

## FROM THE SEA

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### PLA Doctrine and the Employment of Sea-Based Airpower

Daniel J. Kostecka

*Aircraft carriers symbolize a country's overall strength. They are also the core of the navy's combined-arms sea operations. Building carriers has all along been a matter of concern for the Chinese people. To modernize our national defense and build a perfect weaponry and equipment system, we have to consider the development of carriers.*

ADMIRAL LIU HUAQING, MEMOIRS OF LIU HUAQING (AUGUST 2004)

Despite an impressive naval modernization over the past two decades, the People's Liberation Army Navy (PLAN) currently possesses little in the way of force-projection capabilities.<sup>1</sup> The development of force projection through the acquisition of such platforms as aircraft carriers and amphibious assault ships is essential if PLAN forces, as they modernize and mature, are to engage in the full spectrum of traditional and nontraditional operations needed to protect Chinese interests, regionally and abroad. At this point, the most visible manifestations of the PLAN's desire to possess this type of force-projection capability are its Type 071 amphibious transport dock (LPD), commissioned in November 2007; a second Type 071 hull now under construction; and, most significant, the ongoing refurbishment of an incomplete, Soviet-built, *Kuznetsov*-class aircraft carrier at Dalian. These ships represent core elements of the PLAN's future force-projection requirements. Along with follow-on platforms, they will provide the capability to employ sea-based airpower and conduct expeditionary operations beyond the range of older and less capable amphibious vessels, as well as that of land-based air cover.

However, China's desire to possess modern force-projection capabilities for its navy is also the source of considerable speculation and misunderstanding. This is particularly true for China's aircraft carrier program. Speculation runs from forward-leaning predictions that by the early 2020s China could have as many as five aircraft carriers, including two nuclear-powered hulls, to a recent prediction from an Australian policy research think tank that despite evidence to the

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contrary the Chinese are not serious about building aircraft carriers, because it would be “dumb for them to do so.”<sup>2</sup>

China’s LPD program has not generated anything like the controversy accompanying the aircraft carrier. However, it has received a significant amount of attention, if for no other reason than the type represents a modern, long-range expeditionary platform that—unlike most of China’s other naval acquisitions of the past two decades—seems to have been designed from the outset for missions other than supporting an attack on Taiwan. Also, while smaller and much less capable than a true aircraft carrier, China’s single Type 071 LPD is the PLAN’s first true deck-aviation ship, in that unlike destroyers and frigates, it can operate a larger number and more diverse mix of helicopters against a larger set of missions. Modern force projection is essential for China to have a sustained naval presence away from Chinese waters, whether in the South China Sea, the Indian Ocean, or anywhere else. Additionally, authoritative publications from the PLAN, as well as the People’s Liberation Army’s (PLA’s) National Defense University and Academy of Military Sciences, provide clues regarding how the navy intends to employ these platforms in both traditional and nontraditional ways. It is necessary to understand China’s future force-projection capabilities, in light of PLA doctrine, to predict the types of missions that Chinese aircraft carriers and large amphibious vessels are likely to be given.

## AIRCRAFT CARRIERS

Probably the most commonly cited example of China’s desire to expand its naval power beyond Chinese coastal waters is Beijing’s pursuit of aircraft carriers capable of operating conventional fixed-wing fighter aircraft.<sup>3</sup> The PLAN has been interested in acquiring aircraft carriers for decades, but financial, technological, political, and strategic constraints have prevented serious progress. Outside of China, discussion of this issue is highly polarized, to say the least. To some, China’s pursuit of aircraft carriers represents a direct challenge to the United States and clearly indicates that China seeks to project naval power into the Indian Ocean and western Pacific. To others, China’s aircraft carrier program is nothing more than a quixotic exercise in national vanity; in their view, any Chinese carrier would be nothing more than a nationalistic showpiece, with very little operational value.

Further confusing the situation is Beijing’s own obfuscation. Despite years of interest in aircraft carriers and, evidence indicates, experimentation with aircraft carrier technology, as late as 2004 Chinese officials, including General Xiong Guangkai, then deputy chief of the General Staff, stated that China did not plan to build carriers.<sup>4</sup> One year later, the unfinished Soviet *Kuznetsov*-class aircraft carrier *Varyag*, which China had purchased from Ukraine in 1998, went into dry dock at Dalian Shipyard, in northern China, for an extensive refit that continues

at this writing. Today anyone with access to the internet can track the extensive modifications to the ship in photographs posted on a number of blogs and websites. Five years after the ship first entered dry dock, even the most skeptical observers are convinced that China intends to put the ship into operation in the not-very-distant future.

Roughly coincident with work on *Varyag*, Chinese rhetoric on this issue has shifted considerably, with officials and the media discussing aircraft carriers with increasing candor.<sup>5</sup> These include positive statements in April 2009 regarding aircraft carriers by Defense Minister Liang Guanglie and Admiral Wu Shengli, commander of the PLAN, as well as a March 2010 editorial in the English-language version of the *Global Times* stating that it was time for the world to prepare for a Chinese aircraft carrier.<sup>6</sup> Earlier, in November 2008, Major General Qian Lihua of the PLA had asserted China's right to possess an aircraft carrier: "The question is not whether you have an aircraft carrier, but what you do with your aircraft carrier. . . . Even if one day we have an aircraft carrier, unlike another country, we will not use it to pursue global deployment or global reach."<sup>7</sup>

In addition to *Varyag*, China is also developing the aircraft that will compose the ship's air wing. Press and internet reports claim China is producing a Chinese carrier fighter based on the Russian Su-33 Flanker D, designated the J-15; according to one website, the first prototype of this aircraft made its maiden flight on 31 August 2009 and its first takeoff from a land-based "ski jump" (runway ending in an upward ramp) on 6 May 2010.<sup>8</sup> While the exact dates of these flights cannot be confirmed, recent internet pictures show a Chinese Flanker-variant prototype in flight with the same canards and shortened tail stinger as the Russian carrier-capable Su-33; a video of the prototype flying is also on the web. While externally the J-15 appears to be a near copy of the Su-33, internally it likely possesses the same radar and avionics as China's domestically produced land-based Flanker, the J-11B. It will probably be capable of employing a full suite of China's most advanced air-to-air and air-to-ground munitions, including the PL-12 active-radar-homing, medium-range, air-to-air missile.<sup>9</sup>

As an airborne-early-warning (AEW) platform, China may acquire, according to the Russian press, nine Ka-31 AEW helicopters. However, internet photographs indicate that China has fielded a prototype AEW variant of the Z-8 medium-lift helicopter.<sup>10</sup> It is unknown which will be chosen as the primary AEW helicopter for the PLAN's aircraft carrier force. It is possible the PLAN sees an indigenous platform based on the Z-8 as a long-term solution, with Ka-31s from Russia as gap fillers. Alternatively, the Z-8 prototype could also be a test bed for an AEW variant of a more modern helicopter, such as the developmental Z-15.<sup>11</sup> Any of these would be much less capable than a fixed-wing AEW platform, such as the America E-2C Hawkeye.

