

# **Taiwan's Maritime Security**

**Edited by  
Martin Edmonds and  
Michael M. Tsai**

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# Taiwan's Maritime Security

The relationship between Taiwan and the People's Republic of China is regarded as a very serious potential source of conflict in East Asia, especially now that the questions of Hong Kong and Macau have been settled, and increased democratization in Taiwan is seen as a threat by mainland China. This book, which brings together leading international scholars of maritime security, and also strategic thinkers from within Taiwan itself, examines a wide range of questions concerning Taiwan's perception of the naval threat from mainland China, and how Taiwan's navy and naval strategic thinking is responding, including discussions of the strength of Taiwan's naval forces, mainland China's claims and ambitions in the South China Sea, and the controversial question of Theater Missile Defense.

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# Foreword

Dr Michael M. Tsai has had a profound interest in the defense affairs of the Republic of China (ROC) for a long time, and has made an outstanding contribution in this field. Following the very successful conference on “Prospects of Defense Policy and Military Strategy” in 2001 (which has been published by RoutledgeCurzon under the title *Defending Taiwan* in 2002), Dr Tsai again successfully organized, in January 2002, an International Conference on “Taiwan’s Security and Sea Power”. During the conference, renowned scholars and experts from the United States, Taiwan, Japan, Britain, and Australia contributed papers on the development of naval forces on both sides of the Taiwan Strait, as well as regional cooperation on maritime affairs.

Through such informed discussion, exchanges and interactions on defense affairs between the military, civilians, and academics were promoted. The fruits of the conference have served as valuable reference for defense planning. With the publication of this book, more intellectual attention and discussion on defense affairs will certainly be stimulated and thereby contribute to building a consensus among the people on the effective defense of the ROC.

A new focal point in the global strategic environment is the economic development in the Asia-Pacific region. This economic growth and increasing strength within the region has relied on the safe and free passage of merchant shipping along the sea-lanes of communication (SLOCs) located in the first island chain in the West Pacific and East Asia. Clashes of different powers in the region and constant disputes, however, remain as destabilizing factors in the region’s economic development as a whole, and this applies to all states in the region, including the People’s ROC. It is, therefore, in the interests of all the states in this region to safeguard these crucial SLOCs.

The Taiwan Strait, situated at the center of the sea lanes of East Asia, clearly holds a political and economic salience due to its strategic position in the West Pacific. Cross-strait stability is of the utmost significance to both the security of the Asia-Pacific region and, most particularly, the survival of the ROC. Maintaining both a military balance in and the stability of the Taiwan Strait, and securing free passage along the sea lanes of East Asia, is the legitimate and rightful duty of the ROC. It will be one of Taiwan’s principal contributions to the international community.

Taiwan, surrounded by sea, is a typical maritime country. The sea has presented economic benefits and contributed to the creation of the widely acknowledged “economic miracle” of Taiwan, one that has made it the eighth largest economy in the world. Although providing the island of Taiwan a security barrier, the sea can also serve as a path for enemy invasion from all directions. To secure national security and sustainable survival and development, Taiwan has to utilize its geo-strategic advantages, develop and employ its sea power, exploit the ocean’s resources, seek international cooperation, and integrate its interests in survival with the national interests of states around the world.

Taiwan has already put in place an overall plan for the establishment and maintenance of its sea power. The emerging idea is that of establishing a “Ministry of Oceanic Affairs” and points to a determination to look to a maritime strategy to further Taiwan’s national and strategic interests. There is no doubt that the ROC Navy plays a crucial role in the development of sea power. A well-rounded “jointness” of the three Armed Services is also a critical factor in the consolidation of sea power and the maintenance of Taiwan’s security. Several chapters published in this volume provide sound advice on the enhancement of naval power. The Ministry of National Defense (MND) will see it as a reference for future planning and integrate it into Taiwan’s effort to develop a consensus among the population on the development of sea power.

Dr Tsai’s concern for defense affairs and the development of national sea power over the years has been widely appreciated by the defense community. I hope the publication of this book will prompt the Taiwanese people to attach greater importance to the island’s national security and sea power development, while rendering even more support and encouragement to the ROC Armed Forces.

Yiau-Ming Tang  
Minister for National Defense  
Taiwanese Government

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We would like to acknowledge the help and support of those who made both the conference “Taiwan’s Security and Sea Power” and the production of this volume possible. As with the previous volume, *Defending Taiwan*, our thanks must go to the staff of *Taiwan Defense Affairs*, and in particular Peter Wong and York Chen, respectively the Editor and Assistant Editor of the journal. It was on them, and the staff of Michael M. Tsai’s office in the Legislative Yuan, that the burden of organizing the conference fell. With regard to the preparation of this volume, our gratitude again goes to Pauline Elliott, the Executive Secretary of the Centre for Defence and International Security Studies and Assistant Editor of *Defense and Security Analysis*, for her careful copyediting and proofreading of the chapters.

Martin Edmonds  
Michael M. Tsai

# Abbreviations

AAW	Anti-air warfare
ACS	Auxilliary crane ship
AFD	Floating dock
AGS	Survey ship
AGSC	Coastal survey ship
AIP	Air independent propulsion
AKL	Light passenger transport ship
AOE	Fast combat support ship
AOG	Oiler
AP	Transport ship
APEC	Asia-Pacific Economic Community
ARD	Ship repair floating dock
ARF	ASEAN Regional Forum
ARG	Repair ship
ARS	Salvage vessel
AS	Submarine tender
ASCM	Anti-ship cruise missiles
ASEAN	Association of Southeast Asian Nations
ASR	Submarine rescue vessel
ASROC	Anti-submarine rocket
ASUW	Anti-surface warfare
ASW	Anti-submarine warfare
ATA	Rescue assistance ships
ATBM	Anti-theatre ballistic missile
ATF	Ocean-going tug
AWS	Aegis Weapon System
BMD	Ballistic missile defense
CARAT	Co-operation afloat readiness and training
CBM	Confidence-building measures
C4I	Command, control computers, communications, and intelligence
C4ISR	Command, control communications, computers, intelligence, surveillance and reconnaissance
CDISS	Center for Defense and International Security Studies
CIC	Combat Information Center



CMC	Central Military Commission
CS	Continental shelf
CSC	China Shipbuilding Corporation
CSCAP	Council for Security Cooperation in the Asia-Pacific
CSIST	Chung-San Institute of Science and Technology
CVBG	Carrier battle group
DD	Destroyer
DDG	Guided-missile destroyer
DPP	Democratic Progressive Party
EEZ	Exclusive Economic Zone
ERINT	Extended range interceptor
ESM	Electronic warfare support measures
EW	Electronic warfare
FABG	Fast attack missile boat
FF	Frigate
FFG	Guided missile frigate
FLIR	Forward-looking infra-red detectors
GDP	Gross domestic product
GMCS	Ground-based mid-course segment
GMPA	General Maritime Patrol Administration
GPS	Global positioning system
ICBM	Intercontinental ballistic missile
INCSEA	Incidents at sea
JDS	Japanese defense ship
JMSDF	Japanese Maritime Self Defense Force
KMT	Kuomintang Nationalists Party
LCC	Amphibious command ship
LCM	Landing craft
LCU	Landing craft utility
LCVP	Landing craft vehicle personnel
LOSC	Convention on the Law of the Sea
LPR	Fast transport vessel
LSD	Landing ship dock
LSM	Landing ship medium
LST	Landing ship tank
MAAG	Military Assistance Advisory Group
MAD	Magnetic anomaly detection
MDS	Modular combat system
MHC	Coastal minehunter
MIW	Mine warfare
MND	Ministry of National Defense (Taiwan)
MSC	Coastal mine sweepers
MSML	Inshore mine sweepers
MSO	Ocean mine sweepers
NATO	North Atlantic Treaty Organisation
NMD	National missile defense

NTU	New threat upgrade
NTW	Navy theatre—wide
PAAMS	Principal anti-air missile system
PCL	Light patrol craft
PFG	Patrol frigate
PG	Patrol escort ships
PGC	Patrol gunboat
PLA	People's Liberation Army
PLAAF	People's Liberation Army Air Force
PLAN	People's Liberation Army Navy
PLANAF	People's Liberation Army Naval Air Force
PRC	People's Republic of China
R&D	Research and development
RAS	Replenishment at sea
RFI	Request for information
RMA	Revolution in military affairs
RN	Royal Navy
ROC	Republic of China
ROCA	Republic of China Army
ROCAF	Republic of China Air Force
ROCN	Republic of China Navy
ROKN	Republic of Korea Navy
ROV	Remotely operated vehicles
RTN	Royal Thai Navy
SAM	Surface-to-air missile
SLBM	Submarine launched ballistic missile
SLIC	Slow intensity conflict
SLOC	Sea lanes of communication
SOF	Special operating forces
SRBOC	Super-rapid-blooming-offboard-chaff
SSBN	Nuclear ballistic missile submarines
SSK	Conventional diesel-powered submarines
SSM	Surface-to-surface missiles
SSN	Nuclear-powered submarines
THAAD	Theater high altitude area defense
TMD	Theater missile defense
UK	United Kingdom
UNCLOS	United Nations Convention on the Law of the Sea
USN	United States Navy
WMD	Weapons of mass destruction
WPNS	Western Pacific Naval Symposium
YTB	Large harbor tug
YTL	Small harbor tug

# Introduction

*Martin Edmonds and Michael M. Tsai*

One is hard pressed to find any other state than Taiwan that is so heavily dependent on the sea for its security, economic well-being, and livelihood. To understand this assertion, it is necessary, simply, to go back to basic principles. In part, this is a matter of geography: Taiwan is a small island set between the East China Sea in the North, the South China Sea to the South and the Pacific Ocean to the East. Its position is some 120-plus miles to the East of the Southeast of the Chinese mainland. Taiwan is separated from the mainland by a narrow stretch of disputed water known as the Taiwan Strait.

The distance between Taiwan and mainland China at its narrowest is a little over 35 miles; it is therefore much the same at that of the English Channel that separates England from France between Portsmouth and Cherbourg. Though the relationship between these two states, once a matter of bitter enmity, is now one of “concorde”, sealed by a common membership of the European Union and shared security arrangements, such amity does not exist between the People’s Republic of China (PRC) on the mainland and the Republic of China (ROC) on the island of Taiwan. In consequence, the Taiwan Strait represents an important physical, as well as symbolic, barrier separating the two states. Initially, it served as a defense against possible Nationalist Chinese forces under Chiang Kai-shek invading the mainland—a declared ambition of the Kuomintang Party (KMT) of which he was leader. Later, and to the present day, the Taiwan Strait acts as the first line of defense for the protection of Taiwan against invasion by PRC forces.

Taiwan, defined by the PRC leadership as a “renegade province”, has, for the past 50 years, been one of China’s primary national objectives. The reuniting of Taiwan with mainland China has been a source of constant effort by successive Chinese communist administrations. Many alternative approaches have been tried, varying from the direct threat of military invasion to negotiated deals involving promises of Taiwanese autonomy within the framework of Chinese sovereignty, somewhat along the lines of the current arrangement in Hong Kong. All of these initiatives have failed, not necessarily because the terms offered have been wholly unacceptable, but because the Taiwan government has been able to resist any pressure and hold out either for a better agreement or, as is the current situation, Taiwan’s independence.

The explanation for this apparent “impasse” is relatively simple and is predicated on two factors. The first is geography. The second is Taiwan’s credible military power, initially with US active military assistance and, currently, with Taiwan more or less operating defensively alone. Not least among Taiwan’s ability to withstand mainland China’s overtures and threats are Taiwan’s naval and maritime capabilities. It is these maritime capabilities that this book addresses, offering an assessment of the strength and depth of Taiwan’s maritime security.

### **A matter of geography**

As noted briefly above, the island of Taiwan is located some one hundred plus nautical miles off the Southeast coast of mainland China, separated by a stretch of water known as the Taiwan Strait. As such, it should normally come under the influence of the continental mainland of Asia. In fact, it does not, for which the specific geographical features of Taiwan provide the main explanation. This, at first sight is surprising since Taiwan is, by international standards, a very small island with very few natural resources. It is a mere 225 miles long, north to south, and 140 miles wide at its broadest.

Topographically, Taiwan is dominated by a mountain range that virtually runs the length of the island from north to south, rising in places to heights above 13,000 feet. This mountain range rises steeply on both sides and covers almost 75 percent of the island’s land area. On the east side of the island, the mountains drop steeply down to the sea. There is only one navigable river, the Taushui that runs east–west, the remaining rivers being short and fast also flowing from the east to the west. To the west of the mountain range, the remaining 25 percent of the land area is a flat coastal plain where the majority of the 22 million population live an urban, largely industrial, existence. The four major cities of Taiwan, T’aipei, Kaohsiung, T’aichung and T’ainan are sited on the west coast. Only 15 percent of a population of some twenty-two million are engaged in agriculture.

Strategically, the island benefits from a number of natural defenses. Invasion from the East, that is, from the Pacific Ocean, is nearly impossible as the mountain range drops effectively directly into the sea. There would be no location where a beachhead could be established and defended. This leaves only the island’s western coastline, where the vast majority of the urban population are to be found. It is not so much the nature of the terrain, however, that presents a barrier to any invading force, though this certainly would be a factor in its calculations, but the nature of the sea between Taiwan and the Chinese mainland.

The Taiwan Strait, first of all, is shallow and marked with rapid tidal flows that make navigation extremely difficult. The tidal range is also a hindrance, since at low tide the sea retreats from the island’s western shore leaving vast areas of sand/muddy areas of beach that are unsuitable for even the most shallow-drafted of landing craft. Add to this cocktail of problems the climate around Taiwan—winds, rain, and fog and a sea state in the Taiwan Strait that has a reputation for being extremely rough—and any potential invading amphibious force would be faced with almost impossible conditions. All these hindrances have to be

addressed before even taking into account the presence of modern equipped and well-trained ROC defense forces.

The point cannot be stressed too strongly: the security of Taiwan is heavily dependent on the nature and characteristics of the coastal seas around the island and also on its own coastline. It is the responsibility of the ROC Armed Forces to capitalise on these natural geographical and maritime advantages when ensuring the security of Taiwan. Although in the past the weight of attention in defense circles has fallen on the ROC Army, all the evidence points to a shift today towards naval and maritime defense backed by the need for air superiority. It is this that makes this volume, and the expert contributions to it so pertinent.

### **Defense policy formulation and naval interests**

This re-orientation towards maritime and naval security might have been more persuasive if the conclusion had been arrived at as a result of strategic logic, but this was not strictly the case. As has been demonstrated in the chapter by Edmonds and Chen, the ROC Army has tended to dominate defense and strategic thinking in Taiwan for the past 50 years, and its influence has by no means abated. It is still the case that the ROC Army receives the largest share of the defense budget, even though the strategic case for doing so has progressively become weaker as the post Cold War security environment has changed radically. Within the debates over Taiwan's defense and security, neither the ROC Navy nor the Taiwanese Air Force have pressed their arguments for increased funding with much success, partly because of the degree of secrecy with which defense issues were discussed within the government and partly for historical reasons.

Since the Democratic Progressive Party (DPP) formed the government in 2000, this secretive approach has begun to change and Taiwan's defense policy and levels of defense spending have begun to be discussed and debated outside purely military circles amongst informed academics, the media and the general public. The conferences organised by Michael Tsai and his journal *Taiwan Defense Affairs* of which this volume is the proceedings of the second, is indicative of the more open approach to defense issues. It is hardly surprising that after a conference that looked at Taiwan's defense policy generally, the second should focus on maritime issues.

### **PLAN naval expansion program: the driver**

But as intimated above, this was not simply the result of the application of strategic logic to Taiwan's security. The focus on naval and maritime security issues is the direct consequence of recent naval developments in the PRC. This is also reflected in the fact that the first Part of this volume—four chapters in all—addresses the PLAN's modernisation program, and its implications respectively for East Asian security, the South China Sea, and Taiwan's security. As this section of the book comprehensively demonstrates, the PRC has, in parallel with its economic development and growth, focused its defense and security effort

somewhat away from the continent of Asia and in the direction of becoming a maritime power. This is reflected in the types and numbers of naval vessels it has been procuring primarily from the Russian Federation and the investment it has placed in developing an indigenous shipbuilding and repair industry.

In the past, the PLAN concentrated on building a submarine fleet complemented by a very large coastal defense force made up primarily of fast attack patrol craft. There was no expression of interest in developing a maritime power projection capability, and certainly nothing by way of naval aviation or an aircraft carrier. And for all the rhetoric regarding taking back the island of Taiwan by military means, the PLAN's amphibious capability lacked credibility. In contrast, the Taiwanese Navy was not only better equipped, but more than a match for the PLAN. This was achieved until the late 1970s with the assistance of the United States until the US altered its policy towards the PRC. Even then, the United States has remained committed to supporting Taiwan in the latter's search for protection against any potential threat from mainland China. In making available the purchase of naval vessels and air superiority aircraft, under the 1979 US–Taiwan Relations Act, the United States has always been careful not to provide equipment that could be construed in turn as constituting a threat to mainland China.

These criteria largely dictated the agreement made recently in 2001 between Taiwan and the Bush administration regarding the sale of submarines and KNOX-class surface ships. It also explains why the United States was not ready to sell either AEGIS-class destroyers or, even, the *Aegis* radar system to the ROCN. Even so, as Eric Grove goes to lengths to point out, for all the restrictions placed on the ROCN, both from outside and internally, it nonetheless has one of the largest, and operationally capable, fleets in the world, a fact that should not be overlooked or dismissed lightly.

### **The future of Taiwanese shipbuilding**

As the chapter on the ROC's shipbuilding industry reveals, Taiwan has a long way to go before it can match the development and construction capability of United States and European shipyards. This has meant that Taiwan has had to rely on the acquisition of ships from external sources, mainly from the United States. Because of US policy towards China after 1979, there could be no guarantee of ships that the ROCN would ideally like to acquire, for which reason it approached the international arms market. There it met with only modest success, acquiring two conventional submarines from the Netherlands, until PRC pressure effectively brought the contract to an end, and LA FAYETTE frigates from France in the 1990s, some of which were assembled in Taiwan. Recognising that the PRC is developing an indigenous shipbuilding industry and widening its inventory of naval vessels, it is now Taiwan's long-term policy to invest in its own indigenous shipbuilding and ship design capability. It is also accepted that this will be a lengthy process, one that will also require engineers and naval architects to acquire and develop their skills abroad and through technology transfer, bring them back to Taiwan.

## **The PRC and ROC's common concern for SLOC security**

Both Taiwan and the PRC are moving along similar paths with regard to their future naval and maritime developments. Both states face similar difficulties and would also appear to be adopting similar solutions. In a manner of speaking, they are in competition, but one, paradoxically, that brings an element of stability. As far as the security of East Asia is concerned, it is in the interests of both states to maintain their respective maritime developments in equilibrium, and thereby cancel out any potential advantage that the one might acquire over the other. The advantage of sea power in this respect is that things develop much more slowly, and crises at sea can be managed at a more deliberate pace than either on land or in the air. The build-up of the naval capability by both states should not therefore be seen as something that constitutes a threat to East Asian security; quite the opposite. It has the potential, reinforced by maritime law and the Laws of the Sea, to be a source of stability within the region.

Both Taiwan and the PRC think in terms of the first and second island chains as defining the strategic boundaries of their naval operational interests. This is understandable whilst both see the safe passage of their “lifelines” of sea-borne commercial trade passing within them. Both states are sensitive of the degree of vulnerability these sea lanes of communication (SLOC) are, not merely to each other's naval forces, but also to ships of other states and to piracy.

Taiwan, in particular, is heavily dependent on the SLOC to and from the island being secure and free from interference. It also knows that one of the possible strategies entertained by mainland China to force Taiwan to unite with China, is for the PLAN to impose a blockade. Taiwan would then be slowly forced into submission if it did not have the naval and air capability to prevent it. The build-up of Taiwan's naval force, with the capability to prevent any blockade and to keep the flow of strategic materials, oil in particular, arriving and manufactured goods leaving is clearly a priority. In similar vein, as the PRC itself becomes a major trading nation, so it also has an interest in securing the sea lanes of communication through the South China Sea and thereon to the Malacca Strait and the Indian Ocean.

It is therefore in neither the PRC nor Taiwan's interests to do other than to ensure the security of the sea lanes in East and South East Asia. It is fortunate that neither state has a sufficiently superior navy to deny the other access to either the first of the second island chain. At their current rates of development, neither side is likely to achieve superiority until well into the next decade, if at all.

## **Maritime interests the key to Taiwan's future**

Taiwan's maritime, and naval, security is central to its future. Because of its post 1979 diplomatic isolation, Taiwan's most promising prospects to rejoin the international community are three-fold. The first is to demonstrate that it is a democracy and as such fulfils the normal criteria expected of, for example, membership of the United Nations. The second is that Taiwan is both prepared to and is

capable of participating in international peace-keeping and peace support operations. The third is to be engaged in commercial exchange—that is, trade—with other states. In two of these three fundamental criteria, maritime considerations play an essential role. For this reason alone, Taiwan has to look to its maritime interests and promote its maritime security. With this in place, as Ming-Hsien Wong and Tung-Lin Wu have noted, Taiwan will generate maritime prestige, a recognition that will in time open more diplomatic doors.

All this will, however, take time. The dual strategy of seeking out the most appropriate ships and aircraft from abroad in the short to medium term, coupled with a long-term development of an indigenous ship building and repair industry, will eventually bring dividends. In the meantime, Taiwan must focus on its existing maritime capabilities and ensure that they are both closely linked to Taiwan's current defence policy and national strategy and geared to deter any "adventurism" towards Taiwan on the part of the PLA. This will mean not just a matter of amassing ships and naval equipment, but to prepare, look after and train the naval and military personnel without whom no national strategy of defense policy can work.

### **Taiwan's maritime security**

This volume endeavors, in a frank and open manner, to identify the threats with which Taiwan is faced, in particular those from the PRC. It also looks at the Taiwanese Navy and offers an equally frank assessment of its capabilities as well as its shortcomings. Finally, whilst acknowledging the fact that the ROC Navy is amongst the largest and better equipped in the world, there are no grounds for complacency. Assumptions about potential adversaries and the support of allies are not guaranteed, and ultimately Taiwan has to become as self-reliant in maritime, as in other spheres, as it can. The Taiwanese are a resilient people, and as they have demonstrated their capacity to make their country the eight largest economy in the world, so they have the capacity and the commitment to meet the maritime challenge.





## **Part I**

# **The naval balance across the Taiwan Strait**



# 1 Assessment of the PLAN's modernization

*Chen Te-Men*

## Introduction

In the 1950s, the initial objective of the People's Liberation Army (PLA) naval force build-up was to develop “highly mobile aircraft, highly stealthy submarine, and powerful fast attack craft”. Observing Mao's strategic guidance of “active defense, coastal operations”, and its underlying defensive strategy of “let no one defy me, and I will not defy anybody”, the PLA Navy (PLAN) started to strengthen its coastal defense capability by advocating “wolf pack” operations by deploying torpedo boats along the coast and by fully utilizing the maritime militia and the mass of the population.

