and elsewhere than it has in the past. The PLAN is engaging in a much more robust exercise program than even a few years ago. Thus, there has been overlap in the nations exercising with both the PLAN and U.S. Navy. Some exercise partners have displayed nervousness that they feel forced to choose between the two major powers.¹⁴⁸ These sensitivities will cause complications in planning security cooperation between the United States and its exercise partners. Some U.S. traditional exercise partners may be reluctant to engage in exercises that hint at China as the target of the exercise. U.S. military planners and exercise coordinators will have to be sensitive to this new reality. It could mean being flexible in the scheduling of exercises, allowing U.S. exercise partners a greater say in the makeup of the events, and being aware how the exercise is being portrayed in the local and international press.

PLAN operations further from Chinese shores provide more opportunities for the U.S. and Chinese militaries to interact. We reported earlier that a former U.S. Pacific Command commander rightly thought that China's Gulf of Aden deployment presented opportunities for greater military interactions between the two countries. As the Chinese reach further out and experience some of the same challenges the U.S. military has faced for decades, they will want to discuss some common challenges with their American counterparts. They have already expressed a willingness to increase participation in a multinational military coalition, over and above the level of coordination with which the PLA has traditionally been comfortable. This means the United States must decide which areas are appropriate for helping improve PLAN capabilities and which areas could be counterproductive, if not dangerous. Assuming that the United States has no objection to assisting the PLAN in conducting nontraditional maritime security tasks, and also assuming the United States does not wish to help the PLA with a Taiwan scenario or an out of area MCO, table 3 provides a list of missions and tasks the United States should and should not assist the PLAN in being able to perform.

China will attempt to gain greater access to host nation facilities through access agreements and other mechanisms. Both the historical cases of other navies and recent trends in Chinese foreign and defense policy behavior suggest that the Chinese will seek to gain greater access to facilities out of area, both in the near future and in the long term. These facilities will

greatly assist with China's logistics and supply chain problems. As the United States experienced in the not so distant past, temporary access to facilities has benefits, but it also has some great disadvantages. The most problematic is not being able to use some of these facilities during major combat operations. However, as long as China's stated purpose for out of area operations is to protect its economic interests far from its shores, the requirement for support from these facilities during major combat operations is less relevant. If some of these facilities can help China refuel, resupply, and refit its ships over a long supply chain in times of relative peace, then Beijing will have satisfied its immediate political-military requirements for the use of its navy in support of the New Historic Missions. That these facilities cannot help China in an instance of all-out war with the United States or India is beside the point.

Conclusion

China's out of area deployments, although not new, herald another era in PLAN operations. The nature of these operations has thus far been cautious and incremental and can be expected to continue in that fashion for the foreseeable future. If China follows along our predicted continuum of operations, it will steadily progress toward capabilities in major combat operations out of area. Before that happens, however, it will need to undertake significant efforts to improve ship and aircraft maintenance, food preservation, medical care, and logistics supply (at long distances). Most importantly, China will have to develop a network of facilities or bases its forces can rely on for maintenance, repair, and replenishment. In the absence of such a network, China will not be able to take part in major combat operations at distances far from home. As a consequence, the nature and degree of China's access to out of area bases will be the ultimate indication and warning that Beijing either intends to develop into a global military power or will remain content protecting its economic interests by securing its lines of communication to the Middle East, protecting its citizens abroad, and deploying its naval forces where it believes its economic interests to be threatened.

Notes

¹ “China to Send Convoy Fleet to the Aden Gulf and Seas off the Somali Coast,” Press Release of the Ministry of Foreign Affairs of the People’s Republic of China, December 22, 2008, available at <www.chinese-embassy.org.za/eng/fyrth/t52710.htm>.

² Ibid.

³ Ibid.