## PLA THEORY AND AIRCRAFT CARRIER EMPLOYMENT

How the PLAN would employ an aircraft carrier is open to speculation; these versatile platforms can perform a variety of missions. The development in China of a theoretical construct of how the PLAN would employ aircraft carriers dates back to at least the early 1970s, when Liu Huaqing led a feasibility study on the construction of aircraft carriers. Later, as the service's commander (from 1982 to 1988), Admiral Liu pushed for the serious study of aircraft carrier design, asserting that given China's more than three million square kilometers of sea territory, aircraft carriers were necessary to safeguard the nation's rights and interests at sea, enhance national prestige, and add to the nation's peacetime deterrent posture.<sup>12</sup> In 1987, Admiral Liu directed the establishment at the Guangzhou Naval Vessels Academy of a course to train PLAN pilots to command surface combatants; the first class of nine officers graduated with bachelor's degrees in ship command in 1991.<sup>13</sup> Apparently, the PLAN has chosen to follow the American model of selecting its aircraft carrier commanding officers from the naval aviation community. After commanding the PLAN, Admiral Liu served as vice chairman of the Central Military Commission (from 1989 until retirement in 1997); there he continued to argue the case for aircraft carriers.<sup>14</sup>

More recently, authoritative PLA publications on this issue, including *战役学* (*Science of Campaigns*, in 2000 and 2006 editions) and *战役理论学习指南* (*Campaign Theory Study Guide*), provide clues into Chinese thinking on this issue. It is possible, by studying these and other publications, to glean insights into how the PLAN is thinking about employing aircraft carriers operationally.

It is in the South China Sea that one should expect first to see the PLAN employ aircraft carriers. While China's military modernization is primarily geared to deterring independence-minded forces on Taiwan, the only combat that the PLAN has actually engaged in over the past forty years has been in the South China Sea. These clashes occurred in 1974, when Chinese forces captured the Paracel Islands from South Vietnam; in 1988, when PLAN forces captured Johnson Reef in the Spratly Islands and sank three Vietnamese supply vessels; and in 1995, when PLAN forces occupied Mischief Reef, claimed by the Philippines.<sup>15</sup> Recent statements from Beijing—in response to expressions of concern from Washington over competing maritime claims there and the potential threat to navigation—regarding China's sovereignty over islands and surrounding waters in the South China Sea have brought new and increased international attention to this area of key Chinese national interest.<sup>16</sup> China claims a substantial portion of the South China Sea as its territorial waters, and competition is growing among the nations of the region over fishing waters and potential oil and natural-gas deposits. Accordingly, the PLAN has a need for an ability to project force and to employ sea-based airpower against enemy-held islands and reefs. PLA doctrine clearly

lists providing air cover to landing operations as a primary wartime mission, a mission the Chinese see for PLAN aircraft carriers. Both editions of *Science of Campaigns* discuss the importance of aircraft carriers in providing air cover to amphibious invasions against islands and reefs beyond the range of land-based aircraft, a clear reference to their potential use in the South China Sea. The 2000 edition points to the employment of USS *Independence* (CV 62) in this role during Operation URGENT FURY, the 1983 invasion of Grenada.<sup>17</sup>

*Science of Campaigns* also clearly states that three-dimensional attacks are essential to executing the PLA's "coral-island-assault campaign" (对珊瑚岛礁进攻战役) against islands and reefs in the South China Sea during a regional conflict. The 2006 edition of the book, which first detailed this campaign, discusses re-

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quirements for effective seaborne command and control, three-dimensional encirclement, and the complex logistics support required for assaults on coral islands and reefs far from the mainland.<sup>18</sup> An

aircraft carrier, with its fighter and rotary-wing aviation assets and command-and-control facilities, would be tailor-made for the purpose. Additionally, even one or two carriers would be sufficient to enforce China's territorial claims in the South China Sea against such competitors as Vietnam, the Philippines, or Malaysia, should Beijing attempt again to acquire territory as it did in 1974, 1988, and 1995.

A similar analysis appears in a book published in 1998, *Winning High-Tech Local Wars: Must Reading for Military Officers*. It asserts that amphibious forces engaged in "long distance" landing operations should be protected by one or two aircraft carrier groups stationed 100–150 nautical miles from the shore of the objective. In this discussion it is apparent the authors had in mind non-Taiwan landing operations, since the Taiwan Strait is only about one hundred nautical miles wide.<sup>19</sup> Royal Navy aircraft carriers in the Falklands War in 1982 (despite their small and austere air groups) and British and French carriers in the 1957 Suez crisis (notwithstanding air wings less capable than those of contemporary U.S. carriers) demonstrated that even limited carrier-based airpower can be crucial in regional conflicts beyond the range of effective land-based air cover.<sup>20</sup>

*Campaign Theory Study Guide* discusses the employment of aircraft carriers to protect sea lines of communication (SLOCs) in a "sea-traffic-protection campaign." As evidenced by the ongoing deployment of PLAN warships to the Gulf of Aden, this campaign is increasing in importance for the Chinese. In its support, *Campaign Theory Study Guide* argues that the PLA should develop a mixed fleet, with an aircraft carrier, missile destroyers, and nuclear-powered

attack submarines. The guide describes a number of missions to be executed for sea-traffic protection, including air defense and antisubmarine and antishipping warfare, all capabilities that an aircraft carrier could bring to the campaign. A carrier group could also control designated sea areas to ensure the safe passage of merchant ships and air forces are considered a key component of what the authors term “zone cover” forces.<sup>21</sup> Additionally, while the sea-traffic-protection campaign is described as defensive, all PLA defensive campaigns have offensive components. In this case, PLA doctrine describes the importance of organizing sea and air forces to attack enemy elements that pose a threat to sea transport.<sup>22</sup> While carrier-based aviation would not carry sole responsibility for such offensive operations, it could provide a valuable supplement to surface ships, submarines, and land-based aircraft, depending on the type of threat and the proximity of operating areas to Chinese bases.

Beyond specific mentions of aircraft carriers in PLA doctrine, books like *Science of Campaigns* and *Campaign Theory Study Guide* are replete with references to the employment of air forces for air defense and offensive strike, including in a Taiwan contingency. In the latter scenario, the missions discussed for both the PLA Air Force (PLAAF) and PLAN aviation can likely be handled with land-based aircraft. However, in non-Taiwan contingencies fought in the maritime domain farther from the Chinese mainland, it may be necessary to meet air requirements at least in part with sea-based aviation. *Science of Campaigns* discusses the employment of naval air forces for both strike and air-superiority missions in the antiship and counter-sea-traffic campaigns. Additionally, *Air Raid and Anti-Air Raid in the 21st Century* (2002) discusses the importance of long-range fleet bomber and fighter forces in counterstrike operations in the joint anti-air-raid campaign, specifically in attacking sea-based flight decks and in providing air defense for warships.<sup>23</sup> While none of these references refers specifically to sea-based aviation, the stated requirement for naval aviation in these campaigns can be seen as an implicit reference to aircraft carriers, due to the limitations of land-based airpower in long-range maritime operations.