Mao's strategic thinking of “maritime guerrilla operations” was deeply affected by the Soviet Union and the concept of “people's war”. This idea, inherited from the Soviet Navy's coastal defense strategy, guided the PLAN's thinking about the use of naval force for the next 30 years. After being promoted to Vice Chairman of the Central Military Commission in the late 1980s, Admiral Liu Huaqing emphasized the four goals of the PLAN's modernization—electronics, automation, guided-missiles, and nuclear power—and unleashed the programs for its modernization that have been in effect ever since. Given mainland China's booming economic development, the increased importance of the sea lanes of communication (SLOCs), concern over the territorial dispute with its neighboring states in the South China Sea, Japan's military build-up, the Taiwan issue, and the potential for US intervention, the People's Republic of China (PRC) cannot but emphasize the importance of its navy's modernization and construction program, and expedite its development toward the blueprint of a blue water navy.

When the PRC initiated its “socialist modernization program” in the late 1970s, it began to redirect its national development from a closed, self-reliant one toward one of open, maritime orientation. This took a two decade-long effort to transform China from a traditional continental empire into a continental nation driven by the policy to expand its maritime power. In China's maritime-oriented national development of the past 20 years, the PLAN's modernization program has played a major role, not only because a strong PRC navy can protect its flourishing coastal economy and growing offshore interests, but also because a modernized navy can serve as the principal instrument for realizing China's aspiration to be an independent international power.<sup>1</sup>

The PLAN Commander-in-Chief, Shi Yunsheng, accepted an interview in August 2001 with the Hong Kong monthly, *Bauhinia Magazine*, and unveiled the inside story of decision-making with which to implement the “offshore defense” strategy of the Chinese Navy. The implementation of this strategy has been finalized in accordance with China’s National Chairman Jiang Zemin’s directive, which demands that the Chinese Navy fully recognizes the importance of maritime strategy, fulfills the strategic thinking of “offshore defense”, strengthens naval construction in terms of quantity and quality, upgrades offshore co-ordinated operational capability, and facilitates the construction of a modernized navy.

With the inland resources on mainland China gradually becoming exhausted and the rapid growth of its population, the ambition to grasp control of the maritime interests in the Western Pacific and the South China Sea will, in all probability, become a focal point for conflict in the next decade.

The PLAN is pursuing its modernization in two specific areas: on the one hand, it is making every effort to strive for the R&D, production, upgrading, and procurement of naval vessels from abroad and advanced weapon systems; on the other hand, it is enhancing the quality of its personnel through education and training and upgrading the capability of joint service operations.

It is pursuing these goals in order to fulfill the objective of the successful transition from the conventional “coastal defense” to the more aggressive “offshore defense”, and to be capable of projecting force overseas in the future. Whereas maritime strategy provides the principal guidance for naval force construction, this chapter aims at assessing the PLAN’s modernization in the light of the development of its maritime strategy. It also seeks to explore the major achievements of the PLAN’s modernization through R&D, production, upgrading, and procurement of advanced vessels and weapons systems, and the dilemma it has encountered in the process.

## **The development of the PLAN’s maritime strategy**

### ***The chronicles of the PRC’s development of maritime strategy***

In 1982, the PLAN Commander-in-Chief, Liu Huaqing (later as Vice Chairman of the Central Military Commission), directed the Naval Research College to elaborate on the development of maritime strategy. He then introduced a strategy of “offshore defense” in 1985, and the “three phases of maritime strategic development” later on. In 1988, Liu’s successor, Zhang Lian-zhong, formulated the concept of “three maritime defense areas”.

On February 25, 1992, the National People’s Congress passed a Law on the territorial sea and the contiguous zone and formally legalized the PRC’s maritime territorial claims.<sup>2</sup> Article 2 of the Law listed a number of unsettled archipelagos in the Western Pacific as China’s inherited maritime territories.<sup>3</sup>

In 1996, the PRC’s National People’s Congress ratified the United Nations Convention on the Law of the Sea (UNCLOS). This legalized the PRC’s development and management rights over its territorial seas defined by UNCLOS as

a state's rights. This also extended the PRC's rights to its 200 nautical miles (nm) exclusive economic zone (EEZ), and the continental shelf (CS). These rights further comprised the sea-bed and underwater areas that extended beyond its territorial sea to a maximum distance of 350 nm from its coastline. This extension directly challenged the PRC's ability to implement its maritime strategy, sovereign rights, and exploitation of natural resources.

(1) In 1996, the China National Oceanic Bureau drew up an "Agenda of the 21st Century Chinese Oceans". This defined a systematic strategic goal and guidance for action based upon Convention on the Law of the Sea. On May 28, 1998, the PRC published for the first time a White Paper on "Chinese Maritime Development".

(2) In 1988, the PLAN acquired its first XIA-class nuclear powered ballistic missile submarine. It then decided to embark on the construction of a new generation nuclear powered ballistic submarine (SSBN) and nuclear-powered attack submarine (SSN), which marked a significant adjustment of its military strategy, and also an important milestone in its naval modernization.

### ***PLAN Commander Shi Yunsheng's recent reiteration of the "offshore defense" strategy***

On August 1, 2001, marking the 74th Anniversary of the PLA's, the PLAN Commander, Shi Yunsheng, agreed to be interviewed by Hong Kong's *Bauhinia Magazine* and unveiled the internal process of decision-making with which to implement the Chinese Navy's strategy of "offshore defense".<sup>4</sup> The Chairman of the Central Military Commission (CMC), Jiang Zemin, had indicated that he had high expectations for the PLAN. He had inspected the PLAN troops frequently, and issued a series of important statements and instructions.

Through his pronouncements, Jiang Zemin demanded that the Chinese Navy recognized the importance of maritime strategy, fulfilled the strategic thinking of "offshore defense", strengthened the construction of naval forces quantitatively and qualitatively, and upgraded their offshore operational capabilities. Jiang has also asked that naval officers should guarantee the security of Chinese territorial waters, accomplish the sacred mission of the unification of nation, and facilitate the accomplishment of building a modern navy. Shi Yunsheng has indicated that Jiang's words have fully expressed the consistent determination of the core leaderships of three generations to build a strong and modernized PLAN. He has also pointed out the correct direction for the development of the Chinese Navy into the new millennium.

During the interview, Shi Yunsheng emphasized that historically any state that overlooked the importance of sea power courted national disaster. In this respect, the lessons of Chinese history were most saddening and indelible. As recent as one hundred years between 1840 and 1949, China had been invaded more than 470 times from the sea by the Western powers. In addition, he expressed his concern over the complicated maritime situation in the Asia-Pacific region at the dawn of the twenty-first century, Japan's 2000 Defense White Paper, and the

US Theater Missile Defence Developments. He pointed out that China, as a developing country with the world's largest population, had to respond at a strategic level and identify, maintain, and defend its maritime interests in an effort to sustain the Chinese people's survival and future development.

Admiral Shi Yunsheng also emphasized during the interview, however, "China's consistent insistence on commonly exploring and exploiting the world's maritime resources in a peaceful and reasonable way. Based upon the national rights recognized by the principles of sovereignty and International Law, contributions to civilization and the well-being of humanity can be fulfilled through the peaceful scientific application of science to the development of maritime resources and national oceanic endeavors".

### ***The PLAN's study on an "offshore defense" maritime strategy***

According to Admiral Liu Huaqing, "offshore" is more than merely a geographical term. It spells out new geopolitical and strategic considerations. In practical terms, "offshore defense" is most often associated with the 200-nm EEZ and with protection of crucial SLOCs.

Looking to the future, Liu also emphasized the strategic importance of the maritime area bounded by the "second-island chain". The PRC's ability to control this vast area of sea would require both naval and air forces capable at least of sea denial to a distance of almost 2,000 nm (Palau).

Beijing is also well aware that there are domestic and international political and force structural limitations on what the PLAN can do as its radius for operations moved farther away from the Chinese mainland and it tried to sustain operations at greater distances over a long period of time. Politically, China must be careful not to create a situation, especially in Southeast Asia, where the other states in the region felt threatened as a result of the PLAN's presence. This could well result in an increase in the United States Navy's (USNs) presence in the region.

The lack of any long-distance air cover and a fleet capable of operating for sustained periods of time on station is one of the major limitations on the PLAN's force structure. Until these capabilities are improved, the PRC will not be able to exert its influence over areas distanced from the Chinese mainland.<sup>5</sup>

## **PLAN modernization achievements**

### ***Improvement of nuclear and conventional submarines***

In the early 1990s, two factions advocated their respective priorities for long-term modernization projects within the PLAN. One faction argued for giving priority to the submarine fleet modernization; the other wanted to introduce an aircraft-carrier battle group as the top priority. The former group's argument eventually prevailed.

During the process of its nuclear submarine modernization, the PLAN built at least five HAN-class nuclear-powered submarines and one XIA-class nuclear-powered ballistic missile submarine. Because of inexperienced design capability

and inferior shipbuilding technology, the XIA-class nuclear-powered ballistic missile submarine has a limited capability to fulfill its assigned operational role. Despite repeated modifications, the two submarine classes remain troubled by excessive noise and power generation problems, which has led mainland China to seek further assistance from Russia. Currently, Russia's Rubin Design Bureau is helping mainland China build the Type 093 and Type 094, new generation of nuclear-powered attack and nuclear-powered ballistic missile submarines, respectively.

As to their operational performance, the Type 093 submarine is comparable to Russia's VICTOR III-class submarine;<sup>6</sup> in terms of performance, the Type 093 is similar to the US SKIPJACK-class submarines, with a streamlined hull and stabilizer wings on the mast. In the process of building the Type 093, mainland China is believed to be receiving Russian assistance in obtaining stealth technology. The Type 094-class submarine is an extended version of the Type 093-class submarine and is capable of carrying 16 *Julong* II submarine-launched ballistic missiles, which mainland China itself researched and developed. The Types 093- and 094-class submarines are expected to be completed and commissioned sometime before the year 2005. By that time, the Chinese Navy's submarines will have acquired the operational capability to launch ballistic missiles.

With regard to conventional diesel-powered (SS) submarines, mainland China has continued Research and Development (R&D) of the SONG-class diesel-powered submarines by itself. The first submarine of this class was commissioned in 1996, and two submarines have been completed each year since 1998. It is expected that the SONG-class submarines will replace the obsolete MING-class submarine during this decade.<sup>7</sup>

Meanwhile, mainland China has purchased four KILO-class submarines from Russia (two Type 636s and two Type 877s) starting in 1995. Because of the design of the double hull, compartment isolation, and reserved buoyancy, the KILO-class submarine is capable of sustained operations, even when partly damaged. The Type 636 makes use of numerous advanced stealth technologies. For example, a flexible connector is applied to the shaft; a deceleration gear is mounted to lower the propeller speed; changes have been made to the configuration of the bow; and mechanical noise has been decreased. According to information revealed by the US Office of Naval Intelligence, the underwater noise of the Type 636 KILO-class submarine is estimated to be equal to the USN's LOS ANGELES-class nuclear-powered attack submarine.

After having acquired the KILO-class submarines, mainland China has also obtained various advanced submarine weapons, such as the 53–65 KE homing torpedo and the wire-guided torpedo. As is well known, the homing torpedo is difficult to detect and is therefore difficult to counter. Moreover, through its knowledge of combat control and sonar systems, as well as state-of-the-art design, mainland China is now able to improve its indigenous SONG-class submarine and has had it fitted with new Russian torpedoes, defensive equipment, sonar systems, hull coating, and silencing installations.<sup>8</sup> In addition, it is worthwhile noting that hull anechoic cladding technology applied to the submarines acquired from Russia has helped to reduce noise transmission, an urgent problem



that mainland China has been trying to overcome in the process of building its indigenous submarines.

Owing to the fact that the problems of an insufficient budget and inadequate personnel training remain unresolved, the PLAN is still unable to decommission large numbers of obsolete MING- and ROMEO-class submarines over a short period of time. As a consequence, the only way for the PLAN to manage the situation is to improve the MING- and ROMEO-class submarines, such as installing Yu-4 (SEAT-60) torpedoes and hull mounted sonar on the MING-class submarines, which in turn allows them to conduct active and passive searches and attacks. The ROMEO-class submarines have been equipped with six C-861 surface-to-surface missiles. Since both classes of submarine are obsolete in terms of design and performance, their ability to carry out their missions successfully is limited, even after modification. Furthermore, as many as thirty-six ROMEO-class submarines are scheduled for decommissioning.<sup>9</sup>

### ***R&D, upgrading, and procurement of modern surface vessels and advanced weapon systems***

The PLAN has acquired a large number of surface vessels over time, but most of these are of small tonnage displacement and obsolete design, and lack effective anti-ship and anti-air capabilities. Mainland China did not begin to build or purchase modern warships with large tonnage displacement, superior performance, and sea and air denial capabilities until the late 1980s.

In terms of indigenously designed and built surface vessels, mainland China has built two LUHU-class guided missile destroyers of 4,500-ton displacement, four JIANGWEI-class guided missile destroyers of 2,750-ton displacement, and one LUHAI-class guided missile destroyer of 6,000-ton displacement. The LUHU-class guided missile destroyer is mainly equipped with C-801/802 anti-ship missiles, French-built *Sidewinder* air defense missiles, 37 mm close-in weapons systems, Whitehead anti-submarine torpedoes, two 100 mm guns, and a helicopter deck which can accommodate two indigenous Z-9 helicopters to perform the anti-submarine role.

The major air defense and anti-submarine equipment on the JIANGWEI-class guided missile destroyer is as follows: two triple C-801 anti-ship launchers, one twin HP-61 air defense missile launcher and a hangar for one Z-9 helicopter. The LUHAI-class guided missile destroyer has a stretched hull with certain stealth design features, including a streamlined upper structure with an inclined angle. In addition, the LUHAI-class guided missile destroyer can carry as many as 16 C801/802 anti-ship missiles on board, twice as many as the LUHU-class guided missile destroyer, with a Z-9 anti-submarine helicopter onboard.<sup>10</sup>

In addition to the construction of new ships, the PLAN is also engaged in upgrading its air defense capability, reinforcing its anti-submarine weapons systems, and modifying the flight deck onboard the outdated indigenous LUDA-class destroyer. This includes installing two triple HY-2 anti-ship missile launchers and two sets of FQF 2500 anti-submarine launchers. Guns mounted on the stern of the LUDA-class destroyer were also dismantled in order to incorporate a

flight deck to accommodate Z-9A helicopters. In addition, eight air defense missile launchers are installed on the stern of the LUDA-class destroyer. The LUDA-class destroyer is characterized by its four twin C-801 anti-ship missile launchers and the updated twin 37 mm guns.<sup>11</sup> From these changes, it is clear that the PLAN has changed its thinking by abandoning an outdated design that showed a penchant for guns, and adopting anti-submarine and air defense weapon systems in its design of its conventional surface warships.

Although mainland China is making every effort to build a new generation of large-sized surface vessels, the result has not been as satisfactory as expected. For example, the LUHU-class guided missile destroyer still lacks advanced long-range air defense and anti-submarine weapons systems. The LUHAI-class guided missile destroyer is equipped with the HQ-7 air defense system, but none of the systems has yet been able to meet its operational requirements. As a result, mainland China had to divert a large proportion of its naval budget to the purchase of SOVREMENNY-class destroyers from Russia.<sup>12</sup>

Currently, Mainland China has acquired two SOVREMENNY-class destroyers. The first one, code-named "Hangchow", was delivered in February 2000, and the second one arrived in January 2001. Both ships are assigned to the PLAN's East Sea Fleet. The full displacement of the SOVREMENNY-class destroyer is up to 7,600 tons, and the main weapons systems onboard include four 130 mm guns (twin), eight Kh-41 *Sunburn* anti-ship missiles, forty-eight SA-N-7/17 air defense missiles, torpedoes, close-in weapons systems and one Ka-27 anti-submarine helicopter. The SOVREMENNY-class destroyer is the largest multi-purpose surface vessel that mainland China has ever acquired through foreign procurement. In addition to being reliable platforms for anti-surface, air defense, and anti-submarine weapon systems, this destroyer can carry powerful mid-range anti-ship missiles and an advanced shipboard anti-submarine helicopter.

It is important to note that the main design of the *Sunburn* missile is aimed at countering the US AEGIS-class destroyers. With its rapid speed, this type of missile is hard to intercept. Furthermore, when fitted with a large-size warhead load, the *Sunburn* missile can still fly at high speeds towards an objective and has become a lethal weapon with which to pose a threat to any navy. In addition, the technology of designing combat systems acquired from the procurement of SOVREMENNY-class destroyers will serve as a reliable tool for the future reference when mainland China designs new indigenous warships.<sup>13</sup>

### *The development of cruise missiles*

High-tech operational skills demonstrated by the United States in the Gulf War, especially the precision strike capability of *Tomahawk* cruise missiles, left an impression not easily forgotten by the rest of the world. With this in mind, mainland China has actively proceeded with an aggressive R&D program of cruise missiles with Russian help. This project consists of two programs: one is the HY program, and the other is the YJ program. Concerning the HY program, mainland China has successfully improved the Soviet-made *Styx* missiles for the first time. Improved *Styx* missiles such as the HY-2A can carry a warhead of up to 1,129 lb

at Mach 0.9, has the range of 59 miles, and uses infrared seekers. This kind of missile is expected to be deployed on the LUDA-class guided missile destroyers and JIANGHU-class guided missile frigates, while the improved air-to-air HY-2A missile, with a range of 68 miles, will presumably be operated by the PLAN's Naval Aviation's H-6D bombers.

Mainland China keeps working on improving the next generation of cruise missiles of the YJ series, which is a variant of the French-made *Exocet* cruise missile. The YJ-1/C-801 cruise missile, developed by mainland China, is smaller and lighter than those developed before, but has a range of about 25 miles. Although this type of missile has been deployed on the HAN-class nuclear submarine, its serious defect lies in the fact that the submarine has to surface in order to launch the missile.

Mainland China is also developing the newest YJ-2/C-802 cruise missile with a speed of Mach 0.9, a range of 75 miles and with the capability of carrying a warhead of up to 361 pounds.<sup>14</sup> In terms of various technologies such as fuel material, warhead, navigation, guidance, and flight control, the Chinese-made cruise missile is much inferior to the Russia-made SS-N-22 cruise missile. This has resulted in the fact that mainland China also had to appropriate a large amount of money to purchase the SS-N-22 cruise missile from Russia. After acquiring the SS-N-22 cruise missile, mainland China will certainly strengthen its cruise missile capabilities. In the event that mainland China obtains a substantial quantity of SS-N-22 cruise missiles, or is able to develop sophisticated cruise missiles itself, it would deploy them on warships or submarines. As a consequence, the PLAN's operational capability to project forces over long distances would be greatly enhanced.<sup>15</sup>

### ***Procurement of new anti-submarine helicopter***

Mainland China has also acquired a number of KA-28 anti-submarine helicopters and has them deployed on its SOVREMENNY class destroyers. This version of helicopter is equipped with a dipping sonar system, which has an outstanding anti-submarine capability. It is especially suited for operations in the hydrologically complicated waters around Taiwan.<sup>16</sup>

### ***The PLAN's near-term development and dilemma***

There are two factors that affect the PRC Navy's near-term development. First, the development of the PRC's economy and modernization relies on energy sources and international trade. In addition, the oil (energy) imports needed to maintain the economic growth for mainland China is mostly through maritime transportation. Consequently, maintaining the security of SLOCs is of increasing importance. Second, in order to exert the necessary influence on neighboring states, mainland China deems it necessary to secure regional military superiority. The "renegade" province of Taiwan and the Spratlys, with its assumed bountiful natural resources, are the typical cases in this connection.

In order to maintain the capabilities needed to accomplish the above-mentioned goals, the key lies with the PLAN's force structure. The PLAN has more than

1,100 vessels, which is nearly three times as many as the USN. Unlike the USN, however, without referring to the differences in submarine strength or aircraft carriers, the PLAN comprises a mere fifty-six major combat ships (destroyers and frigates). This number constitutes only about 5 percent of the PLAN's total strength, with the remainder consisting of patrol craft, mining operation vessels, and a small-sized amphibious force.

In the near future, the Chinese Navy will move forward to develop a "green water" capability. This means that it will attempt to foster power projection capabilities as close as possible to the first-island chain—the whole line starting from the Western part of Japan, through Senkaku island and Taiwan, to Palau islands. By 2020, the PLAN's goal is to build up a "blue water" naval capability that can project forces as far as the second-island chain, running from the Western part of the Kuril islands, through the Mariana islands, and as far as Papua New Guinea.

Within the peripheral area of "green water", the PLAN's strategy places emphasis on controlling and interdicting sea lanes. As for outward expansion to the area of "blue water", the PLAN will have to expand its air defense and anti-submarine capabilities into areas where the United States and other nations' navies are in a better position to concentrate their forces and hinder reinforcements coming from the Chinese mainland.

In order to accomplish the maritime strategy of expanding from the "green line" to the "blue line", the PLAN is purchasing major surface vessels and weapons systems from Russia, while at the same time encouraging the strengthening of its domestic shipbuilding capacity. Mainland China is currently building a new type of 6,000-ton destroyer to replace the larger sized warships presently in its fleet. In November 1997, mainland China concluded an agreement with Russia to procure two SOVREMENNY-class destroyers and possibly with one more to come.

It is reported that mainland China has begun a research project on aircraft carriers. It may be considering constructing aircraft carriers of its own design or retrofitting two mothballed aircraft carriers. The Ukrainian VARYAG-class aircraft carrier and the Russian MINSK-class aircraft carriers are two vessels that mainland China's affiliated companies have ostensibly purchased for non-military purposes.

Because of uncertainties in the economic development and the rapidly deteriorating regional security situation, however, mainland China is not inclined to wait for these main warships to enter service. That is, it has been staging military exercises with smaller-sized ships. These are adequate for the PLAN to expand its naval power to the first chain of islands. What is worth mentioning especially is the fact that most of the newly commissioned warships have been dispatched to the East Sea Fleet, whose operational area of responsibility includes peripheral waters around Taiwan. The implication of this move indicates mainland China's intention to expand its naval capability near Taiwan, and also explicitly make known its resolve that it can exert sea denial capabilities against the USN should it try in future to intervene in the peripheral waters around Taiwan.

With a view to wielding effective naval power in future engagements, small-sized warships must depend on credible logistical support to sustain operations. Recent PLAN exercises have placed emphasis on maritime re-supply, maintenance

support, and re-fueling operations needed for rapid attack fleets to carry out their mission. The exercises demonstrated that the PLAN's fleets will have to be anchored along the coast of mainland China over an extended period of time for re-supply operations by vulnerable, lightly armed or unarmed supply ships. Under this tactical scenario, the PLAN is vulnerable to protracted supplies that will severely comprise its strategic ambition to extend its maritime influence.

Mainland China has created a model of employing these small-sized vessels to act as a temporary resolution for force projection. Even if the PLAN has demonstrated its ability for outward expansion to the first-island chain, it still lacks the appropriate displacement tonnage of main ocean-going combatants needed to operate over long distances. While the production and procurement of main combat vessels is growing steadily, the PLAN will still be confined to the littoral waters around the mainland.

In order to upgrade the ability to project force in "blue-water" operations, mainland China is obliged to take the following measures:

- build more logistic supply ships in order to strengthen logistic supply and support capabilities for oceangoing operations;
- modernize existing nuclear-powered submarines and attack submarines (especially in noise reduction and weapons delivery systems), and increase the number of submarines;
- build destroyers and frigates for ocean-going operations;
- acquire the most advanced command and control systems,
- give priority to the modernization of C4I systems;
- strengthen naval aviation combat power.

