

Naval War College Review

Volume 62
Number 2 *Spring*

Article 6

2009

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Recommended Citation

Erickson, Andrew and Goldstein, Lyle (2009) "Gunboats for China's New "Grand Canals"?—Probing the Intersection of Beijing's Naval and Oil Security Policies," *Naval War College Review*: Vol. 62 : No. 2 , Article 6.
Available at: <https://digital-commons.usnwc.edu/nwc-review/vol62/iss2/6>

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GUNBOATS FOR CHINA'S NEW "GRAND CANALS"?

Probing the Intersection of Beijing's Naval and Oil Security Policies

Andrew Erickson and Lyle Goldstein

Over a millennium ago, a waterway known as the Grand Canal, connecting the seaport of Hangzhou with Beijing in the north, became a critical artery for the dynamic growth of Chinese civilization. In the last decade, the sea lines of communication (SLOCs) connecting China to the Middle East and Africa have assumed a similarly vital role as a major "center of gravity" for Chinese economic development. With Chinese oil demand growing rapidly and seaborne oil imports constituting more than 80 percent of total oil imports, China's new "Grand Canal" has also become a vital oil lifeline. In 2007, approximately 85 percent of Chinese oil imports passed through the Strait of Malacca; Chinese writings commonly refer to this critical vulnerability as the "Malacca Dilemma" (马六甲困局). Given these developments, along with the 26 December 2008 deployment of two destroyers and one supply vessel from the People's Liberation Army Navy (PLAN) to support counter-piracy operations in the Gulf of Aden, it is time to consider seriously the prospect of future PLAN missions to defend Chinese interests not only in East Asia but also beyond.

Against this strategic backdrop, it is not surprising that some Chinese naval and maritime affairs analysts believe that China needs the military capacity to protect its long and increasingly vital maritime oil supply lines.¹ Defense of oil SLOCs

may become a driver in future PLAN evolution;² this would be particularly the case if the Taiwan issue were to become a lesser concern to the People's Republic of China (PRC).³ Indeed, a major U.S. government report states that "as China's economy grows, dependence on secure access to markets and natural resources,

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Naval War College Review, Spring 2009, Vol. 62, No. 2

particularly metals and fossil fuels, is becoming a more significant factor shaping China's strategic behavior.⁴ A shift in naval-mission focus from consolidating control of China's maritime periphery to pursuing SLOC security would represent a major reconceptualization of Chinese national security, one with wide-ranging international implications. Examining the Indian case, moreover, illustrates that promotion of blue-water naval capabilities in China is not unusual for a developing major power.⁵

The possible interaction between China's developing oil security and naval strategies poses important questions. Gunboats were once used to invade China in the name of protecting international commerce. Now China is itself acquiring powerful warships, but its precise reasons for doing so remain unclear. What relationships do Chinese civilian and military leaders envision between maritime commerce, oil availability, and the use of force in international affairs? Such questions appear to be largely undecided in China. They perplex the U.S. Department of Defense, which stated in 2008 that "the extent to which Beijing's concerns over the security of its access to oil supplies shapes China's defense policy and force planning is not known."⁶ But they are questions that China will increasingly confront in the future, as its role on the global stage, including both economic and military aspects, continues to increase.

The maritime dimensions of China's emerging oil security strategy have received considerable attention from analysts, both inside and outside the nation.⁷ But to date, few scholars have attempted to analyze comprehensively oil security-related writings in Chinese naval and maritime publications. This article will therefore offer possible answers to these questions and attempt to fill an important gap in the existing literature by surveying the maritime oil security discussions conducted by Chinese naval and energy specialists.

China's dominant domestic oil players are, first, the national oil companies and, second, the State Council, with its National Development and Reform Commission (NDRC)—not the security establishment.⁸ Yet maritime oil security is generally not addressed in documents published by these entities, a fact that raises questions as to how oil security is conceptualized by China's leadership, which, by default, would likely handle such issues.⁹

Chinese maritime writings, by contrast, have proliferated in recent years.¹⁰ At least five PRC professional publications concerned with naval development have appeared, as well as a plethora of books discussing the direction of Chinese naval modernization.¹¹ Few other Chinese publications analyze maritime oil security in detail.¹² A survey of China's official naval journal, *当代海军* (*Modern Navy*), from 2003 to 2006 reveals relatively few articles devoted to maritime oil security issues. Nevertheless, these articles cite China's perceived naval weakness as a key cause of oil insecurity.¹³ The tenor of these discussions suggests a strong

disinclination by Chinese naval strategists to accept American or Western control over Beijing's "oil lifeline" (石油生命线).¹⁴ This unease may well help to fuel China's ongoing naval buildup. However, one principal finding of this article is that some Chinese naval and maritime affairs analysts are pragmatic and advocate cooperation with other oil-consuming great powers, including the United States, in order to secure stability of the oil and gas supply.

This analysis has eight sections. The first establishes a geostrategic context for China's current naval and oil security-related actions and explores the role of oil in China's recent turn to the sea. The second and third sections explore Chinese perceptions of the roles of SLOCs and potential threats to them, respectively. A fourth section discusses People's Liberation Army (PLA) doctrinal writings relevant to SLOC protection missions. The fifth explores future naval implications of a more assertive Chinese naval presence driven by oil security concerns. Section six offers potential leading indicators of Chinese development of a navy capable of long-range SLOC protection. The seventh section examines Chinese arguments in favor of international SLOC security cooperation. The final section summarizes the findings and offers reason to believe that U.S.-China energy cooperation is quite possible in the maritime sphere.

THE CONTEXT FOR NAVAL AND OIL SECURITY STRATEGY DEVELOPMENT

In comparison to those of Japan or Taiwan, mainland China's overall energy imports are low.¹⁵ Domestic energy production remains centered on coal (about 70 percent of total supply), of which China has the world's third-largest reserves, after the United States and Russia. China is the only northeast Asian country to have these advantages. However, the country's oil use and oil import dependence have been rising rapidly since China became a net oil importer in 1993. While still a very significant oil producer, China now imports half of its crude oil needs of more than 7.7 million barrels per day. Oil security has become a hot discussion topic, because although oil occupies a minority share in the overall national energy balance, it currently has no large-scale substitutes as a transport fuel. Without adequate oil supplies, China's economy would grind to a halt as fuel shortages shut down trucks, ships, aircraft, and much of the rail system.¹⁶

For these reasons, as well as the Chinese Communist Party's more general imperative to orchestrate rapid economic development, resource acquisition appears to have become a major focus of Beijing's pragmatic foreign policy. This features sophisticated diplomacy, commercial initiatives, a flexible approach to problem solving that prioritizes economic and social progress over governance standards or individual human rights, and a new willingness to assume international responsibilities (e.g., peacekeeping and anti-piracy operations).

China's emphasis on resource supply security is driven fundamentally by internal development requirements, but against the backdrop of China's impressive naval modernization over the past decade, concerns about potential Chinese naval development trajectories do arise. China has been building four classes of submarines simultaneously. It is also improving its amphibious warfare, air defense, and antiship missile capabilities. Furthermore, whereas old military and strategic debates focused on Taiwan contingencies, the new strategic ques-

“Our economic development generates the need of overseas resources and markets, and there are hidden dangers in the security of our development.”

tions concern what may be wider regional, and potentially global, ambitions emerging in Beijing.¹⁷ Yet at this point, in the assessment of the U.S. Defense Department, China “is neither capable of using

military power to secure its foreign energy investments nor of defending critical sea lanes against disruption.”¹⁸

To address these questions, it is critical to understand China's debate over energy strategy. Chinese oil security writings are increasingly numerous, reflecting a vigorous national debate among civilian experts and scholars. “Free marketeers” believe that markets are the best tool to ensure a secure supply of imported oil. Beijing University's Zha Daojiong, for instance, argues that China's path to oil security lies in greater integration with the existing global oil market.¹⁹ Some analysts believe that transnational and nonhuman threats to maritime oil security are as important as, or more important than, interstate threats.²⁰ There are pragmatists at Chinese naval institutions who believe that oil security can be achieved through diplomacy.²¹

But there are also mercantilists, who take a darker view based on the zero-sum premise that dwindling oil supplies compel each consumer to fight for exclusive control of resources. They believe that China must control its foreign oil supplies from wellhead to gas pump and are typically more inclined than others toward using military power to guarantee oil-supply security. For instance, Zhang Wenmu, of Beijing University of Aeronautics and Astronautics, a major public intellectual, writes that China must control its sea-based oil supplies: “We must build up our navy as quickly as possible. . . . Otherwise, China may lose everything it has gathered in normal international economic activities, including its oil interests, in a military defeat.”²² While Zhang's writing appears to have attracted a limited following, it is conspicuous for its apparent lack of calculation of costs or of potential balancing reaction by others, or any clear estimate or plan about exactly what kind of naval capabilities China would need for what kind of scenarios. There is a wide and sophisticated array of viewpoints even in China's naval studies community.

THE ROLE OF OIL RESOURCE PROTECTION IN CHINA'S MARITIME DEVELOPMENT

Despite its largely insular, continental history, China appears to be turning decisively to the sea as its trade relationships blossom and resource demand grows. In 2006, maritime industries accounted for \$270 billion in economic output (nearly 10 percent of GDP).²³ Extensive foreign oil resources are required to sustain China's growth, and some Chinese analysts appear to assume that there will be an unrelenting, zero-sum competition for access to them.²⁴ This justification has been present in the Chinese literature since the 1980s or early 1990s. In fact, it was in some ways more prevalent in those years (though not in connection with the Middle East/Malacca Straits but, rather, oil and resources in the South China Sea). The PLAN attempted to use these factors to justify budgets and modernization plans, because at the time the Taiwan and U.S. issues were less pressing.²⁵ One explanation for the content of maritime debates is the context of domestic bureaucratic and political wrangling for defense budget and procurement priority.

In the future, if tensions between China and the United States over Taiwan ease, maritime interests and SLOC security might reemerge as a basis for justifications of missions and modernization programs and budgets for the PLAN. Yet this may not be driven only by a perception of actual international interests and China's security environment; another driver may be a struggle by the PLAN to secure a greater portion of the PLA budget, particularly if it is able to improve its status vis-à-vis the PLA ground forces. This possibility is hardly far-fetched: China's 2008 Defense White Paper for the first time treats the ground forces as a distinct service equivalent to the Navy, Air Force, and Second Artillery, suggesting that they are becoming less dominant within the military and that the PLAN may grow correspondingly over time in funding and mission scope.²⁶

Today, Beijing appears to believe that China's maritime commercial and oil interests might need increasing protection. At an expanded Central Military Commission conference on 24 December 2004, Chairman Hu Jintao introduced a new military policy that defined the four new missions of the PLA: first, to serve as an "important source of strength" for the Chinese Communist Party (CCP) to "consolidate its ruling position"; second, to "provide a solid security guarantee for sustaining the important period of strategic opportunity for national development";²⁷ third, to "provide a strong strategic support for safeguarding national interests"; and fourth, to "play an important role in maintaining world peace and promoting common development."²⁸

The last two missions reflect new emphases for the PLA, and the fourth is unprecedented. According to a subsequent article in *Liberation Army Daily*, the third includes maritime rights and interests. Specifically, Hu requires the PLA

“to not only pay close attention to the interests of national survival, but also national development interests; not only safeguard the security of national territory, territorial waters, and airspace, but also safeguard electromagnetic space, outer space, the ocean, and other aspects of national security.”²⁹ On 27 December 2006, in a speech to People’s Liberation Army Navy officers attending a Communist Party meeting, Hu referred to China as “a great maritime power (海洋大国)” and declared that China’s “navy force should be strengthened and modernized” and should continue moving toward “blue water” capabilities.³⁰ China’s 2006 Defense White Paper further states that China’s “navy aims at gradual extension of the strategic depth for offshore defensive operations and enhancing its capabilities in integrated maritime operations.”³¹

China’s 2008 Defense White Paper adds that “the Navy has been striving . . . to gradually develop its capabilities of conducting cooperation in distant waters.” It arguably alludes to oil security in describing the present state of the world: “Struggles for strategic resources, strategic locations and strategic dominance have intensified.”³² But oil security is not mentioned directly in Hu’s redefinition of PLA policy, raising the question of whether an oil security/SLOC mission is specifically sanctioned by China’s leadership. This is hardly surprising, as Chinese leadership pronouncements tend to represent abstract distillations of high-level consensus, particularly concerning emerging issues for which specific policy has yet to be decided. Potential factors that could motivate expansion of PLAN activities include: first, a perceived need to protect Chinese shipping and resource supply lines and, second, to make sure that China can handle a Taiwan crisis and other regional contingencies; third, bureaucratic interests (e.g., of the navy and specific factions within it); and fourth, a desire within the leadership for a Chinese “Great White Fleet” for international prestige. It is likely that a combination of these factors provides the impetus behind China’s naval modernization. However, oil supply security stands out as a clear national strategic interest that has the potential to unite factions within China in support of more assertive naval policies.