Overall, it is likely that China views the primary role of its carriers as regional in nature—defending China’s maritime claims in East Asia. This is consistent with PLA doctrine, which envisions the use of carriers in providing air cover to long-distance landing operations, primarily in the context of scenarios in the South China Sea. Discussion of the employment of aircraft carriers in the sea-traffic-protection campaign is applicable to a wider set of scenarios. However, it is in the South China Sea, with its disputed maritime claims and potential threats to Chinese shipping even in regional conflicts in which China is neutral, that aircraft carriers would most likely be employed to protect China’s SLOCs. A primarily regional role for aircraft carriers is also consistent with the theme in

official and unofficial Chinese media of the need for carriers to protect China's extensive maritime territory in the East and South China Seas. As one Shanghai-based military expert states, "Our carrier will definitely not engage with powerful U.S. aircraft carrier fighting groups. But it is enough to be a symbolic threat among neighboring countries like Vietnam, Indonesia, and the Philippines who have territorial disputes with China."<sup>24</sup> This line of discussion is also consistent with Admiral Liu Huaqing's primary argument for aircraft carriers.<sup>25</sup> Rear Admiral Zhang Zhaozhang elaborated in April 2009:

The Chinese navy does not need to fight in the Atlantic Ocean, the Indian Ocean or at the center of the Pacific Ocean. The Chinese navy follows a proactive defense strategy. However, in order to defend the security of the national territory, marine territories, and the waters within the First Island Chain, this proactive defense strategy does not mean that our navy only stays within the First Island Chain. Only when the Chinese navy goes beyond the First Island Chain, will China be able to expand its strategic depth of security for its marine territories.<sup>26</sup>

It is highly unlikely for three reasons that China will seek to use its carriers to assert U.S.-style sea dominance in the Indian Ocean or elsewhere in what Chinese sources term "far-seas operations."<sup>27</sup> First, current estimates are that China is going to build three or four carriers. Since it is highly unlikely that all of them will be combat ready at the same time, they would find themselves outnumbered and outgunned by the Indian Navy. India itself is looking to field a force of three aircraft carriers, but in the Indian Ocean they would be supported by land-based airpower, including AEW and intelligence, surveillance, and reconnaissance platforms. They could call on India's fleet of submarines for additional support. China's carriers, by contrast, would be operating beyond the support of land-based airpower, with at best minimal support from China's small force of nuclear-powered attack submarines.<sup>28</sup> This also does not even address the possibility of American involvement, which would only make the situation less tenable for PLAN carrier groups operating in the Indian Ocean in wartime. Additionally, even if all of China's carriers were combat ready, security concerns nearer home would likely preclude the PLAN's surging all of its carriers and their escorts into the Indian Ocean, leaving the PLAN significantly weakened vis-à-vis powerful East Asian competitors.

Second, there is also the question of just how much combat capability PLAN carriers will bring to a traditional force-on-force conflict. It can be safely assumed that at the very least the PLAN's first two carriers (to include ex-*Varyag*), and possibly later ones, will employ a short takeoff but arrested recovery (STOVAR) —that is, a ski-jump design. This represents a significant limitation, because ski-jump-equipped carriers are far less capable than U.S. Navy-style catapult-assisted takeoff but arrested recovery (CATOBAR) ships, which employ powerful



steam catapults to launch heavily laden fighter and strike aircraft. STOBAR carriers are forced to operate rotary-wing AEW platforms, which are far less capable than fixed-wing AEW aircraft in terms of range, operating altitude, and the size of the radars they can carry, thereby severely inhibiting the situational awareness of a battle group. For regional operations (e.g., in the South China Sea) this would not be as much of a problem, because PLAN carriers could count on support from land-based AEW aircraft like the KJ-2000 and KJ-200, now in service in the PLAAF. In the Indian Ocean this would likely not be the case. Recent internet reporting claims China has fielded a prototype fixed-wing AEW platform based on the twin-engine Y-7 transport, which is at least superficially similar to the U.S. E-2C, indicating the potential for future carrier use.<sup>29</sup> This raises the possibility that China is looking to field CATOBAR carriers in the future and that its carrier force will ultimately include a mix of CATOBAR and STOBAR ships. However, the Y-7 is considerably larger than the E-2C, itself a challenging aircraft to operate off the U.S. Navy's large carriers. This means that if China is going to field a carrier-capable AEW platform based on the Y-7, the airframe will likely require significant modifications before it is ready for employment at sea.<sup>30</sup>

Third, although the J-15 itself may be able to employ a wide variety of air-to-air and air-to-surface munitions, fighters operating from STOBAR carriers are limited in the fuel and weapons they can carry and so primarily defend their battle groups, rather than acting offensively. Again, in a regional conflict where land-based strike aircraft (such as the JH-7A, H-6G, J-11B, and Su-30MKK/MK2) can be called upon for offensive strikes, this is not a big problem. Outside of East Asia, however, China could not use land-based strike aircraft without air bases in foreign nations.<sup>31</sup> STOBAR carriers, for their part, cannot generate as many sorties as CATOBAR carriers, because they cannot simultaneously launch multiple aircraft, and the *Kuznetsov* and similar designs cannot carry air groups as large as those of American carriers.<sup>32</sup>

These disadvantages, however, are not crucial for regional force projection, because land-based airpower would be available. PLAN carriers, therefore, would likely operate against opponents like Vietnam, in a supporting role—antishipping, island seizure, and sea-traffic protection—as opposed to serving as the centerpiece of offensive fleets deployed thousands of miles beyond Chinese waters.