⁴ Rear Admiral Xiao Xinnian as quoted in Andrew Erickson, “Chinese Sea Power in Action: The Counter Piracy Mission in the Gulf of Aden and Beyond,” paper presented at the National Bureau of Asian Research, Strategic Studies Institute of the U.S. Army War College, and Texas A&M University Bush School Conference entitled *The PLA at Home and Abroad*, Carlisle Barracks, PA, September 25–27, 2009, 10.

⁵ Shi Hua and Zang Beixin, [“Chinese Navy Will Protect Ships Free of Charge”], [*Global Times*], December 24, 2008, available at <<http://world.huanqiu.com/roll/2008-12/322933.html>>. See also Erickson, 11.

⁶ “Foreign Ministry Spokesperson Liu Jianchao’s Regular Press Conference on December 18, 2008,” available at <www.chinese-embassy.org.za/eng/fyrth/t526955.htm>.

⁷ Bai Ruixue and Zhu Hongliang, “Commander of the Chinese Flotilla for Escort Missions Says: At Present, the Flotilla Does Not Have a Disembarkation Plan,” Xinhua, December 26, 2008.

⁸ Donna Miles, “U.S. Welcomes Chinese Plans to Fight Piracy, Admiral Says,” American Forces Press, December 18, 2008, available at <www.defenselink.mil./news/news-article.aspx?id=52386>.

⁹ Daniel M. Hartnett, “The PLA’s Domestic and Foreign Activities Orientation,” testimony before the U.S.-China Economic and Security Review Commission, Washington, DC, March 4, 2009, 6. See also Bernard Cole, “China’s Military and Security Activities Abroad,” testimony before the U.S.-China Economic and Security Review Commission, Washington, DC, March 4, 2009, 2–3.

¹⁰ Dean Cheng, “The Chinese Navy’s Budding Overseas Presence,” January 11, 2010, available at <www.heritage.org/Research/Reports/2010/01/The-Chinese-Navys-Budding-Overseas-Presence>.

¹¹ Case studies of People’s Liberation Army Navy (PLAN) out of area deployments were selected based on the amount of detail offered for the purposes of analysis.

¹² *Dangdai Zhongguo Haijun* [当代中国海军, 从书编辑委员会], 中国社会科学出版社, 北京], 1987.

¹³ The narrative that covers the history of the PLAN from the inception of the People’s Navy up until its first port visit to South Asia in 1985 is based on *Dangdai Zhongguo Haijun* (当代中国海军).

¹⁴ The Standing Committee of the Politburo is the highest ranking decisionmaking body of the Chinese Communist Party (CCP) and hence the body with the authority to make major foreign and defense policy decisions.

¹⁵ The Great Proletarian Cultural Revolution (1966–1976) was conceived by Mao Zedong as a means to advance the socialist revolution by inciting the masses (Red Guards) to overturn the authority and power of the CCP. Party and government officials, as well as former businessmen and anyone deemed to be antirevolutionary, were sent to the countryside, forced into hard labor, subjected to self-criticism, and in some cases violently attacked. The whole country was thrown into chaos for the entire

tenure. This included the People's Liberation Army and PLAN as well. Although some defense procurement and development did take place during this period, for the most part, the modernization of the PLAN suffered as a result of the movement.

¹⁶ The First Island Chain comprises the Aleutians, the Kuriles, Japan, the Ryukyus, Taiwan, and the Philippines, which forms a curved chain of island groups in the Western Pacific.

¹⁷ The two test rockets carried only monitoring equipment to track their performance. Western observers at the time speculated that these rockets would eventually be developed into intercontinental ballistic missiles (ICBMs) for the purposes of addressing the Soviet threat. Subsequent observers verified that the May 1980 long-range rockets were indeed the first DF-5/CSS-4 ICBMs. See *New Scientist*, June 26, 1980, 378. Also see Andrew Erickson, "Beijing's Aerospace Revolution," presented at the China Maritime Studies Institute Conference entitled *Evolving Maritime Roles for Chinese Aerospace Power*, U.S. Naval War College, Newport, RI, December 10–11, 2008, 22.

¹⁸ *Dangdai Zhongguo Haijun*.