China’s growing reliance on oil imports to power economic growth makes oil supply security a distinct national security interest. In an attempt to transform Hu’s general guidance into more specific policy, articles in state and military media have argued that to safeguard China’s economic growth, the PLA must go beyond its previous mission of safeguarding national “survival interests” (生存利益) to protecting national “development interests” (发展利益). “Our economic development generates the need of overseas resources and markets, and there are hidden dangers in the security of our development,” explains a Nanjing Army Command College political commissar, Major General Tian Bingren. “With the deepening of economic globalization and increasingly frequent

flow of . . . energy sources, an outside local war or conflict will influence the development and construction of a country.”³³ Writing in a PLA newspaper, the recently retired Major General Peng Guangqian—who has served as a research fellow at China's Academy of Military Sciences and who, as an adviser to China's powerful Central Military Commission (CMC) and Politburo Standing Committee, has enjoyed significant influence in the shaping of PLA strategy—warns

“[China] must view things from the perspective of keeping the United States from cutting its oil supply lines. Concretely speaking, this entails making the United States not willing to cut China's oil supply lines, not daring to do so, and not able to do so.”

that “some of the foreign hostile forces” may “control the transport hubs and important sea routes for China to keep contact with the outside, and curb the lifeline China needs to develop.”³⁴ A major study advised by such influential policy makers as Dr. Qiu Yanping,

deputy director of the Chinese Communist Party Central Committee's National Security Leading Small Group Office,³⁵ emphasizes the importance of securing China's sea lines of communication.³⁶ Writing in the official journal of the Central Committee, the PLAN commander, Wu Shengli, and Political Commissar Hu Yanlin state, “To maintain the safety of the oceanic transportation and the strategic passageway for energy and resources . . . we must build a powerful navy.”³⁷ While this serves these individuals' bureaucratic interests, they must nevertheless coordinate their statements with PLA and CCP leadership; such naval advocacy would have been impermissible previously. Analysts writing in PLA publications label oil security a key area of concern and advocate measures, including expansion of strategic petroleum reserves and modernization of the PLA Navy and Air Force, as well as of the Second Artillery (the strategic missile force), in order to protect China's energy supplies and key infrastructure.³⁸

A series of naval strategy books, published in Beijing during 2003 by a PLAN-affiliated press, under the overarching theme of “The Chinese Nation and the Ocean,” suggests a relatively firm link between naval strategy and resource concerns among serious Chinese analysts. The introduction to one of these books, *蓝色方略* (*The Blue Strategy*), explains that “in today's world, the population is growing as land-based resources are depleted. Conflict and competition over maritime rights and interests are intensifying with each passing day.”³⁹ Another book in the series, *卫海强军* (*A Mighty Force to Protect the Sea*), suggests that resource issues will greatly affect China's development trajectory. Resolving this issue in a manner that supports China's development strategy will require new “resource space” (资源空间) that can only be found in maritime domains.⁴⁰

Alfred Thayer Mahan's dicta that commerce is vital to maritime power and that the best way to threaten and defend commerce is by engaging naval forces in

decisive battle are pervasive in Chinese writings.⁴¹ They appear in a recent book, *海上力量与中华民族的伟大复兴* (*Sea Power and the Chinese Nation's Mighty Resurgence*), by two Chinese naval officers.⁴² Published by China's National Defense University, the volume emphasizes the critical role of controlling sea-lanes for the purposes of developing sea power, as well as the nation's economy. Its authors contend that sea powers have generally enjoyed great geostrategic advantages over land powers—an argument with major implications for China's future development. Once again stressing the link between economic and naval power, the two naval officers note, “from an economic power standpoint, maritime civilizations . . . are far superior to continental civilizations.” Of particular relevance to this discussion of oil security, the authors observe that continental powers have frequently been surrounded and blockaded with considerable strategic effect. They suggest that maritime threats to China are increasing and that its maritime resources are being plundered.

The recent actions of the United States have exerted an especially deep influence on Chinese analysts' oil security views. According to a 2004 article on oil security in China's foremost naval journal, *Modern Navy*, “The 9.11 events gave the United States an opportunity to assert greater control over the oil-rich Middle East. The wars in Afghanistan and Iraq ensured that Middle Eastern oil and gas was ‘in the bag’ for the United States.” The author of this analysis argues: “The great powers compete for oil [because whichever state] controls the oil can also control the lifeblood of other countries' economic development, [but whichever state] controls the Middle East can control that of the [entire] world economy.”⁴³ Such perceptions are important. If Chinese policy makers see the oil market as United States–controlled and unreliable and come to doubt Washington's willingness to keep critical oil SLOCs open impartially, they might push hard to create a blue-water navy. Such actions would mark a strategic tipping point in the Sino-American relationship and could set off a cascade effect of more assertive SLOC security policies by Japan and other major oil importers.

CHINESE VIEWS OF OIL SLOCs

Chinese defense policy intellectuals generally consider oil SLOC security to be a major issue, as suggested by an edited volume on SLOC and maritime oil security published by China Institute of Contemporary International Relations (CICIR).⁴⁴ In addition, the PLA's first English-language volume of its type, *The Science of Military Strategy*, emphasizes that SLOC security is vital to China's long-term development.⁴⁵ As discussed above, the authors of Chinese oil security works tend to fall into two primary camps: the “free marketeers,” who see the global oil market as the best guarantor of oil supply security, and the “mercantilists,” who see the global oil supply situation in zero-sum terms and favor

greater state involvement in securing energy supplies. Those who believe that greater reliance on the international oil market is the best path to oil supply security have gained strength over the past several years. However, based on assessment of Chinese-language analyses on oil supply security, it appears that the mercantilists still exert significant influence. More to the point, authors close to the military and to the party's top ranks appear to have strong mercantilist inclinations. Accordingly, that the mercantilists' articles occupy less print space relative to those of free marketeers does not necessarily mean that their policy influence is insignificant.

In fact, the upswing in Somali piracy in late 2008 and the pirates' capture and holding for three months of the supertanker *Sirius Star* have likely strengthened the hand of those favoring a more assertive naval presence along key maritime energy transit corridors. The PLA Navy's subsequent deployment of two destroyers and a supply ship to the Gulf of Aden is an unprecedented move that may presage a more active Chinese presence near global maritime energy routes. At the very least, it will make China's energy diplomacy much more credible, given that it demonstrates a capability to deploy military assets in areas of interest. The following section surveys Chinese strategic thinkers' views as to which regions are most crucial to Chinese energy security.

China's modern strategists envision their nation as having four strategic sea-lanes: east (from across the Pacific), south (from Australia and the Pacific islands), west (from the Middle East and East Africa through the Indian Ocean), and north (through Sea of Okhotsk and the Tsushima Strait). They worry that more than 75 percent of China's seaborne oil imports flow through a few key maritime arteries.⁴⁶ Chinese analysts and policy makers discuss possible ways to bypass these established routes, but thus far few of their plans appear likely to alter substantially China's dependence on established global oil shipping lanes.

Seaborne oil transport tends to be far less expensive than pipelines, for instance. In addition, the majority of China's oil imports come from the Middle East and Africa, where distance and geographic obstacles (oceans) make pipeline shipments economically and physically unfeasible. According to a map that appeared in the October 2006 issue of *现代舰船* (*Modern Ships*), such alternative routes could ultimately include oil pipelines from Siberia, Pakistan, the Burmese port of Sittwe, and the just-completed Kazakhstan pipeline that carries oil into western China. The accompanying analysis, however, is skeptical that these pipelines could solve China's "Malacca Problem." Regarding Russia, for example, it is suggested that Moscow's evident distrust of China means that the Kremlin "will not accept putting its lifeline under the control of another great power."⁴⁷ Chinese analysts worry that Russia might suspend oil supplies during crisis; they realize that their Russian counterparts worry that in peacetime

China might import additional oil by sea and refuse Russian oil shipments unless it received lower prices. On the other hand, CICIR scholar Zhang Xuegang maintains optimistically that a proposed canal across Thailand's Isthmus of Kra "could . . . provide a strategic seaway to the Chinese navy" through which "fleets could . . . more easily protect the nearby sea-lanes and gain access to the Indian Ocean."⁴⁸

It is generally held that land-based oil pipelines can displace a portion of future oil import growth and will help diversify China's oil import channels to some extent but that they cannot replace maritime oil transport.⁴⁹ Available overland supplies from Russia, Kazakhstan, and other areas are insufficient to reduce China's growing absolute and relative reliance on seaborne oil imports. Furthermore, off-loading seaborne crude in Burma or Pakistan seems problematic, given their great distances from China's coastal economic centers. Moreover, as a few Chinese sources recognize, pipelines have their own vulnerabilities—to substate actors and precision-guided munitions.⁵⁰ An article in *舰船知识* (*Naval and Merchant Ships*) states succinctly, "SLOC security is much more important than pipeline transport lines."⁵¹ It is therefore reasonable to assume that China will continue to rely on the Indian Ocean sea-lanes, the Malacca and Hormuz straits, and the South and East China seas as its primary oil import channels.⁵²

Chinese writers have dubbed the Strait of Hormuz the "Oil Strait" (石油海峡), because China obtains approximately 40–45 percent of its oil imports from the Middle East, the vast majority of which must flow through Hormuz.⁵³ Chinese scholars recognize the Middle East's instability, noting that since 1951 ten of the sixteen major global oil supply disruptions have originated in the region.⁵⁴ A recent PRC analysis notes that by 2020 China could be importing nearly four million barrels per day of oil from the Middle East (over twice the current average level of 1.5 million barrels per day).⁵⁵ Chinese experts note pointedly that "all oil that China imports from the Middle East and Africa has to go through the Straits of Hormuz and Malacca, but [these straits] are beyond the reach of the PLAN's power."⁵⁶

The "Western SLOC" (西行航线), running from the Indian Ocean through the Malacca Strait, to the South China Sea, and finally to the Chinese mainland, has particular strategic value as "China's 'lifeline' of economic development."⁵⁷ It carries 80 percent of Chinese oil imports;⁵⁸ that figure includes virtually all of China's imports from the Middle East and Africa.⁵⁹ Chinese researchers fear that Malacca, which "has become the strategic throat of China's energy and economic security," is "extremely narrow, easy to blockade."⁶⁰ "Whoever controls the Strait of Malacca," therefore, "effectively grips China's strategic energy passage, and can threaten China's energy security at any time."⁶¹