### **VERTICAL ASSAULT: AMPHIBIOUS AIRPOWER**

With approximately sixty ships of the type displacing over a thousand tons, including twenty-six landing ships, tank (LSTs) of over four thousand tons, as well as numerous smaller craft, the PLAN possesses one of the world's largest amphibious assault forces. However, it has very little capacity for vertical assault, due to a lack of deck-based aviation. Modernization of this force over the past two

decades has been steady, with the arrival of Type 072II and 072III LSTs and Type 073IV landing ships, medium (LSMs). However, since most of the new ships have replaced older and less capable ships, overall lift capacity has not increased significantly; it is currently no more than two divisions' worth of troops (depending on the combat loadout).<sup>33</sup> This is nowhere near enough to execute an amphibious assault against Taiwan, which would have to be a combined-arms landing on a scale similar to that of the Normandy invasion of June 1944. However, China could employ its current force of LSTs and LSMs in island-assault scenarios, such as the seizure of one of Taiwan's offshore islands (perhaps Jinmen or Matsu) or

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of small islands in the South China Sea in a conflict with Vietnam or the Philippines. However, their shallow draft and lack of aviation facilities (LSTs have helicopter

landing pads but not hangars) make them less than ideal for assault operations beyond China's littoral, such as in a coral-island campaign, and wholly unsuited for long-range expeditionary operations beyond East Asian waters or for nontraditional security operations, such as humanitarian assistance and disaster relief (HA/DR).<sup>34</sup> An article in the July 2010 edition of *舰船知识* (*Naval and Merchant Ships*) states that large amphibious assault ships are necessary for contemporary distant-sea operations, HA/DR, and amphibious missions against islands far from naval and air bases, where such ships would serve as platforms for smaller amphibious vessels, vertical assault, and command and control.<sup>35</sup>

China's intention to address the gap in the PLAN's modern long-range expeditionary capability was first made public on 22 December 2006, with the launching of the Type 071 *Kunlunshan* (LPD 998).<sup>36</sup> The Type 071 LPD offers a significant increase in lift capacity and, just as important, the capability to employ a small but flexible air group of helicopters in assault and attack roles. With its long range and large capacity, the Type 071 LPD can operate far from China's shores, engaging in a wide range of missions, from amphibious assault and vertical envelopment (the insertion of troops by airdrop or air landing) to humanitarian aid to areas stricken by natural disasters and evacuation of Chinese citizens trapped in war-torn nations.<sup>37</sup> However, with only one ship operational and a second under construction, long-range assault capability is still quite limited. It is unknown how many LPDs the PLAN intends to build, with estimates ranging from two ships to eight.<sup>38</sup>

In addition to the Type 071 LPD, the press reports that China plans to build the Type 081 LHD (helicopter assault ship), similar in size and capability to the French *Mistral*-class LHD, or approximately half the size of the U.S. Navy *Wasp* class. In June 2007, American defense analyst Richard Fisher, of the International

Assessment and Strategy Center, reported that Chinese sources at an international maritime trade show in Singapore (IMDEX-07) claimed that the Type 081 LHD would displace approximately twenty thousand tons, have the capacity to transport five hundred troops, and be configured for helicopter-based vertical assault.<sup>39</sup> A three-part series of articles in the Chinese journal *当代海军* (*Modern Navy*) asserts the importance of developing a balanced force of amphibious assault ships of both the LPD and LHD types, due to their complementary capabilities, citing the U.S. Navy's force of LPDs, LSDs, and LHA/LHDs as an example.<sup>40</sup> Chinese authorities, including Admiral Liu, have also speculated on the utility of helicopter carriers, either as versatile platforms in themselves or as stepping-stones to aircraft carriers proper.<sup>41</sup>

Beyond press speculation, very little is known about the Type 081 program in terms of how many platforms the PLAN will acquire (if any) or what capabilities they would possess. Chinese sources at IMDEX-07 stated that China had the capability to construct a helicopter assault ship of the type. This is no doubt true, given likely similarities in hull design between the Types 071 and 081. The July 2010 *Naval and Merchant Ships* article already mentioned calls for a Chinese LHD that would approximate the USS *Wasp* class in size (approximately forty thousand tons) and capability (up to forty helicopters and one thousand troops) but without the specialized facilities to operate fixed-wing aircraft (for *Wasp*, the V-22, AV-8B, and F-35, or Joint Strike Fighter).<sup>42</sup> In any case, China has yet to begin construction on such a platform, much less integration into its force structure.<sup>43</sup>

## FUTURE EMPLOYMENT OPTIONS

The highest projections for modern Chinese amphibious assault ships are for eight Type 071 LPDs and six Type 081 LHDs, but American, Indian, and Taiwanese defense analysts have all assessed that the PLAN will acquire six Type 071s and three Type 081s. Fisher claims that China intends to build three amphibious task groups, each based around one Type 081 and two 071s.<sup>44</sup> It is possible (perhaps likely) that these analysts obtained their information from the same source—they may even be quoting one another—and that the projection of three Type 081 LHDs and six Type 071 LPDs probably represents a high-end estimate for the Chinese navy's future long-range amphibious force. A force of this size would permit the PLAN to field something akin to three American-style expeditionary strike groups, if it desired to organize its forces in such a manner. While this sounds impressive, in reality it represents enough lift for only between 4,500 and 6,500 troops, about one of the South Sea Fleet's two marine brigades. Moreover, that estimate assumes that all of the ships are operational and fully mission capable at the same time, a rare occurrence in any navy. It should also be noted that such a force could employ in total between forty and seventy helicopters of

various types, depending on mission requirements. Yet the PLAN only has about thirty-five rotary-wing aircraft of all types, most of which are smaller Z-9 and Ka-28 helicopters, geared toward antisubmarine warfare and search and rescue.<sup>45</sup> The PLAN's current inventory of fifteen Z-8 medium-lift helicopters is wholly inadequate to support an expanded force of amphibious-assault vessels. The PLAN needs to address this weakness if it is to field a robust vertical-assault capability. The entrance into service of additional Z-8s, a more modern heavy-lift design reported to be in development, or a militarized version of the modern medium utility helicopter, the Z-15, currently in codevelopment with Eurocopter, might help in this regard.<sup>46</sup>

While some analysts speculate that one of the primary missions of China's future fleet of oceangoing amphibious vessels would be to contribute to an invasion of Taiwan (providing a credible means to assault Taiwan's east coast), it is unlikely the PLAN envisions a Taiwan scenario as the primary mission for LPD 998 or any future vessels of similar capacity. First, while the notion of employing such vessels against Taiwan's exposed eastern side is intriguing at first glance, it would mean deploying a significant number of the PLAN's most modern warships—not only its most modern assault ships but also escort vessels—into the Philippine Sea, where they would be highly vulnerable to U.S. attack submarines. Second, as stated above, even three LHDs and six LPDs would be able to carry only about a brigade of marines. The Chinese would need far more, as well as the necessary supplies, in order to present a credible threat and sustain operations once a bridgehead was established. The lift that would be needed is far beyond even the most forward-leaning estimates of China's intentions. Third, it is unlikely the PLAN would be willing to risk these vessels as part of a more conventional assault across the narrow confines of the Taiwan Strait, where they would be at risk from Taiwan navy fast attack craft and coastal-defense antiship cruise missiles. Fourth, the fact that LPD 998 is in not the East Sea Fleet but the South Sea Fleet (based almost twice as far from the Philippine Sea, where it would need to operate to assault Taiwan's east coast) is highly suggestive of the platform's roles and missions. Future ships in this class could be based with the East Sea Fleet, but the operational problems stated above would still apply.