¹⁹ An *area of responsibility* is a U.S. Navy designation for a replenishment oiler that can replenish other ships while under way.

²⁰ In maritime parlance, *blue water* denotes open ocean operations. Its only difference with the term *out of area* is that the former may still apply to waters within the Asia-Pacific region and Western Pacific, while the latter applies to open ocean, littoral, and any naval operations outside of the Asia-Pacific.

²¹ *Dangdai Zhongguo Haijun*, 660.

²² It is safe to say that the Chinese probably did not possess satellite communications. If they had, they would not have deprived the ships of the capability, especially for such a high profile mission.

²³ "Chief Designer Talks about PLAN Replenishment Ship," February 12, 2009, available at <www.china-defense-mashup.com/?;=2625>.

²⁴ According to the Beaufort Scale, Level 11 waves are exceptionally high: very large patches of foam driven before the wind and covering much of the sea surface. See below for a description of the Beaufort Scale.

²⁵ "Chief Designer Talks about PLAN Replenishment Ship."

²⁶ According to the Beaufort Scale, Force 8, 9, and 11 winds are an empirical measure for describing wind speed based on observed sea conditions. The scale was first created in 1806 by Sir Francis Beaufort, an Irish-born British admiral. The scale ranges from 0 (calm) to 12 (hurricane force). Force 8 represents a fresh gale or moderately high waves with breaking crests forming spindrift. Force 9 represents a strong gale with high waves whose crests sometimes roll over. Force 11 represents a violent storm with exceptionally high waves and large patches of foam driven before the wind covering much of the sea surface.

²⁷ This account was translated and summarized from: 永门轮救助我国驻索马里援外人员, *Yongmen lun jiuzhu woguo zhu Suomali yuanwai wairen yuan*, available at <www.cosco.com/cn/knowledgebase/detail.jsp?docId=695>.

²⁸ This three ship visit to Pearl Harbor and San Diego was described in "Luhu class Multirole Destroyer, Type 052," *GlobalSecurity.org*, available at <www.globalsecurity.org/military/world/china/luhu.htm>.

²⁹ *Ibid.*

³⁰ *Ibid.*

³¹ Erickson, 15.

³² Ibid.

³³ Ibid.

³⁴ “Towards Dark Blue: Chronicling the Development of the Chinese People’s Navy” (走向深蓝—中国 人民海军发展 记实), accessed at China.com, April 1, 2009.

³⁵ Ibid.

³⁶ “PLAN attends big foreign naval review: responding to non-traditional security threats,” available at <www.huaxia.com/2t/is/2004-74/831363.html> (Chinese translation).

³⁷ “Towards Dark Blue.”

³⁸ Ibid.

³⁹ “North Sea Fleet Vessels 113 and 881 Visit U.S., Canada and Philippines” (北海舰队113舰和881 舰 出访每家菲三国), accessed at <<http://roomx.bokee.com/5606837.html>>.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Stephen Chen and Greg Torode, “PLA Given Nod to Lead Anti-Piracy Operations,” *South China Morning Post*, September 22, 2010.

⁴³ “Expert: Anti-Piracy Mission Can Test PLAN High-Seas Combat Capabilities” (专家：出兵打海盗可检验中国海军的德的远洋战力), available at <www.ah.xinhuanet.com/news/2008-12/24/content_15269944.htm>.

⁴⁴ Ibid.

⁴⁵ Li Jie, “China’s Navy Still Has Far to Go,” *China Daily*, August 14, 2009, available at <www.chinadaily.com.cn/opinion/2009-08/14/content_8568918.htm>.

⁴⁶ Ibid. See also “Yin Zhuo: The PLAN should build a long-term supply base in Djibouti” (尹卓：中国海军应在吉布提建立长期补给基地), accessed at <http://cn.china.cn/article/n494656,fe393f,d2477_12053.html>.