As a "blue water" navy, the PLAN must rely on air power to sustain its combat power. It therefore has to face the challenge of establishing a highly capable naval air force to carry out various missions. In the next decade or so, it will become more evident that mainland China will have a strategic gap in its "blue water" force as a result of insufficient and unsuitable warships. Because the scientific and technological infrastructure is seriously falling behind, along with the deficiency in its capability to integrate various systems, the PLAN will have to address these major impediments during the process of developing a "blue-water" navy. In addition, the following four drawbacks will also affect the progress of the PLAN's modernization.

- personnel quality and training;
- backwardness of basic defense technology;
- inadequacy of modern concepts;
- negligence and insufficiency of logistics support capabilities.

In addition to the realities above, the PLAN also lacks fundamental theories on which to build a "blue water" navy. The prerequisites set forth by Alfred Thayer Mahan and Julian Corbett as the basis for developing a sound maritime strategy

are not in sight, nor is the PLAN free from the rigidity that has been inflicted on it by flimsy maritime and strategic thinking. This thinking is characterized by:

- vulnerability of its concept of sea power and maritime strategy, resulting from the fact that, traditionally, the PRC's major threats have come from the North, over land;
- restraint imposed by the nature of the PRC's "Active Defense" thinking;
- inaccurate perceptions of the nature of sea power and of the applications of naval forces.

Judging from the fact that, over the years, the PLAN has maintained a cautious approach towards the introduction of aircraft carriers through purchases from abroad, the PRC leadership recognizes that credible defense is built on the basis of a flourishing economy. Mainland China learned a grim lesson from the collapse of the former Soviet Union—a military superpower can suffer grave consequences due to long standing negligence of economic developments. Consequently, the PRC leaders will be careful enough not to follow the downhill spiral that the Soviet Union experienced, and therefore place military modernization at the end of their four modernization programs.

## **Conclusion**

Over 50 years of development, the PLAN has basically established a maritime capability that can carry out its offshore operational mission. In spite of all the necessary elements in its force structure and the nuclear-powered submarines, the PLAN is still characterized as a lightly armed, offshore defense force. A small number of medium-sized ships acquired through foreign procurement is not sufficient to be tasked with medium- and long-range defense missions, let alone to threaten rivals in medium- and long-range waters.

Mainland China regards the modernization of its armed forces as the prerequisite to march forward into the twenty-first century and to become a global power in the world. It also fully realizes that the expansion of sea power symbolizes the strengthening and exercise of national power. Consequently, mainland China can be seen as actively engaging in the modernization of its navy's structure despite the fact that there are very many problems waiting to be solved in respect of technology, logistics, and quality of personnel.

Without question, after half a century's endeavor of modernizing its structure, the PLAN cannot yet fully support the requirements of its ocean-going strategic objective. Early in the twenty-first century, however, the PLAN will possess modernized and offshore operational capabilities, but only to a certain degree. Former PLAN Commander, Liu Huaqing, noted,

The PLA Navy must be able to effectively control the waters along the first island chain, and the term "offshore" should not be described as "inshore" as known to the public in general. In comparison with the open sea, "offshore" is a concept meaning extended waters West of the second island chain.

By that time, the PLAN will have the potential to threaten the security and stability of the Asia-Pacific region, and pose in particular a severe threat against neighboring nations around the Taiwan Strait and the South China Sea.

Based upon the force structure of the PLAN, with the exception of the deterrent role that its ballistic missile submarines play, it is impossible for its conventional naval forces to become a global power or to pose an serious threat to the United States, owing to historical and cultural constraints. In the years ahead, therefore, mainland China may be expected to become a regional power at best.

## Notes

- 1 Alexander Chieh-cheng Huang, "The Chinese Navy's offshore Active Defense Strategy, Conceptualization and Implications", *US Naval War College Review*, Vol. XLV11, No. 3, Seq. 347, Summer 1994, p. 8.
- 2 This law defined the range of China's territorial sea and contiguous zone as 24 nm—twelve for the territorial sea and twelve for the contiguous zone—extending from the baseline of the territorial sea.
- 3 Article 2 states: "The territorial sea of the People's Republic of China is the sea areas adjacent to the PRC's land territories and internal waters. The land territories of the PRC include: the PRC mainland and coastal islands; Taiwan and nearby islets including the Diaoyutais [Senkaku Shoto]; Penghu Islands [Pescadores]; the Dongsha [Pratas], Xisha [Paracel], Zhongsha [Macclesfield Bank], and Nansha [Spratly] archipelagos; and all the islands belonging to the PRC". See *Central Daily* (International Edition) (Zhongyang Ribao [Guojiban]), February 27, 1992, p. 1.
- 4 Wu Zuei-hu and Mao Tei, "PLAN Commander Shi Yunsheng: Review of the Naval Strategy Development", *Bauhinia Magazine* (Hong Kong Monthly) August 2001, pp. 6–9.
- 5 Kenneth W. Allen, "PLA Building at the Start of a New Century", *Center of Naval Analysis Conference Report*, July 2001, pp. 3–4.
- 6 Zalmay M. Khalilzad (translated by Wu Fu-seng), *The United States and a Rising China: Strategic and Military Implications*, Taipei: Military History & Translation Bureau, MND, October 2000, pp. 98–99.
- 7 "New PLAN to Train, Purchase Vessel Mix", "Anthology of Global Defense Studies 88", (translated by Military History & Translation Bureau, MND), *Jane's Defence Weekly*, December 6, 1998, p. 200.
- 8 James R. Lilley and David Shambaugh (translated by Chai Wen-chung), *China's Military Faces the Future*, Taipei, Military History & Translation Bureau, MND, August 2000, pp. 255–56.
- 9 Mehsan Ahrairi (translated by Wu Hun), *The Expansion of PLA Oceangoing Military Power; Anthology of Global Defense Studies 3*, Taipei: Military History & Translation Bureau, MND, July 2000, p. 316.
- 10 James R. Lilley and David Shambaugh, *op. cit.*, pp. 265–66.
- 11 Prasun K. Sengupta (translated by Yie Si-zen), *Warship Design and Build Capability of the Countries in the Pacific Region, Anthology of Global Defense Studies 3*, Taipei: Military History & Translation Bureau, MND, July 2000, p. 555.
- 12 *Jane's Defence Weekly*, *op. cit.*, p. 200.
- 13 James R. Lilley and David Shambaugh, *op. cit.*, pp. 259–61.
- 14 Larry M. Wortzel (translated by Wu Chi-Da), *The Chinese Armed Forces in the 21st Century* Taipei: Military History & Translation Bureau, MND, September 2000, pp. 222–24.
- 15 *Ibid.*, p. 225.
- 16 James R. Lilley and David Shambaugh, *op. cit.*, p. 264.



## 2 The rise of the PLAN and the implications for East Asian security

*Sam Bateman and Chris Rahman*

### Introduction

This chapter addresses the strategic implications of the rise of the People's Liberation Army Navy (PLAN), including how that process might affect the stability of the region as a whole. However, the "sum of the whole" is not necessarily equal to the "sum of the parts". A larger PLAN will impact on particular countries differently and much will depend on how individual countries respond to the situation. These responses will be extremely varied: Japan, for example, is more concerned than South Korea or Russia; and in Southeast Asia, Malaysia, and Thailand may have a more relaxed view than Vietnam or the Philippines. Further to the West, India will likely respond strongly to a larger PLAN, particularly if the Chinese operate into the Indian Ocean with forward bases in littoral countries. Overarching the response of individual countries in the region itself will be the attitude of the United States and whether or not the United States Navy (USN) institutionalizes the PLAN as its natural adversary.

A particular challenge for East Asian security lies in the accommodation of not only a larger PLAN but also of China as potentially *the* major regional maritime power. As well as a larger navy, the dimensions of China's maritime power will include a large global shipping fleet, vast shipbuilding capacity, and a major role in the management of regional oceans and seas and their resources.<sup>1</sup> To enable the future regional security environment to remain relatively benign, China will thus need to play a key role in the processes of maritime security co-operation and dialogue in East Asia. Having evolved its geopolitical position from a continental and coastal power to that of a continentally-based maritime power, China might have to adjust some of its more restrictive views of coastal state rights vis-à-vis those of maritime *user* states. This would be a positive contribution to regional security.

### The PLAN and China's maritime power

#### *Current trends*

In a speech to the National People's Congress on March 6 2001, China's Finance Minister, Xiang Huaicheng, announced that China would increase defense spending



by 17.7 percent in 2001, its biggest expansion in real terms in the last 20 years.<sup>2</sup> The Chinese Navy is expected to obtain a significant share of the increased defense budget with a focus on advanced technology systems, including new submarines, heavily armed surface combatants, state-of-the-art anti-ship missile systems, and, eventually, an aircraft carrier capability. The PLAN is already the largest navy in East Asia with close to seventy operational submarines and fifty-three major surface combatants and it continues to grow rapidly. However, much of the PLAN's force structure is either old or outdated with new designs of ships and submarines, such as the LUHAI-class guided missile destroyers and SONG-class conventional submarines, only slowly being inducted into service. These platforms have been supplemented by high-profile purchases of limited numbers of Russian weapon systems such as the four KILO-class submarines and the two SOVREMENNY-class destroyers (with two more improved ships of the class likely) armed with fearsome SS-N-22 *Sunburn* anti-ship cruise missiles.<sup>3</sup>

In its expansion process, the PLAN clearly plans to improve its capabilities from that of a "green water" navy to a "blue water" one, capable of operating beyond Admiral Liu Huaqing's "second island chain", representing an imaginary line drawn from Japan through the Bonin Islands, the Mariana Islands, and the Caroline Islands.<sup>4</sup> The Chinese Navy is gradually becoming an international sea power of note, with ambitions to break out of the West Pacific into the Indian Ocean and even farther afield.<sup>5</sup> As pointed out by Bernard Cole, China's ability to project power is key to its maritime strategy and central to the vision of the current head of the PLAN, General Shi Yunsheng.<sup>6</sup> However, Michael McDevitt has questioned the level of bureaucratic influence that the PLAN has within the PLA and asked whether, in part, this is due to some disconnect between maritime strategy and a national strategy that does not envision the need to project power.<sup>7</sup>

While China has clearly recognized the importance of air power for power projection,<sup>8</sup> it also needs to acknowledge the dependence of air power (and often sea power as well) on forward bases and logistic support, which often depend, in turn, on the maintenance of the sea lanes of communication (SLOCs). The alternative to forward bases to support the projection of sea power is a comprehensive "fleet train" of underway replenishment vessels, stores ships, and tankers. At present, the PLAN only has a limited number of such vessels and while there are few indications that more are on order, it would appear that forward deployments by the PLAN will be largely dependent on access to foreign ports. This will require a major diplomatic initiative on the part of China in the South Pacific and the Indian Ocean and there are indications that this is already underway.<sup>9</sup>

The new and enhanced capabilities to which the PLAN aspires will eventually have a significant regional impact, including new surface combatants with area air defense missile systems,<sup>10</sup> aircraft carriers and more potent nuclear attack submarines (SSNs).<sup>11</sup> These could well lead to competitive acquisitions by other countries. Nevertheless, China appears committed to the acquisition of an aircraft carrier capability, possibly a smaller carrier of around 25,000 tons in the short term but larger conventional carriers of around 50,000 tons in the longer term. It is not inconceivable, however, that China's first carrier will be closer to the larger,

rather than the smaller, of the two displacement options. Although hard evidence is impossible to come by, it has nevertheless been reported that Beijing has already appropriated approximately one-fifth of the money required for a two to three ship carrier program.<sup>12</sup>

Due largely to the strategic maritime geography of East Asia, submarines are essential for China's defense of her maritime interests and to provide a credible threat to those of an adversary, including the SLOCs of Taiwan and Japan. Submarines are also a significant threat to the USN's carrier battle groups, especially when they are operating in the more confined waters of the East Asian seas enclosed by the Japanese and Philippine archipelagos, or through the "choke points" and focal areas of East Asia. New surface vessels, maritime aircraft, and submarines will be linked by modern tactical data systems representative of an ability to conduct information-led warfare against a range of adversaries. The acquisition of Revolution in Military Affairs (RMA)-type, network-centric systems are a major part of China's current security aspirations,<sup>13</sup> and also play an integral part of the socio-economic and technological development of the PLAN.<sup>14</sup>

China's power and influence will be particularly significant at sea in the twenty-first century. China is in the process of becoming East Asia's preeminent local maritime power, possessing not only the region's largest (if not necessarily the most modern) navy and a rapidly growing array of land-based offensive capabilities relevant to the maritime theater of operations, but also the largest merchant shipping fleet,<sup>15</sup> a large and growing shipbuilding capacity,<sup>16</sup> significant offshore oil and gas deposits,<sup>17</sup> as well as being a major fishing nation. China in the near future, if not already today, will exhibit all the classical Mahanian trappings of maritime power.<sup>18</sup>

China's maritime power is thus far more encompassing than simply the modernization of the PLAN. The Chinese government has consciously promoted the growth of a marine economy. The 1998 Marine Policy White Paper stated, for example, that China must "take exploitation and protection of the ocean as a long-term strategic task before it can achieve the sustainable development of its national economy".<sup>19</sup> The new emphasis upon the marine economy is yet another factor (in addition to Taiwan, China's maritime territorial claims, perceived threats from maritime powers, and regional prestige, status, and influence) that has led both to an expanding role for the PLAN in the pursuit of furthering China's wider national security interests, and to the consequent, ongoing expansion and modernization of the PLAN's own capabilities.

The rise of China as a maritime power is part of a more general process that sees the balance of international maritime power shifting towards East Asia, despite some stalling following the economic downturn of the late 1990s. This trend is most apparent with the increase in the region's commercial maritime power: shipping, seaborne trade, shipbuilding, and fishing. These have grown significantly in recent decades in line broadly with the economic growth of the region. As regional navies also grow, this upheaval in the balance of maritime power will extend into a naval dimension as new naval powers emerge in East Asia. There will be a decline in the traditional maritime power exercised by

Western countries relative to the new and aspiring regional maritime powers—Japan, China, India, South Korea, Taiwan, Singapore, and in the longer term, possibly other Association of Southeast Asian Nations (ASEAN) member countries such as Malaysia and Thailand. Thus, the rise of the PLAN is not only significant in terms of the regional implications but also for the important global dimension of those international implications. This is not solely due to the rise of the PLAN *per se*, however, or even solely to the rise of China's broader maritime power; rather it may be seen to be a result of the rise of East Asian maritime power generally.

The emergence of maritime powers in the Asia-Pacific is not surprising. In addition to strategic geography, there is a legacy of maritime tradition going back many centuries. Maritime power has been an important element of the strategic character of East and South Asia for many centuries. As John Reeve observes, "It was sea power which made possible the creation of an Asia-Pacific regional economy".<sup>20</sup> He goes on to refer to the European presence in Asia, facilitated by naval technological advantage, as being "perhaps the most remarkable example in history of maritime leverage against the land".<sup>21</sup> This historical pattern has continued into the twenty-first century in the more benign form of the forward-deployed USN, with its maritime-strategic predominance underpinning regional stability and the security of seaborne trade. American maritime preponderance is coming under a concerted challenge in East Asia's littorals, however, particularly by China.

### *China's maritime strategy*

The strategic geography of the region dictates China's maritime strategy. China's major naval ports are located on seas that are semi-enclosed by the off-lying archipelagoes. The rise of the PLAN and the evolution of China's strategy of "off-shore active defense" implies that China is seeking to become the dominant regional sea power,<sup>22</sup> able to exercise effective sea control in the littoral waters of the East and South China Seas. A renewed appreciation of its maritime interests, coupled to an appreciation of the technological capabilities of potential rivals such as the United States (especially following the American experiences with stand-off air and missile power in the Gulf War, Kosovo, and Afghanistan), has led to an ever greater PLA concern with extending China's defensive depth.

To extend its defensive depth, China has had to give greater emphasis to an offensive operational capability and an ability to project power at least as far as the "first island chain" (running from the Kuriles through the Japanese home islands, the Ryukyus, Taiwan, and the Philippines to the Indonesian archipelago), and perhaps as far as the "second island chain". The quest for an operational capacity to be able to fight at ever-increasing distances from the mainland reflects a requirement to defend not only the mainland coastline, but also China's maritime territorial claims and interests.<sup>23</sup> But as well as being able to operate comprehensively within the East and South China Seas, using sea denial capabilities to defend the mainland and its maritime interests against attack or encroachment from the sea, China must also develop the capabilities to operate through and

beyond the off-lying archipelagoes if it is to be a truly "blue water" navy. By most estimates, however, China remains at least two decades away from realizing its blue water ambitions.

Nevertheless, with respect to East Asia's smaller and more vulnerable states, China's Navy, together with Beijing's expanded diplomatic and economic influence, already represents a formidable new aspect of the regional security equation. The increased presence of the PLAN throughout the region, including its programs of port visits and other visible diplomatic functions will increasingly come to symbolize that growing influence; although the PLAN hitherto has been fairly introverted and not prepared to co-operate with other navies but there are indications that this situation is changing.<sup>24</sup>

### *China's maritime claims and boundaries*

Over the last decade, China has made a series of maritime claims that are deemed by some other nations, particularly the United States, to be excessive and not in accordance with international law. It is probably not a coincidence that these claims were made at a time when China's maritime power generally was growing significantly. They are indicative of a maritime power "flexing its muscles" and demonstrating a preparedness to re-write the law, if necessary, to suit its own agenda. This process is not too dissimilar to that of the United States with its unilateral move in the Truman Proclamation of 1945 to assert jurisdiction over the resources of the continental shelf.<sup>25</sup>

In 1996, China claimed a system of straight baselines along most of its mainland coast and around the Paracel group of islands in the South China Sea. A detailed analysis of this baseline system by the US Department of State was highly critical as most of China's coastline does not meet the criteria for applying straight baselines as set out in the 1982 UN Convention on the Law of the Sea (LOSC).<sup>26</sup> Straight baselines may only be employed where the coastline is deeply indented, if there is a fringe of islands along the coast in its immediate vicinity, or in certain other specified circumstances relating to river mouths and bays. There would seem to be little substance in China's claims that its entire coastline meets the criteria for employing straight baselines.<sup>27</sup> Also, there is no provision in the LOSC for baselines around mid-ocean archipelagos, such as the Paracels, that are not part of an archipelagic state (as opposed to a mainland or continental state such as China).

At present China has relatively few maritime boundaries. The main complications with boundary delimitation are the uncertain status of Taiwan, and the conflicting claims to the Senkaku (Diaoyu) islands and the Spratly and Paracel islands in the South China Sea. The situation in the South China Sea is the most notorious and problematic of all the maritime jurisdictional problems in East Asia. China's claim to waters in the South China Sea has been subject to considerable speculation and misreporting. This is largely caused by differing interpretations of the dotted line that appears on some maps enclosing most of the South China Sea. Western writers have suggested that this dotted line claims the whole

area as Chinese territorial waters or “historic waters”,<sup>28</sup> but this is not believed genuinely to be the case. As suggested by Zhiguo Gao, “A careful study of Chinese documents reveals that China never has claimed the entire water column of the South China Sea, but only the islands and their surrounding waters within the line” and that, “the boundary line on the Chinese map is merely a line that delineates ownership of islands rather than a maritime boundary in the conventional sense”.<sup>29</sup> In effect, China is saying that all the islands and reefs within the dotted line are Chinese and that these generate maritime zones as allowed by international law. The line should not be seen as an ambit claim to the waters of the South China Sea.

After a period of relative calm, 2001 has witnessed increased Chinese naval activity in the South China Sea, including the Spratlys, where China already has built military installations on Mischief, Fiery Cross, Cuarteron and Johnson Reefs. The PLAN has also deployed ships to Scarborough Shoal (North of the Spratlys and Southeast of the Paracels and Macclesfield Bank), prompting fears that China intends to occupy that feature in the near future.<sup>30</sup> China has also recently constructed around twenty 100-m QUI-M-class patrol boats, which are expected to increase China’s naval presence in the Spratlys. Although the boats have been liveried with Customs Service markings, it is reported that this is most likely a ruse and that the crews are all PLA/PLAN personnel.<sup>31</sup>

### *Freedom of navigation*

The incident involving the USN EP-3E aircraft and China in early April 2001 highlighted the potentially dangerous situation emerging in East Asian waters, as increased naval activity increasingly has strained inter-state relations over the issue of freedoms and rights of navigation.<sup>32</sup> Navigational rights and freedoms are major issues in East Asia due both to the importance of regional SLOCs and strategic geography. Ships traveling between the Malacca and Singapore Straits, and Northeast Asia pass almost entirely through the territorial sea or exclusive economic zone (EEZ) of various coastal states, including China. However, problems arise with claims by some coastal states to restrict the innocent passage of warships and some other categories of vessel in the territorial sea and to make military operations in the EEZ subject to the prior approval of the coastal state.

China is currently taking a leading role in the region in the application of these restrictive interpretations of the LOSC. One consequence of China’s extensive use of straight baselines for delineating the territorial sea is to push the territorial limits of the territorial sea (and perhaps the EEZ) further offshore, with larger areas of internal waters inside the baselines where there may not be a right of innocent passage.<sup>33</sup> China specifically stipulated the requirement for prior authorization of warship transit of the territorial sea in a declaration on ratifying the LOSC. The Chinese position on the innocent passage of warships has been summed up as follows.

As is well known, China takes a negative stance on the recognition of the right of innocent passage for warships and, on the contrary, requires the foreign warships to obtain prior permission before they transit through the territorial sea.

With the opposite attitude of Russia towards the passage of warships through the territorial sea, China's doctrine and practice is remarkable. Its attitude and possible future posture will no doubt have an important effect on the development of the international rules in regard to the right of innocent passage and even the whole territorial sea regime.<sup>34</sup>

The precise nature of the jurisdictional regime applicable in the EEZ is still in the process of evolution. An important area of disagreement relates to the ability of a coastal state to introduce regulations that have the effect of denying freedoms of navigation and overflight in all or part of its EEZ. The maritime powers argue that, subject to the resource-related rights and environmental protection obligations of a coastal state, the freedoms of navigation and overflight in the EEZ are the same as those on the high seas:<sup>35</sup> that is to say, without requiring prior notice to, or authorization from, the coastal state.<sup>36</sup> Contrary to this argument, some coastal states, including China, have declared security zones that extend into the EEZ, or they have specifically claimed that other states are not authorized to conduct military exercises or manoeuvres in the EEZ without their consent.<sup>37</sup> This difference of view between China and the United States, in particular, was highlighted in the EP-3 incident. It would likely figure prominently in any future period of tension in the vicinity of Taiwan, when there could well be escalating levels of restrictions on overflight and navigation applied by both sides. According to You Ji, Chinese analysts have noted the imposition of "no fly zones" as a frequently used post-Cold War demonstration of power by the major Western powers over weaker states.<sup>38</sup>

In the current regional security environment, regional states, including China, that have made claims to maritime jurisdiction and judged by the United States and other Western countries to be *excessive*, are unlikely to rescind such claims. Despite whatever pressure might be exerted by the West, East Asian countries are going to attach even greater importance to measures such as offshore security zones or other restrictions on the movement of warships and military aircraft in sea areas adjacent to the coast, but outside their territorial sea. Another related implication is that the regional security environment may be less conducive to the development of regimes for maritime co-operation and to some form of maritime confidence-building measure (CBM). The United States, especially, views many such measures—particularly those related to the transparency of naval operations—as a "slippery slope" towards efforts to place greater restrictions on the nature and area of naval operations.