As with aircraft carriers, for the missions of the Type 071 LPD and similar future platforms one needs to look to the South China Sea and not to Taiwan. *Campaign Theory Study Guide*, *Science of Campaigns*, and *Winning High-Tech Local Wars* all discuss the use of rotary-wing forces in the vertical-envelopment role. While China's military modernization is primarily aimed at deterring independence-minded forces on Taiwan, it is to the three-dimensional assault role in the PLA's coral-island-assault campaign, beyond the range of land-based helicopters, that large assault ships such as LPDs and LHDs are best suited.<sup>47</sup> Their aviation

capabilities, large troop- and cargo-carrying capacity, and command-and-control facilities are ideal for this sort of campaign.<sup>48</sup> In November 2008 and June 2009, for instance, LPD 998, in the company of destroyers, frigates, and supply ships, conducted long-distance patrols of the disputed waters in the Spratly Islands; PLAN marines carried out at least one island-seizure exercise. This is suggestive of the primary operational orientation of this warship.<sup>49</sup>

China could employ aircraft carriers in a similar way. It is unlikely that the PLAN, apparently planning an LHD type, views vertical-assault operations as a primary mission for an aircraft carrier. Nonetheless, vertical assault represents a legitimate and proven use for carriers. The U.S. Navy has often employed them in this role. Notable examples include the launching of helicopters from USS *Nimitz* (CVN 68) in 1980 for Operation EAGLE CLAW, the failed mission to rescue American hostages in Iran; RESTORE DEMOCRACY in Haiti in 1994, when USS *Dwight D. Eisenhower* (CVN 69) embarked soldiers and helicopters from the 10th Mountain Division; and the early stages of ENDURING FREEDOM in 2001, when USS *Kitty Hawk* (CV 63) served as the “afloat forward staging base” for U.S. Army and Air Force special-operations troops and helicopters.<sup>50</sup> The author of “How Big a Role Do Aircraft Carriers Play in Noncombat Operations?,” published in 2009, discusses the role of *Eisenhower* off Haiti in 1994, arguing that it is sometimes necessary to reorganize a carrier’s air group for nontraditional security missions, removing some or all of its fixed-wing aircraft to make room for additional helicopters.<sup>51</sup>

Additionally, there are references in *Campaign Theory Study Guide* to the use of helicopter-carrying vessels (e.g., converted merchant ships, as mentioned in the sea-traffic-protection campaign) to conduct a variety of missions.<sup>52</sup> Amphibious assault ships, particularly LHDs, with their rotary-wing aviation capabilities, could represent valuable supplements to aircraft carriers and other surface combatants engaged in SLOC protection. The recent deployment of LPD 998 to the Gulf of Aden for counterpiracy operations with a mix of Z-8 and Z-9 helicopters specially fitted with gun and rocket pods was an excellent example of such a use of an assault ship in sea-traffic protection. Throughout the PLAN counterpiracy mission, helicopters have been crucial for shuttling special-operations forces to merchant ships and in warding off suspicious boats.<sup>53</sup> LPD 998, employing Z-8s, can accomplish these missions more effectively than destroyers and frigates employing smaller Z-9s and Ka-28s.

## NONTRADITIONAL SECURITY MISSIONS FOR SEA-BASED AIRPOWER

In addition to combat missions in regional conflicts, it is likely that China views aircraft carriers and large assault ships as important platforms for nontraditional security missions. As stated above, the best example so far is the decision to

deploy LPD 998 on counterpiracy duty in the Gulf of Aden as part of China's sixth counterpiracy rotation. Other nontraditional missions include maritime antiterrorism, prevention of maritime transportation of weapons of mass destruction, maritime peacekeeping, HA/DR, and noncombatant evacuation operations (NEOs). While it is unlikely that the PLAN views such missions as primary roles, these are tasks that navies often find themselves engaged in on a day-to-day basis. Nontraditional security missions also provide a useful occasion for the PLAN to operate in East Asian waters and beyond in a manner that does not inflame "China threat" rhetoric. In fact, they would present China as a responsible state that takes international-security issues seriously and is willing to promote cooperation and stability.<sup>54</sup> These missions also provide useful on-the-job training for the PLAN; Captain Xu Ping writes in the influential journal *中国军事科学* (*China Military Science*) that nonwar military actions are becoming one of the best forms of training, testing, and enhancing the core military functions that are necessary for winning local wars under "informatized" conditions.<sup>55</sup>

A significant example is humanitarian assistance and disaster relief. It is known that China was embarrassed in the aftermath of the 26 December 2004 Indian Ocean tsunami when the PLAN was obliged by a lack of suitable platforms to stand on the sidelines as several other countries, including the United States, Japan, India, and Thailand, deployed naval forces to provide humanitarian relief. As China develops its force of amphibious assault ships and eventually aircraft carriers, it is likely that they will be employed in HA/DR in East Asia and outside China's regional seas in areas such as the Indian Ocean. One Chinese article discussing the role of naval forces in disaster relief specifically names Cyclone Nargis (which struck Burma on 27 April 2008). An article on the 2004 tsunami, which struck Indonesia primarily, points out that the tidal waves also hit India and Sri Lanka.<sup>56</sup> The deployment of a task group built around one or more assault vessels to the Indian Ocean to provide disaster relief could go a long way in quieting fears of a growing regional Chinese military presence. Participation in HA/DR operations in the Indian Ocean would also allow the PLAN to establish an increased presence in the region in a nonintrusive, even friendly, manner that would likely find approval within the international community. Additionally, like the ongoing counterpiracy deployments, such missions would provide valuable experience in operating in close proximity to other major naval forces.<sup>57</sup>

While aircraft carriers lack some of the specialized support and logistics capabilities of amphibious assault ships for HA/DR operations, China will still likely employ its carriers for this mission in East Asia and possibly farther abroad. Chinese commentators have noted the important role that USS *Abraham Lincoln* (CVN 72) played in relief operations after the Indonesian tsunami in 2004. The participation of the light carrier USS *Saipan* (CVL 48) in disaster relief in the

Caribbean and Mexico in 1954 and 1955 is also discussed.<sup>58</sup> While the launching of even a single, refurbished, Soviet-era aircraft carrier will cause some to point to a growing China threat, the positive news of the deployment of a PLAN aircraft carrier to a coastal disaster area in East Asia will be a diplomatic counterweight to all but the most extreme trepidations. As Professors Andrew Erickson and Andrew Wilson of the U.S. Naval War College state, “The aftermath of the 2004 tsunami has convinced many Chinese that good carriers make good neighbors and they are a necessity if China’s force structure available for deployment to Southeast Asia is to match and complement its diplomatic initiatives.”<sup>59</sup>

Beyond HA/DR, aircraft carriers and modern amphibious assault ships are well suited to a variety of other nontraditional security operations as well. The October 2008 issue of *Modern Navy* featured a spirited debate among three Chinese

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*Modern force projection is essential for China to have a sustained naval presence away from Chinese waters, whether in the South China Sea, the Indian Ocean, or anywhere else.*