Chinese specialists are therefore particularly sensitive to the growth of American influence in and around the Strait of Malacca. Chinese writings do mention piracy and terrorism as threats to the oil flow through Malacca, noting that “in 2001 alone, there were over 600 piracy incidents.”⁶² The foremost concern of many, however, is clearly the strong U.S. presence in the region, which has increased with the ongoing war on terror. There is little doubt that the situation in the contemporary Middle East has made an impression: whichever state “controls the Middle East can control . . . the [entire] world economy.”⁶³ Chinese observers scrutinize what they regard as an American choke point control strategy, stating: “Everyone knows that the Malacca Strait is tightly linked to the South China Sea . . . and grips the throat of both the Pacific and the Indian Oceans.”⁶⁴

One PRC analysis asks whether the Malacca Strait will become yet another American forward military position in the Asia-Pacific.⁶⁵ Another asserts that the United States poses a “grave, hidden threat” to China’s energy security.⁶⁶ PRC scholars have noted that in 1992 the Seventh Fleet’s logistics agent, Commander, Logistics Group Western Pacific, was moved from Subic Bay in the Philippines to Singapore.⁶⁷ The United States has no military base there, only access to facilities like Changi Naval Base, but, it is suggested, “the area can be placed under the control of U.S. military power.”⁶⁸ China is uneasy with growing U.S.-Singapore security cooperation and the notion that the United States appears to be cementing its regional strategic position under the guise of “combating terrorism.”⁶⁹

The South China Sea is another of China’s critical oil transport zones, as China-bound oil flowing through Malacca must also transit this area on its way to southern and eastern China.⁷⁰ The South China Sea is, moreover, a vital transport corridor for liquefied natural gas (LNG), carrying two-thirds of the world’s current LNG trade.⁷¹ At present, Japan and South Korea are the region’s primary LNG users, but the LNG transport security question is of increasing interest to China, which by 2020 may be importing more than thirty million tons per year.⁷²

At the same time, China is keenly interested in producing oil and gas from beneath the South China Sea. Some Chinese observers claim that the South China Sea represents a “second Persian Gulf.”⁷³ Two naval analysts assert that “oil and gas reserves [of the South China Sea] could reach 3.5 billion tons [or more than twenty-five billion barrels of oil equivalent] . . . [which would be] extremely important for China’s economic development.”⁷⁴ A PLA publication also claims that the South China Sea possesses “rich oil reserves equivalent to those of the Middle East.”⁷⁵ Such assertions, however, are not supported by the limited oil yield from the South China Sea over thirty years of exploration and appear divorced from the far lower reserves that international oil companies believe to be

present there. Figure 1 lists the top global oil and gas reserve zones, according to a widely accepted industry benchmark.

If Chinese researchers' reserve estimates appear wildly optimistic, they do suggest that Beijing greatly values the South China Sea's oil and gas production potential. This could assume particular importance if China increases exploration and production activities there to reduce oil and gas import dependence, and thereby vulnerability to SLOC disruption. If Chinese national oil companies find oil or gas in the South China Sea, even outside China's territorial waters or exclusive economic zone, SLOC vulnerability would be reduced substantially by the shift of oil assets to be defended from the far reaches of the Indian Ocean to areas increasingly within range of China's air and naval bases. To date, the South China Sea appears to be yielding much more natural gas than oil. In collaboration with China National Offshore Oil Corporation (CNOOC), for instance, Hong Kong-based Husky Resources in 2006 made a world-class four-to-six-trillion-cubic-foot gas discovery 250 kilometers south of Hong Kong.⁷⁶

Like the South China Sea, the East China Sea has attracted the interest of Chinese specialists because of its oil resources, the value of which they likewise seem to exaggerate. "The East China Sea's continental shelf could be one of the world's richest oil fields," declares a book by two PLAN officers. "The waters near the [disputed] Diaoyu [Senkaku] Islands could become the 'Second Middle East.'"⁷⁷ The East China Sea is typically mentioned in the context of energy and territorial disputes with Japan, as opposed to SLOC security per se. Nevertheless, it contains some of China's most important ports, and, unlike the Malacca Strait and Indian Ocean oil lanes (but like the South China Sea), it lies

FIGURE 1
GLOBAL OIL AND GAS RESERVES BY REGION

Global Oil Reserves by Region		Global Gas Reserves by Region	
	% of Global Total		% of Global Total
North America	5.6	North America	4.5
Central and South America	9.0	Central and South America	4.4
Middle East	61.0	Middle East	41.3
Africa	9.5	Africa	8.2
Asia Pacific	3.3	Asia Pacific	8.2
Europe and Eurasia	11.6	Europe and Eurasia	33.5
Total	100.0	Total	100.0

Source: "Statistical Review of World Energy, June 2008," *British Petroleum*, www.bp.com.

near Chinese air and naval bases. The next section will explore which threats Chinese analysts fear most and under which scenarios they might arise.

PERCEIVED THREATS TO CHINA'S MAJOR OIL SLOC

It is often said that American naval supremacy is an excellent guarantor of global SLOC security and that Beijing actually benefits substantially from the stabilizing role that American naval hegemony plays.⁷⁸ This is perhaps especially true with respect to oil markets and the related question of sea-lane security.⁷⁹ But Chinese naval and maritime analysts tend to focus on what might happen to Chinese seaborne oil supplies during a conflict, and they generally perceive a substantial naval threat to China's oil SLOCs. One representative writing observes that oil and gas supply routes often become important military targets in wartime: "Japanese tankers became Allied targets and in 1944, Japanese oil imports were halved. By early 1945, Japanese oil imports had basically been stopped."⁸⁰ It should be noted that in assessing the threats to China's major oil SLOC, Chinese specialists contend that this threat does not emanate solely from Washington.

Despite the pathbreaking bilateral exercises with the Indian navy in 2005 and Hu Jintao's successful November 2006 visit to India, Chinese observers worry about India's dominant position astride China's most important oil SLOC. Chinese naval and maritime affairs publications keenly follow Indian naval development;⁸¹ they are impressed by this development, especially in the realm of naval aviation, and fear that such capabilities could allow New Delhi to "effectively prevent any outside great power's Navy from entering the Indian Ocean."⁸² Moreover, Chinese observers also note India's enhanced ability to project power to the east. Indeed, a 2004 article in *Modern Ships* reviews New Delhi's establishment over the past decade of a Far Eastern Fleet (远东舰队), its growing operational presence in the Andaman Sea and the Malacca Strait area, and increased exercises with the U.S. Navy.⁸³ Perceiving an emerging threat to a vital SLOC, one Chinese expert observes that the 75 percent of Chinese oil imports coming from Africa and the Middle East must pass through Indian navy-controlled seas.⁸⁴

According to another Chinese observer, it is the fleets of the United States, Japan, and India that, together, "invariably constitute overwhelming pressure on China's oil supply."⁸⁵ In appraising Japan's newly evolving defense posture, Chinese researchers express concern that "Japan's defense scope has extended to the Taiwan Strait and could include the Malacca Strait. [Also,] Japan has used Singapore's air bases."⁸⁶ Other naval specialists have been critical of Japan's deployment to Iraq, arguing that this initiative has more to do with the geopolitics of oil than with any humanitarian motives.⁸⁷ This illustrates a larger concern

that the regional maritime oil security environment is being reshaped to Beijing's detriment.

Nevertheless, as a recent maritime oil security assessment in *Modern Ships* states, "For the foreseeable future, the U.S., Japan, and India are the three countries that have the capability to cut China's oil supply lines. However, cutting

"A big and powerful [Chinese] fleet will support a stable supply chain [from which] all oil trading nations benefit. Thus, in the era of globalization, a formidable navy is not only in our own country's security interest, but is actually a requirement of global security as well."

China's oil supply lines essentially means starting a war with China. . . . Only the U.S. has the power and the nerve to blockade China's oil transport routes." The same Chinese naval analysis suggests two possible scenarios wherein the United States might seek to

embargo China's oil supplies. The first would be a Taiwan contingency. The second is less clear: "If China's rise is not of a peaceful character, or if the speed of the rise is too rapid . . . the U.S. could blockade China's maritime oil transport lines, thereby cutting short China's rise." It is argued that, in addition to the Malacca Strait, American forces could block China's energy SLOC at multiple points. This prospect is interpreted as a source of considerable leverage for the U.S. Navy vis-à-vis China.⁸⁸ Another analysis arrives at similarly stark conclusions, stating that the 1993 *Yinhe* incident (frequently invoked by Chinese analysts) could foreshadow American interception of China-bound oil shipping during a Taiwan crisis.⁸⁹

One of the most interesting naval strategy discussions regarding the threat to China's oil SLOC concerns Taiwan. Most PRC analyses of the Taiwan question tend to focus on the official line that Taiwan is fundamentally a sovereignty issue. By contrast, the book *戍海固边* (*Defend the Sea, Strengthen Frontiers*) focuses on the strategic value of the island for China. Its authors assert that the Taiwan issue is a matter of survival for China, because control of the island will enable mainland China to "project [naval power] upon the Pacific Ocean's critical strategic sea lanes." Its authors suggest that unfavorable geography, especially the enemy's position on Taiwan, has enabled adversaries to blockade China in the recent past. According to this analysis, Taiwan is critically positioned along the "oil route" from the Middle East to East Asia. It is suggested, moreover, that "if Taiwan fell under the control of a power hostile to China, not only would this mean that this great gate was closed but also that the Taiwan Strait Channel could be blocked."⁹⁰

Chinese naval and maritime analysts are well aware that the U.S., Indian, and, especially, Japanese economies are also highly dependent on seaborne trade in oil and gas. One Chinese interlocutor has even suggested that at least in the

near term China's only viable naval response to the aforementioned embargo scenarios would be a strategy of retaliation—an effort to answer an embargo against China with “an eye for an eye.”⁹¹ The implication during the interview was that China could interrupt U.S. oil supplies if Washington attempted to blockade China, but no specific methods were mentioned.

PLAN REQUIREMENTS FOR PROTECTING MARITIME OIL SUPPLY ROUTES

As noted previously, Chinese writings that examine energy and oil supply security issues have become increasingly available in recent years. Still, very few publicly available sources contain detailed discussions of SLOC security missions and the tactics and platforms that such missions might require. It is useful to examine some of those that do.

战役理论学习指南 (*Campaign Theory Study Guide*), a 2001 textbook written by Chinese National Defense University scholars, draws on a variety of high-quality doctrinal publications. Its authors believe that air and information superiority will be necessary to achieve sea control, using such offensive operations as “raids on enemy bases or harbors and other major coastal targets; operations to annihilate enemy force concentrations on the water; ocean blockades; operations to disrupt enemy ocean transportation; and operations to take islands or shoals,” as well as defensive measures, including “defense of straits and waterways, protecting ocean transportation lines and counter blockade operations.”⁹² To safeguard its own ocean transport, the PLAN may have to “annihilate enemy heavy naval groups . . . and . . . destroy the enemy ocean transport and supply system.” The range of the PLAN will be an important determinant of operational success: “Offshore combat stresses that the front lines of the first island chain is a primary battlefield for our offshore waters which should be seized and held to our advantage.”

Should China implement a naval blockade, the authors acknowledge, international law will impose constraints, though they believe such targets as enemy offshore oil zones to be legitimate. To attack an enemy SLOC the authors recommend selecting an accessible section of the ones least protected but most frequently used. Distant enemy bases, which are heavily fortified but fixed, could be destroyed, preferably by a preemptive strike.