The rise of the PLAN, and increased naval activity in the region, generally, mean that there will be a higher risk of incidents arising from contrary interpretations of freedoms and rights of navigation. There is some possibility, however, that China might step back from some of the more restrictive interpretations of the LOSC as the PLAN expands and comes to view navigational issues rather differently. A "blue water" PLAN will need to be more concerned about freedoms of navigation being available in the waters of other countries. With so much of the Western Pacific enclosed as EEZs, the PLAN might recognize that conceding coastal states the right to exercise some control over naval operations by foreign

countries in their EEZ is an unacceptable limitation. Any such policy transformation would be consistent with China becoming a major maritime power. It would also be a positive contribution to regional stability and remove some of the uncertainty that exists at present.

## **The strategic implications**

### *The East Asian region as a whole*

East Asia appears to be facing an unprecedented period of strategic competition. China is the focus of strategic rivalry with apparent attempts by other regional powers to contain its strategic rise. These moves are most evident in the maritime domain, where the evolving strategic discontinuity in Asia is most acute. Were China's strategic modernization efforts focused instead on its traditional continental preoccupation, the security situation throughout maritime East Asia would be more relaxed today (although such a continental focus would create different types of problems—especially for Russia, and to a lesser extent, India, and the Central Asian Republics). Unfortunately for the maritime states of the Western Pacific, the primary geopolitical thrust of China's strategic thinking is focused upon the East and South China Seas: that is, maritime East Asia.

While China is normally regarded as a continental power, it is a hugely significant development for East Asian security that it is now in the process of also becoming a leading regional maritime power. Robert Ross argues that contemporary East Asia has a bipolar strategic structure, divided into continental and maritime domains.<sup>39</sup> Russia may have been the major continental power in Asia in the past, but China is now the dominant continental power, having been a major strategic beneficiary of the collapse of the Soviet Union.<sup>40</sup> The United States dominates maritime East Asia, with Japan performing a lesser, support role. Ross goes on to argue that, "China can destabilize only by challenging US maritime supremacy".<sup>41</sup> However, China's widely based maritime power will increasingly challenge US maritime supremacy in the region, which is based primarily on naval power. The characterization by Ross of the US–China relationship as "one between a land power and a maritime power, each with its own distinct geopolitical imperatives" ignores the reality that China is also emerging as a maritime power of at least regional significance.<sup>42</sup> The "maritime balancing" described by Ross, with the United States supporting its "maritime containment" of a continental power through arrangements with Japan and the region's other archipelagic and island countries, may not be realized or maintained as easily as he (and others) assume.<sup>43</sup>

Increasingly affected by the centrally-planned expansion of Chinese maritime power, and symbolized by the steady modernization of the PLAN, the momentum thrusting Chinese influence throughout East Asia's seas and littorals, whether diplomatic, economic, strategic or rhetorical, is *the* leading strategic issue facing East Asia in the early twenty-first century. It is one with potentially global implications if China's maritime power continues to grow unchecked. There will be



undoubtedly disastrous global consequences should attempts to counterbalance that influence go badly wrong.

Counterbalancing is becoming increasingly evident in the region, with other regional states and the United States bolstering their maritime force structures in anticipation of a greater intensity of rivalry between China's and their own interests in the future. Even those countries that do not feel directly threatened by the rise of China are nonetheless taking tangible measures to improve their maritime strategic capacities in response to the naval programs of others, and as insurance against possible regional contingencies involving China: South Korea may be a good example of this latter phenomenon.

Further evidence of counterbalancing behavior is apparent in several ongoing attempts to forge new regional maritime-based coalitions consisting of states with a mind to defend the regional geopolitical *status quo* against the looming challenge of a rising China. One attempt has been the effort to create a trilateral naval coalition in Northeast Asia, involving Japan, South Korea, and the United States.<sup>44</sup> This example, however, faces particular obstacles in the form of the Japanese constitution and the reticence of Seoul both to become involved in potentially anti-Chinese activity and to set aside a historical distrust of Japan. The United States has also increased its defense co-operation with Taiwan, particularly since the George W. Bush administration took office, implicitly linking Taiwan and the defense of the island into its regional security strategy.

Coalition-building activity has also been highly visible in Southeast Asia.<sup>45</sup> The United States has been attempting to build upon its various defense co-operation linkages in the sub-region, not only to improve co-operative responses to low-level security challenges such as humanitarian assistance, disaster relief, and peacekeeping operations, but also as the first step towards constructing informal coalitions, should they be required in the future to balance the rise of China's influence. One tangible aspect of this process is the annual Co-operation Afloat Readiness and Training (CARAT) bilateral exercises between the USN (and US Coast Guard) and six Southeast Asian navies.<sup>46</sup> Another has been to link its regular bilateral military exercises with Australia, the Philippines, and Thailand under the overarching auspices of exercise TEAM CHALLENGE. Although this has not yet led to the establishment of a truly multilateral regional exercise with the United States at its core, that certainly seems to be the intention. In 2001, in the normal bilateral exercise COBRA GOLD, for example, Singapore for the first time participated in certain parts of the exercise with the United States and Thailand to make it a multilateral affair.<sup>47</sup> Japan has also expressed a close interest in the expanded COBRA GOLD as well as pursuing its own co-operative anti-piracy initiatives.<sup>48</sup>

In a process begun by Japan's former premier, Obuchi, in November 1999, the establishment of a maritime coalition to combat piracy in the South China Sea and piratical behavior in and around the archipelagic states of Southeast Asia, as well as to provide a greater overall measure of SLOC security, has been actively promoted by a number of Japanese organizations.<sup>49</sup> Several conferences have been held as part of this process involving shippers, other commercial interests,



international maritime organizations, and regional coast guards. Any of the Japanese proposals, if successfully implemented, would result in a wider role for the Japanese Coast Guard and/or the Japanese Navy (JMSDF) beyond the 1,000-nm SLOC protection range of Japan's current defense responsibilities.

There is a genuine concern in Japan with the safety of shipping in the region, yet this process undoubtedly also is part of the on-going Japanese attempts to expand its range of military options, in concert with the United States, for dealing with the rise of China's regional maritime power. There remains a good deal of suspicion in Southeast Asia about any Japanese attempts to establish an enhanced strategic role or military presence in the sub-region, however, due to long memories of Tokyo's behavior in the Pacific War.

Yet another proposal has been promoted for a multilateral security relationship between the United States and its main Pacific allies, Australia, South Korea, and Japan.<sup>50</sup> Similarly, Indian naval activities, such as naval ship visits and exercises East of Singapore, and a growing relationship between New Delhi and both Washington and Tokyo (and Taipei), enhanced by the faster pace of security co-operation as part of the on-going reaction to the catastrophic terrorist attacks in New York and Washington on September 11, 2001, suggest that an active, if informal, process for the maritime balancing of China is well underway.

The United States, and particularly the United States in close alliance with Japan, cannot assume that East Asian countries (other than Japan itself and, of course, Taiwan) will support attempts to contain China. Most countries are well aware of geostrategic realities and may at least "sit on the fence", if not necessarily move into the Chinese "camp", even though none particularly enjoys the prospect of an unencumbered and unbalanced China creating a regional hegemony of sorts.<sup>51</sup> ASEAN nations, particularly Burma, Malaysia, and Thailand, have a pragmatic view of China and are unlikely to be part of an active counter-balancing process. With the likelihood of closer economic and trade links between ASEAN and China,<sup>52</sup> there are some indications of acceptance, at least in Southeast Asia, of China as the dominant Asian power, although a continued strategic presence by the United States is increasingly welcomed.<sup>53</sup> From a Chinese perspective, efforts to contain it are threatening and justify increased military expenditure, particularly in naval and other maritime-relevant force structure.

## **Impact on individual countries**

### ***Japan***

The rise of the PLAN is of great concern to Japan for several reasons. First, Japan has perceptions of adverse implications resulting from China's looming hegemonic status in East Asia. Second, Japan is heavily dependent upon the import of critical and strategic materials, including energy, much of which transits in normal circumstances through the South and East China Seas adjacent to major PLAN bases. Although China is also becoming more dependent upon oil shipped

from the Persian Gulf, Japan's dependence is far greater and is much more vulnerable to SLOC interdiction by China, rather than the other way around.

While the Japanese Maritime Self Defense Force (JMSDF) has a current role in protecting SLOCs out to 1,000 nm from the main islands (roughly to the Bashi Channel between Taiwan and the Philippines), the interests of Japan in SLOC security must extend now to the South China Sea, the Straits of Malacca, and Singapore. This concern is already manifest in Japan's proposals for coast guard patrols in Southeast Asian straits and the South China Sea. Japan, as has already been noted, is actively pursuing co-operative arrangements and the formation of new coalitions to improve its SLOC security. Although Southeast Asian states are wary of a Japanese military presence or coalition proposals, offers of bilateral assistance, such as coast guard training, have generally been welcomed. Japan has been able thus far to establish bilateral co-operation with India, and some ASEAN states, especially those most worried about a rising China.<sup>54</sup> Most recently, for example, the Coast Guards of Japan and the Philippines completed an anti-piracy exercise off Manila Bay.<sup>55</sup>

Renewed Japanese attention to SLOC security and a new focus upon an expanded regional role for Japan's maritime security forces must be viewed in the context of Tokyo's growing concerns with China's maritime expansion. Japan's general concerns with the rise of China have been exacerbated by continuing incursions of Chinese naval and "research" vessels into Japanese waters, and into the disputed waters around the Senkakus and the two countries' overlapping EEZs, both of which have yet to be delineated. As an example of the current thinking on China within the Japanese defense establishment, Tokyo's latest Defense White Paper explicitly links such Chinese activities to China's "blue water" naval ambitions.<sup>56</sup> Predictably, Beijing has reacted sourly to the perceived tone of the White Paper.<sup>57</sup>

### ***Taiwan***

China remains Taiwan's sole external threat, and much of China's strategic modernization since the mid-1990s has been Taiwan focused. Taipei has been able to secure, in principle, some much needed new weapon systems from the Bush administration, many of which will be naval, including second-hand KIDD-class destroyers, maritime patrol aircraft and, eventually, new submarines. Time, however, may be on Beijing's side, as the overall correlation of forces across the Taiwan Strait will evolve increasingly to favor the mainland.<sup>58</sup> The US Defense Department also has identified many deficiencies in what it terms the "functional non-hardware" elements of Taiwan's defense efforts.<sup>59</sup> It would appear that Taiwan will face an extremely difficult challenge in trying to keep up with the naval developments of the mainland.

### ***Russia***

With a renewed focus on international activities as part of Russia's new draft naval doctrine, several Russian naval ships have been visiting different oceans,

including the Indian Ocean in 2001.<sup>60</sup> The new Russian naval doctrine calls for transforming the country back into a strategic force on the high seas,<sup>61</sup> and the resumption of visits to the Indian Ocean comes after years of decline of the Russian Navy under the Yeltsin regime. However, any “China threat” Russia may perceive is continental rather than maritime in character. Although Moscow is wary of supplying weapons and military technology to China that might one day be used against Russia, it has had no such reservations over naval systems. In fact, despite the rhetoric, Russia’s fiscally-induced strategic withdrawal seems to be continuing in the Pacific, with plans to abandon its Vietnamese naval base at Cam Ranh Bay before the lease expires in 2004.<sup>62</sup> With China’s continuing purchases of surface combatants and submarines from Russia, it is possible that heightened naval co-operation between China and Russia will emerge in the future.

### ***South Korea***

The Republic of Korea Navy (ROKN) has major plans to develop into a significant regional naval force with more powerful sea control capabilities, including large anti-air warfare (AAW) destroyers (the KDX-III, which will be broadly equivalent to the Japanese KONGO-class vessels),<sup>63</sup> and new generation submarines.<sup>64</sup> The first of the AEGIS-class KDX-III vessels could be deployed as early as 2008.<sup>65</sup> The aim is to have a full “blue water” navy.<sup>66</sup> These plans have only been dampened slightly by the economic downturn of recent years. It received a boost in March 2001 when President Kim Dae-Jung stated that “our Navy will have a ‘strategic task force’ for protecting the national interests and international peace in ‘blue water’ scale”.<sup>67</sup> The rationale for the new acquisitions lies with a concern for the security of sea-borne trade, a perceived need for self-reliance, longer-term prospects for reunification with North Korea (this occurrence would inevitably lead to the withdrawal of US forces from the Korean peninsula), and suspicions of both Japan and China. At the top end of the scale of surface warfare, the ROKN is also looking ahead to the possible acquisition of an aircraft carrier.<sup>68</sup>

The impact of the PLAN’s rise has had relatively little direct effect on South Korean strategy, with the communist forces of the North still the primary strategic focus, and Japan a secondary one. Nevertheless, Seoul would be sensitive to any disruption of its SLOCs through the East and South China Seas, which are currently protected by the USN. The rapid growth of South Korea’s Navy, and ocean-going ambitions of an influential Korean naval lobby,<sup>69</sup> however, may present future problems if the naval arms building programs of the Northeast Asian states become more competitive, or if Korean ships begin to operate farther afield, creating greater opportunities for unintended incidents at sea with Japanese or Chinese ships.

### ***Vietnam***

Vietnam has a land border with China that has been the scene of fighting on several occasions over the years. At sea, there have been engagements in recent decades between Chinese and Vietnamese naval forces in the South China Sea.

Despite this history of military clashes perhaps surprisingly, Vietnam is likely to be fairly relaxed about the rise of the PLAN. In Carl Thayer's words, Vietnam "has a less alarmist and more nuanced view of the so-called 'China threat' than Western powers because it does not perceive a rising China as a new phenomenon".<sup>70</sup> Vietnam and China reached an agreement on the maritime boundary in the Gulf of Tonkin in December 2000, including arrangements, apparently, for joint resource management and law enforcement.

### ***Southeast Asia***

The other Southeast Asian countries will likely be split on their perceptions of the rise of the PLAN and whether or not they perceive there to be a "China threat". The Philippines is the only state that is likely to perceive a definite threat. Burma, Thailand, and Malaysia will be more ambivalent and will prefer to accommodate China rather than subscribe to any moves to contain it. Burma continues to operate maritime surveillance systems and coastal signals intelligence stations in co-operation with China along the Bay of Bengal to gather intelligence on Indian naval activities and monitor traffic passing through the Malacca Strait.<sup>71</sup>

Singapore will be pragmatic and, while offering base facilities to the USN and undertaking military training in Taiwan, will steer a "middle course" with China. There is no doubt, however, that Singapore values the US presence: in the words of one Singaporean Member of Parliament, "We want the Yankees here".<sup>72</sup> Efforts by India to woo some Southeast Asian states, and Indonesia in particular, into a *de facto* coalition that has a thinly veiled objective of containing China are likely to be unsuccessful. This is especially the case as long as the medium-term foreign policy bias of the new Indonesian regime remains undetermined, at least to outside observers. Added to the circumspection of most Southeast Asian states of being drawn into an anti-China coalition, there remains a general political-cultural predisposition opposed to multilateralism and institutionalized security co-operation in the sub-region.<sup>73</sup>

There is a tendency to regard Northeast and Southeast Asia as almost separate strategic regions. While their problems may be different, they are in fact closely entwined with each other. This is particularly so with maritime issues due to the linkages through sea-borne trade, resource exploitation, the inherent mobility of naval forces and the potential influence at sea of China in both sub-regions. On the one hand, the countries of Northeast Asia face a major maritime security problem with maintaining the free movement of shipping through the confined waters of Southeast Asia. On the other hand, the straits states of Indonesia, Singapore, and Malaysia are aware of the potential strategic leverage they gain by their proximity to, and potential control over, these strategic waterways. It may be expected that, in the future, China will display a keener interest in the security of these waterways.

### ***India***

India is potentially the Southern anchor for the containment of China with its "Look East" policy and activities. In early 2001 Indian Defense Minister,

George Fernandes, said that “there was recognition that the Indian Navy would have to play a role in sea lanes extending as far as Japan”, and that, “they would also be engaged in combating piracy”.<sup>74</sup> India and China have long shared a traditional, if low-key, rivalry. That rivalry has intensified, however, due to China’s on-going assistance to Pakistan’s nuclear weapon program and India’s subsequent nuclear tests. In light of the China–Pakistan relationship, China’s military activities in Burma have been treated with increasing suspicion in New Delhi, especially when there is a naval component involved.<sup>75</sup>

Any PLAN presence in the Indian Ocean, therefore, is deemed by India to be a threat; the Indian Navy has explicitly identified China and the PLAN as its primary strategic challenge in the twenty-first century.<sup>76</sup> India is the Asian country that will most likely challenge China’s maritime interests. As Malcolm Davis has observed, “Growing military competition between China and India—played out in the constrained waterways of Southeast Asia—looks likely in coming years, and may fuel a dangerous arms race between the two nuclear-armed Asian giants”.<sup>77</sup> An interesting sidelight to this situation is the role played by Russia as the principal overseas supplier of warships, submarines, naval systems, and combat aircraft to both countries, and Moscow’s reaction to any Sino-Indian conflict.<sup>78</sup>

Until recently, Indian warships rarely visited East Asian waters and there is no precedent for prolonged Indian naval operations east of the Malacca and Singapore Straits. It could well be India’s strategic aspiration, however, to be able to control (or at least threaten) the movement of shipping through the choke point based on these key strategic straits, as well as ships in the focal area South of Sri Lanka. The objective would be to be able to disrupt the tanker traffic between the Middle East and Northeast Asia, as well as the movement of warships and submarines through the straits in the event of conflict with China. Much of the naval competition between China and India may come to be focused in the strategic waterways of Southeast Asia and their approaches in the Bay of Bengal and the South China Sea.

In recent times, India has been courting Vietnam and Indonesia, perhaps seeing these two countries as being more prepared to take an anti-Chinese position. India and Indonesia have recently signed a defense co-operation agreement that commits the two countries to establishing a commission to coordinate activities in fields including training, technical assistance, and the supply of defense equipment. India has conducted naval exercises with Vietnamese naval vessels in the South China Sea while the Indian Coast Guard has held joint training exercises with Japan in the Bay of Bengal.<sup>79</sup> Significant Indian naval force development plans include the acquisition of a second-hand Russian aircraft carrier, the ADMIRAL GORSHKOV, and the projected lease of a nuclear-powered attack submarine.<sup>80</sup>

In addition to its growing security linkages with ASEAN states, there is also a prospect of greater levels of security co-operation between New Delhi and both Washington and Tokyo following the September 11 terrorist attacks in America. In high-level meetings between India and the United States, for example, it is believed that talks involved such issues as giving India a role in protecting oil tankers transiting from the Persian Gulf to Northeast Asia during the Indian

Ocean leg of the journey.<sup>81</sup> India also has been involved in a growing informal security relationship with Taiwan.<sup>82</sup>

### ***United States***

The dilemma that the rise of the PLAN presents for the United States recently has been summed up as follows: "For the United States—and particularly the Department of Defense—the choices are clear: engage with the Chinese military and seek out ways and means to enhance mutual understanding, or permit the militaries of both nations to stand off and continue to view each other with suspicion".<sup>83</sup> Meaningful engagement will prove difficult, however, as China's strategic modernization and, in particular, its access denial capabilities, will increasingly challenge American maritime supremacy in East Asia over time. For the immediate future, the United States remains committed to the region and to defending its allies and Taiwan.<sup>84</sup>

The US Pacific Command has been active in its coalition-building activity, which has had an (at least) secondary mission to act as part of its counterbalancing of China, albeit with little tangible success to date. America's alliances, especially that with Japan, have been rejuvenated, and Washington has signaled in its Quadrennial Defense Review an intention to shift forces and strategic emphasis from the European to the Asian theater.<sup>85</sup> Much of the thinking behind these moves revolves around a sound understanding of the Chinese challenge to the United States guaranteed regional security order, although the long-term consequences of September 11 for US national security strategy—and the implications for East Asia—are yet to be determined.

### **Fuelling a naval arms race?**

The regional maritime security situation seems more dangerous now than it was in the early 1990s, with some observers arguing that a naval arms race is now evident in the region.<sup>86</sup> Most regional countries appear committed to resuming robust programs for modernizing their maritime forces. This current surge in naval spending has more serious overtones than the increased naval expenditure of the early last decade prior to the economic downturn of 1997–98.<sup>87</sup> The "first round" of naval expansion appeared part of an understandable, non-threatening process of modernization.<sup>88</sup> This does not seem the case with the "second round" of naval expansion, which appears to be, based more on assessments of threats posed by other regional countries. The proliferation of submarines and advanced anti-ship cruise missiles are particularly significant developments.

Naval developments in the region are driven by perceptions of threats and maritime insecurity. Many of these concerns are related either directly or indirectly to China although many regional countries maintain long-standing perceptions of threats from their neighbors. Some East Asian navies, which previously had only limited coast guard-type functions, are building up enhanced offshore capabilities—not only highly capable surface combatants and submarines, but

also significant numbers of aircraft for both maritime strike and surveillance. All indications are that the first years of the new millennium will be a growth period for maritime security forces in East Asia. Naval expansion is being justified on the basis of pessimistic assessments of maritime security; navies will concentrate on their war-fighting role, while separate coast guards are being developed to meet the EEZ surveillance and patrolling/sovereignty protection requirement.<sup>89</sup>

The proliferation of submarines in East Asian waters has major implications for trust and confidence-building. Indonesia has operated submarines for many years. Singapore has recently moved into submarines with the acquisition of four refurbished boats that previously belonged to the Swedish Navy.<sup>90</sup> Malaysia is planning the lease or purchase of up to four submarines to boost its combat capabilities and protect its SLOCs.<sup>91</sup> The Royal Thai Navy (RTN) also plans to lease one or two second-hand submarines from Germany “to keep up with the underwater ambitions of neighbors Malaysia and Singapore”,<sup>92</sup> but these plans were later put on hold.<sup>93</sup> They would also provide protection for the RTN’s main capital asset, its aircraft carrier. With the exception of the Russian Pacific Fleet, the PLAN is the only regional navy with SSNs and SSBNs. You Ji predicts that the number of nuclear submarines in the PLAN will reach over a dozen by early in the 2000s.<sup>94</sup>

In view of the increasing number of submarines in the region,<sup>95</sup> the safety of submerged submarine operations should become of particular concern to regional navies. The regional ASW capability is also increasing with the consequent probability that “intruder submarines may be detected, particularly in territorial seas or disputed waters”. This may create a potentially serious situation if there is tension between the countries that could be involved, or if the detection is made in a sensitive area. It may be necessary to consider the establishment of a regional submarine Movement Advisory Authority (or water space management regime)<sup>96</sup> along the lines of the procedures currently followed by NATO and other Western navies. This would be difficult, however, in view of the essentially sensitive nature of submarine operations. The concern for submarine safety in the region was demonstrated by the four-nation combined submarine rescue exercise held in the South China Sea in October 2000.<sup>97</sup>

A naval arms race in the region is evident not only on the demand side with regional countries seeking new ships, submarines, aircraft, and advanced military systems but also on the supply side with the manufacturers of these items pushing their products strongly. With a barely discernible hiccup during the economic crisis of the late 1990s, Southeast Asian nations in particular have been subjected to an aggressive marketing campaign by the sellers of ships, aircraft, missiles, sensors, communications systems, and so on. Arms manufacturers from Europe and North America have turned to East Asia for a market to replace the falling demand in their domestic markets as a result of their smaller defense budgets in line with the “peace dividend” of the post-Cold War era. The marketing campaigns often include conferences held in conjunction with defense exhibitions that promote ideas of regional instability and the “new threat” from China.