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naval experts (including Senior Captain Li Jie of the Navy Military Studies Research Institute) regarding the advantages of amphibious assault ships over aircraft carriers. The discussion revolves around

the suitability of amphibious assault ships in such operations as maritime anti-terrorism, counterpiracy, prevention of maritime transportation of weapons of mass destruction, and maritime peacekeeping, Li arguing that using an aircraft carrier to execute such missions is like using an “ox cleaver to kill a chicken.”<sup>60</sup> Li also points out that amphibious assault ships appear far less threatening than aircraft carriers, while providing greater flexibility afforded by their air and sea-based assault capabilities and extensive medical facilities.<sup>61</sup> Another article in the same published debate states, “Amphibious warships are able to shoulder or accomplish most of the tasks done by mid to small-size aircraft carriers, and are even able to engage in tasks that some of the carriers are unable to do.”<sup>62</sup>

It is in nontraditional security missions that China would likely employ aircraft carriers and amphibious assault vessels in “far seas” operations. There is no evidence that China is developing sufficient force projection to launch a major offensive against another state; the level of capability it is likely seeking would be sufficient for a variety of other missions. Since late December 2008 the PLAN has maintained two warships (destroyers or frigates) and one supply ship in the Gulf of Aden in counterpiracy patrol, as well as, recently, LPD 998. These ships have escorted a substantial number of merchant vessels and deterred some pirate attacks, but they lack the capability to take firm action against pirate bases ashore should they be called upon to do so. United Nations Security Council Resolution (UNSCR) 1851, passed unanimously in December 2008, authorizes operations against pirate bases on land in Somalia.<sup>63</sup> No nation has taken such action under

UNSCR 1851, but should the Chinese decide to do so, the small helicopters and modest special-operations troops now deployed with the destroyers and frigates would be insufficient. LPD 998, with its larger Z-8 helicopters and LCACs (landing craft, air cushion), would make a PLAN group capable of acting under UNSCR 1851. Should the international community attempt to address piracy in Somalia by deploying a multinational force for peacekeeping and nation building, PLAN amphibious assault ships could offer transportation and logistics support to PLA soldiers involved.

Protecting Chinese citizens in nations bordering the Indian Ocean is another task that PLAN expeditionary units could carry out. It is estimated that over five million Chinese citizens live and work overseas, including forty-five thousand in Nigeria, twenty-four thousand in Sudan, ten thousand in the Democratic Republic of the Congo, and ten thousand in Pakistan. Chinese citizens living in unstable countries like these are increasingly at risk. In April 2007, seven Chinese oil workers were killed in Ethiopia; another five were abducted and murdered in Sudan in 2008. In 2004 three Chinese engineers were murdered in Gwadar, while in 2007 a busload of Chinese construction engineers was bombed in southwestern Baluchistan, killing several policemen.<sup>64</sup> Most recently, in July 2010 Chinese oil workers staying at a hotel in Gwadar were subjected to a rocket attack.<sup>65</sup> Also, about half of the approximately two thousand Chinese soldiers currently deployed on UN peacekeeping missions are in Sudan and the Democratic Republic of the Congo, nations where future instability could lead to a requirement for sea-based support.<sup>66</sup>

In May 2007 China's Ministry of Foreign Affairs (MFA) established a division of consular protection within the Department of Consular Affairs, MFA's largest department, with 140 staff in Beijing and more than six hundred at overseas consulates. Although diplomatic channels have secured the release of kidnapped Chinese citizens, including nine people in Nigeria in 2007 and twenty-five Chinese sailors on the pirated coal carrier *Dexinhai* (released in December 2009 after payment of a four-million-dollar ransom), growing Chinese nationalism and confidence in the military could put pressure on Beijing to take more muscular action in the future.<sup>67</sup> A naval task group built around one or more large amphibious vessels would be crucial in conducting a NEO or in providing over-the-horizon support to Chinese peacekeepers. Amphibious assault ships would bring a wide range of capabilities to such a task, including diverse air wings, made up of transport, rescue, and attack helicopters; task group command and control; medical facilities; and marines and soldiers supplemented by specialists such as engineers and medical personnel.

The February and March 2011 deployment of a single PLAN frigate and four PLAAF Il-76 transports to support a Chinese NEO in war-torn Libya are excellent



examples of the PLA's need for greater expeditionary capability. While this mission represents the first time China deployed military forces to support a NEO, the PLA's contribution to the mission was unimpressive. By the time PLAN and PLAAF forces arrived in theater, over 90 percent of the approximately thirty-five thousand Chinese citizens in Libya had already been evacuated, using chartered commercial ferries and aircraft. The mission generated a great deal of positive publicity for the PLA in the largest evacuation of Chinese citizens from a foreign country since the founding of the People's Republic, and it demonstrated the PLA's ability to respond quickly to execute its mission. However, the small role played by China's military forces in this operation highlights its lack of substantive long-range expeditionary capabilities. That said, an indicator of a more robust role for the PLA in this type of mission is this March 2011 statement from Major General Luo Yuan of the Academy of Military Sciences in the Chinese newspaper *Xinhua*: "If there's an emergency and there are a huge number of overseas Chinese needing to be evacuated, then it's quite necessary for the army to step in and help the government get them out."

Given the likelihood that the primary focus of China's future aircraft carrier fleet will be regional, any deployments of Chinese carrier groups outside the western Pacific will probably be to support nontraditional security missions or establish a peacetime presence. While not as useful as large amphibious assault ships for NEOs, counterpiracy, support to peacekeeping, and the like, carriers could provide air cover or rotary-wing support to Chinese forces engaged in these missions were it necessary. A carrier group deployed near a nation where Chinese citizens were threatened could also serve as a powerful instrument of diplomacy. Further, if the commitment elsewhere or unreadiness of other forces required, a carrier (though not ideally suited to the role) could put assault forces ashore against pirate lairs. The use of *Kitty Hawk* as an afloat forward staging base in 2001 for special-operations forces is instructive in this regard. China could also deploy carrier groups to the Indian Ocean periodically on goodwill cruises and bilateral or multilateral exercises. That peacetime presence might support nations important to China's position in the region, such as Pakistan and Sudan, or effectively assert to regional actors that China's interests and concerns are not to be ignored.

China's navy currently possesses only a modest long-range force-projection capability. However, between now and 2020 the acquisition of aircraft carriers and additional amphibious assault vessels will give it a robust capacity for expeditionary and force-projection operations in East Asia. It will also give the PLAN the ability to engage in small or medium-sized missions of these kinds both in and beyond East Asia—particularly in support of nontraditional security missions,

such as counterpiracy, support to peacekeeping forces, noncombatant evacuation, humanitarian assistance and disaster relief, and peacetime presence. While the PLAN's overall expeditionary potential will likely be closer to that of the British and French navies than that of the U.S. Navy, its aircraft carrier and amphibious forces will still likely be the most powerful of any East Asian nation. A force of this size will not be sufficient to project force beyond East Asian waters, but it should be enough to protect China's regional maritime interests and contribute significantly to Chinese diplomacy outside East Asia.