Regarding “coastal SLOC defense,” the authors believe that China enjoys “numerous forms of superiority such as weather, topography, and a friendly population.” Based on PLAN requirements, elements of the PLA and “sea militias, sea transport, and the fishing industry,” they propose, should navigate in small groups “between islands and through maritime areas that are inconvenient for submarines and large surface vessels.” Notwithstanding the high defensibility of

coastal waters, infrastructure improvements are making them less important to China's oil security. China is rapidly improving its domestic pipeline network for transporting crude oil and products and is thereby becoming less reliant on coastal shipping to move petroleum from point to point.

Chinese strategists are rather more concerned that an enemy could interdict China-bound tankers far from PRC shores. As *Campaign Theory Study Guide* notes, "During deep-sea SLOC defense combat, the loss of superior coastal conditions and the presence of numerous disadvantageous factors mean that the threat from enemy transportation disrupting forces is great." Limitations include "relatively low integrated mobility, less desirable reconnaissance and early-warning capacity, and limited maritime control area, which make it difficult for us to discover the enemy's forces in a timely manner."

To make the best of a difficult situation, the PLAN should employ "large group concentrations" to attack enemy ships taking on fuel and supplies, transiting "narrow waterways," particularly during inclement weather, and "stick close to the coasts of friendly countries," perhaps aided by "diplomatic short-cuts." As in coastal SLOC defense, forces should operate in unexpected areas and prepare both "reserve" and "decoy" routes. In addition to "moderniz[ing] and refit[ing] destroyers, escorts, and conventional submarines," "outfitting transport vessels with certain weapons and helicopters and having them conduct necessary warning, anti-submarine, anti-vessel, and other self-defense combat has a certain technological superiority over the use of guard vessels." To improve deep-sea SLOC protection in the future, China should "endeavor to establish a contemporary, integrated and offensive, new, special mixed fleet with an aircraft carrier as core and missile destroyers (or cruisers) and nuclear attack submarines as backbone forces."

战役学 (*The Science of Campaigns*), an operationally and tactically focused doctrinal textbook, was also published by China's National Defense University.⁹³ The 2006 version devotes considerable focus to joint operations and the specific measures necessary to support offensive operations in order to deter other militaries from threatening China's SLOCs, or, failing that, to retaliate and compel them to retreat. Chapter 12, "Joint Blockade Campaign," emphasizes the need to achieve objectives rapidly in a complex battle environment by jointly implementing an air, maritime, and information blockade.⁹⁴ The last entails "actively destroy[ing] the enemy's important ground information installations, disrupt[ing] the enemy's satellite and radio channels, cut[ting] off the enemy's submarine cables and cable channels . . . [and] smashing the enemy's information warfare capability." In order to "achieve and maintain campaign sea control," the PLA should "establish an integrated air and sea monitoring and controlling system." China's "Air Force, conventional missile forces, submarine

forces and surface combat ship force" should implement "barrier" (e.g., sea mine), "firepower," and "armed force" blockades on the enemy's naval ports and bases.

This emerging doctrine's focus on how to ensure the security of the sea-lanes adjacent to China's coast in a conflict over Taiwan against the attempts of states to blockade China (as opposed to securing SLOCs in peacetime) seem to suggest that China would consider preemptive action to protect its sea-lanes and that it would not hesitate to escalate in order to protect maritime resource supply lines. These doctrinal writings also suggest present limitations in PLAN capabilities: they reveal an apparent need for improvised and stopgap measures to achieve such goals in actual combat conditions. Even after a decade of intensive naval modernization, many of the ideas suggested remain aspirational rather than operationally feasible. These statements need to be compared with those in other PLAN doctrinal writings as they become available outside China; nonetheless, it seems reasonable to conclude that Beijing nearly a decade ago was already carefully evaluating the consequences of, and potential countermeasures to, a maritime oil blockade. As new doctrine imposes new requirements, this will highlight capabilities and limitations, thereby clarifying further the extent and direction of the PLAN's SLOC security efforts.

NAVAL IMPLICATIONS: BEYOND TAIWAN?

China might also be pursuing the ability to project naval power further than would be necessary in a Taiwan contingency. Modern warships are capable of performing many missions. Hence, they are not restricted to a specific role in specific waters. Their political masters presumably find them useful to perform a variety of missions in a wide range of circumstances and locations (e.g., both a Taiwan context and deployments farther afield). One explanation for China's possible movement toward a blue-water navy that might transcend the Taiwan issue is found in its growing dependence on imported oil and other key economic inputs.

The PLAN's present inability to secure China's long-distance oil transport SLOCs, or to deter a U.S. blockade militarily, greatly concerns Chinese experts.⁹⁵ They are painfully aware of the U.S. Navy's superiority over the PLAN.⁹⁶ There is a clear sense of urgency: "Regarding the problems . . . of sea embargo or oil lanes being cut off . . . China must . . . 'repair the house before it rains.'"⁹⁷

One PRC naval analysis of maritime rights and resource security explains that China's navy is not sufficiently strong to undertake the oil-SLOC security mission, because of Beijing's longtime policy of "emphasizing land power over sea power" (重陆轻海).⁹⁸ This policy stems from the fact that for much of its history China faced land-based threats from what is now Central Asia and Mongolia, as

well as internal security concerns. Threats from the sea did not become a major issue until the arrival of European forces in the eighteenth and nineteenth centuries, and China did not come to depend significantly on seaborne natural resource imports until 1993, when it became a net oil importer.⁹⁹ Hinting at a possible redirection of PLAN strategy, as well as at potential rivalry among PLAN warfare communities, the above-mentioned analysis advocates shifting priorities from a submarine-centric navy to one with aircraft carriers as the “centerpiece.”¹⁰⁰

Such a shift would have major internal and international implications. Internally, it would mean that the PLAN would likely capture a much larger portion of the defense budget, especially as the carriers themselves would need a complement of aircraft and a dedicated fleet of escort vessels to be useful in actual combat conditions. Its internal clout would be further enhanced by the fact that aircraft carriers might rapidly become an important diplomatic instrument for projecting Chinese presence and influence in Asia, and perhaps (eventually) globally. Internationally, moving toward a carrier-centric navy could prompt other regional and global navies to upgrade their own forces in anticipation of China’s taking a more assertive stance regarding naval power projection.

Despite any efforts both to channel China’s maritime development in a peaceful direction and to portray it accordingly to the rest of the world, history suggests that any major military modernization program is likely to unnerve other powers. A move by Beijing from a “near sea” to a “blue water” naval strategy, even if conducted under the auspices of “commercial protection,” may be no different. A recent article in *中国军事科学* (*China Military Science*) states that “[China’s] navy must . . . unceasingly move toward [the posture of] a ‘blue-water navy’ [and] expand the scope of maritime strategic defense.”¹⁰¹ To accomplish this goal, one Chinese analyst asserts that Beijing requires long-range area-air-defense destroyers, helicopter carriers, diesel submarines with air-independent propulsion and cruise missiles, nuclear submarines capable of attacking enemy harbors and land targets, and advanced naval aircraft, such as the Su-30 Flanker.¹⁰²

Proponents of energy/SLOC defense as a mission for the PLAN are not the only ones contributing to what seems to have become a robust debate within China. Some Chinese views acknowledge the costs and difficulty of building the power-projection capabilities necessary to carry out credible SLOC-defense missions (e.g., aircraft carriers), as well as the potential for balancing against China and the political costs that would likely occur in the event that China procured a carrier battle group. Many writers express similar or related reservations, either directly or indirectly. The presence of these views within China may help explain why the arguments for energy/SLOC-defense missions have not yet gained greater traction.

POTENTIAL INDICATORS OF A SHIFT TO OIL SECURITY AS A NAVAL DEVELOPMENT DRIVER

Chinese writings suggest a range of views on how to organize the PLAN for operations further afield. A sustained movement of assets to the South China Sea could imply a PLAN mission beyond Taiwan, in pursuit of genuine, if limited, SLOC protection capability. Indeed, a student at Beijing's influential Central Party School asserts that China has been overly cautious in its naval development and should instead pursue a navy capable of deterring SLOC attacks all the way to Malacca and of conducting combat operations beyond a thousand nautical miles from China.¹⁰³ Increased PLAN presence in key SLOC areas could also have a valuable "shaping" function, as it can "strengthen [China's] power of influence in key sea areas and straits" in peacetime and thereby decrease the chance of its interests being threatened in war.¹⁰⁴

One of the most ambitious discussions of PLAN development in relation to energy SLOC security is found in a 2006 article from *舰载武器* (*Shipborne Weapons*). This article proposes that in the twenty-first century, as China broadens its naval presence on the world's oceans, Beijing's North, East, and South Sea fleets should transform into a Northern Fleet, a Pacific Fleet, and an "Indian Ocean Fleet" (印度洋舰队). A systematic outline of the potential scope and mission of such notional Northern and Pacific fleets is beyond the parameters of the present article. Nonetheless, we can observe that the very idea of a Chinese Indian Ocean Fleet, while speculative, could suggest the potential for significant change in the PLAN's response to the SLOC security issue. According to this Chinese analysis, the core mission of the proposed Indian Ocean Fleet would be "to protect [Beijing's] interests in the South China Sea, while at the same time guarding the Indian Ocean navigation route and escorting Chinese oil tankers transiting the Malacca Strait." The analysis emphasizes the crucial role that aircraft carriers would play in such a fleet, particularly if they could coordinate effectively with China's new air defense destroyers.¹⁰⁵

Were China to move toward a robust blue-water SLOC-defense capability, the evidence of its doing so would likely emerge, sequentially, in, first, adoption of the logic and the language of the proponents' arguments in major speeches; followed by, second, formal changes to published doctrines and published guidelines; third, in a shift in acquisitions and procurement; and fourth, a shift in such areas as deployment and training. A major speech might be made by a senior civilian leader (e.g., on the Politburo Standing Committee) that adopted some of the language outlined by some of the proponents described above. Adjustments to doctrine would likely be published prior to the actual acquisition of capabilities. This general PLA pattern is exemplified by Jiang Zemin's 1993 speech on "military strategic guidelines," which presaged later acquisitions and

changes to operational doctrine.¹⁰⁶ Of course, if the PLAN acquired certain capabilities for SLOC defense but doctrine and the majority of procurement, deployment, and training remained focused on other missions, then it would seem that a transition had still not occurred.

While logical in practice, however, this sequence might be difficult to monitor. Chinese doctrine and policy statements are often vague, and they might be deliberately obfuscated in order to minimize the scope for balancing behavior by other powers. Larger precipitating developments, such as a bureaucratic change that enhanced the PLAN's status or budgetary resources, might occur without foreshadowing obvious to the outside world. Even deployment and training can be ambiguous; PLA experts have recommended using missions other than war (e.g., anti-piracy efforts off Somalia) to develop war-fighting capabilities and interoperability.¹⁰⁷ Hardware acquisition and deployment, by contrast, is a useful indicator to monitor, because it is typically less ambiguous. With respect to force structure, indicators of a more ambitious Chinese naval presence, particularly in the area of SLOC protection, would likely include:

- Construction and deployment of additional nuclear attack submarines and other platforms with significant demonstrated antisubmarine warfare capabilities¹⁰⁸
- Development of aircraft or helicopter carriers and related doctrine and training programs¹⁰⁹
- Establishment of new, modern shipyards dedicated to military ship production or expansion of areas in coproduction yards that are dedicated to military ship production¹¹⁰
- Expansion of the PLAN auxiliary fleet, particularly long-range, high-speed oilers and replenishment ships
- Development of the ability to conduct sophisticated ship repairs remotely, either through tenders or overseas repair facilities¹¹¹
- Steady deployment of PLAN forces to vulnerable portions of the sea-lanes to increase operational familiarity and readiness
- Maturation of advanced levels of PLA doctrine, training, and human capital.