The growing military manufacturing base of East Asia includes joint ventures formed between overseas defense manufacturers and domestic companies to promote national military production. In turn, this may lead to export production, with only Japan refraining from selling its military products abroad out of deference to regional sensitivities and constitutional limitations. It is also significant that of all regional countries, China has progressed the furthest in developing a military-industrial/manufacturing establishment capable of producing a full range of conventional weapons, including ships, submarines, and aircraft.<sup>98</sup>

## **Regional maritime security and co-operation**

### ***Regional security co-operation***

The upsurge of interest in multilateralism in the Asia-Pacific in the 1990s is manifest particularly in the formation of the ASEAN Regional Forum (ARF) to discuss Asia-Pacific regional security issues. A central aim of the ARF was to bring China into a process of dialogue. China is playing a responsible role in the region (e.g. in the South China Sea). The ARF (and the “Track II” Council for Security Co-operation in the Asia-Pacific—CSCAP) are important forums for the engagement of China on regional security issues. China uses its participation in these forums as a CBM,<sup>99</sup> while perhaps still being hesitant to operationalize many of the measures that are discussed, except for low-key naval ship visits and similar activities.<sup>100</sup> Clearly, there can be no substantial progress with any form of confidence building or “preventive diplomacy” in East Asia without the involvement of China.<sup>101</sup>

“Second track” forums have utility for establishing maritime security frameworks, particularly by spreading awareness of problems and identifying potential solutions that may be too sensitive or embryonic for consideration at a “first track” level. Notable “second track” maritime security forums include the CSCAP Maritime Co-operation Working Group and the annual Workshops for Resolving Potential Conflict in the South China Sea. After some initial hesitation, China now plays an active role in these two forums. The main contributions of the CSCAP Working Group have been the development of CSCAP Memoranda on *Guidelines for Regional Maritime Co-operation*,<sup>102</sup> and *Co-operation for Law and Order at Sea in the Asia-Pacific*.<sup>103</sup> The Working Group is now working on a prospective memorandum on the LOSC in the Asia-Pacific.

The biennial international SLOC conferences are another example of a relevant “second track” forum. These date back to the 1980s and have the objective of fostering the common interest of Asia-Pacific countries in the security of SLOCs.<sup>104</sup> Recent conferences have been held in Taipei, Tokyo, and Seoul with the last in Canberra in April 2001. Unfortunately, despite attempts to secure Chinese participation in these conferences, these have so far not been successful. As there is no formal membership procedures for participation in the SLOC process, however, it is unlikely that the non-participation of China is due to the leading role of Taiwan in the process.



***Naval co-operation***

Naval co-operation and dialogue are often put forward as a possible means of reducing naval competition and tensions. Naval co-operation encompasses *all* military activities associated with the sea, recognizing that in some regional countries, maritime aircraft are operated by the air force. It can be both a potential maritime CBM in its own right and an important subset of broader maritime co-operation.<sup>105</sup> Its scope ranges from low-key, confidence-building activities (e.g. ship visits, fleet reviews, personnel exchanges, navy-to-navy talks, and multilateral naval conferences) through more ambitious activities (such as information/intelligence exchanges, joint doctrine development, standard operating procedures (SOPs) for exercises and peacetime operations, bilateral and multi-lateral exercises, avoidance of incident at sea (INCSEA) agreements, naval peacekeeping, and co-operation on tasks such as marine scientific research and countering piracy) to the top end of combined operations (e.g. co-operative maritime surveillance, standing regional naval forces, co-operative SLOC protection, and mine-countermeasures).

The 1972 agreement between the United States and the former Soviet Union to prevent incidents on and over the high seas is an excellent example of a practical maritime CBM, which has stood the test of lengthy and demanding operational experience.<sup>106</sup> Bilateral "Incident at Sea" agreements were also negotiated between the Soviet Union and several other Western European navies. Russia has now signed INCSEA Agreements with Japan and South Korea. In January 2001, the navies of Indonesia and Malaysia agreed the MALINDO Prevention of Sea Incident Co-operative Guidelines that provide standard safety procedures to apply during unscheduled encounters at sea between units of the two navies.<sup>107</sup> A consequence of the US surveillance aircraft incident with China in April 2001 may be a full INCSEA agreement, rather than the existing, limited Military Maritime Consultative Agreement.<sup>108</sup> The region would welcome any such outcome.

Unfortunately, the mindset among some navies in the region, including the PLAN, still seems opposed to exploring the potential for further, more meaningful co-operative activities. This is due in part to the historical legacy in the region of conflict and confrontation, political sensitivities, and the lack of preparedness (or political authority) of any regional navy to take the lead with initiating co-operative activities. During discussions in the CSCAP Maritime Co-operation Working Group on the "Guidelines for Regional Maritime Co-operation", representatives of several countries, including China, were concerned that some of the guidelines could imply a significant abrogation of their claimed sovereignty at sea. They considered that adherence to the guidelines could involve some reduction of their rights to independent action.<sup>109</sup>

The Chinese delegates also were not comfortable with the particular guidelines that sought to encourage naval co-operation. This was on the apparent grounds that China did not engage in naval co-operation itself and possibly would feel threatened if some navies were co-operating while other navies did not. As an indication of the modest progress that has been made, a Chinese participant at the

ninth meeting of the Working Group in Beijing in November 2000 presented a paper on naval co-operation. The PLAN also participated as an observer at the First Western Pacific Mine Countermeasures exercise held under the auspices of the Western Pacific Naval Symposium (WPNS) in Singapore, June 2001.

The navies that do engage in co-operative activities must be careful that they do not send the wrong signals to the other navies by appearing to be members of an exclusive club. For this reason, the WPNS offers on-going potential as an *inclusive* forum. The “bottom line”, though, is that something has to be done to avert the undesirable consequences of the current pace of naval force development continuing in the region. This is a particularly acute need, given the historical background of regional naval conflict and tensions, particularly in Northeast Asia.

### ***Confidence-building***

There is little prospect of the current rate of naval development in East Asia slowing down. Hence, it is important to work towards a regional security environment where navies do not have the justification to acquire the types and numbers of ships, aircraft, and submarines under procurement at present. With current force structure developments, and while potential causes of conflict exist, particularly in the South China Sea, there is a risk of misunderstanding between maritime forces with the ships, submarines, and aircraft of so many different nations all operating in similar areas. The risks involved are heightened by the semi-confined nature of East Asian seas, by potential causes of conflict, such as overlapping claims to maritime jurisdiction and fisheries disputes, and by the presence of submarines and long-range missile systems. The latter require well-developed procedures and effective command and control if errors and miscalculations are to be avoided.

All of this suggests the importance of maritime confidence-building in East Asia. Regional navies themselves have some role to play in developing the necessary measures, particularly with regard to transparency and contributing a naval dimension to processes of dialogue and co-operation. It will be difficult to coax the PLAN into taking a *meaningful* role in such developments; nevertheless, it is vital that China, as the rising maritime power of East Asia, becomes more deeply involved if this CBM activity is ultimately to be successful.

### **Conclusion**

East Asia seems to be facing an unprecedented period of maritime strategic competition between the major regional strategic players, with dangerous overtones for the security of the entire Asia-Pacific, and a risk that this competition might spill over into the Indian Ocean. There exists a high potential for sustained confrontation between the major powers, even of outright conflict. However, the regional balance of power continues to shift in favor of China, which will become the one major regional maritime power. While some nations will seek to contain the strategic rise of China, these efforts are hardly preordained to be successful.

Potentially, they might lead to further deterioration in the regional security environment and, even, open conflict. Such efforts also may influence China to hasten the pace of expansion of the PLAN and reduce any incentive to step back from its “excessive” maritime claims, thus hindering the resolution of East Asia’s leading maritime sovereignty disputes.

Overall, there is increased scope for both maritime competition and tensions over maritime issues to intensify in East Asian seas. This highlights the importance of a co-operative approach to oceans’ management and maritime confidence- and security-building. China provides the main challenge in implementing this approach. In the future, China probably will dominate the maritime scene of East Asia through its shipping and fishing interests, growing naval power, and extensive offshore areas under some degree of Chinese jurisdiction. Already, tension is evident to a large degree in the narrow seas of East Asia as a consequence of the rise of China as a maritime power, including the slow, but steady, modernization of the PLAN.

The current trends will only be reversed through a sustained process of confidence and trust-building, facilitated by the development of strong regional multi-lateral security frameworks. This will only occur, however, if there is a change to the political mindsets of all regional states. China must be closely engaged in the confidence-building process, preferably leading to the development of codes of conduct in disputed areas and INCSEA agreements between regional navies, especially between the PLAN and both the USN and JMSDF. The daunting challenge facing regional states is to defend the existing geopolitical order in ways that do not exacerbate tensions with China. Nor must they lead to open conflict across Asian seas that would endanger the entire political and economic fabric of the region.

## Notes

- 1 The Chinese White Paper on *The Development of China’s Marine Programs* issued in 1998 notes that: “China has made positive contributions to international ocean development and protection by participating positively in UN marine affairs, promoting co-operation between countries and regions and conscientiously carrying out its obligations in this field”. Information Office of the State Council of the PRC, *The Development of China’s Marine Programs*, Beijing, May 1998. Also available on the World Wide Web at <http://www.chinanews.org/WhitePapers/sea-e.html>.
- 2 John Pomfret, “China Plans Major Boost in Spending for Military”, *Washington Post*, March 6, 2001, <http://www.washingtonpost.com/wp-dyn/articles/A26882-2001Mar5.html>.
- 3 Malcolm R. Davis, “Back on Course”, *Jane’s Defense Weekly*, January 24, 2001, pp. 22–24.
- 4 Bernard D. Cole, “China’s Maritime Strategy”, Susan M. Puska (ed.), *People’s Liberation Army after next*, Carlisle, PA: Strategic Studies Institute, US Army War College, August 2000, pp. 279–80.
- 5 You Ji, *The Armed Forces of China*, St. Leonards, NSW: Allen & Unwin, 1999, p. 170.
- 6 Cole, “China’s Maritime Strategy”, p. 302.
- 7 Rear Admiral Michael McDevitt USN (Rtd), “Where is China’s Navy Headed?”, *US Naval Institute Proceedings*, May 2001, p. 58.

- 8 You Ji, *The Armed Forces of China*, *op. cit.*, p. 15.
- 9 China has been steadily increasing its contacts and involvement in the South Pacific and Southeast Asia in recent years. Stratfor Strategic Forecasting, "China looks to the South Pacific", May 21, 2001, <http://www.stratfor.com/asia/commentary/0105212250.htm>.
- 10 These systems will overcome a significant current deficiency of the PLAN's major surface combatants that makes them highly vulnerable to air attack once they deploy beyond the range of land-based air cover.
- 11 Davis, M. "Back on Course", *op. cit.*
- 12 Donald J. Evans, "Beijing Commits to Carrier Aviation", *Defense & Foreign Affairs Strategic Policy*, Vol. 29. No. 9, September 2001, p. 12.
- 13 Malcolm R. Davis, "China's Security Aspirations for the 21st Century and Challenges for East Asia", *Asia-Pacific Defense Reporter*, August/September 1999, pp. 10–11.
- 14 You Ji, *The Armed Forces of China*, *op. cit.*, p. 18.
- 15 As of January 1, 2000, China and the Hong Kong (SAR) combined had the third largest merchant shipping fleet in the world with 2,496 vessels (over 1,000 dwt) totalling 69.5 million dwt after Greece (3,167 vessels and 131 million dwt) and Japan (2,862 vessels and 95.2 million dwt). These figures include ships both under the national flag and those under a flag of convenience. Institute of Shipping Economics and Logistics, *Shipping Statistics and Market Review* (SSMR), No. 4, April 2000, table I-1.1, p. 19.
- 16 Wayne Hugar, "Is China Taking a Great Leap Forward in Shipbuilding?", *US Naval Institute Proceedings*, July 2001.
- 17 See, for example, "Oil Industry Enjoys Great Potential for Development", *Beijing Review*, 22–28 June 1998, pp. 15–16.
- 18 See A.T. Mahan, *The Influence of Sea Power upon History, 1660–1783*, 5th edn, New York: Dover Publications, 1987 (5th edn first pub. 1894), Ch. 1.
- 19 Information Office of the State Council of the PRC, *The Development of China's Marine Programs*, Beijing, May 1998. For background on the expansion of China's marine industries and maritime interests, see Alexander Chieh-cheng Huang, "Chinese Maritime Modernization and Its Security Implications: The Deng Xiaoping Era and Beyond", PhD dissertation, George Washington University, 1994; and David G. Muller, *China as a Maritime Power*, Boulder, CO: Westview Press, 1983.
- 20 John Reeve, *The Development of Naval Strategy in the Asia-Pacific Region 1500–2000*, Royal Australian Navy Sea Power Centre Working Paper No. 4, Canberra, RAN Sea Power Centre, May 2000, p. 3.
- 21 *Ibid.*, p. 4.
- 22 On the strategy of "offshore active defense", see Alexander Chieh-cheng Huang, "The Chinese Navy's Offshore Active Defense Strategy: Conceptualization and Implications", *Naval War College Review*, Vol. XLVII, No. 3, Summer 1994, pp. 7–32.
- 23 You Ji, *The Armed Forces of China*, *op. cit.*, pp. 8–9.
- 24 As demonstrated, for example, by the profile of PLAN participation in the Western Pacific Naval Symposium, the exchange of naval port visits with other countries in the Asia-Pacific and attendance at overseas staff colleges and conferences.
- 25 Biliana Cicin-Sain and Robert W. Knecht, *The Future of US Ocean Policy—Choices for the New Century*, Washington DC: Island Press, 2000, pp. 33–34.
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- 27 Max Herriman, "China's Territorial Sea Law and International Law of the Sea", *Maritime Studies*, No. 92, January–February 1997, p. 16.
- 28 Bradford L. Thomas and Daniel J. Dzurek, "The Spratly Islands Dispute", *Geopolitics and International Boundaries*, Vol. 1, No. 3, Winter 1996, p. 308.

- 29 Gao Zhiguo, "The South China Sea: From Conflict to Co-operation", *Ocean Development and International Law*, Vol. 25, 1994, p. 346.
- 30 Bill Gertz, "China Deploys Warships", *The Washington Times*, June 25, 2001, [www.washtimes.com](http://www.washtimes.com).
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### **3 China's strategy toward the South China Sea**

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The South China Sea is often regarded as one of the three major flashpoints in East Asia (the other two being the Korean Peninsula and the Taiwan Strait). The Sea's flashpoint was most recently highlighted by the Hainan Island Incident of April 2001 when a Chinese fighter collided with a United States Navy (USN) surveillance EP-3 aircraft.<sup>1</sup> The South China Sea has key strategic importance both in terms of the sea lanes of communication (SLOCs) that criss-cross the body of water and the natural resources it contains.

This area—or at least portions of it—is claimed by six states, including Taiwan. The People's Republic of China (PRC) is clearly the main protagonist—the most ambitious and assertive claimant to maritime territory in the South China Sea. This chapter examines Chinese intentions and actions toward the area.<sup>2</sup> It suggests that China's strategy since 1970 is best understood with reference to the concept of “slow intensity conflict”. A half-century of PRC policy is divided into three phases, each signifying a gradual “ratcheting” up of efforts to assert control over the South China Sea. Conflict scenarios and the potential for a peaceful resolution of the conflict are also examined.

China's territorial claims in the South China Sea put it at odds with four Southeast Asian countries and the Republic of China on Taiwan (hereafter “Taiwan”) that also have claims to portions of the sea.<sup>3</sup> Various islands, reefs, and waters are claimed by Brunei, China, Malaysia, Indonesia, the Philippines, Vietnam, and Taiwan.

#### **China's intentions: realizing full sovereignty**

What are China's intentions concerning the South China Sea? There can be little doubt that Beijing seeks to acquire what amounts to complete sovereignty over the South China Sea. China has consistently and persistently claimed sovereignty over the islands, atolls and reefs, and their surrounding waters since the early 1950s—but particularly since the 1970s—and its actions have only reinforced these claims.<sup>4</sup> Why has China pursued its claims in the South China Sea? Opinions differ on what are the forces driving Beijing: some contend domestic political factors are key; others argue China is seeking energy security; and still more contend that China simply views the region as being of major strategic importance.

The first explanation is that domestic political constituencies are driving China to actively pursue its territorial claims in the region. This manifests itself on two levels—on the general principle of sovereignty, and at the level of bureaucratic politics. On one level, in terms of a sensitive issue of sovereignty, China's rulers are afraid of looking soft on territorial questions. Whereas strong leaders, such as Mao Zedong or Deng Xiaoping, could dispense with such a sovereignty issue without a second thought, Jiang Zemin, because he was much weaker, could not afford to be anything but hardline.<sup>5</sup> On another level, certain powerful constituencies have strong interests in pursuing China's claim. The Chinese People's Liberation Army Navy (PLAN) for one, has an obvious bureaucratic interest in vigorously moving forward on China's claim the South China Sea—a issue it argues that is “second only to Taiwan”.<sup>6</sup>

A second reason—concern over energy security—is very plausible, given that China is very worried about its future energy needs.<sup>7</sup> China is particularly alarmed about its dependence on foreign oil. An important indication of this is that Beijing is seeking to establish a strategic oil reserve with at least 30 days supply.<sup>8</sup> The South China Sea is both a potentially lucrative source of petroleum and natural gas as well as a transit region for oil tankers from the Middle East bound for Chinese and East Asian destinations. While China is likely to need increasing amounts of oil, most of its energy requirements will probably continue to be met by coal. That oil, however, will probably not come from the South China Sea. Nevertheless, many in Beijing appear convinced that the area contains vast reserves of oil (and gas) to the extent that the South China Sea has been referred to as “the Second Persian Gulf”.<sup>9</sup>

Indications are that there are not substantial reserves of oil here and, in any event, transporting any oil that is discovered will challenge China's capabilities. Oil pipelines, while easy for Beijing to propose, are extremely difficult (and expensive) to build; the same is true for gas discoveries and pipelines. China is therefore likely to become more dependent on Middle East oil with the critical issue here being one of protecting oil tankers traversing the South China Sea.<sup>10</sup>

A third possible reason is simply that the region is viewed as being of vital strategic importance to China.<sup>11</sup> The oceans loom ever larger in China's future for which Beijing has crafted a “maritime strategy”.<sup>12</sup> Fisheries are of great importance to it and the South China Sea accounts for approximately one quarter of China's aquatic produce. Falling catches and fishing restrictions in China's waters have led to Chinese fishing fleets venturing further a field and encroaching on the territorial waters of Southeast Asian states.<sup>13</sup> Moreover, according to some estimates, 30 percent of China's oil and 50 percent of its iron ore, and as much as 90 percent of its entire international trade comes via sea.<sup>14</sup>

The South China Sea is dissected by SLOCs and access is restricted to key choke points such as the Strait of Malacca. More than half the world's merchant shipping traffic in a given year traverses the South China Sea via the Straits of Malacca, Lombok, or Sunda. Furthermore, the Strait of Malacca sees three times the oil tanker traffic of the Suez Canal and more than five times the tanker traffic of the Panama Canal.<sup>15</sup> If the South China Sea is primarily a SLOC issue, then

China might continue to take the “free rider” option and rely on the USN protection of its merchant fleet. Alternatively, China might consider enlarging the PLAN so as to take on this responsibility itself.<sup>16</sup>

Beijing is interested in the South China Sea because it has great power ambitions and is unwilling to compromise on the question of sovereignty—both are at stake in this case. Certainly, China’s leaders think there is a good chance that energy resources lie beneath the South China Sea, there are important domestic political factors driving activities in the region, and without a doubt there is a good strategic rationale for China dominating the South China Sea. But most importantly China dreams of being a world power and it seeks tangible ways to realize this dream.<sup>17</sup>

At the very least, China desires to ensure its territorial security. According to one researcher, writing in early 2001: “At the same time that China’s land boundaries [have] reached an unprecedented stability, incidents of incursions and disputes over our sea territory grow more serious by the day, with China’s sovereign oceanic rights and resources are being taken over by foreign countries”.<sup>18</sup> Beijing wants to become a maritime great power and the South China Sea is China’s own backyard. If China cannot make good on its claims in the South China Sea, then it is unlikely to be able to exert power elsewhere in the Asia-Pacific. Hence, “China will take considerable political risks to pursue its perceived rightful claims in the South China Sea”.<sup>19</sup>

In short, China wants to expand its influence in maritime Southeast Asia. Of course, delivering on this ambitious goal is another matter. Will China rapidly build up its blue water fleet, or not? The PLAN still seems to be a relatively low budget priority when compared with the PLA’s ground and air forces. It appears that China is not committed to a rapid naval build up. While greater attention was given to sea power in the 1980s and 1990s, naval development continued at a “measured pace”.<sup>20</sup> Hence there is the need for a strategy that does not require a large navy.

### **Slow intensity conflict**

Since China is unlikely to focus on an accelerated naval build up, it will focus on a strategy suitable for a country with a weak navy. China has refrained from launching an all-out military operation to expel the forces of other states, in part because it lacks the capability and in part because this would be harmful to Beijing’s grand strategy for enhanced economic integration and transportation links with Southeast Asia.<sup>21</sup> Instead, Beijing has engaged in what is called “slow intensity conflict”.<sup>22</sup> Unlike “low intensity conflict”, “slow intensity conflict” (SLIC) entails the possibility of conventional war-fighting. Indeed, SLIC includes war between the regular armed forces of different states, but this tends to be primarily small units battling in rather minor and infrequent skirmishes. SLIC entails a protracted struggle waged with all the instruments of national power, not just military but also diplomatic, economic, and informational. China maintains

a diplomatic position of seeking negotiated solutions to disputes and officially advocates joint exploitation of the region's natural resources. Beijing's record of actions, however, belies this co-operative rhetoric.

In SLIC there is no battle for the hearts and minds of local civilian inhabitants because the disputed area is an uninhabited maritime region. Instead, there is a stealth-like struggle to divide and lull the other claimants into believing that no conflict exists. Mark Valencia recently remarked, "China's strategy will continue to be a combination of dividing and dominating; obfuscation and ambiguity; careful timing; and selective assertiveness".<sup>23</sup> A decade earlier, John Garver observed: "China's slow expansion through the South China Sea during the 1970s and 1980s was made up of a seamless web of military build ups, establishment of administrative and logistic networks, military exercises and clashes, and diplomatic maneuvers".<sup>24</sup>

The potential for escalation in SLIC is quite low. When it does occur, however, it happens gradually. The tempo of operations is likely to be erratic because of the command, control, and communication difficulties that plague all the disputants in the area. SLIC makes it difficult for other claimants to keep their attention focused on the issue and coordinate with neighbors, and none of the parties, including China, has any interest in seeing a full-scale war break out.

The past five decades have only seen a gradual "ratcheting up" of China's efforts to assert its sovereignty over the South China Sea. These decades can be divided into three periods corresponding to changes in the level of interest and activity directed toward the maritime region.

### **Pre-SLIC phase (rhetoric without action): 1949–69**

The PRC has long claimed all the major islands, atolls, and reefs in the South China Sea, claims that have been clearly staked out in Chinese maps of the region since 1949. For the first two decades of its existence, the PRC has not been in a position to make good on its claims. The PLAN simply did not have the capability to maintain a long-term presence in the region either in the form of establishing a permanent base or dispatching regular patrols.