⁴⁷ “PLAN Logistics Experts Visit French and Singapore Experts” (海军后勤远洋补给考家团赴法国核新加坡考佳) in *Dang Dai Hai Jun* (当代海军), Issue 11, 2005 年.

⁴⁸ Li.

⁴⁹ Ibid.

⁵⁰ One U.S. scholar and naval expert reviewing this report noted that a U.S. Navy DDG or FFG can only carry two helicopters on their deployments. Why then do the Chinese consider their two helicopters inadequate? Perhaps because the U.S. ships have access to bases; therefore, two helicopters have much less to do in terms of intra-task force logistics supply. In the absence of forward basing and access to facilities, the PLAN has a great deal of heavy lifting for intra-task force logistics supply, and therefore considers the two helicopters on these deployments as inadequate.

⁵¹ Li.

⁵² “Yin Zhuo.”

⁵³ “PLAN Logistics Experts Visit French and Singapore Experts.”

⁵⁴ Li.

⁵⁵ “Yin Zhuo”; Li; also see, “Expert: Anti-Piracy Mission Can Test PLAN High-Seas Combat Capabilities” (专家：出兵打海盗可检验中国海军的德的远洋战力), available at <www.ah.xinhuanet.com/news/2008-12/24/content_15269944.htm>.

⁵⁶ “Yin Zhuo.”

⁵⁷ Ibid.

⁵⁸ “China’s Navy Expeditionary Food” (中国海军远舰食品), *Dang Dai Hai Jun* (当代海军), Issue 7, 2004 年.

⁵⁹ Ibid.

⁶⁰ Li.

⁶¹ Ibid.

⁶² “Yin Zhuo.”

⁶³ “‘Thousand Island Lake’ Comprehensive Depot Ship Offshore Logistics,” Xinhua, November 23, 2009.

⁶⁴ You Ji, “Naval Humanitarian Assistance Operations Anchored in Military Operations Other Than War,” paper presented at *Chinese and American Approaches to Non-Traditional Security: Implications for the Maritime Domain*, U.S. Naval War College, Newport, RI, May 4–5, 2010, 49.

⁶⁵ Peter Brown, “China’s Navy Cruises into Ascendancy,” *Asia Times*, April 22, 2010.

⁶⁶ Andrew Erickson and Michael Chase, “Informatization and the Chinese People’s Liberation Army Navy (PLAN),” presented at the National Defense University, RAND, CAPS, and CEIP Chinese navy conference, November 29–December 1, 2007, 31. See also Peng Guangqian and Yao Youzhi, ed., *The Science of Military Strategy* (Beijing: Military Science Publishing House, 2005), 253.

⁶⁷ Erickson and Chase, 15.

⁶⁸ Nowhere in this study do we specifically examine Chinese writings to determine if the Chinese have actually studied these lessons from foreign campaigns. We performed such an examination for the U.S. Army War College/National Bureau of Asian Research conference on the PLA in October 2010. For that conference, the Institute for National Strategic Studies prepared a paper on the lessons that the PLA have taken from the Falklands campaign and applied to their power projection and out of area operations.

⁶⁹ Linda Keefer, *Base Support for U.S. Naval Operations in the Western Pacific: A Survey of 19th- and Early 20th-Century Developments*, CIM 259 (Alexandria, VA: Center for Naval Analyses, December 1992), 3.

⁷⁰ Ibid., 3–6.

⁷¹ Ibid.

⁷² Ibid.

⁷³ Ibid., 4.

⁷⁴ Admiral Nimitz’s formal title during the Second World War was Commander in Chief Pacific Fleet and Commander in Chief, Pacific Ocean Area, or CINCPAC/CINCPACOM. The first gave Admiral Nimitz command over all naval forces in the Central Pacific. The second gave him command over all military forces—Army, Navy, Army Air Force, and Marine Corps—in the Central Pacific.