While it cannot be predicted with certainty how China will seek to employ its aircraft carriers and modern amphibious assault ships, authoritative open-source publications offer important insight into the potential operational roles of these platforms in both wartime and peacetime. More important, these writings clearly show that the Chinese military is aware of the flexibility of aircraft carriers and modern assault ships and likely views them as more than simply "one mission" platforms. Instead, they suggest, it will seek to employ them in a variety of traditional and nontraditional security missions in order to accomplish "diversified military tasks."<sup>68</sup>

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#### NOTES

- The views expressed in this article are those of the author and do not necessarily reflect the views of the Department of the Navy or Department of Defense.
- A modified version of this article appears as a chapter in Andrew S. Erickson and Lyle J. Goldstein, eds., *Chinese Aerospace Power: Evolving Maritime Roles* (Annapolis, Md.: Naval Institute Press, May 2011).
1. The epigraph is from Liu Huaqing, *Memoirs of Liu Huaqing* (Beijing: PLA Press, August 2004).
  2. Richard Fisher, "Update: China's Aircraft Carriers," *International Assessment and Strategy Center*, 10 March 2009, [www.strategycenter.net/](http://www.strategycenter.net/); Hugh White, "China: Up Periscope," *Lowy Interpreter*, 6 January 2010, [www.lowyinterpreter.org/](http://www.lowyinterpreter.org/).
  3. The purpose of this section of the article is to provide a general overview of China's aircraft carrier program, as opposed to a comprehensive study on the issue. For greater detail, see Ian Storey and You Ji, "China's Aircraft Carrier Ambitions," *Naval War College Review* 57, no. 1 (Winter 2004), pp. 77–93; Andrew S. Erickson and Andrew R. Wilson, "China's Aircraft Carrier Dilemma," *Naval War College Review* 59, no. 4 (Autumn 2006), pp. 13–45; and Nan Li and Christopher Weuve, "China's Aircraft Carrier Ambitions: An Update," *Naval War College Review* 63, no. 1 (Winter 2010), pp. 13–31. All *Naval War College Review* sources, here and below, are available online at [www.usnwc.edu/press/](http://www.usnwc.edu/press/).
  4. Zhu Lin, "The PLA Has No Plans to Build Aircraft Carriers for the Time Being," *Wen Wei Po*, 11 March 2004; Erickson and Wilson, "China's Aircraft Carrier Dilemma," pp. 13–45.
  5. Feng Changhong, "Developing an Aircraft Carrier to Uphold China's Ocean Rights and Interests," *Tzu Ching*, 1 April 2006.
  6. "Time to Prepare for China's Aircraft Carrier," *Global Times*, 11 March 2010, available at [opinion.globaltimes.cn/](http://opinion.globaltimes.cn/); "Jiangnan Shipyard Group Ready to Build China's Own Aircraft Carrier," *Zhongguo Tongxun She* [China News Agency], 22 April 2009.

7. Mure Dickie and Martin Dickson, "China Hints at an Aircraft Carrier," *Financial Times*, 16 November 2008, available at [us.ft.com/](http://us.ft.com/).
8. "China Making First J-15 Ship-borne Fighter," *Kanwa Asian Defense*, 1 May 2010; "J-15 Flying Shark," *Chinese Military Aviation*, 7 July 2010, available at [cnair.top81.cn/](http://cnair.top81.cn/); "Chinese Ski Jump Spotted," *Strategy Page*, 12 August 2009, [www.strategypage.com/](http://www.strategypage.com/).
9. "J-15 Flying Shark."
10. Mikhail Kukushkin, "Kamov Is Counting on the Small One," *Vremya Novostey*, 8 February 2010; "Z-8 AEW Helicopter Unveiled," *China Defense Blog*, 19 October 2009, [china-defense.blogspot.com/](http://china-defense.blogspot.com/); and "Z-8 AEW Super Frelon," *Chinese Military Aviation*, 11 November 2009, available at [cnair.top81.cn/](http://cnair.top81.cn/).
11. "Zhi-15 (EC 175) Medium Lift Helicopter," *Chinese Defence Today*, 15 March 2008, available at [www.sinodefence.com/](http://www.sinodefence.com/).
12. Liu, *Memoirs of Liu Huaqing*.
13. Wang Yucheng, "The Making of a Chinese Captain," *当代海军* [Modern Navy] (March 2005); Storey and You Ji, "China's Aircraft Carrier Ambitions"; Huang Caihong and Cao Guoqiang, "Competing for Excellence in the Blue Skies: Remembering China's First Generation of Pilot Ship Captains," *Xinhua*, 1 August 1998.
14. Storey and You Ji, "China's Aircraft Carrier Ambitions," p. 78.
15. Michael Studeman, "Calculating China's Advances in the South China Sea," *Naval War College Review* 51, no. 2 (Spring 1998), pp. 68–90.
16. Cheng Guangjin and Wu Jiao, "Sovereign Waters Are Not in Question," *China Daily*, 31 July 2010, available at [www.chinadaily.com.cn/](http://www.chinadaily.com.cn/).
17. Wang Houqing, *战役学* [Science of Campaigns] (Beijing: National Defense Univ. Press, May 2000); Zhang Yulang, *战役学* [Science of Campaigns] (Beijing: National Defense Univ. Press, May 2006).
18. Zhang, *Science of Campaigns*.
19. Wang Qiming and Cheng Feng, *Winning High-Tech Local Wars: Must Reading for Military Officers* (Beijing: Military Translation, August 1998).
20. Lyle Goldstein, "China's Falkland Lessons," *Survival* 50, no. 3 (June–July 2008); Michael H. Coles, "Suez, 1956: A Successful Naval Operation Compromised by Inept Political Leadership," *Naval War College Review* 59, no. 4 (Autumn 2006), pp. 100–18.
21. Zhang Xingye, *战役理论学习指南* [Campaign Theory Study Guide] (Beijing: National Defense Univ. Press, May 2002).
22. *Ibid.*; Wang, *Science of Campaigns*; and Zhang, *Science of Campaigns*.
23. *Air Raid and Anti-Air Raid in the 21st Century* (Beijing: PLA Press, May 2002); Zhang, *Campaign Theory Study Guide*; Wang, *Science of Campaigns*; Zhang, *Science of Campaigns*.
24. Minnie Chan, "Challenge Will Be Training Pilots, Ex-General Says," *South China Morning Post*, 1 April 2010.
25. Liu, *Memoirs of Liu Huaqing*.
26. Cai Wei, "Dream of the Military for Aircraft Carriers," *Sanlian Shenghuo Zhoukan* [Sanlian Life Weekly], 27 April 2009.
27. Li and Weuve, "China's Aircraft Carrier Ambitions," p. 14.
28. Arun Prakash, "India's Quest for an Indigenous Aircraft Carrier," *Rusi Defense Systems* (Summer 2006).
29. "Y-7 AWACS," *Chinese Military Aviation*, 18 September 2010, available at [cnair.top81.cn/](http://cnair.top81.cn/).
30. The author would like to thank Lt. Cdr. Cory Gassaway, USN, for his valuable insights into operating the E-2C from aircraft carriers.
31. Li and Weuve, "China's Aircraft Carrier Ambitions," p. 20.
32. Stephen Saunders, *Jane's Fighting Ships 2009–2010* (Coulson, Surrey, U.K.: IHS Jane's, 2009); and Lt. Cdr. Corey S. Johnston, "Transnational Pipelines and Naval Expansion: Examining China's Oil Insecurities in the Indian Ocean" (master's thesis, U.S. Naval Postgraduate School, Monterey, California, June 2008), available at [www.nps.edu/](http://www.nps.edu/).
33. Saunders, *Jane's Fighting Ships 2009–2010*.
34. Han Jiang, "Exploration of China's Amphibious Assault Ship," *舰船知识* [Naval and Merchant Ships] (July 2010).
35. *Ibid.*