In this period, the PRC laid claim to the South China Sea but never backed these statements up with actions. An important reason was that it simply lacked the necessary naval forces. Moreover, Beijing was preoccupied with other issues both foreign and domestic. In the early years of its existence, the PRC was preoccupied with establishing control over the mainland and waging a war on the Korean Peninsula. In the late 1950s and 1960s, border wars with India and the Soviet Union and internal upheavals resulting from the Tibetan revolt, the "Great Leap Forward", and the "Cultural Revolution" gave Beijing no time to focus on what was considered a remote maritime frontier. Moreover, a fundamental strategic assumption throughout much of this period was the possibility of a global war and the primary scenario was a land invasion of China. Any attention beyond these continental concerns invariably focused on Taiwan.

### **SLIC phase one: 1970 to the late 1980s**

In this second period, China took a more proactive approach to the South China Sea. By the early 1970s, this had changed as Chinese forces began to opportunistically seize islands in the region. First of all, it became far more interested in the maritime region and began to establish a naval presence. In the 1970s, the PLAN began surveying the Easternmost island group of the Paracels and set up a weather station on the largest island within the archipelago. The following year, a harbor and wharf were constructed at Woody Island. The more dramatic indication of this change was the clash between Chinese and South Vietnamese forces in January 1974. Eight PLAN surface combatants defeated four Republic of Vietnam naval vessels and seized control of the Western group of the Parcel Islands.<sup>25</sup>

By the mid-1970s, China perceived a less immediate threat from the then Soviet Union, in part because of its rapprochement with the United States. Nevertheless, China still felt surrounded by the Soviets and Soviet client states, a concern that only intensified by the late 1970s. Under Deng Xiaoping, China began a strategic reorientation away from a purely continental focus and toward greater attention to the littorals. There was a primary national concentration on economic development by means of market reforms and the opening up of China's domestic market to foreign investment and international trade.

It was the coastal regions of China, the Southern province of Guangdong in particular, that received the lion's share of attention. National unification was also a high priority initiative during the 1980s and by 1989 this effort could be regarded as having achieved impressive results. Agreements had been reached with London and Lisbon for the return to Chinese control of Hong Kong and Macao. Furthermore, a modest but significant breakthrough had occurred in mid-1988 with the first face-to-face meeting between representatives of Taipei and Beijing to deal with a hijacked China Airlines cargo jet.

### **SLIC phase two: late 1980s to the present**

It was not until the late 1980s, however, that Beijing undertook a more purposeful and coordinated effort to expand its presence in the South China Sea. In this third period, Beijing utilized legal, economic, and diplomatic instruments as well as military, in an unmistakable campaign to gain the upper hand.

By the late 1980s, some strategists recognized that China's continued economic growth and security interests required more attention to securing energy resources, protecting China's maritime regions and its SLOCs. A key strategic thinker was Admiral Liu Huaqing, a Long March veteran, who had focused since the early 1950s largely on the PLAN. He was appointed Commander in Chief of the Chinese Navy in 1982, and then joined the Central Military Commission as a Vice Chair in 1987.<sup>26</sup> As China's merchant shipping tonnage grew in the reform era, so did Beijing's interest in protecting its ships. Moreover, if China was to make good on its claims to maritime territories, then a build-up of the PLAN was vital.

In 1988, Hainan Island became the 30th province-level administrative division in the PRC. Prior to this, it had been an administrative district (*xingzheng qu*) under the jurisdiction of Guangdong Province.

The creation of a new island province was certainly not undertaken without considerable thought. There were multiple reasons behind the move, but one of the more significant was the need to provide greater stimulus for economic development of coastal China and for this particular backward island that had shown considerable potential for growth.<sup>27</sup> The new province formally included not just Hainan itself but also all the islands claimed by China in the South China Sea. There was also a larger strategic rationale behind the creation of a new maritime province. China had greater interest in natural resources such as energy and fisheries that seemed to exist in abundance in the South China Sea.<sup>28</sup>

In March 1988, PLAN forces engaged Vietnamese naval units at Johnson Reef in the Spratlys; the outcome was that the Chinese came out on top. According to Vietnamese sources, three Vietnamese troops were killed, seventy-four were missing. China then went on to occupy seven nearby islands.<sup>29</sup> It also appears that in the late 1980s the PLAN was preparing a larger offensive to seize the Spratly Islands from Vietnam by force, but it never did.<sup>30</sup> A combination of the domestic upheaval surrounding the nationwide protests in the spring of 1989, the crackdown that followed, fiscal retrenchment, and a desire to avoid raising tensions in China's foreign relations resulted in the abandonment of any military plans in the South China Sea.

Instead of a naval operation, Beijing launched a diplomatic offensive. In 1990, China held out an olive branch to Southeast Asian states: in August Premier Li Peng proposed holding discussions about the joint development of the Spratlys. A year later, the Director of Asian Affairs of the PRC Ministry of Foreign Affairs led a delegation to a multilateral forum in Bandung hosted by Indonesia.<sup>31</sup>

The passage of the 1992 National Maritime Law underscored China's growing interest in the region and its determination to make clear Beijing's ownership of the islands, atolls, and reefs in the South China Sea and the resources located in the region.<sup>32</sup> In the aftermath of the Gulf War, China became more aware of the importance of energy security and the South China Sea was both a potential source of petroleum and natural gas as well as a vital sea route for tankers bound for China with Middle East oil. The strategic importance of the maritime region can only have been reinforced by the realization that, by 1993, China had become a net importer of oil.

Whereas in the 1970s and 1980s the main belligerents were Vietnam and China, in the 1990s China and the Philippines have provided the major antagonists as they spar over disputed islands in and around the Spratly Islands. While there have been no pitched sea battles, China has gradually extended its reach in the South China Sea through increased air and sea patrols, larger and more permanent outposts on reefs and islands. Moreover, Chinese fishing fleets have become more active in the region and Beijing has granted permission for foreign companies to explore for oil in the disputed seas.

In February 1995, Manila discovered that Beijing had constructed a very solid and permanent looking structure on Mischief Reef in the Spratlys and encounters

between Chinese and Filipino vessels followed in March and April. The discovery promoted the Association of Southeast Asian Nations (ASEAN) states to put pressure on China to agree to place the dispute on the formal agenda of the ASEAN Regional Forum (ARF). The PRC Foreign Minister responded by stating that China would adhere to the 1982 United Nations Convention on the Law of the Sea and would not interfere with freedom of navigation. He also agreed to engage in bilateral talks with the Philippines and Vietnam to formulate a code of conduct.<sup>33</sup> The ASEAN countries wanted specific commitments, but China preferred vague pledges.<sup>34</sup> As of January 2002, no code of conduct has been agreed, although a draft proposal has been discussed.<sup>35</sup>

China has a clear preference for bilateral negotiations and the South China Sea issue is no exception.<sup>36</sup> While Beijing has been willing to engage in multilateral forums, notably the ARF, Beijing's record has been mixed at best.<sup>37</sup> China, for example, signed five agreements with the Philippines to ease the tensions over the Spratlys in May 2000. The accords signed in Beijing during President Joseph Estrada's five-day visit which pledged to resolve peacefully territorial disputes between the two countries were described as a "positive" development, but in reality this amounted to little more than postponing the issue.<sup>38</sup>

Follow-up meetings between Jiang Zemin and Estrada's successor, Gloria Macapagal Arroyo, in October 2001 similarly failed to address the issue. Nevertheless, the two heads of state agreed to work bilaterally to find a solution to the South China Seas dispute and to work toward devising a regional code of conduct. Significantly, while President Arroyo stressed the importance of seeking a multilateral agreement, her Chinese host emphasized bilateral accords. Coincidentally, during Arroyo's state visit to China, a Chinese ship—in what appeared to be a naval supply vessel—was sighted in the disputed territory near Mischief Reef. The Philippine Ministry of Foreign Affairs promptly lodged a formal protest with China's ambassador in Manila.<sup>39</sup>

Also noteworthy, in December 2000, was the agreement signed in Beijing between Jiang Zemin and his Vietnamese counterpart, including one to delineate the territorial waters in the Gulf of Tonkin. Then, the eighth and most recent round of Sino-Vietnamese boundary talks was concluded in mid-November 2001 in Hanoi, resulting finally in an agreement on the demarcation of the Gulf of Tonkin. Significantly, the South China Sea dispute was set aside at both meetings.<sup>40</sup>

China's Defense White Paper issued in October 2000 made several references to the South China Sea. The first reference commented that "the situation in the South Sea region basically remains stable [*jiben baochi wending*]". However, a second reference, two pages later, stated: "Incidents of nibbling [*canshi*] on China's sovereignty and interests in the South Sea continue to occur, and some extra-regional countries are attempting to interfere in the South Sea issue".<sup>41</sup> The assessment in the second reference is not completely without foundation. Certainly, China has not necessarily been the "most aggressive" state in the South China Sea. As Ralph Cossa has observed, Malaysia and the Philippines have also been aggressive. Moreover, China has, for several years, reacted with great restraint or moderation to extremely assertive and provocative actions by the Philippines.<sup>42</sup>



## **Conflict scenarios**

If hostilities do break out in the South China Sea, China will almost certainly be one of the belligerents. If the probability of involvement in the area is based on a country's record of belligerency and on the greatest number of islands/reefs occupied, then Vietnam and the Philippines clearly would be the other prime candidates. While China does not appear to take the Philippines seriously as a Southeast Asian naval power, it gives due attention to Vietnam. According to a recent survey of Asian navies, Vietnam's naval strategy in the South China Sea consists of "controlling the seas through the islands; that is ... to invade and occupy as many South Sea islands as possible ...". The same author then observes: "China is the chief obstacle to the Vietnamese Navy's nibbling".<sup>43</sup> Malaysia's military could also present a credible challenge to China.<sup>44</sup>

Another possible scenario involves a clash between China and Taiwan in the event of heightened tensions in the Taiwan Strait.<sup>45</sup> Taiwanese forces occupy two islands: one in the Spratlys, and Pratas Island several hundred miles to the North. Seizing these islands would offer China a way to ratchet up pressure on Taiwan with a military operation that would not risk failure and have virtually zero danger of escalation. Any Taiwan defense would likely be token, since the naval garrisons on both islands were trimmed down in February 2000 and replaced with Coast Guard units. At the same time, control of the islands shifted from Taipei's Ministry of National Defense to the Coast Guard Administration. Nevertheless, tension between the two countries have been mitigated in recent years as scholars from both sides of the Taiwan Strait have held regular dialogues on the South China Sea.<sup>46</sup>

## **Prospects for a peaceful resolution**

The situation in the South China Sea is conducive to dispute resolution and there is significant potential for some kind of bloodless negotiated outcome.<sup>47</sup> First, the South China Sea flashpoint is currently in a pre-crisis stage. Second, the issues involved, while serious, do not directly involve any of the rival claimants' questions of the imminent destruction of a country or the survival of a regime. The dispute is over a maritime zone in and around the Spratly Islands and one that is considerably removed from the political centers of power. Third, the dispute is not bilateral but multilateral; this mitigates against a logjam between two claimants preventing all hope of progress. The ten-member ASEAN is the obvious mechanism to use when seeking a multilateral solution.

Fourth, because different claimants have different priorities, it is possible that some kind of mutually acceptable settlement could be reached and the primary requirements of each party can be accommodated. For China, the dispute seems to be primarily about sovereignty; of all the disputants, China's claim has been the most consistent and enduring. Certainly, the natural resources of the South China Sea are of considerable interest, but Beijing appears amenable to sharing these resources in exchange for formal acknowledgment that the islands and their



contiguous waters belong to China. The Southeast Asian states seem primarily interested in tapping the natural resources of the region, whether these are oil, gas, or fisheries. For outside powers such as Japan, Australia, and the United States, the primary issue is one of freedom of navigation.

## Conclusion

The South China Sea has been a persistent zone of competition and conflict for the past 30 years and this is unlikely to change in the near future. Indeed, by the late 1990s, Beijing's South China Sea policy stood in stark contrast to its emphasis on stability and diplomatic solutions or to understandings of territorial or other disputes on China's periphery.<sup>48</sup> On the one hand, the potential for a negotiated settlement involving all the disputants exists; on the other hand, the dispute could very easily defy ready resolution and continue to simmer. China is the pivotal country: it is the one state that has the power to determine whether the South China Sea dispute is resolved through co-operation or conflict.

Slow intensity conflict remains perhaps the most accurate way to characterize China's efforts in the South China Sea. Tensions in the area have tended to be quite, low even when overt hostilities have flared up. The countries of Southeast Asia, and the major powers in the Asia-Pacific region, should carefully monitor China's actions to see if they are consistent with the letter and spirit of its conciliatory rhetoric and co-operative agreements. While such bilateral accords signed in recent years are positive steps, they are unlikely to prove a substitute for a multilateral settlement. Talks between China and the other disputants on devising a regional code of conduct acceptable to all parties ought to be a high priority.

In the defense realm, Taiwan has wisely in effect demilitarized its holdings in the South China Sea by replacing its naval presence with coast guard forces. Diplomatically, the situation is more complicated. The dilemma for Taiwan is to avoid being marginalized in any South China Sea dialogue on the one hand while refraining from antagonizing China and other claimants on the other.

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  - 6 Bernard D. Cole, *The Great Wall at Sea: China's Navy Enters the 21st Century*, Naval Institute Press, 2001, p. 170. See also Garver, "China's Push Through the South China Sea", *op. cit.*
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  - 9 *The South China Sea Dispute: Prospects for Preventive Diplomacy*, A Special Report of the United States Institute of Peace, Washington, DC: US Institute of Peace, August 1996, p. 4. See also "Asians Meet on Territorial Disputed Spratly Islands with Potential oil Riches and Access to Shipping, could be Flashpoint", *Christian Science Monitor*, July 15, 1991.
  - 10 Robert A. Manning, *The Asian Energy Factor: Myths and Dilemmas of Energy, Security, and the Pacific Future*, New York: Palgrave, 2000, pp. 100–10, 191, 200. See also David Rosenberg, "The Rise of China: Implications for Security Flashpoint and Resource Politics in the South China Sea", in Carolyn Pumphrey (ed.), *The Rise of China in Asia: The Security Implications*, Carlisle Barracks, PA: US Army War College, 2002, Kenneth W. Allen, *PLA Navy Building at the Start of a New Century*, Conference Report, Alexandria, VA: Center for Naval Analyses, Inc, July 2001, p. 16.
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- 30 See Garver, "China's Push Through the South China Sea", *op. cit.*, pp. 1014–15. Sheng Lijun also notes this point. See his *China's Policy Toward the Spratlys in the 1990s*, p. 12.
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# 4 The modernization of the PLAN and Taiwan's security

*Bernard D. Cole*

## Introduction

China's geo-strategic concerns focus on Taiwan. Furthermore, Beijing refuses to renounce the use of military force to ensure reunification of the island with the mainland. The PLAN would play a central role in forcing options ranging from intimidation to outright invasion. This chapter will assess how the modernization of the PLAN affects Taiwan's security.

This assessment will review the way in which the PLAN force structure changed during the decade of the 1990s, with an eye on the number, type, and capability of additions to the fleet. Future PLAN developments will be discussed, with a focus on 2005. The impact of the putative Revolution in Military Affairs (RMA) will be briefly surveyed, as will Taiwan's naval capabilities. The PLAN's partners in the PLA, China's Air Force (PLAAF) and strategic forces (Second Artillery), will be factored into the operational equation. Finally, a summing up of the maritime situation in and around the Taiwan Strait will be considered, to include possible US involvement.

## Geography

Geography is one factor that may be described as a constant across time in operational considerations. An important *caveat* to that truism, however, is that new weapons and sensor systems are capable of modifying the impact of geography. The emergence of aircraft was the most obvious such "system" of the last century, while in the new century the amorphous category labeled "information warfare" may have the potential for making geography operationally less relevant. From the PLAN's perspective, East Asian geography is both a positive and negative factor in the Taiwan situation. The intervening strait is a formidable barrier to the projection of military power, but the closeness of the island greatly simplifies its operational challenge and provides many continental bases from which power can be generated. Another geographic factor is the relatively close location of US naval and air forces based in the region.

The proximity of Taiwan to the mainland means that the island's maritime theater is littoral waters, the area within approximately 600 nautical miles (nm) of land.<sup>1</sup>

Hence, this chapter's review and evaluation addresses a very limited geographic theater: the Taiwan Strait is no more than 100 nm wide and 300 nm long, for an area of approximately 30,000 square miles. Taiwan itself lies from 35 to 102 nm off the mainland, although various smaller islands are as close as 3 nm from the continent.

The Taiwan Strait forms just one part of a maritime operating area of considerably greater size, however. One logical way to define this area is by the weapons systems capabilities of both the mainland and Taiwan. The presence of modern submarines and relatively long-range aircraft and missiles in the Chinese mainland's arsenal may define a theater extending to the North at least as far as Okinawa (just over 300 nm), in the East to a point midway between Taiwan and Palau (approximately 850 nm), and in the South to a point at least midway down the South China Sea (approximately 350 nm).

These distances delineate a Taiwan maritime theater of almost 90 million square miles—a formidable scope of ocean and littoral territories. But even this huge slice of the earth's surface does not include all the land-based aircraft and missile resources upon which China would be able to draw in a contest in and for Taiwan and its strait.

Evaluating the threat to Taiwan posed by the PLAN requires consideration of the growing strength of the PLAAF (People's Liberation Army Air Force), especially the Su-27 and Su-30 aircraft acquired from Russia. Less commented upon, but also important, is Beijing's acquisition of Il-76s. China's present inventory of these large, multi-engine jet aircraft (probably seventeen) is used mostly as troop transports for the 15th Airborne Army. The Il-76 is multi-mission capable, however, and may provide the PLAAF and the PLAN air force (PLANAF) with aerial refueling and airborne command and control capabilities that will significantly affect China's ability to gain and exercise control of the air over the Taiwan maritime area.

## **The PLAN force structure**

### ***1990***

China's Navy a decade ago had entered a period of significant modernization as it decommissioned Soviet-origin ships and submarines, and began deploying indigenously produced combatants. Hallmarks of this modernization were reliance on anti-ship cruise missiles (ASCM), and the acquisition of shipboard helicopters, primarily for anti-submarine warfare (ASW), but with additional tasking in electronic warfare (EW), anti-surface warfare (ASUW), and logistics.

Submarines were the PLAN's central force in 1990. It numbered approximately fifty conventionally powered and four nuclear powered submarines. Most of this force was composed of ROMEO- and WHISKEY-class submarines acquired from the Soviet Union or built in China on Soviet design plans. The nuclear fleet consisted of three HAN-class attack boats (SSN) and one XIA-class fleet ballistic-missile submarine (SSBN) designed to launch the JL-1 inter-continental ballistic missile.

Second in number to its submarines was the PLAN's force of patrol boats and other small combatant craft, totaling well over 500. As was the case with the submarine force, however, many of these were "laid up"—that is, not ready to go to sea without several months of preparations, not the least of which would be identifying and training crews.

The "Battle fleet" of the PLAN in 1990 was composed of no more than fifteen LUDA-class guided-missile destroyers (DDG), all of which lacked anti-air warfare (AAW) and ASW systems capable of providing more than rudimentary self-defense. These were supplemented by approximately two-dozen JIANGHU-class guided-missile frigates, but these ships have very limited capabilities and, like the LUDAS-class vessels, are updates of 1940s-era Soviet designs.

The 1990 PLAN's non-combatants included amphibious assets capable of embarking no more than one full division. This force still included eleven or twelve American-built tank landing-ships (LST) of Second World War vintage, three more modern YUKAN-class LSTs built on a Soviet design, and approximately 400 smaller landing craft of various designs and states of readiness. The PLAN a decade ago possessed limited at-sea refueling capability, just two FUQING-class replenishment-at-sea (RAS) ships capable of refueling other ships underway.

Finally, the PLAN's mine warfare (MIW) force in 1990 was old, numbering approximately fifty minesweepers and one dedicated minelayer. These were augmented by as many as 100 trawlers nominally equipped to serve as minesweepers, but most of them were not ready for operations.

## **2000**

During the past decade or so, the PLAN has increased by approximately one DDG, one submarine, and two guided-missile frigates (FFGs) each year, which is a modest program of naval growth. China's Navy consists for the most part of indigenously produced ships, but they are almost all derivations of Soviet/Russian designs. The LUDA-class DDG, for example, is based on the old (c.1940s) Soviet-designed KOTLIN-class destroyer. China's newer LUHU-class DDG is a modernized version of the LUDA, while the even newer LUHAI-class ship is simply a larger LUHU. In fact, only the three SONG-class submarines, nine JIANGWEI-class and four later modifications of the JIANGHU-class frigates, the twenty-five HOUXIN- and HOJIAN-class missile patrol-boats, and the two FUQING-class RAS ships are indigenously designed and constructed—and most of these rely heavily on foreign designed/produced engineering, weapons, and sensor systems.<sup>2</sup>

The PLAN in 2000 had not grown in numbers, and counted fewer ships and submarines than in 1990. It was a significantly more potent force, however, since it resulted from a deliberate modernization campaign by PLAN leadership. Its capability was previously limited largely to operations in what the US Navy would describe as coastal waters, which we will define as the ocean area within 100 nm of the coast; the Chinese Navy of the new century aspires to a greater geographic competence.



Beijing's recent naval purchases, especially those from Russia, demonstrate its determination to maintain the pace of naval modernization—and probably its frustration at China's inability to develop its own important naval systems. The ships and systems acquired in the past 20 years are credited with giving China “a significant main naval fighting force” but one inadequate “to have all-around (three-dimensional) control of ‘blue water’ ”. The PLAN leadership seems to understand its shortcomings and what it needs to achieve its strategic goals, which include the ability to operate in ocean areas out to approximately 1,800 nm from the Chinese coast, including the Yellow Sea, much of the East China Sea, and the South China Sea. By inference, the Sea of Japan, the archipelagic waters of the Philippine and Indonesian island chains, and the Strait of Malacca are also included.

### ***Submarines***

The PLAN continues to maintain a large submarine force, with modernization proceeding steadily. The bulk of the force is composed of approximately thirty improved versions of the 1950s Soviet-designed ROMEO-class submarine. These boats are not often seen at sea, possibly because of a lack of trained crews, and have only rudimentary ASW capability. China has built nineteen MING-class submarines, an improved ROMEO design, with most of them based in the North Sea Fleet. The MINGS, in turn, are supposed to be succeeded by the SONG-class.<sup>3</sup>

Future SONG construction may fall victim to additional purchases of Russian submarines. China has acquired four KILO-class, two of the “export” model and two of the quieter and more capable design produced for the Russian Navy. Although a 1970s design, the KILO is still a very capable, quiet submarine—if properly maintained and operated. The PLAN appears to be experiencing problems learning to operate and maintain these boats. Crew training has not gone well; serious problems with the propulsion batteries have developed, and the submarines are returning to Russia for all but routine maintenance.<sup>4</sup>

While there are several reports that China will acquire additional KILOs,<sup>5</sup> in view of these problems and dissatisfaction at having to rely on foreign sources, the PLAN may prefer to continue building the SONG-class, or wait to purchase AMUR-class submarines, the Russian follow-on design to the KILO. Although two AMUR hulls were under construction, Russia reportedly has stopped work on both boats as a result of budgetary problems and a lack of foreign orders. Although conventionally powered, the largest of the AMURs, the LADA-class, may be equipped with an air independent propulsion system (AIP).<sup>6</sup>

One former PLAN commander claimed that, “the development of nuclear-powered submarines is the chief objective of this century”. The PLAN currently has six nuclear-powered submarines, a single XIA-class SSBN and five HAN-class SSNs. These boats have never been more than marginally satisfactory, but China is moving to augment them with a new SSN, designated the Type-093, and a new SSBN, designated the Type-094.<sup>7</sup> Both will almost certainly rely on Russian



design and engineering assistance. The first Type-093 is under construction, with a possible commissioning date by 2005, but a start date for the Type-094 is undetermined. Predicting the length of time it will take for China to deploy new submarines is risky, given Beijing's poor track record: the HAN was begun in 1958, but did not go to sea until 1974. Hence, there are not likely to be significant changes in the composition of China's submarine force during the next decade, barring large-scale purchase of foreign boats.