Perhaps the most important indicator, however, would be Chinese acquisition of reliable overseas air and naval bases—a major shift from current foreign-policy doctrine. China is already bolstering its strategic position along Indian Ocean oil SLOCs. Writing in *China Military Science*, a PLAN senior captain details Chinese investments in Burmese and Pakistani port facilities (e.g., Gwadar) that would improve western and southwestern China's sea access and also

expand China's geostrategic influence.¹¹² Gwadar has been designed in part to "serve as an alternate port to handle Pakistani trade in case of blockade of existing ports," however, and Pakistan might be reluctant to grant the PLAN access during a conflict.¹¹³

Perhaps the PLA is making greater progress in Burma, where it has reportedly assisted in the construction of several naval facilities on the Bay of Bengal. A Chinese Southeast Asia expert notes that Sino-Burmese military and security relations have strengthened, with China assisting in the construction and modernization of Burmese naval bases by repairing and constructing radars and fuel facilities. Burma's leaders, he claims, have pledged to support China if it needs to defend its interests.¹¹⁴

Despite these reports, however, China appears far from having overseas naval bases of its own. An Indian naval officer, Commander Gurpreet Khurana, assesses, "China and the IOR [Indian Ocean Region] countries involved maintain that the transport infrastructure being built is purely for commercial use. There is no decisive evidence at this point to assert otherwise because these facilities are in nascent stages of development."¹¹⁵ In the future, any bases that China did establish would have to be defended effectively in the event of conflict.

A RESPONSIBLE STAKEHOLDER?

It is perhaps not surprising that Chinese naval and maritime affairs analysts are looking to "blue water" missions beyond the strict confines of Taiwan contingencies. It is certainly in their bureaucratic interest to do so. Indeed, such bureaucratic interests have fueled previous naval rivalries. Of course, it is also possible that official approval of planning, budget, and forces for explicit SLOC security missions might promote factional disagreement because of the cost and the potential for negative international repercussions. China's national oil companies, which shape much of China's oil and gas policy, may prefer the status quo. The State Council and other bureaucratic organs are committed to vital domestic development priorities that include the foremost challenges confronting China's leadership (welfare, health care, urbanization, west and northeast development, and rural modernization). The army, air force, and Second Artillery may have different priorities for defense-spending allocation. Moreover, the foreign ministry and even top leaders share an understanding about the potential for balancing against China if Beijing appears too aggressive. Nevertheless, continued development of China's economy may make available sufficient resources to permit "logrolling," in which different organizations and policy factions acquiesce to the fulfillment of others' budgetary priorities in return for support for their own.¹¹⁶ Continued substantial increases in the PLA budget as

a whole, and even improvements in the PLAN's ability to compete with China's other armed services, cannot be ruled out.

A more surprising finding is that a number of Chinese maritime and naval specialists support maritime cooperation with the other oil-consuming powers, particularly the United States. Some Chinese analysts recognize the potential costs to China of a balancing reaction, by neighbors and the United States, to a Chinese shift toward an extended SLOC-defense mission for the PLAN. Key strategic implications that could destabilize the Indian Ocean and western Pacific littoral regions might include regional naval power upgrades and alliance rebalancing to offset a more muscular and far-ranging Chinese naval presence. A unilateral approach is unnecessary, some write, and the costs would be very great. India, Japan, the United States, Indonesia, Malaysia, and Australia would almost certainly bolster their own naval forces and would also likely seek to create security architectures more explicitly designed to contain China.

A major study of China's SLOC security problem calls for emphasizing cooperation in international organizations and conventions and in laws and regulations concerning oil transport.¹¹⁷ A 2004 survey in *Naval and Merchant Ships* reveals many nationalist themes on energy but concludes that China is "increasingly dependent on stability in the Middle East."¹¹⁸ Of course, such language sounds entirely familiar to Western ears. An analysis from *Modern Ships* finds that "the energy crisis and maritime SLOC security are not problems that are just confronting China alone . . . but [rather] impact on international SLOC security and stability."¹¹⁹ A more recent analysis from the same journal observes that Persian Gulf instability could harm China's interests significantly; it argues that China must cooperate closely with India, South Korea, and even Japan—which might otherwise join the United States against China in any conflict—in the energy sphere.¹²⁰ But the overarching requirement is to maintain good relations with Washington. There is little choice, according to this source, because "the U.S. could blockade energy shipments to China at any time." It is suggested, moreover, that present U.S.-China relations have stabilized to a large degree, despite the UNOCAL incident and other irritants.¹²¹ It is also recognized that Washington is unlikely to act against the status quo. In fact, "if stability can be maintained in U.S.-China relations, then China's maritime oil transport will be basically secure."

On a similar note, CICIR scholar Zhao Hongtu writes that while oil security will continue to be a challenging and controversial issue, China cannot hope to compete with the United States in naval development and can best safeguard its interests by helping Southeast Asian states develop an indigenous capacity to address nonstate challenges. He asserts that the United States has promulgated a "String of Pearls Strategy" and also that the international community still

entertains a "China Energy Threat Theory." In the end, however, he concludes that while China's energy infrastructure (e.g., the country's nascent strategic petroleum reserve) is indeed vulnerable to attack, an oil blockade of China is both risky and "not likely at all," primarily because "the fate of the two countries have forged a community of destiny, [and therefore] war and military blockade will only cause both sides to suffer."¹²² Zhao's view seems to be that while tankers and oil storage depots might be tempting military targets, the serious market disturbances resulting from attacks upon them would affect all global oil consumers, as would China's likely military response to any attack on its oil assets.

Even advocates of robust PLAN development do not foreswear cooperation. One researcher insists that "the building of a powerful Chinese navy is a necessary requirement to ensure China's oil security" because "if China is to become [equal] friends with Americans in the future, we must first become an opponent that the U.S. cannot defeat."¹²³ A variety of Chinese naval analysts further support the cooperation theme. Writing in *China Military Science*, two PLAN academics describe maritime oil security as a problem not of "SLOC security" but rather of "regional maritime stability."¹²⁴ Another allows that seaborne oil transport remains a security issue in specific instances but maintains that "international bilateral and multilateral security cooperation is the necessary trend."¹²⁵ A rather remarkable article on the energy issue in *Modern Navy* actually links a Chinese naval buildup to support a SLOC mission to the principle of "peaceful development." The analysis asserts that "a big and powerful [Chinese] fleet will support a stable supply chain," from which "all oil trading nations benefit. Thus, in the era of globalization, a formidable navy is not only in our own country's security interest, but is actually a requirement of global security as well." This analysis concludes that as long as China's navy continuously engages with the outside world, developing opportunities to partner with other countries, the world will come to accept, and even welcome, a strong Chinese navy.¹²⁶

Nevertheless, a wide variety of Chinese analysts continue to worry that in a confrontation the United States would have a range of options for interrupting Chinese oil supplies. They are suspicious of U.S. exercises with other regional navies. While the United States must continue to pursue its core regional interests and support its allies, it may be able to counter Chinese arguments for a PLAN capable of energy/SLOC-security missions by persuading relevant individuals that it is a genuine guarantor of open SLOCs. The United States can enlarge common ground on energy and SLOC security by engaging China and the PLAN more through joint exercises (e.g., search and rescue, humanitarian assistance, and disaster relief) and strategic dialogue. In promoting constructive communications with Chinese interlocutors, it will be important to emphasize

that SLOC security is a problem for nations around the world (particularly in East Asia), not just for China.

THE DEPTH OF BEIJING'S INSECURITY

This article has found that discussion of oil SLOC protection within the voluminous naval and maritime affairs literature in contemporary China is not extensive, at least in comparison with, for example, undersea warfare or air-independent propulsion technology. Yet oil SLOC protection has the potential to emerge as a major bureaucratic sales point for acquisition of modern, blue-water platforms, as well as the training and doctrine needed to employ them effectively. Already, some Chinese naval and maritime analysts display pointed interest in energy issues, and many of these share a fairly distinct general viewpoint. The most critical theme that underlies this perspective is China's perceived current vulnerability to an oil embargo. As one might expect, Chinese analysts are reluctant to place their country's oil security in the hands of other great powers, especially the United States. If it does not already serve this role, then, the oil issue could offer a potent rationale for continuing or even further accelerating China's naval modernization, especially as Beijing's military planners begin to grapple seriously with scenarios beyond Taiwan. Perhaps somewhat more unexpected, given their tone of profound and immediate concern for China's maritime oil security, are the candid admissions of Chinese naval and maritime analysts that the PLAN's capabilities for protecting China's long oil SLOCs are minimal at present. Also, it is somewhat surprising that these specialists, while sounding a wide variety of themes, many quite nationalistic in character, seem in general to be guardedly open to multilateral oil security cooperation and appear to understand the importance of trying to preserve good relations with Washington.

Of the many Chinese naval analyses surveyed for this study, among the most sophisticated was a lengthy treatment of the oil security question in the October 2006 issue of *Modern Ships*. At the conclusion of that analysis, the author articulates a three-point strategy that may encapsulate the Chinese naval community's views on the oil security question: "[China] must view things from the perspective of keeping the United States from cutting its oil supply lines. Concretely speaking, this entails making the United States not willing to cut China's oil supply lines, not daring to do so, and not able to do so." Though the importance of this particular source should not be exaggerated in the absence of information concerning its provenance, this statement's succinct parallelism suggests that it might perhaps be influenced by (or even drawn from) some element of official internal policy. It further suggests that a web of self-interest would deter the United States from embargoing China and that adept diplomacy could

hinder any attempt by Washington to use this leverage. Most surprising, perhaps, is that this formulation calls not just for strengthened naval forces but also nuclear strategic forces as well.¹²⁷ This perceived need for additional deterrence capabilities, apparently driven by concern that the United States might attempt to sever Chinese SLOCs in the event of a Taiwan conflict, may truly illustrate the depth of Beijing's insecurity with respect to maritime oil access.

On the whole, however, means of safeguarding SLOC security remain under debate in China, perhaps offering other states an opportunity to influence Beijing's plans in a way that will support cooperative maritime security. Beijing and Washington in particular share a wide range of maritime oil security interests that could best be promoted through cooperation. The primary threat to seaborne oil supplies comes not from national navies but from well organized and increasingly capable nonstate actors, such as the pirates that are, at this writing, creating havoc in the waters off Somalia.

Cooperation to blunt nonstate threats to maritime oil shipments can help build trust and reduce the potential for state-on-state naval confrontations over energy-supply security. It can also be a showcase for how maritime powers like the United States can work to integrate China into a global security architecture, which will need modifications to accommodate the relative newcomer but offers an excellent starting framework. Both official and unofficial diplomacy can help build a foundation for a more extensive maritime energy security partnership in coming years.

NOTES

The views expressed in this essay are those of the authors alone, and do not represent those of the U.S. Navy or any other element of the U.S. government. An earlier, preliminary version of the present argument was presented at the China Maritime Studies Institute's second annual conference, "Maritime Implications of China's Energy Strategy," in December 2006 and appeared as "Chinese Naval Analysts Consider the Energy Question" in Gabriel Collins, Erickson, Goldstein, and William Murray, *China's Energy Strategy: The Impact on Beijing's Maritime Policies* (Annapolis, Md.: Naval Institute Press, 2008), pp. 299–335. The authors thank George Gilboy, James Holmes, Nan Li, William Murray, and Toshi Yoshihara for their significant contributions.