36. "Type 071 Landing Platform Dock," *Chinese Defence Today*, 5 June 2008, available at [www.sinodefence.com/](http://www.sinodefence.com/).
37. Bai Yanlin, "The Use of the Navy in Disaster Rescue and Relief Operations," 当代海军 [Modern Navy] (August 2008).
38. Richard Fisher, "Chinese Aspects of Singapore's IMDEX Naval Technology Show," *International Assessment and Strategy Center*, 20 June 2007, [www.strategycenter.net/](http://www.strategycenter.net/); "Shanghai, LCAC, and a New LPD under Construction?," *China Defense Blog*, 11 May 2010, [china-defense.blogspot.com/](http://china-defense.blogspot.com/).
39. Fisher, "Chinese Aspects of Singapore's IMDEX Naval Technology Show."
40. Senior Capt. Li Jie, "On What Should the Development of Amphibious Assault Ship Focus? Part 3," 当代海军 [Modern Navy] (November 2008).
41. *Ibid.*; Liu, *Memoirs of Liu Huaqing*; Erickson and Wilson, "China's Aircraft Carrier Dilemma."
42. Han, "Exploration of China's Amphibious Assault Ship."
43. Fisher, "Chinese Aspects of Singapore's IMDEX Naval Technology Show."
44. *Ibid.*; Liu Chi-Wen, "An Analysis of China's Amphibious Assault Ships," *Hai-chun Hsueh-shu Shuang-yueh-kan*, 1 June 2008.
45. Saunders, *Jane's Fighting Ships 2009–2010*.
46. "新一代Z-15型直升" [A New Generation of Z-15 Helicopter], *China.com*, 18 December 2009, [military.china.com/](http://military.china.com/); "Z-8/S/J/JH (SA-321Ja) Super Frelon," *Chinese Military Aviation*, 10 July 2010, [cnair.top81.cn/](http://cnair.top81.cn/).
47. Zhang, *Science of Campaigns*.
48. Han, "Exploration of China's Amphibious Assault Ship."
49. Pan Xiaomin and Wu Chao, "Fierce Tigers of Land Warfare Quietly Invade Unnamed Reef," 人民海军 [People's Navy], 17 December 2008; Wei Gang, Li Yanlin, and Wu Chao, "A Chinese Naval Ship Formation Conducts the First Long-Voyage Training Sail around the South China Sea," 人民海军 [People's Navy], 2 December 2008; and Bai Yang, "Three Underway Replenishment Records Have Been Reset," 人民海军 [People's Navy], 22 June 2009.
50. "Afloat Forward Staging Base (AFSB)," *GlobalSecurity.org*, 18 June 2006.
51. Senior Capt. Li Jie, "How Big a Role Do Aircraft Carriers Play in Noncombat Operations? Part 1," 当代海军 [Modern Navy] (January 2009), and "How Big a Role Do Aircraft Carriers Play in Noncombat Operations? Part 2," 当代海军 [Modern Navy] (February 2009).
52. Zhang, *Campaign Theory Study Guide*.
53. Yin Hang and Yu Huangwei, "6th Chinese Naval Task Force Dispels Suspected Boats," *Liberation Army Daily*, 19 July 2010, available at [eng.chinamil.com.cn/](http://eng.chinamil.com.cn/).
54. Bai, "The Use of the Navy in Disaster Rescue and Relief Operations"; Erickson and Wilson, "China's Aircraft Carrier Dilemma."
55. Capt. Xu Ping, "Tentative Analysis of Hu Jintao's Strategic Thinking on Accomplishing Diversified Military Tasks," *中国军事科学* [China Military Science] (March 2010).
56. Bai, "The Use of the Navy in Disaster Rescue and Relief Operations"; Li, "How Big a Role Do Aircraft Carriers Play in Noncombat Operations? Part 2."
57. Xu, "Tentative Analysis of Hu Jintao's Strategic Thinking on Accomplishing Diversified Military Tasks."
58. Li, "How Big a Role Do Aircraft Carriers Play in Noncombat Operations? Part 2."
59. Erickson and Wilson, "China's Aircraft Carrier Dilemma."
60. Senior Capt. Li Jie, "On What Should the Development of Amphibious Assault Ship Focus? Part 2," 当代海军 [Modern Navy] (October 2008).
61. *Ibid.*
62. *Ibid.*
63. "Security Council Authorizes States to Use Land-Based Operations in Somalia, as Part of Fight against Piracy off Coast," press release on UNSCR 1851, 16 December 2008, [www.un.org/](http://www.un.org/).
64. "China's Pearl Loses Its Luster," *Asia Times Online*, 21 January 2006, [www.atimes.com/](http://www.atimes.com/); "Why Are Chinese Engineers Being Targeted?," *Daily Times*, 20 July 2007, available at [www.dailytimes.com.pk/](http://www.dailytimes.com.pk/).

65. "Chinese Engineers Escape Rocket Attack," *Sri Lanka Guardian*, 10 July 2010, available at [www.srilankaguardian.org/](http://www.srilankaguardian.org/).
66. "Chinese Blue Helmets Renowned as Devoted Peace Keepers," *Liberation Army Daily*, 26 April 2010, available at [eng.chinamil.com.cn/](http://eng.chinamil.com.cn/); "Operations and Deployments," *Chinese Defence Today*, 9 February 2009, available at [www.sinodefence.com/](http://www.sinodefence.com/).
67. "Chinese Oil Workers Set Free in Nigeria," *China Daily*, 5 February 2007, available at [www.chinadaily.com.cn/](http://www.chinadaily.com.cn/).
68. Xu, "Tentative Analysis of Hu Jintao's Strategic Thinking on Accomplishing Diversified Military Tasks."



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