The PLAN submarine force is improving its weapon suites more rapidly than its ships. Recent purchases of Russian wire-guided and wake-homing torpedoes provide very capable weapons that are difficult for surface ships to counter. Beijing has also reportedly purchased Soviet-designed rocket-propelled torpedoes from Ukraine.

### ***Surface combatants***

The most numerous and the largest ships in China's Navy are its surface combatants, described as the "vital" or "main" PLAN component. Chinese observers themselves have evaluated their newest warships "on a par with foreign warships of the 1980s"—but even that is an optimistic estimate.<sup>8</sup>

### ***Guided-missile destroyers (DDG)***

The most recent and potent addition to China's surface fleet are two Russian-built SOVREMENNY-class DDGs. They are home ported in Zhoushan, near Ningbo in the East China Sea Fleet's AOR. The SOVREMENNY is a capable warship, designed by the Soviet Union in the early 1970s for surface warfare. Its primary armament is the formidable *Moskit* missile (designated the SS-N-22 "*Sunburn*" in NATO parlance), designed to attack surface ships. Each SOVREMENNY carries eight of these missiles, with no onboard reload capability. The *Moskit* has a range of over 87 nm and carries a 300 kg conventional warhead. The missile's lethality results primarily from its speed and flight profile: immediately following launch to a probable altitude of several hundred feet, the missile descends to "sea-skimming" altitude below 20 m above the ocean's surface. As it closes the target, the *Moskit* accelerates to a speed as high as 2.5 Mach. This final part of the flight profile is complicated by the missile's ability to conduct radical evasive maneuvers, possibly including maneuvers involving 15 Gs, to complicate the fire-control solution for the target's defensive systems. China took delivery of forty-eight *Moskits* in 2000.

The SOVREMENNY is also capable of firing the *Moskit*'s successor currently under development, the *Yakhont*, which may have almost twice the range, 162 nm, but a smaller warhead, 200 kg. Beijing has not yet purchased the *Yakhont*, but will probably do so. The SOVREMENNY's capabilities in other warfare areas are much less formidable. Its only AAW missile system fires the SA-N-7 "*Gadfly*" or SA-N-17 "*Grizzly*" missile. Although superior to any previous PLAN AAW system, these missiles are essentially "point defense" weapons: their maximum range,

13.5–15 nm, is too short to allow significant area air-defense coverage.<sup>9</sup> Four 30-mm rapid-fire guns provide air defense out to a range of 2 km.

ASW capability is equally unimpressive, depending on a medium frequency, hull-mounted active sonar and a weapons suite of torpedoes and mortars. Two KA-28 helicopters provide the SOVREMENNY with its most significant ASW system. The ship is also equipped with sonar and other submarine-detection systems, and armed with torpedoes.

These weaknesses in AAW and ASW do not detract from the SOVREMENNY's potent capability against surface ships, but highlight the fact that it was not designed by the Soviet Union to operate alone. The ship is intended to form part of a large, multi-mission task group. The PLAN will have to very carefully orchestrate these ships' employment in wartime to prevent their quick destruction by aircraft or submarines.

The PLAN took a significant step forward in the mid-1990s with construction of the LUHU-class DDG. Although only two of these ships were built, they are China's first gas turbine-powered warships, with engines purchased from the United States. In other respects, however, the LUHU represents only incremental advances over the older LUDA-class across the spectrum of naval warfare capabilities.

The two LUHUs, named *Harbin* and *Qingdao*, are armed with the 22-nm-range YJ-1 ASCM and the *Crotale* AAW missiles. Four 30 mm gatling-guns offer short-range air defense, and the ship is equipped with US-built Super-Rapid-Blooming-Offboard-Chaff (SRBOC) dispensers. A French-designed *Tavitac* combat integration system and a well designed if not fully integrated CIC enhance the LUHU's combat effectiveness. The LUHUs are both equipped with Zhi-9A helicopters, as lead components in an ASW suite that includes a hull-mounted, medium-frequency sonar, Italian-designed torpedoes, and Soviet-designed mortars.

The small size of this class may be due to China having acquired only five LM-2500 marine gas-turbine engines from the United States before the post-Tiananmen Square sanctions halted such sales in 1989. Each LUHU is equipped with two of these engines; the fifth may be employed as a training unit. Beijing has been forced to look elsewhere for gas turbines.

China's newest warship, the LUHAI-class DDG, the first of which, *Shenzhen*, was commissioned in 1999, is significantly larger than the LUHUs, displacing 7,940 tons to their 4,200. *Shenzhen* is armed with the YJ-2 ASCM, similar to the YJ-1 carried by the LUHU but with a greater range (66 nm). AAW defense is similar to the LUHUs—the *Crotale* AAW missile system and gatling-guns, as is the ASW suite—medium frequency sonar, torpedoes, mortars, and two Ka-28 helicopters. *Shenzhen's* larger size may have been dictated by the need to install Ukrainian-built gas turbine engines, which are larger than the LUHUs' LM-2500s, but the additional volume offers valuable room and stability should the PLAN modernize the ship with improved weapons and sensor systems.

China has attributed significant stealth characteristics to the LUHAI—"its special invisibility feature is even more prominent", but pictures of *Shenzhen* do not support this claim, although the ship may have a lower radar signature than

previous Chinese-built ships and is reportedly coated with a radar-absorbent material. The ship's superstructure includes too many "corners" that could have been eliminated to reduce radar reflectivity. There are also several items of deck equipment, including boat davits, guns, and even the anchor housing area that could have been better designed to reduce the ship's radar signature.

The fifteen ships of the LUDAI and II sub-classes are armed with the old, but still capable *Hai Ying-2* (HY-2) ASCM system, with a range of 51 nm. The ASCM on the one LUDA III was upgraded to the *Ying Ji-1* (YJ-1), a shorter range (23 nm), but more reliable missile. The LUDAs all have the typical PLAN ASW suite: medium or high frequency, hull-mounted sonar, Soviet-designed mortars/depth charges, and (in this case Italian-designed) torpedoes. At least one of the ships has been modified to carry two French-built Z-9A *Dauphin* helicopters. This sole LUDA III also is equipped with a variable-depth sonar. These are still useful ships, and represent an important PLAN transition to the missile age, but suffer from significant defects in terms of turn-of-the-century naval technology such as systems integration, ASW suites, and air defense.

### ***Guided missile frigates***

The PLAN's newest FFG is the JIANGWEI-class, of which two sub-classes have been built. The first JIANGWEI was commissioned in 1991; eight more have joined the fleet. At 2,250 tons displacement, this ship is a capable escort, although much smaller than China's destroyers. The JIANGWEI I sub-class is armed with the YJ-1/2 ASCM and *Hang Qi-61* (HQ-61) AAW system. This latter missile is a Chinese-built point defense weapon with a 7.5 nm range, apparently reverse-engineered from the *Crotale* system. The JIANGWEI II sub-class differs in substituting the *Crotale* for the HQ-61—apparently because the indigenous system was unsatisfactory. Additional air defense is provided by gatling-guns and SRBOC chaff launchers.

The JIANGWEIs are powered by diesel engines of German design and have an ASW suite consisting of a hull-mounted medium-frequency sonar and ASW mortars, but no torpedoes. They embark a single Z-9A helicopter and have a well-designed combat direction center equipped with the *Tavitac* combat integration system.

The JIANGWEI-class, still being produced, represents a significant step forward from the older JIANGWEI-class frigates. Twenty-eight JIANGWEIs were commissioned between the mid-1970s and 1996. They are diesel-powered and armed with four HY-2 ASCMs for surface warfare, but have neither AAW missiles nor gatling-guns. Their ASW suite is limited to a hull-mounted, medium-frequency sonar, mortars, and depth charges. The ships lack torpedoes and helicopters, except for one ship of the class, *Siping*, which was converted to include a flight deck for a Z-9A helicopter, Italian-built ASW torpedo tubes, and two gatling-gun installations.

This ship's numerous portholes indicate a lack of air conditioning, which would adversely affect the performance of on-board electronic equipment during operations

in tropical or sub-tropical waters. The JIANGHU's most serious shortcoming, however, is the lack of a CIC in most ships of the class. A warship lacking this most basic element of system integration—installed in United States and British ships during Second World War—is essentially unable to operate in a modern naval environment.

### *Light combatants*

The PLAN's origin as a coastal defense force has meant an early and continuing reliance on relatively small warships, usually displacing less than 500 tons. Currently, the PLAN includes perhaps sixty Chinese versions of the old Soviet-designed OSA- and KOMAR-class patrol boats firing ASCMs with a 25 or 45 nm range. These boats, counted in the hundreds a few years ago, are being phased out, replacing them are the five HOUJIAN-Class and twenty (to date) HOUXIN-class patrol boats. Both are armed with 25 nm YJ-1 ASCMs, although the HOUXIN is a modification of the 40-year old HAINAN-class gunboat. These are essentially coastal craft, with the HOUJIANS homeported in Hong Kong, but are capable of operating in the South China Sea and the waters around Taiwan in times of calm to moderate weather. The PLAN also includes about 250 smaller patrol boats armed with guns or torpedoes.

### *Mine warfare*

Mines are the most cost-effective means of naval warfare, especially in littoral waters and for constraining an enemy. Hence, it is surprising that China, in view of its concern with Taiwan, has not made a larger investment in this warfare area.

The PLAN includes only one dedicated minelayer, although almost any naval surface ship, as well as most merchantmen and fishing trawlers, can deploy mines in a rough fashion. China's mine-clearing force consists of twenty-seven Soviet-designed T-43 ocean-going and eight coastal minesweepers. There are also forty-six remote operated minesweepers, almost all of them in the navy's reserve force (as are an additional thirteen T-43s). The PLAN's mine inventory may include as many as 100,000 mines, but almost all of these are very old models. It has probably acquired a few rocket-propelled mines from Ukraine.<sup>10</sup>

### *Amphibious ships*

The PLAN in 2000 does not deploy a large amphibious force, which centers on thirteen modern LSTs. The seven YUKAN-class constructed between 1980 and 1995 each can each embark 200 troops and ten tanks. The six ships of the more modern YUTING-class are slightly larger (each embarking 250 troops and ten tanks), and have a large helicopter deck on the fantail.

The PLAN also includes "landing ships-mechanized" (LSMs). There are eleven modern ships of the YUDENG- and YUHAI-classes, with only the latter still in production. Older LSMs include thirty-one YULIANG-class, each embarking three tanks and a limited number of troops.

Amphibious operations pose three basic problems. First, how are forces transported to the objective? As noted above, the PLAN currently can lift no more than two divisions of troops. Civilian vessels have participated in amphibious exercises since at least 1994, but history shows that using civilian troop lift is very problematic.<sup>11</sup>

Second, how is control of the sea gained sufficiently to ensure safe transport? China would have to employ its entire fleet, from patrol boats to DDGs to submarines, to protect the ships transporting invasion forces, and to ensure logistical support of the force after it lands. Third, how is control of the air gained sufficiently to ensure both the safe transport of the invasion force and its defense after the initial landing? China must be able to call upon the resources of the PLANAF, the PLAAF, and shore-based ballistic and cruise missiles. The lack of joint PLANAF–PLAAF training and Taiwan’s modern air force will seriously challenge Chinese attempts to gain control of the air.

### *Logistics at sea*

The PLAN includes numerous supply and support ships, but only three of them are capable of replenishment-at-sea, supplying warships when they are underway in the open ocean. Each of the three fleets is assigned one of these “AORs” either NANCANG-class (South Sea Fleet) or one of the two FUQING-class (North and East Sea Fleets). These are relatively large ships (37,000 and 21,000-tons displacement, respectively), capable of refueling two ships simultaneously.

Although two additional FUQINGs were built, one was sold to Pakistan and one was converted to the civilian merchant fleet, indicating that the PLAN is not concerned about further increasing its ability to conduct underway replenishment. This is a strong sign that China is not moving to expand further into blue-water naval operations.

The PLAN also includes five much smaller cargo ships (4,300–8,800-tons displacement), and several dozen small oilers, many of them in the merchant fleet but apparently available for navy tasking. These ships range from 530 to 2,300-tons displacement, and are not designed for underway replenishment. The Navy has many other auxiliaries, including twelve submarine support ships and a small repair ship (converted from an old US-built LST), as well as more than forty ocean-going tugboats. Troop transports include the four QIONGSHA-class, each capable of embarking 400 troops and all stationed in the South Sea Fleet.

### *Ballistic missiles*

The Navy’s role in China’s national nuclear deterrent force has been limited to its single XIA-class SSBN, armed with twelve *Julang-1* (JL-1) intermediate-range ballistic missiles. The JL-1, a solid-fuel, 1,900-km-range, nuclear-capable missile, is due to be replaced by the *Julang-2* (JL-2), with an expected range of 12,000 km and possibly capable of carrying multiple, independently targetable, nuclear warheads. The JL-1 took 16 years to develop and deploy, the JL-2 will be a modification of the *Dongfeng-31* (DF-31), which had its first test firing in 1999

and should be ready for maritime testing within the decade—well-before the Type-094 SSBN is ready to go to sea.<sup>12</sup>

China's indigenous cruise missile development program dates back to the late 1950s, originating with SS-N-2 *Styx* surface-to-surface missiles provided by the Soviet Union. Later purchases of the French-built *Exocet* missile provided an additional model to Chinese designers. Long-range—more than 200 km—cruise missiles are under development, to include models launched from submerged submarines. China has developed the capability of designing and manufacturing cruise missiles with close to state-of-the-art features.<sup>13</sup>

The PLAN's short to medium-range surface-to-surface missiles include the *Shang You-1A* (SY-1A), a version of the Soviet-built *Styx*, with a range of 95 km. This missile has been widely exported and is in service on LUDA destroyers, JIANGHU frigates, and older missile patrol-boats. Its successors, the YJ-1 and *Ying Ji-2* (YJ-2) have a range of 40 and 120 km, respectively, and are similar to *Exocet* models. They are in service on later JIANGHU and LUDA models, on JIANGWEI frigates, LUHU and LUHAI destroyers, and newer (HOUIJIAN and HOUXIN-class) missile patrol-boats. Two of the HAN-class submarines may have been modified to launch either the YJ-1 or YJ-2 while submerged.

### *Naval aviation*

The PLANAF currently fields approximately twenty-seven regiments, each with 24–25 aircraft. Total PLANAF strength is uncertain, but numbers approximately 800 aircraft.<sup>14</sup> This total is likely to be reduced by about 200 over the next decade, as the PLANAF continues to phase out its F-6, A-5, and B-5 aircraft.

PLANAF surveillance aircraft include six SH-5 amphibians and six maritime versions of the Soviet-designed Y-8 (AN-12) transport, which are capable of rudimentary ASW operations. The PLANAF also retains about fifty B-6 (Soviet-designed Tu-16) aircraft; twenty of these are able to carry anti-ship cruise missiles, while the remaining planes are used for surveillance and general utility missions.

The PLANAF has yet to begin operating the Su-27, although this aircraft, China's most modern, has been flown by the PLAAF for several years, and will probably not be able to afford either the Su-27 or the Su-30 as its next generation air-superiority fighter. The F-10 might fill that role, but is still unproven, despite more than 10-years of development. Another important modernization issue is selecting a long-range strike aircraft to replace the B-6, although these will probably not be completely phased out for another decade. The PLANAF probably views the FBC-1, a strike aircraft that has been under development for more than a decade, and which is able to carry 2–4 C-801 anti-ship cruise missiles, as the B-6's successor.

### *Aircraft carriers*

The PLAN does not have any aircraft carriers in commission, under construction, or under negotiation for foreign purchase, despite continuing speculation in the press.<sup>15</sup>

China has acquired four aircraft carriers during the past quarter-century: ex-HMAS MELBOURNE was purchased from Australia, nominally for its scrap value. The ship was scrapped only after engineers had measured and learned from it what they could about carrier construction and operations.

Three ex-Soviet carriers, MINSK, KIEV, and VARYAG, have also been purchased by Chinese companies, supposedly for conversion to casinos. All three are decrepit hulks—MINSK and KIEV were two of the Soviet Union's first carriers, and had been inactive for several years before being sold to Chinese interests. VARYAG, a unit in the Soviet's newest and largest classes of aircraft carriers, is equipped with a "ski jump" bow to facilitate fixed-wing aircraft operations. Its construction began in a Ukrainian shipyard in 1985 but the 1989 collapse of the Soviet Union halted its construction over a decade ago. Neither MINSK, nor KIEV, nor VARYAG are viable candidates for refitting. As a result of their long periods of inactivity, their hulls and decks must be heavily corroded, their propulsion machinery seriously deteriorated, and their installed weapon and sensor systems beyond repair.

Barring a significant change in China's strategic priorities, PLA budgetary limitations are likely to continue to prevent the PLAN from acquiring aircraft carriers for the next decade. Reasons include the high costs of both acquiring and operating an aircraft carrier, which requires such a large financial and personnel investment that it embodies the state: the loss of a carrier in combat would be not just a loss to the Navy, but a loss to the nation. Hence, a carrier requires a fleet of other ships to defend it against all surface, subsurface, and aviation threats. The carrier also requires replenishment-at-sea ships to keep it (and its escorts) supplied with fuel, ordnance, and other supplies.

### *Shortcomings*

The director of the General Armament Department, General Cao Guangchuan, has complained that "the task of developing the Navy's armaments is arduous".<sup>16</sup> The PLAN suffers in at least four areas:

*Anti-air warfare* First is the lack of effective area AAW defense—the ability to defend not just individual ships, but groups of ships; AAW systems on even the PLAN's newest ships really only qualify as "point defense" weapons.

*Anti-submarine warfare* Second are the PLAN's ASW suites. Despite promising developments using satellite-based radar to find submarine wakes and airborne lasers to detect submarines at depth, sound transmission through water (sonar) remains the most reliable way to detect a submarine. PLAN ships make almost exclusive use of hull-mounted, active, medium-frequency sonar, which are the least expensive and simplest to operate of the various sonar technologies available. Only the two LUHUs are equipped with towed, variable-depth sonar. Detecting submarines, especially from a surface ship, is a very difficult process and the PLAN is not taking advantage of available ASW technology; some of it 40 years old.

China's Navy also lacks significant airborne and, apparently, seabed ASW resources. There are only a dozen old aircraft assigned to the ASW mission. China does not appear to have deployed bottom listening arrays in its coastal waters.



*Systems integration* Third, effective operation in these complex mission areas, AAW and ASW, and in modern naval warfare in general, requires the effective integration of shipboard, airborne, and shore-based systems. The PLAN is beginning to make progress in this crucial area of integrating sensors, weapons, and command and control functions, but it appears that even its newest ships have only partially integrated, automated sensor and weapon systems.<sup>17</sup> The combination of foreign and Chinese-built units within the same system—a French-built missile system with a Chinese air-search radar, for instance—complicates the integration problem, one that will only be incrementally improved during the next decade.

*Maintenance and supply* Fourth, the foreign origin of many weapons and sensor systems, and in some cases propulsion plants, in all PLAN front-line combatants complicates the maintenance and supply functions. Countries of origin, either design and/or manufacture, include France, Italy, the United States, Ukraine, and especially the former Soviet Union. This makes maintenance-training and supply-support difficult. The LUHU-class, for example, incorporates “more than forty advanced foreign technologies”.<sup>18</sup> The apparent decision to buy more indigenously-built LUHAI-class DDGs rather than Russian-built SOVREMENNY may have reflected a PLAN desire to lessen its dependency on foreign systems.<sup>19</sup>

### *Doctrine*

Although PLAN commander Shi Yunsheng has claimed that the “CPC leadership” believes “building a powerful People’s Navy” is the “major task of our Army building”, there is scant evidence that this is more than oratory.<sup>20</sup> Hence the PLAN’s officer and enlisted personnel will face increased requirements to get the most out of their ships and aircraft.

One of the PLA’s recently revised regulations, perhaps the most important in terms of war fighting capability, is “The Chinese PLA Program for Combined Campaigns”. This regulation connotes a strategy-doctrine-operational art-tactics progression that could describe twenty-first century PLAN capabilities. Throughout, the “Combined Campaigns” regulation emphasizes the importance of standardization and of science and technology, since these “have now become the key factor in deciding upon the outcome of a war”. Doctrinally, the regulation first delineates “the principle of unity”—emphasizing that the “new-generation PLA” regulations must “uphold a unified combat ideology” to include training and tactics. Second, the “Combined Campaign” regulation applies to both single-service and joint combat operations: naval units “will have clear-cut combat regulations to abide by and a unified combat ideology to follow in different types of combat operations launched at different levels”.<sup>21</sup> To what degree this concept will define PLAN employment during the next decade is problematic, however, if recent exercises are an indicator of the progress the PLA has made conducting truly joint unconvincing.

The PLAN mission most directly tied to China’s vital economic sector is SLOC defense. The Navy must safeguard sea-lanes in Beijing’s claimed territorial waters, which requires a “brown/green-water” navy in the Yellow Sea, the East China Sea



West of the Japan–Philippines line, and the South China Sea. The PLAN may possess the assets to defend its “brown-water” SLOCs—those within 100 nm of its coast, but the next level of SLOC protection includes sea lanes that extend throughout East Asia, from the Sea of Japan to the Andaman Sea West of Malacca. The PLAN’s ability to defend these “green-water” SLOCs is more problematical.

The twenty-first century PLAN must significantly increase its technological sophistication and personnel expertise. Admiral Shi Yunsheng has listed five attributes of a modern navy, all areas in which the PLAN requires improvement:

- 1 strengthened “research on naval strategies”;
- 2 “vigorous development of high-tech equipment”;
- 3 train personnel “with modern and scientific and technological qualities” to operate its “modern equipment”;
- 4 effective “medium- and long-term” plans;
- 5 “modernization of the main equipment of the navy”.<sup>22</sup>

Shortfalls in meeting these objectives may be at least partially compensated for by innovative technology and doctrine. The advances demonstrated in Desert Storm and dramatically emphasized during the US campaign in Kosovo appear to offer such an opportunity to some PLA strategists. One has written, for instance, “cruise missiles are the vanguard, aerial strength is the main power, and the ground, sea, air, space, and electromagnetism are integrated. This will become a basic mode for the recent and future high-technology regional war”.<sup>23</sup>

### ***The effect of the RMA***

Effectively managing information flow and the electronic spectrum will be key to PLAN operations. This does not mean “information warfare” in the sense so often discussed as part of an RMA, but refers to a historical constant in naval warfare, situational awareness: knowing the location of own and opposing forces.<sup>24</sup> Ideally, a naval commander will know precisely where his own forces are positioned, as well as knowing precisely where his opponent’s forces are located. Achieving full situational awareness requires the commander to deploy reconnaissance, surveillance, and intelligence assets, and then to integrate fully their output.