1. This article uses the term "naval analyst" to describe PLAN officers and researchers known to be attached to naval research institutes; all other scholars of naval affairs are referred to as "maritime affairs analysts."
2. This is similar to drivers and justifications put forth by other regional navies. See, for example, *Freedom to Use the Seas: India's Maritime Military Strategy* (New Delhi: Directorate of Strategy, Concepts and Transformation, Integrated Headquarters Ministry of Defence [Navy], May 2007). But a Chinese shift would be very important, in part precisely because others have similar claims.
3. Maj. Gen. Peng Guangqian, PLA (Ret.), for example, recently stated that danger of war over Taiwan has greatly declined. "彭光谦: 两岸军事冲突危险大减" [Peng

- Guangqian: The Danger of Cross-Strait Military Conflict Has Greatly Decreased], *China Review News*, 24 December 2008, gb.chinareviewnews.com.
4. Office of the Secretary of Defense, *Military Power of the People's Republic of China 2008*, Annual Report to Congress (Washington, D.C.: 2008), p. 10, available at www.defenselink.mil/pubs/pdfs/China_Military_Report_08.pdf.
 5. Many Indian writings reveal a vision for the Indian Ocean as India's Ocean, with India assuming "a pivotal position" (Kanwal Sibal [former Indian foreign secretary], "Safe on the High Seas: India Plays a Critical Role in Keeping Sea Trade Routes Secure," *Telegraph*, 12 March 2008, available at www.telegraphindia.com). One of India's two current strategic naval documents declares, "Geography has been kind to India, placing her in a favourable position to control the vital northern areas of the Indian Ocean" (*Indian Maritime Doctrine* INBR8 [New Delhi: Integrated Headquarters, Ministry of Defence (Navy), 2004]). Former prime minister Jawaharlal Nehru is credited with the philosophy that "to be secure on land, we must be supreme at sea" (Maitreya Budha Samantaray, "Strengthening Ocean as a Substitute for India's Land Diplomacy," *Newstrack India*, 16 July 2008, available at www.newstrackindia.com). Prime Minister Manmohan Singh states that "India's growing international stature gives it strategic relevance to the area ranging from the Persian Gulf to the Strait of Malacca." India's navy formally pursues a SLOC security mission, because it is "in all respects, a maritime nation," and 90 percent of its oil arrives by sea or undersea pipeline (*India's Maritime Military Strategy*, pp. iii, 46, 49, 96). Admiral Sureesh Mehta, commander of India's navy, is said to envision "a truly blue-water navy with strategic reach to operate from Africa's eastern coast right up to Malacca Straits" (Rajat Pandit, "Blue-Water Navy Is the Aim," *Times of India*, 1 November 2006, available at timesofindia.indiatimes.com). In comparison, one might even argue that the Chinese debate remains relatively modest and restrained, and that it hews close to core interests rather than ambitious visions.
 6. Office of the Secretary of Defense, *Military Power of the People's Republic of China*, p. 12.
 7. See, for example, Bernard D. Cole, *Sea Lanes and Pipelines: Energy Security in East Asia* (Westport, Conn.: Praeger, 2008); Kenneth Lieberthal and Mikkal Herberg, "China's Search for Energy Security: Implications for U.S. Policy," *NBR Analysis* 17, no. 1 (April 2006), p. 23; Dan Blumenthal and Joseph Lin, "Oil Obsession: Energy Appetite Fuels Beijing's Plans to Protect Vital Sea Lines," *Armed Forces Journal* (June 2006), available at www.armedforcesjournal.com; Wu Lei and Shen Qinyu, "Will China Go to War over Oil?" *Far Eastern Economic Review* 169, no. 3 (April 2006), p. 38.
 8. Erica S. Downs, "The Chinese Energy Security Debate," *China Quarterly* 177 (March 2004), pp. 21–41. See also Trevor Houser, "The Roots of Chinese Oil Investment Abroad," *Asia Policy*, no. 5 (January 2008), pp. 141–66.
 9. Energy security discussions are not widespread in publicly available Chinese materials. There are three possible explanations. First, maritime and energy security issues appear to be integrated primarily at the top leadership level, not at the ministry level (where open reports might be issued). With the exception of three short periods, the PRC has lacked a central energy ministry with real authority over the many energy-sector players. (These include the NDRC, state oil and gas producers, and special high-level working groups, such as the National Energy Leading Group (国家能源领导小组), chaired by Premier Wen Jiabao since its establishment in 2005). There is also a State Energy Office, attached to NDRC's Energy Bureau, but it is staffed at less than a hundredth of the level of the U.S. Department of Energy (100 : 110,000), lacks formal authority over energy stakeholders, and is likely so overwhelmed with work that it can only react to events, not shape policy proactively. NDRC documents tend to focus on general aspects of national energy consumption and conservation, not maritime or military issues. See, for example, 能源发展 '十一五' 规划 [Eleventh Five-Year Program for Energy Development] (Beijing: 国家发展改革委 [National Development and Reform Commission], April 2007), available at www.ndrc.gov.cn. Second, there

appear to be few dedicated civilian experts who focus on both energy and maritime security issues, and those who do tend to focus on specific subjects (e.g., Southeast Asia experts study the Malacca Strait). The PLAN almost certainly pays close attention to energy security, but its views are difficult to track directly, because the PLA continues to lack transparency. A variety of institutions likely give inputs into PLAN strategy, including the Naval Studies Research Institute in Beijing, the Command and Staff College in Nanjing, and the Submarine Academy in Qingdao. Third, Chinese observers are apparently discouraged from publishing openly on certain sensitive topics. Naval and military analysts more often discuss technological developments than such potentially sensitive yet clearly important and widely recognized themes as maritime energy security. Still, this tendency reinforces the importance of reviewing those materials that do appear.

10. Chinese security-related writings may be divided into six major categories, of varying relevance to maritime energy security issues. Political-science and international-relations journals, such as *现代国际关系* (*Contemporary International Relations*), *国际问题研究* (*International Studies*), *国际政治研究* (*International Politics Quarterly*), *国际论坛* (*International Forum*), *国际政治科学* (*Quarterly Journal of International Politics*), *国际交流* (*International Understanding*), and *和平与发展* (*Peace and Development*), *中国国际问题研究* (*China International Studies*), *当代亚太* (*Contemporary Asia-Pacific Studies*), and *太平洋学报* (*Pacific Journal*), rarely if ever have specific relevant content. Military intellectual and strategic publications, as exemplified by *中国军事科学* (*China Military Science*), offer broader insights but few specifics. Doctrinal publications—for instance, *战役学* (*Science of Campaigns*)—reveal potential strategic and operational approaches. Technical journals, such as *中国能源* (*China Energy*), *中国油气* (*China Oil and Gas*), *石油科学* (*Petroleum Science*), *石油学报* (*Acta Petrolei Sinica*), *海洋石油* (*Offshore Oil*), and *中国海上油气* (*China Offshore Oil and Gas*), normally offer some of the highest quality and most reliable research but do not address directly such a complex, interdisciplinary, strategic subject. For this particular topic, then, the sources with most direct
- coverage are military newspapers, like *人民海军* (*People's Navy*), and semitechnical/trade publications (e.g., *舰载武器* [*Shipborne Weapons*]), which describe technology and platforms in some detail and link them to larger strategic issues.
11. These include, at a minimum, *当代海军* (*Modern Navy*), *人民海军* (*People's Navy*), *舰船知识* (*Naval and Merchant Ships*), *舰载武器* (*Shipborne Weapons*), and *现代舰船* (*Modern Ships*). *Modern Navy* is a monthly magazine published by the official PLAN newspaper *People's Navy*, which is the daily newspaper published by the Political Department of China's navy. *Naval and Merchant Ships* is a semitechnical monthly publication of the Chinese Society of Naval Architecture and Marine Engineering. *Shipborne Weapons* and *Modern Ships* are monthly journals published by the state-owned China Shipbuilding Industry Corporation (CSIC), China's largest designer, manufacturer, and trader of military and civilian vessels and related engineering and equipment. In addition to these naval-oriented publications, Beijing's foremost military journal, *中国军事科学* (*China Military Science*), is published by the PLA's Academy of Military Science. Sea Tide Press (海潮出版社), located in Beijing, is affiliated with the PLAN Political Department. It publishes such officially sanctioned books as the 杨志本 [Yang Zhiben, ed.], *中国海军百科全书* [*China Navy Encyclopedia*], vols. 1 and 2 (Beijing: 海潮出版社 [Sea Tide], 1998).
12. Chinese doctrinal texts rarely, if ever, offer specific insights into Chinese maritime energy security. It is not helpful to dismiss Chinese maritime interest publications as "popular"; doing so narrows the scope of available literature to an impractical degree. Contemporary China is a highly technocratic and extremely nationalistic society where magazines devoted to military issues that are quite sophisticated also happen to make a profit. That the case is different in other countries does not automatically render the Chinese sources unreliable. Given the complexity and opacity of China's "defense intellectual complex," affiliations of authors in Chinese journals are often unknown. We may wish the case was different, but scholars of China need to learn to cope with such

ambiguities. Rejecting these viewpoints because backgrounds are unknown is not an option for serious scholars. It would also be excessively narrow to restrict all discussions regarding naval matters to identified uniformed personnel. Like the United States, China has a large number of research institutes that employ both civilians and uniformed naval personnel (and often many retirees as well). Anyone familiar with naval policy in China—and for that matter, in the United States—knows that the development of naval strategy and the socialization of related policies and ideas are interactive processes among civilian scientists and strategists, military personnel, and industrial interests, as well as civilian leaders. To draw an analogy, one might consider such figures in the United States as Norman Polmar or Ronald O'Rourke. The opinions of these non-uniformed “naval analysts” are at least as important as those of many senior U.S. Navy personnel in the formation of naval strategy. In the extremely technocratic contemporary PRC, civilian scientists and experts may strongly influence military opinion and strategy formation.

13. The few relatively recent examples include 顾祖华 [Gu Zuhua], “维护海上石油安全须有强大海上编队” [In Order to Safeguard Energy Security, a Massive Naval Fleet Is Necessary], *当代海军* [Modern Navy] (August 2004).
14. 陈安刚, 武明 [Chen Angang and Wu Ming], “马六甲: 美国觊觎的战略前哨” [Malacca Strait: The U.S. Covets a Strategic Outpost], *现代舰船* [Modern Ships] (December 2004), p. 13.
15. For a regionwide survey, see Cole, *Sea Lanes and Pipelines*.
16. China still has a window of opportunity to avoid the level of oil dependence and overall energy dependence that OECD countries experience (though it is closing fast). Also, it is by no means clear that recent trends in Chinese oil demand and car transport can or will be allowed to continue; this is reportedly the subject of major debate in Chinese policy circles.
17. For recent scholarship on this issue, see the proceedings of the conference “PLA Missions beyond Taiwan,” 26–28 September 2008, U.S. Army War College Strategic Studies Institute, Carlisle, Pennsylvania.
18. U.S. Defense Dept., *Military Power of the People's Republic of China 2008*, p. 13.
19. See, for example, 查道炯 [Zha Daojiong], “相互依赖与中国的石油供应安全” [Interdependence and China's Oil Supply Security], *世界经济与政治* [World Economics and Politics], no. 6 (2005), pp. 15–22.
20. 赵宏图 [Zhao Hongtu] (China Institute of Contemporary International Relations), “‘马六甲困局’与中国能源安全再思考” [The “Malacca Dilemma” and Rethinking China's Energy Security], *现代国际关系* [Contemporary International Relations], no. 6 (2007), pp. 36–42.
21. 冯梁 [Feng Liang] (senior colonel and professor), 战略教研室 [Strategy Teaching and Research Section], and 段廷志 [Duan Tingzhi] (lieutenant colonel and associate professor, Naval Command College), 第二政治理论教研 [Second Political Affairs Teaching and Research Section, Naval Command College], “Characteristics of China's Sea Geostategic Security and Sea Security Strategy in the New Century,” *中国军事科学* [China Military Science] (January 2007), p. 27.
22. 张文木 [Zhang Wenmu], “China's Energy Security and Policy Choices,” *世界经济与政治* [World Economics and Politics], no. 5 (May 2003), pp. 11–16, OSC CPP20030528000169.
23. “10% of GDP Now Comes from Sea, Says Report,” *China Daily*, 10 April 2007, available at www.chinadaily.com.cn.
24. See, for example, Peng Guangqian and Yao Youzhi, eds., *The Science of Military Strategy* (Beijing: Military Science, 2005), p. 446.
25. For insights into possible PLAN efforts to influence Chinese policy and national budgeting, see M. Taylor Fravel and Alex Liebman, “Beyond the Moat: PLAN's Evolving Interests and Potential Influence” (unpublished manuscript cited with permission).
26. Information Office of the State Council, People's Republic of China, “China's National Defense in 2008,” January 2009, available at www.fas.org/nuke/guide/china/doctrine/wp2006.html.
27. This entails continued military modernization to enhance the credibility of deterrence