⁷⁵ The CINCPAC strategic objectives for the Central Pacific were “to branch out first into the Gilbert and the Ellice Islands, east and northeast of the Solomons, where operations would serve both to advance U.S. forces strategically and to divert Japanese forces from the Solomons. . . . Development of bases in the Ellice group and seizure in advance positions in the Gilberts from the Japanese would put U.S. forces in position to push on into the Marshalls and the Carolines.” At that point, the Allies would be within bombing range of the Japanese home islands and in a position to launch

a major amphibious assault against Formosa (Taiwan) for the purpose of staging an invasion against the Japanese home islands. See Grace Person Hayes, *The History of the Joint Chiefs of Staff in World War II* (Annapolis, MD: Naval Institute Press, 1982), 310.

⁷⁶ Anthony W. Grey, "Joint Logistics in the Pacific Theater," in *The Big "L": American Logistics in World War II*, ed. Alan Gropman (Washington, DC: National Defense University Press, 1997), 329.

⁷⁷ Ibid.

⁷⁸ Robin G. Gentry, *Sea Basing: Evolutionary Naval Doctrine and Military Transformation* (Carlisle Barracks, PA: U.S. Army War College, 2004), 2–3.

⁷⁹ This judgment is borne out in later analysis of the Guadalcanal and Falklands campaigns.

⁸⁰ John Coates, "The War in New Guinea 1943–44 Operations and Tactics," in *The Foundations of Victory: The Pacific War 1941–1943*, ed. Peter Dennis and Jeffrey Grey (Canberra: Army History Unit, 2003), 16.

⁸¹ David A. LaBarbera, "Buna: MacArthur's Lieutenants in an Immature Theater," U.S. Naval War College, Joint Military Operations Department, 1997, 10.

⁸² For example, George Kenney's airmen invented an external fuel tank, which, when placed on fighters, could extend their range several hundred miles.

⁸³ Chris Madsen, "Strategy, Fleet Logistics, and the Lethbridge Mission to the Pacific and Indian Oceans 1943–1944," *Journal of Strategic Studies* 31, no. 6 (2008), 953.

⁸⁴ Ibid., 967.

⁸⁵ Ibid., 969.

⁸⁶ Ibid., 978.

⁸⁷ Nicholas Sarantakes, "One Last Crusade: The British Pacific Fleet and Its Impact on the Anglo-American Alliance," *English Historical Review* 121, no. 491 (2006), 465.

⁸⁸ Also described as the "floating rear," these have come to feature a repair ship, a destroyer or submarine tender, a floating barracks, a supply barge, and occasionally an expedient dry dock. See Gordon H. McCormick, *The Soviet Presence in the Mediterranean* (Santa Monica, CA: RAND, 1987), 8–9.

⁸⁹ Ibid., 9.

⁹⁰ Ibid., 11.

⁹¹ Ibid., 15.

⁹² Ibid., 75.

⁹³ Ibid., 61.

⁹⁴ D.A. Schrady, *Sea Based Logistics and Lessons from the Falklands* (Monterey, CA: Naval Postgraduate School, 2000), 10.

⁹⁵ Ibid.

⁹⁶ Valerie Adams, "Logistic support for the Falkland's campaign," *The RUSI Journal* 129, no. 3 (1984), 47.

⁹⁷ The linear distance between Grenada and Barbados is approximately 160 miles. See Gilbert S. Harper, "Logistics in Grenada: Supporting 'No Plan' Wars," *Parameters*, June 1990, 58–61.

⁹⁸ Ibid. Also see Ronald Cole, *The Planning and Execution of Joint Operations in Grenada, 12 October–2 November 1983* (Washington, DC: U.S. Government Printing Office, 1997), 64–68.

⁹⁹ Joseph T. Stanik, *El Dorado Canyon* (Annapolis: Naval Institute Press, 2003), 184.

¹⁰⁰ *Ibid.*, 183–184.

¹⁰¹ *Ibid.*, 196.

¹⁰² *Ibid.*, 150.

¹⁰³ *Ibid.*, 160.

¹⁰⁴ *Ibid.*, 171.

¹⁰⁵ *Ibid.*, 167.