- against threats on China's periphery (e.g., the possibility of Taiwan independence). The resulting strategic stability ensures a peaceful external environment for economic development globalization and integration of China into the global economy at a time when China can benefit from diversion of U.S. attention to countering terrorism.
28. "Earnestly Step Up Ability Building within CPC Organizations of Armed Forces," 解放军报 [Liberation Army Daily], 13 December 2004, available at www.chinamil.com.cn; "三个提供, 一个发挥" [Three Provides and One Bring into Play], news.sina.com.cn.
 29. 刘明福, 程钢, 孙学富 [Liu Mingfu, Cheng Gang, and Sun Xuefu], "人民军队历史使命的又一次与时俱进" [The Historical Mission of the People's Army Once Again Advances with the Times], 解放军报 [Liberation Army Daily], 8 December 2005, p. 6. See also 杨毅, 主编 [Yang Yi, chief editor], 国家安全战略研究 [Research on National Security Strategy] (Beijing: 国防大学出版社 [National Defense Univ. Press], 2007), p. 323.
 30. For "great maritime power," 丁玉宝, 郭益科, 周根山 [Ding Yubao, Guo Yike, and Zhou Genshan], "胡锦涛在会见海军第一次党代表会代表时强调: 按照革命化现代化正规化相统一的规则, 锻造适应我军历史使命要求的强大人民海军" [When Hu Jintao Met with the Naval Delegates at the 10th Party Congress, He Emphasized Building a Powerful People's Navy That Meets the Requirements to Accomplish Historical Missions of Our Army in Accordance with the Principle of Unifying Revolutionization, Modernization, and Standardization], 人民海军 [People's Navy], 28 December 2006, p. 1. For "strengthened and modernized," "Chinese President Calls for Strengthened, Modernized Navy," *People's Daily*, 27 December 2006. For "blue water," "Chinese President Calls for Strong Navy," *VOA News*, 28 December 2006, available at voanews.com.
 31. Information Office of the State Council, People's Republic of China, "China's National Defense in 2006," 29 December 2006, available at www.fas.org/nuke/guide/china/doctrine/wp2006.html.
 32. For quotation, see "China's National Defense in 2008." The eighty-three-page 2006 white paper mentions the word "energy" only twice. Only one instance refers to a strategic, operational, or maritime context: "security issues related to energy, resources, finance, information and international shipping routes are mounting." This is in a general discussion of the international security environment, not specifically linked to China. "Oil" is mentioned only twice, both in internal bureaucratic contexts.
 33. 田秉仁 [Maj. Gen. Tian Bingren], "新世纪阶段我军历史使命的科学拓展" [The Scientific Development of the Historical Mission of Our Army in the New Phase of the New Century], 中国军事科学 [China Military Science] (October 2007), pp. 21–27, OSC CPP20080123325001.
 34. 彭光谦 [Peng Guangqian], "从着重维护生存利益到着重维护发展利益—对国家 安全战略指导重心转变的一点思" [From the Focus on Safeguarding the Interests of Survival to the Focus on Safeguarding the Interests of Development], 中国国防报 [National Defense News], 17 January 2007, OSC CPP20070119710012.
 35. A "leading small group" (LSG) is an ad hoc supra-ministerial body responsible for coordination and consultation in a specific issue area that does not formulate independently or implement concrete policies. This particular LSG manages national security policy for the Politburo and Secretariat and issues guiding principles for the general direction that bureaucratic activity should take. For more on LSGs, see David M. Lampton, "China's Foreign and National Security Policymaking Process: Is It Changing, and Does It Matter?" in *The Making of Chinese Foreign and Security Policy in the Era of Reform*, ed. David M. Lampton (Palo Alto, Calif.: Stanford Univ. Press, 2001), pp. 16–19.
 36. Yang Yi, *Research on National Security Strategy*, pp. 274, 289, 323–24. For the importance to China of maritime development in general, see also pp. 276, 292, 294–95.
 37. 吴胜利, 胡彦林 [Wu Shengli (PLAN commander) and Hu Yanlin (PLAN political commissar), edited by Wang Chuanzhi], "锻造适应我军历史使命要求的强大人民海军" [Building a Powerful People's Navy That Meets the Requirements of the Historical Mission for Our Army], 求事 [Seeking Truth], no. 14 (16 July 2007),

- available at www.qsjournal.com.cn, OSC
CPC20070716710027.
38. 胡博 [Hu Bo], “从资源安全说有备无患” [Concerning Resource Security, Preparation Averts Danger], *解放军报* [Liberation Army Daily], 27 May 2004. See also 侯志平 [Hou Zhiping], “对维护我国石油安全的战略思考” [Reflections on Our Country’s Oil Security Protection Strategy], *国防大学学报* [Journal of the National Defense University], no. 8 (2005), p. 87.
 39. 周德华, 陈炎, and 陈良武 [Zhou Dehua, Chen Yan, and Chen Liangwu], *蓝色方略: 二十一世纪初的海洋和海军* [The Blue Strategy: Ocean and Navy at the Beginning of the 21st Century] (Beijing: Sea Tide, 2003), p. 3.
 40. 曲令泉, 郭放 [Qu Lingquan and Guo Fang], *卫海强军: 新军事革命与中国海军* [A Mighty Force to Protect the Sea: The New Revolution in Military Affairs and China’s Navy] (Beijing: Sea Tide, 2003), p. 46.
 41. See, for example, A. T. 马汉 [A. T. Mahan, author], 安常容, 成忠勤 译 [An Changrong and Cheng Zhongqin, translators], 张志云, 卜允德 校 [Zhang Zhiyun and Bu Yunde, proofreaders], *海权对历史的影响, 1660–1783* [The Influence of Sea Power upon History, 1660–1783] (Beijing: 解放军出版社 [People’s Liberation Army Press], 2006); 刘华清 [Liu Huaqing], *刘华清回忆录* [The Memoirs of Liu Huaqing] (Beijing: People’s Liberation Army Press, 2004), pp. 432–33; 丁一平, 李洛荣, 龚连娣 [Ding Yiping, Li Luorong, and Gong Liandi], *世界海军史* [The History of World Navies from the Chinese Perspective] (Beijing: Sea Tide, 2000), pp. 309, 343–48; and 徐起 [Xu Qi], “21世纪初海上地缘战略与中国海军的发展” [Maritime Geostrategy and the Development of the Chinese Navy in the Early Twenty-first Century], *中国军事科学* [China Military Science] 17, no. 4 (2004), pp. 75–81; repr. in translation by Andrew Erickson and Lyle Goldstein, *Naval War College Review* 59, no. 4 (Autumn 2006), pp. 46–67. Also, 朗丹阳, 刘分良 [Lang Danyang and Liu Fenliang], “海陆之争的历史检视” [Historical Exploration into the Land-Sea Dispute], *中国军事科学* [China Military Science], no. 1 (2007), pp. 39–46.
 42. Unless otherwise specified, all information in this and the following paragraph is derived from 郝廷兵 [Hao Tingbing, PLAN] and 杨志荣 [Yang Zhirong, PLAN], *海上力量与中华民族的伟大复兴* [Sea Power and the Chinese Nation’s Mighty Resurgence] (Beijing: National Defense Univ. Press, 2005), pp. 2, 6, 32, 47, 52.
 43. This entire paragraph is drawn from Gu Zuhua, “Massive Naval Fleet Is Necessary,” p. 40.
 44. 张运成 [Zhang Yuncheng], “能源安全与海上通道” [Energy Security and Sea Lanes], in *海上通道安全与国际合作* [Sea Lane Security and International Cooperation], 杨明杰 [Yang Mingjie, ed.] (Beijing: 时事出版社 [Current Affairs], 2005), p. 103.
 45. Peng and Yao, *Science of Military Strategy*, p. 446.
 46. Zhao Hongtu, “The ‘Malacca Dilemma’ and Rethinking China’s Energy Security,” pp. 38–39. This seemingly disproportionate concentration stems from the fact that even in the modern era, geography, prevailing winds, ocean currents, and weather patterns determine the safest, cheapest, and most efficient maritime shipping routes. But sailing around a particular strait is a real option, because the incremental cost of doing so is marginal on a dollar/barrel basis.
 47. 凌云 [Ling Yun], “龙脉” [The Dragon’s Arteries], *现代舰船* [Modern Ships] (October 2006), p. 17.
 48. Zhang Xuegang, “Southeast Asia: Gateway to Stability,” *China Security* 3, no. 2 (Spring 2007), p. 26.
 49. Unless otherwise specified, this section is derived from Ling Yun, “Dragon’s Arteries,” p. 12.
 50. Zhao Hongtu, “The ‘Malacca Dilemma’ and Rethinking China’s Energy Security,” p. 41.
 51. 李杰 [Li Jie], “石油, 中国需求与海道安全” [Oil, China’s Requirements, and Sea Lane Security], *舰船知识* [Naval and Merchant Ships] (September 2004), p. 12.
 52. For a detailed argument concerning why China’s seaborne oil dependence will continue to grow despite efforts at land-based pipeline construction, see Andrew Erickson and Gabriel Collins, “China’s Oil Security Pipe Dream,” forthcoming manuscript.