¹⁰⁶ John M. Collins, *Desert Shield and Desert Storm: Implications for Future U.S. Force Requirements* (Washington, DC: Congressional Research Service, April 19, 1991), 14.

¹⁰⁷ *Ibid.*

¹⁰⁸ Michael Asteris, “Merchant shipping: The fourth arm of Defence?” *The RUSI Journal* 138, no. 2 (1993), 69.

¹⁰⁹ Michael Ranken, “The Gulf War: Logistic Support and Merchant Shipping” *Naval Review* 79, no. 3 (July 1991), 201.

¹¹⁰ Howard Deshong and John Peters, *Out of Area or Out of Reach? European Military Support for Operations in South West Asia* (Santa Monica, CA: RAND, 1995), 39.

¹¹¹ Paul McCarthy, *Operation Sea Angel: A Case Study* (Santa Monica, CA: RAND, 1994), 19.

¹¹² Charles Smith, *Angels from the Sea: Relief Operations in Bangladesh, 1991* (Washington: U.S. Government Printing Office, 1995), 48.

¹¹³ McCarthy, 20.

¹¹⁴ Uwe Jansohn, “Operation Amaryllis: French Evacuation Operation in Rwanda 1994—Lessons Learned for Future German Non-Combatant Evacuation Operations?” Thesis, U.S. Army Command and General Staff College, 2000, 50–52.

¹¹⁵ *Ibid.*

¹¹⁶ Neal Schneider, “Operation Unified Assistance from onset of tsunami to efforts through Mar. 2005,” Unified Assistance Brief, U.S. Pacific Command, April 15, 2005, available at <www.pacom.mil/special/0412asia/index.shtml>.

¹¹⁷ *Seabasing*, a concept first conceived by the U.S. Navy, has also been adopted by the Marine Corps as one of its core operating concepts. The general concept entails the ability to assemble a military force offshore of an objective and selectively offload materials necessary to accomplish an objective ashore (establish a beachhead, conduct humanitarian assistance operations) without necessarily creating a large stockpile of equipment ashore. In its idealized form, a seabasing force could perform almost all of its assembly activities offshore, conduct some tasks ashore, and then return to the task force with little footprint on the ground.

¹¹⁸ The most efficacious use of bases and ports as a means to stave off a capacity problem was General Douglas MacArthur’s South West Pacific Area Theater. MacArthur’s forces were chronically short of everything but managed to make up for that force structure problem by establishing forward operating bases covertly and swiftly near enemy positions before the enemy could react to their presence. See George C. Kenney, *General Kenney Reports: A Personal History of the Pacific War*, USAF Warrior Studies (Washington, DC: U.S. Government Printing Office, 1987). Also see Edward Drea, *MacArthur’s ULTRA: Codebreaking and the War against Japan, 1942–1945* (Lawrence: University of Kansas Press, 1992).

¹¹⁹ The PLAN is already capable of performing FONOPS.

¹²⁰ A distinction needs to be made between a *formal prepositioning program* in which durable military equipment (for example, vehicles, weapons systems) are stored on the soil of a sovereign government and agreements with host nations to get access to fuel, food, and other supplies. A *preposition program* entails the stationing of foreign troops on the soil of another sovereign state for the purpose of protecting or guarding the prepositioned equipment.

¹²¹ Kevin Lanzit and Kenneth Allen, "Right-Sizing the PLA Air Force: New Operational Concepts Define a Smaller More Capable Force," in *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, ed. Roy Kamphausen and Andrew Scobell (Carlisle Barracks, PA: U.S. Army War College, September 2007), 448. See also Gabe Collins, Michael McGauvran, and Tim White, "Chinese Aerial Refueling Development," paper presented at the China Maritime Studies Institute Conference on *Evolving Maritime Roles for Chinese Aerospace Power*, U.S. Naval War College, Newport, RI, December 10–11, 2008, 8.

¹²² Collins, McGauvran, and White, 6.

¹²³ *Ibid.*, 5, 8, 12.