53. Unless otherwise specified, data in this paragraph are derived from Zhang Yuncheng, "Energy Security and Sea Lanes," pp. 107, 108, 118.
54. 汪海 [Wang Hai], "构建避开霍尔木兹海峡的国际通道" [Creating an International Channel to Bypass the Strait of Hormuz], *世界经济与政治* [World Economics and Politics], no. 1 (2006), p. 49.
55. For the four-million-barrel figure, *ibid.*, p. 48.
56. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 118.
57. *Ibid.*
58. 达巍 [Da Wei], "中国的海洋安全战略" [China's Maritime Security Strategy], in *海上通道安全与国际合作* [Sea Lane Security and International Cooperation], 杨明杰 [Yang Mingjie, ed.] (Beijing: Current Affairs, 2005), pp. 361–62.
59. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 118.
60. For "strategic throat," 李兵 [Li Bing], "国际战略通道研究" [International SLOC Research] (doctoral dissertation, 中共中央党校 [Chinese Communist Party Central Party School], 1 May 2005), p. 355. For "extremely narrow," Zhang Yuncheng, "Energy Security and Sea Lanes," p. 118.
61. 李小军 [Li Xiaojun], "论海权对中国石油安全的影响" [On the Influence of Sea Power upon China's Oil Security], *国际论坛* [International Forum] 6, no. 4 (July 2004), p. 18.
62. 章明 [Zhang Ming], "马六甲困局与中国海军的战略抉择" [The Malacca Strait Problem and the Future Strategic Choices of the Chinese Navy], *现代舰船* [Modern Ships] (October 2006), p. 21.
63. This entire paragraph is drawn from Gu Zuhua, "Massive Naval Fleet Is Necessary," p. 40.
64. Chen Angang and Wu Ming, "Malacca Strait," pp. 11–14.
65. *Ibid.*, p. 11.
66. Ling Yun, "Dragon's Arteries," p. 15.
67. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 111.
68. *Ibid.*, p. 118.
69. Chen Angang and Wu Ming, "Malacca Strait," pp. 11–14.
70. 张玉坤, 张慧 [Zhang Yukun and Zhang Hui], *戍海固边: 海上安全环境与海洋权益维护* [Defend the Sea, Strengthen Frontiers: The Maritime Security Environment and the Defense of Maritime Rights and Interests] (Beijing: Sea Tide, 2003), p. 50.
71. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 107.
72. Scott C. Roberts, "China's LNG Program Turns a Corner," *Cambridge Energy Research Associates*, www.cera.com.
73. Chen Angang and Wu Ming, "Malacca Strait," p. 12.
74. Zhang Yukun and Zhang Hui, *Defend the Sea, Strengthen Frontiers*, p. 47.
75. Peng and Yao, *Science of Military Strategy*, p. 441.
76. "Husky Energy Announces Significant Gas Discovery in South China Sea," *Husky Energy Inc. News*, 14 June 2006, www.huskyenergy.com/news/.
77. Zhang Yukun and Zhang Hui, *Defend the Sea, Strengthen Frontiers*, p. 45.
78. We focus our discussion on military threats to Chinese energy SLOCs. This is because piracy and other nonstate threats affecting the Malacca Strait and other choke points tend to be more easily dealt with as law enforcement issues, as building local enforcement capacity tends to be more effective than using naval forces to suppress maritime criminal elements. The drop-off in reported pirate attacks in the Malacca Strait area over the past few years is a case in point, as better regional cooperation in the law enforcement arena has made it more difficult for pirates to operate.
79. Interview, Beijing, March 2007.
80. China Institute of Contemporary International Relations, *Global Energy Structure* (Beijing: Economic Security Study Center, 2005), p. 91.
81. See, for example, the series of very detailed reports in a long series that was initiated in the November 2005 issue of *Modern Navy*.
82. Zhang Yuncheng, "Energy Security and Sea Lanes," pp. 116–17.

83. Chen Angang and Wu Ming, "Malacca Strait," p. 14.
84. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 120.
85. *Ibid.*, p. 119.
86. *Ibid.*, p. 120. Chinese concern regarding Japan and the Taiwan Strait has been heightened by U.S.-Japan Defense Guidelines revisions, which some interpret to authorize the extension of Self-Defense Force coverage to the Taiwan Strait area.
87. Gu Zuhua, "Massive Naval Fleet Is Necessary," p. 40.
88. Unless otherwise specified, this entire paragraph is drawn from Ling Yun, "Dragon's Arteries," p. 15.
89. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 119. Prompted by concerns that *Yinhe* would deliver large amounts of precursors for mustard and sarin gas to Iran, the Clinton administration sent vessels to monitor the Chinese-flag containership in the Indian Ocean. A neutral inspection in Saudi Arabia confirmed that no chemicals were on board. This apparent intelligence failure seriously damaged U.S.-China relations for some time. For further details, see Patrick Tyler, *A Great Wall: Six Presidents and China: An Investigative History* (New York: Public Affairs, 1999), pp. 396–400.
90. This entire paragraph is drawn from Zhang Yukun and Zhang Hui, *Defend the Sea, Strengthen Frontiers*, pp. 22–24.
91. This was the position of one Chinese strategist interviewed by the authors in China, December 2005.
92. Unless otherwise specified, all quotations in this section come from 薛兴林 [Bi Xinglin], ed., *战役理论学习指南* [Campaign Theory Study Guide] (Beijing: National Defense Univ. Press, 2002), pp. 107, 228–56.
93. There are two editions, of 2000 and 2006; the latter appears significantly more sophisticated.
94. Unless otherwise specified, all quotations in this section are from Zhang Yuliang et al., *战役学* [Science of Campaigns] (Beijing: National Defense Univ. Press, 2006), pp. 297–303.
95. Ling Yun, "Dragon's Arteries," p. 16.
96. *Ibid.*, p. 15.
97. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 122.
98. 高月 [Gao Yue], "海权, 能源 与安全" [Maritime Rights, Resources, and Security], *现代舰船* [Modern Ships] (December 2004), p. 7.
99. For a comprehensive analysis of this issue, see Andrew Erickson, Lyle Goldstein, and Carnes Lord, *China Goes to Sea: Maritime Transformation in Comparative Historical Perspective* (Annapolis, Md.: Naval Institute Press, forthcoming 2009).
100. Gao Yue, "Maritime Rights, Resources, and Security," p. 7.
101. Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy," pp. 75–81.
102. Zhang Ming, "Malacca Strait Problem," p. 25.
103. Li Bing, "International SLOC Research," pp. 354–55.
104. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 124.
105. This entire paragraph is drawn from 江风 [Jiang Feng], "21世纪中国海军三大舰队构想" [Prospects for the PLAN's Three Fleets in the 21st Century], *舰载武器* [Shipborne Weapons] (June 2006), pp. 19–22.
106. See David M. Finkelstein, "China's National Military Strategy: An Overview of the 'Military Strategic Guidelines,'" in *Right-Sizing the People's Liberation Army: Exploring the Contours of China's Military*, ed. Roy Kamphausen and Andrew Scobell (Carlisle, Pa.: U.S. Army War College, 2007), esp. pp. 69–79.
107. 张兆垠, 少将, 成都军区驻滇某集团军副军长 [Maj. Gen. Zhang Zhaoyin, deputy group army commander, Chengdu Military Region], "坚持不懈地加强我军核心军事能力建设" [Strengthen Unremittingly Our Army's Core Military Capacity Building], *解放军报* [Liberation Army Daily], 2 December 2008; "彭光谦: 中国海军赴索马里打击海盗完全有信心" [Maj. Gen. Peng Guangqian: Has Complete Confidence in China's Navy Going to Somalia to Attack Pirates], *新浪军事-东方网联合报道* [Joint Report by Sina.com Military Affairs and Oriental Network], 18 December 2008, available at www.chinareviewnews.com.
108. Because of their lower cost, smaller size, and potentially very quiet operation (e.g.,

- under air-independent propulsion) if neither great speed nor range is required, diesel submarines are best for littoral operations. The superior speed and range of nuclear submarines (and relative stealth within these demanding performance parameters), together with their ability to support formidable antiship weapons systems, make them essential for blue-water SLOC defense. However, their still-high cost and their need for highly trained crews and sophisticated maintenance facilities make them worth acquiring in substantial numbers only if SLOC defense is prioritized. For detailed explanation of these points, see Andrew Erickson and Lyle Goldstein, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no. 1 (Winter 2007), pp. 54–79; and Andrew Erickson, Lyle Goldstein, William Murray, and Andrew Wilson, *China's Future Nuclear Submarine Force* (Annapolis, Md.: Naval Institute Press, 2007).
109. For a discussion of potential future steps in Chinese aircraft carrier development emphasizing the difficulties and opportunity costs that would likely be involved, see Andrew S. Erickson and Andrew R. Wilson, "China's Aircraft Carrier Dilemma," *Naval War College Review* 59, no. 4 (Autumn 2006), pp. 13–45. For more recent indications that China may have decided to devote more resources to deck aviation development, see 邓佑标 [Deng Youbiao], "海军大连舰艇学院首次招收飞行学员" [Dalian Naval Vessel Academy Recruits Flight Students for the First Time], *解放军报* [Liberation Army Daily], 5 September 2008, p. 5, available at www.chinamil.com.cn, or in English as "Dalian Naval Academy Recruits Pilot Cadets for the First Time," *Liberation Army Daily*, 5 September 2008, english.chinamil.com.cn.
 110. For detailed analysis, see Gabriel Collins and Michael Grubb, *A Comprehensive Survey of China's Dynamic Shipbuilding Industry: Commercial Development and Strategic Implications*, China Maritime Study 1 (Newport, R.I.: Naval War College Press, 2008).
 111. In the absence of tenders, a navy determined to conduct significant blue-water SLOC security missions would probably need either the ability to bring technicians along in some capacity, access to technologically sophisticated port facilities, or both.
 112. Xu Qi, "Maritime Geostrategy and the Development of the Chinese Navy," pp. 75–81.
 113. "Gwadar Port," *Gwadar News & Business Source*, www.gwadarnews.com/gwadar-port.asp.
 114. 林锡星 [Li Xixing] (Jinan University Institute of Southeast Asian Studies), "中缅石油管道设计中的美印因素" [The Influence of the U.S. and India on the Sino-Myanmar Oil Pipeline Proposal], *东南亚研究* [Southeast Asian Studies], no. 5 (2007), p. 34. For a more skeptical assessment, see Andrew Selth, "Burma, China and the Myth of Military Bases," *Asian Security* 3, no. 3 (September 2007), pp. 279–307.
 115. Gurpreet S. Khurana, "China's 'String of Pearls' in the Indian Ocean and Its Security Implications," *Strategic Analysis* 32, no. 1 (January 2008), p. 3.
 116. For historical examples of this process in other countries, see Jack Snyder, *Myths of Empire: Domestic Politics and International Ambition* (Ithaca, N.Y.: Cornell Univ. Press, 1993).
 117. Zhang Yuncheng, "Energy Security and Sea Lanes," p. 124.
 118. Li Jie, "Oil, China's Requirements, and Sea Lane Security," p. 11.
 119. Gao Yue, "Maritime Rights, Resources, and Security," p. 7.
 120. Unless otherwise specified all data in this paragraph are derived from Ling Yun, "Dragon's Arteries," pp. 10–11, 14, 17.
 121. In March 2005, the China National Offshore Oil Corporation attempted to purchase the Union Oil Company of California (UNOCAL). Based on concerns about impending Chinese control of strategic resources, as well as, probably, a growing fear of China's rising global political and economic influence, the U.S. House of Representatives resolved by 398–15 that the merger could "threaten to impair the national security of the United States" and called for a presidential review should it succeed. As a major study has also noted, there were other reasons for opposing the bid: "CNOOC's backing by the Chinese

- government allowed it to outbid any competitive commercial company, and China's state-owned companies are not reciprocally open to foreign purchase." CNOOC withdrew its bid. Following a subsequent bid by Chevron Corporation, UNOCAL became its wholly owned subsidiary on 10 August 2005. "China's Thirst for Oil," *Crisis Group Asia Report no. 152*, 9 June 2008, p. 10, available at www.crisisgroup.org.
122. Zhao Hongtu, "The 'Malacca Dilemma' and Rethinking China's Energy Security," pp. 36–42. For further details on the strategic petroleum reserve, see Gabriel Collins, "China Fills First SPR Site, Faces Oil, Pipeline Issues," *Oil & Gas Journal* (20 August 2007), pp. 20–29.
123. Li Xiaojun, "Influence of Sea Power upon China's Oil Security," p. 18.
124. Feng and Duan, "Characteristics of China's Sea Geostrategic Security," p. 27.
125. 张炜 [Senior Colonel Zhang Wei] (Navy Research Institute researcher), "国家海上安全理论探要" [Exploring National Sea Security Theories], *中国军事科学* [China Military Science] (January 2007), p. 91.
126. This entire paragraph is drawn from Gu Zuhua, "Massive Naval Fleet Is Necessary," p. 40.
127. This entire paragraph is drawn from Ling Yun, "Dragon's Arteries," p. 19.