¹²⁴ Ronald O'Rourke, *China's Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress* (Washington, DC: Congressional Research Service, December 23, 2009), 12. See also Dennis J. Blasko, "Chinese Military Logistics: The GLD System," November 4, 2004, accessed at <www.asianresearch.org/articles/2354.html>.

¹²⁵ Bernard D. Cole, "Right-Sizing the Navy: How Much Naval Force Will Beijing Deploy," in *Right-Sizing the People's Liberation Army*, 532.

¹²⁶ Li.

¹²⁷ One of the arguments for the establishment of a forward supply base, according to Admiral Yin Zhuo, is to make sure that morale problems that crop up due to long, repetitive deployments are mitigated. See "Yin Zhuo." Morale was also an issue raised by You, 40–41.

¹²⁸ O'Rourke, 5–6.

¹²⁹ *Ibid.*, 12.

¹³⁰ Michael McDevitt, "The Strategic and Operational Context Driving PLAN Building," in *Right-Sizing the People's Liberation Army*, 498.

¹³¹ See the case study presented earlier in this report involving the Chinese government diverting a China Ocean Shipping Company merchant ship to Somalia for a noncombatant evacuation operation in 1991.

¹³² You, 36.

¹³³ "China's Hospital Ship Arrives in Gulf of Aden," *China Daily*, September 15, 2010.

¹³⁴ "Yin Zhuo."

¹³⁵ You, 36.

¹³⁶ *Ibid.*, 15.

¹³⁷ "Sea Change in Thinking about China's Navy," *China Daily*, April 23, 2009, available at <http://english.chinamil.com.mil/site2/special-reports/2009-04/23/content_1737880.htm>. See also, "Chinese Military Officers Urge Building of Aircraft Carrier," March 6, 2009, available at <www.china-defense-mashup.com/?p=2982>; Wang Linyan, "U.S. Admiral: China naval strength no surprise," *China Daily*, April 20, 2009, available at <www.chinadaily.com.cn/china/2009-04/20/content_7692867.htm>.

¹³⁸ O'Rourke, 9–10.

¹³⁹ Ibid., 11.

¹⁴⁰ Ibid.

¹⁴¹ At present, we need to make a distinction between *out of area* ASW and ASW that could/ would be employed for a Taiwan scenario or a scenario within the Western Pacific. Theater ASW makes heavy use of maritime patrol aircraft based ashore and also relies on available surface combatants and submarines to track, find, and prosecute contacts. Out of area ASW relies almost entirely on ships, submarines, and aircraft that are part of an expeditionary task force operating out of area.

¹⁴² Cole, 547.

¹⁴³ Ibid.

¹⁴⁴ McDevitt, 493–494.

¹⁴⁵ As the term implies, a *shore to shore* amphibious capability entails the ability to load landing craft and other shorter range amphibious vessels directly from a port or pier, sail across a body of water, and directly assault a beachhead. These assets are usually landing craft, air cushioned craft, and other smaller vessels. A ship to shore amphibious capability entails the ability to load landing craft and other shorter range amphibious vessels on board a larger amphibious ship, sail a considerable distance to an objective area, release the landing craft and smaller vessels into the water, and then assault a beachhead.

¹⁴⁶ Which marks an improvement over the previous mainstay of amphibious operations, the LST. See O'Rourke, 15.

¹⁴⁷ The PLAN's dramatic recent deployment to the East China Sea is one such example, sending a strong signal to Japan about Chinese assertiveness in their bilateral maritime territorial dispute.

¹⁴⁸ Renato Cruz de Castro, *China, the Philippines and U.S. Influence in Asia*, American Enterprise Institute (AEI) Outlook Series (Washington, DC: AEI, July 2007), available at <www.aei.org/outlook/26450>; also see Ian Storey, *The United States and ASEAN-China Relations: All Quiet on the Southeast Asian Front* (Carlisle Barracks, PA: U.S. Army War College, October 2007), 27–28.

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