The PLAN requires this ability, first, to employ its forces effectively: to know when to sortie its ships and launch its airplanes, and where to position and operate those units. Second, much is made today of the efficacy of precision-guided munitions, but to be effective, these missiles and other systems require fairly precise locating information on the target.

Third, naval warfare is, by nature, multidimensional. The effective joint employment of land, air, and sea forces—crucial to successful littoral warfare—depends on the availability and rapid exchange of friendly and enemy positioning information among many different units of sea, air, and land forces.

Fourth, the fact that littoral warfare, by definition, occurs in restricted waters shortens response times and increases the importance of possessing accurate situational information, since the need for rapid decision-making increases geometrically with the reduction of the geographical arena. There is little evidence that China has progressed very far in developing operational expertise in this vital realm of twenty-first century naval warfare.

### *Taiwan's Navy*

Taiwan is modernizing its navy as determinedly as is China, albeit without the crucially important submarine construction—although that may change if Taipei is able to find a source for the submarine acquisition agreed to by Washington in the Spring of 2001. PLAN operational thought about Taiwan seems to be focusing on three alternative military courses of action: amphibious assault, blockade, and “deterrent strike”.<sup>25</sup>

An amphibious assault from the sea is, of course, the classic military attack to capture an island. This is a difficult, complex operation to carry out successfully. PLAN planners will have to take into account the typically bad, changeable weather in the Taiwan Strait and the lack of suitable landing beaches on either of the island's coasts. The strait is subject to high winds and seas, often above those forecast, and is susceptible to typhoons during most of the year. The lack of beaches is compounded by the presence of wide areas of mud flats, tidal ranges of up to 15 meters, and complex currents.<sup>26</sup>

Taiwan's weak minesweeping force consists of four relatively new (c.1990) coastal mine hunters obtained from Germany, and eight ex-US and ex-Belgian minesweepers that are 40–45 years old. Other anomalies in Taiwan's naval force appear to be the over-abundance of amphibious ships; in fact, the island maintains more amphibious lift capacity than does the mainland. Surely, the resources devoted to a relatively large amphibious force with a minor mission (supporting outlying islands) would be better spent elsewhere. Finally, and most significant, is the lack of an integrated, joint command and control structure.

China's dedicated mine warfare forces are also small, but mines can be laid by almost any surface ship, as well as by aircraft. Significantly, PLAN surface combatants are required annually to exercise laying mines.

China's missile force could inflict great death and destruction on Taiwan and its people, but by themselves, and despite expected improvements in accuracy, even several hundred of these missiles would not be able to force the Taipei government to surrender, given strong popular will on the island. This is the second and most important strategic question: how strong is the Taiwan population's will to resist? A more thoughtful strategy would be required for the PLAN to achieve specific goals in the face of opposition by the United States and the Taiwan navies and air forces. One aspect of such a strategy would almost certainly be employment of information warfare to counter the advanced military technological superiority of those fleets—a capability more discussed than demonstrated in China.

Another strategic step in such a conflict would be to gain the initiative through preemption. This does not necessarily require a “bolt from the blue”, but could be achieved by seizing the initiative at a time of significant US naval weakness in East Asia, a topic addressed in Appendix.

China is pursuing a maritime strategy designed to achieve near-term national security objectives and longer-term regional maritime dominance through both combatant and merchant fleets. Beijing presently is building a navy capable of decisively influencing the operational aspects of the Taiwan and South China Sea situations, should diplomacy and other instruments of statecraft fail.

### ***Naval options against Taiwan***

The parameters of twenty-first century naval warfare noted above—mobility; the ability to manipulate information to achieve situational awareness; air and space power, to include missiles and other precision-guided munitions; and jointness—all constructed to fight in littoral waters, pose a tough challenge for any navy.

The PLAN might seek to attack its opponent’s situational awareness; a difficult operational picture would be created by flooding the littoral with fishing and merchant craft, as well as by conducting complex naval maneuvers. The goal would be to create an operational situation of uncertainty and delay for the opponent.

Next, the three PLAN fleets, probably organized into multi-capable task forces under Beijing-dominated command, would be operated with two primary goals: to supplement a blockade of area waters, and to oppose Taiwan and US naval forces in China’s (and Taiwan’s) littoral. The geography of a littoral naval war favors China, since the PLAN would be close to its home bases. Furthermore, since Taiwan is well within the operating envelope of mainland-based air and missile power, as noted above.

Most Chinese public pronouncements about Taiwan’s military posture are little more than bravado, such as “we have to ensure that the Taiwan authorities are in a hopeless situation militarily”.<sup>27</sup> A more thoughtful analysis, however, was offered by one Chinese naval strategist: “the strategy that we should pursue is one of sustained high-intensity deterrence or pressure combined with political and diplomatic efforts”. This paradigm is based partly on three conditions:

- 1 the Taiwan Strait *per se* creates geo-strategic terms favorable to defense, not offense;
- 2 due to long-standing political, economic, and technical limitations, the mainland Chinese armed forces have not yet really evolved a large-scale three-dimensional offensive capability on high-tech terms;
- 3 the balance of offensive and defensive cross-strait force is mostly favorable to [Taiwan] to a certain extent and within certain limits.

Russia has undoubtedly passed to the United States the capabilities of the new weapons (i.e. Su-27 aircraft and KIL0-class submarines) systems purchased by China; since the United States has certainly, in turn, passed these parameters to Taiwan, the defense will be that much more capable.<sup>28</sup>

Naval authors in China have recently emphasized the value of technological advances, including a shift “From platform-centric to network-centric ... strategy based on the speed of command”.<sup>29</sup> This refers to a theory in the US Navy that future fleet operations will be conducted not by individual ships acting on the basis of their own sensors, weapons, and communications and control systems, but by groups of ships operating as members of a co-operative network. The ships, aircraft, and even shore stations will be linked by computers and operate in a coherent “network-centric” environment, passing information back and forth and functioning as a single entity.

The PLAN, however, is still very much “platform-centric”, almost wholly dependent on individual ship and aircraft operations. These platforms constitute the naval power available to China to secure its territorial claims in the East and South China Seas.

### ***Quarantine/blockade***

The most likely opening move in a naval strategy against the island would be a naval quarantine. Quarantine would likely be chosen instead of a formally declared blockade, since the latter is an act of war between nominally sovereign nations and because Beijing considers Taiwan to be Chinese national territory.

Declaration of a quarantine would result in at least low-level naval and air warfare, first, because Taipei would seek to broach the barrier to economic discourse and, second, because Chinese declaration and imposition of a quarantine would trigger the American Taiwan Relations Act, which states that United States will “consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States”.<sup>30</sup> US reaction under the “grave concern” clause is not stipulated, but the deployment of two aircraft-carrier battle groups to the Taiwan area in March 1996 indicates the near-certainty of US military intervention should China resort to “non-peaceful means”.

Beijing would certainly intensify the degree of force applied by the PLAN in response to Taiwan naval or air actions to lift the quarantine, and would probably do so even in the face of US military intervention. The naval weapons of choice for China would most likely be mines, and especially submarines armed with wake-homing torpedoes and possibly ASCMs. Chinese naval and air force aircraft would also attack naval units interfering in the quarantine.

Throughout a naval campaign in the waters and air space surrounding Taiwan, Chinese military forces would likely adhere to Maoist doctrine—at least in versions suitable to the relatively quick-moving warfare of the twenty-first century—especially the operational dicta addressing the necessity of speed and lethality, with commanders seizing the initiative and adhering to flexibility and deception in their actions. The PLAN would attempt to campaign in accordance with more modern concepts as well, of course, especially operating jointly. Doing so would depend on the PLA having developed integrated doctrine and operational art to

the point where naval, air, and shore-based units are able to operate jointly, under a unified command—a proficiency not yet demonstrated in exercises.

### *Amphibious operations*

A large-scale amphibious assault is the most complicated of naval operations to plan and execute successfully. A comparison with the classic 1944 invasion of Normandy is instructive, given Taiwan's proximity to the Chinese mainland.<sup>31</sup> The Allies launched a total of 176,000 amphibious and approximately 24,000 airborne troops against Normandy, located about as far from England as Taiwan is from the Chinese mainland. The Allies employed 10,000 aircraft, 136 warships, 3,000 landing craft, and 2,000 other ships.

The opposing Germans in 1944 mustered approximately 50,000 troops, no significant warships, and had lost air supremacy to the Allies many months previously. Not only can China not deploy anywhere near the Allied numbers against Taiwan, but the affray would begin without Chinese control of either the air or the sea. Furthermore, Taiwan could oppose an invasion attempt with more than 200,000 troops, forty warships, and 450 fighter aircraft. Finally, the US plan for the invasion of "Formosa" in 1944–45—Operation Causeway—estimated that a total of approximately 400,000 personnel would be required, seven infantry divisions plus 250,000 supporting personnel. And this assumed a friendly Taiwanese population who would rise up against the Japanese oppressors.

This comparison highlights the US Marine Corps guidelines for conducting a successful amphibious assault. The most important of these is that the assaulting force outnumber the defenders by a ratio of at least 5 : 1. This figure is based on the assumption that three-fifths of the attacking force will be absorbed in assaulting the beach itself, so the remaining two-fifths are necessary to exploit the landing after it succeeds in establishing a beachhead.

Second, the assaulting force requires air superiority; third, the attackers must be able to apply superior concentration of force—usually meaning greater numbers of troops, but also achievable through surprising the defense—at the point of assault than can the defenders. Finally, the attacking force must be able to reinforce and build-up its strength at the point of assault more quickly than the defenders can assemble troops to repel the landing. China cannot and in 2005 will not likely be able to achieve any of these four points, although air and sea superiority will be contested and the element of surprise should never be discounted.

Most significantly, China does not presently show indications of building up its capability to conduct large-scale amphibious assaults. The two brigades of Chinese marines are apparently well-trained and form a self-supporting force, but they number no more than 12,000—about the number the PLAN is able to transport today in its total amphibious assault ships. A plan does not appear to be in effect to rapidly expand this force, but ships for this mission, such as LSTs, are simple in comparison to combatant ships and can be constructed relatively quickly and cheaply. Even an LST, however, would require several months to construct.

The occasional use of civilian shipping to transport troops and even artillery has been well-publicized in recent years, but this seems little more than a public relations ploy. More likely than a classic amphibious assault against Taiwan is the use of selected amphibious operations on a relatively small-scale to influence events begun concurrently—perhaps by airborne assault units—or already underway on the island. For instance, amphibious assault might serve to land forces to seize specific ports or to launch raids against Taiwan's command and control infrastructure.

More fungible is the Navy's supporting infrastructure, ranging from fuel facilities to food supplies. The PLAN appears to be "sourcing-out" an increasing array of support functions, a trait increasingly common to many militaries. This will suffice and ease the Navy's logistical sourcing burden, but add the complications of relying on civilian organizations and motives. The move to jointness will also continue to affect the PLAN's logistical infrastructure, in theory for the better. Key to the PLAN's operating plan in any scenario in China's littoral—that is, in waters out to 400–600 nm from its coast—is the availability of shore-based air and missile assets to support operations at sea.

### *Other options*

Naval campaigning against Taiwan would almost certainly involve other PLA services in conjunction with traditional naval operations. Most likely is an initial, two-pronged attack on the island by Second Artillery missiles and special-operating forces (SOF), to include "fifth column" elements resident on Taiwan. These assaults would initially be targeted against the command and control infrastructure, including early warning facilities and electronic media systems. Leading personnel would be targeted by SOF, as might fresh-water supplies and public transportation. The intent would be both to create confusion and uncertainty among Taiwan's public and to hamper the civilian and military leadership's ability to first, understand and evaluate the attacks; second, counter them; and third, rally the population.

The initial assaults would be followed by a continuing campaign against the command and control facilities on the island, to include transportation and other nodes—such as the media and the banking system—to further sow confusion and shake public confidence. Attacks on military leaders would continue and perhaps intensify, but those on the civilian leadership would be ameliorated to ensure that Beijing would have sufficiently empowered officials in Taipei with whom to negotiate.

This last point is significant, since it indicates that China does not, now or in 2005, envision military attacks against Taiwan to "destroy" the island or even capture it through the medium of an all-out military campaign.<sup>32</sup> The schema and goal of a Chinese military campaign would be as much psychological as "military". PLAN (and other military) forces would be used to hasten the capitulation of an island whose communications and transportation networks have been severely disrupted.

The real target of any Chinese assault on Taiwan will be its population. The PLAN will play a supporting role in any such campaign, which would be planned to be of short duration, certainly less than 90 and perhaps no more than 10 days. Should Taipei prove resistant to the initial onslaught, the Navy's role will increase in both scope and importance, as Beijing seeks to isolate the island by exercising control of the air and the sea around Taiwan.

An important contingency for employing PLAN forces against Taiwan in 2005 will be the possibility of US intervention, perhaps with Japanese support. Tokyo would likely try to limit its participation in a Taiwan scenario to logistical and base support, even if evoked under the Defense Guidelines with the United States. This support would be crucial to an American effort, however, and China might well seek to "get Tokyo's attention" by launching ballistic missile attacks on US bases in Japan, such as Okinawa, Sasebo, Yokosuka, Atsugi, Yakota, and Misawa. A Chinese SOF campaign against Japan would be more difficult, but PLAN submarines stationed near the important naval bases at Sasebo and Yokosuka could have a serious effect on the US Seventh Fleet's ability to respond in a timely fashion to a crisis in the waters surrounding Taiwan, especially if most fleet units were in port when the crisis began.

The PLAN almost certainly understands that it cannot match the power and capability of the US naval and air forces that could be dispatched to assist Taiwan in the face of a quarantine or some more intensive military assault. Implementing "asymmetric warfare" for the PLAN in a contest involving US forces would amount to little more than achieving some effect at sea without having the entire navy sunk during the first 24 hours of the contest. This is not to dismiss the possibility of innovative and unexpected Chinese tactics, but to note that the most the PLAN is likely to be able to achieve is to delay US naval entry into a Taiwan theater and to prevent American aircraft-carrier battle groups from closing to within China's littoral waters. This could be achieved by surprise and deception in the initial assaults on the island, followed by extensive sowing of minefields and large-scale submarine deployments.

If, for instance, Beijing effectively mined the ports of Keelung, Kaohsiung, Tsoying, and Taichung and simultaneously sortied 25–30 submarines—thereafter maintaining at least twelve of them on station North and East of Taiwan—intervening naval forces would face a very challenging environment. These submarines might all eventually be located and either destroyed or forced back to their home port, but the time involved in successfully carrying out the ASW effort—1 month?, 6 months?—might give China the opportunity to force Taiwan to the negotiating table under Beijing's terms.

## **Conclusion**

What naval forces might Beijing assign to a quarantine against Taiwan? We have already noted that submarines would lead the PLAN efforts, most likely numbering in 2005 no more than four HAN- and one Type-093-class nuclear powered submarines, and four KILO-, eight SONG- and twenty MING-class conventionally



powered submarines. Thirty old ROMEO-class boats might still be in commission, but the availability of trained crews to man them would be problematical. China's single ballistic-missile submarine, the XIA, is not likely to play a role.

The PLAN's surface fleet in 2005 will likely include two SOVREMENNY- and up to four LUHAI-class guided-missile destroyers (DDGs) armed with SS-N-22 *Moskit* ASCMs. Two additional SOVREMENNYs have apparently been ordered from Russia, but will probably not join the Chinese fleet before 2007. Two LUHU-class DDGs would also serve in the Navy's "battle line", but the fifteen LUDA-class DDGs would be essentially helpless in the face of air attack. The same applies even more to China's numerous JIANGHU-class FFGs, but the (up to) twelve JIANGWEI-class FFGs would be more useful in a quarantine scenario.

China's surface combatants would rely almost entirely on shore-based logistical support; the PLAN's three underway replenishment ships, each currently assigned to one of the three geographic fleets, could be augmented by salvage and repair ships and operated as a logistics task force. The confined waters in which Taiwan-linked naval operations would be conducted, however, argues against such a formation, which would be ripe for, and hence have to be defended against, air, surface, and sub-surface attacks.

Key to any PLAN campaign in 2005 will be the ability to project air power over the sea. The most valuable contribution to this goal by the Navy's air force will be its ship-board helicopters, used across the spectrum of naval warfare missions. Shore-based fighters and tactical bombers will be available from both PLANAF and PLAAF units, although the Chinese military has not demonstrated the joint doctrine and operational expertise necessary to effectively operate such forces together. It is here, in the air, that naval warfare will continue to be determined, as it has since December 1941.

In other words, as we review PLAN force structure in 1990 and 2000, and apparent modernization and force level intentions during the current decade, it is apparent that ground forces retain pride of place in the PLA and, more importantly, within Beijing's national security paradigm:

- 1 The Chinese Navy is not acquiring aircraft carriers and is not receiving the front-line tactical aircraft being acquired from Russia.
- 2 The Chinese Navy is not building large numbers of or more capable amphibious assault ships; exercises utilizing civilian shipping have simply demonstrated the limited utility employing of such vessels.
- 3 The Chinese Navy is not increasing the speed at which it commissions modern surface combatants, either through indigenous construction or foreign purchase.
- 4 The Chinese Navy does not appear to be pursuing a plan to acquire the ships necessary to deploy integrated, multi-mission capable task forces.
- 5 The Chinese Navy is not rapidly modernizing its mine warfare forces for either the offensive or defensive mission.
- 6 The Chinese Navy continues to modernize and is becoming a more formidable force, but it is doing so at a moderate pace.



Is the PLAN currently and will it in 2005 be a threat to Taiwan's security? Yes, but not in terms of a navy-on-navy contest with even the Taiwan Navy, and certainly not if the United States intervenes. The modernized Chinese Navy that is currently evolving will be a late twentieth-century force equipped with the detection, localization, and targeting suites necessary to employ its ASCMs effectively. Most significantly will be the submarine force around which the PLAN will continue to be centered. Barring some currently unforeseen breakthrough in ASW capability, in satellite-based laser detection perhaps, submarines will continue for the foreseeable future as the true capital ship of naval warfare.

Most troublesome for Taiwan's naval defense is, quite simply, geography. The island's propinquity to the mainland will make it difficult for Taipei to counter-balance Beijing's air power. In other words, the future promises a degree of Chinese air superiority that may cancel out any Taiwan naval superiority at sea.

Armed US intervention under the aegis of the Taiwan Relations Act in the case of Chinese military action against Taiwan is almost assured, although overriding international events—a greatly expanded war on terrorism, perhaps—cannot be discounted as driving American priorities in a different direction. Assuming US intervention, however, means that the PLAN's role in a contest with and over Taiwan will be less than determinative. Instead, the PLAN may well be viewed by Beijing as expendable in such a contest, but it will remain a powerful weapon in China's arsenal, and one that a threatened Taiwan will have to be prepared to counter.

### **Appendix: transit times to the East China Sea**

Note: "East China Sea" is defined as the northern tip of Luzon. The first number below is for a ship steaming at 20 kts, the second number is for a ship steaming at 14 kts.

- from the US East Coast (Norfolk): 23–33 days;
- from the Mediterranean (Naples): 15–22 days;
- from the Persian Gulf (Muscat): 10–15 days;
- from the US West Coast (San Francisco): 12–18 days;
- from Hawaii (Pearl Harbor): 9–14 days;
- from Japan (Yokosuka): 3–5 days.

These times of course vary with the speed of the reinforcing ships, a factor that has important implications beyond simple transit time.

First, the faster the reinforcing ships proceed, the more fuel they will use, which in turn will require additional fueling stops *en route*, thus delaying their arrival, or finding additional replenishment ships to fuel them underway, not an easy task.

Second, the faster the reinforcing ships proceed, the more likely—almost a certainty—they will arrive with vital engineering and/or weapons and sensor systems out of alignment or inoperative.

Third, the faster their speed, the less training the reinforcing ships will be able to accomplish *en route*, a serious concern since personnel skills will atrophy during a one week or longer period of high-speed transit. This consideration is particularly important for aircraft carriers, whose speed-of-advance is tied directly to aircrew readiness: maintaining the flight proficiency of its embarked air group requires the carrier to vary its speeds and courses to take advantage of available winds; hence a high "speed of advance" restricts the carrier's opportunity to conduct flight operations, which in turn means that reinforcing aircraft carriers could arrive in the East China Sea with untrained or at least rusty aircrews: practically speaking, 20 kts does not permit a CVBG to conduct significant flight operations *en route*; 14 kts does.

## Notes

- 1 The US Navy's description of "littoral seas" as those extending to approximately 600 nm from the continental coast is more useful than that offered by Milan N. Vego, *Naval Strategy and Operations in Narrow Seas*, Portland: Frank Cass, 1999, who does not offer a firm description of "narrow seas", although he infers (p. xv) that they are "waters less than 600 feet deep". This is not a particularly useful definition, however, given the widely varying gradients that mark continental shelves and the ocean bottom in general around the world. Vego also describes narrow seas as "restricted waters", but that is even less useful.
- 2 The author has relied on five primary sources to assess PLAN numbers; the author ranks these in order of reliability as: (1) discussions with PLAN, Taiwan, and US naval officers; (2) A.D. Baker, *Combat Fleets of the World*, Annapolis, MD: Naval Institute Press; (3) *Jane's Fighting Ships*, London: Jane's Information Group; (4) International Institute of Strategic Studies, *The Military Balance*, London: Oxford University Press; and (5) other secondary sources, including media reports.
- 3 The SONG reportedly incorporates French sonar technology and has an unusual stepped sail; the first two boats reportedly experienced very significant self-noise problems, but these appear to have been resolved (*Jane's*; author's interviews). Uncertainty about the viability of the SONG design may have played a role in China's decision to continue building the MING-class.
- 4 There have been many reports of these problems, including Kathy Chen, "China's Inability to Keep Subs Running Shows Broader Woes Plaguing Military", *Wall Street Journal*, August 1, 1997, p. 1; "New PLAN to Train, Purchase Vessel Mix", *Jane's Defence Weekly*, December 16, 1998, p. 25. See *Jane's* 2000, p. 119, for reports of the battery (and other engineering) problems. Training problems are noted in Richard Fisher, "Appendix to Chapter 5: Foreign Arms Acquisition and PLA Modernization", in James R. Lilley and David Shambaugh (eds), *China's Military Faces the Future*, Washington, DC: AEI and M.E. Sharpe, 1999, p. 164. "Chinese Subs Experience Battery, Training Problems" *Navy News & Undersea Technology*, September 1, 1997, p. 5, repeats these reports as well as noting that Egypt, Iran, and India have experienced similar engineering problems with their KILOs. Marina Shatilova, "Zvezda Shipyards Receives order to Repair Chinese Submarine", *ITAR-TASS*, June 16, 2000, in FBIS-CEP20000616000016, reports that the shipyard in Bolshoi Kamen, near Vladivostok, "will repair a Chinese submarine this year". Also see "Russia to Repair Chinese Submarines", *Agentstvo Voyennoykh Novostey*, Moscow, June 28, 2000, in FBIS-CEP20000628000244, which reported that "medium repair" of one of the PLAN's KILOs would begin in the autumn of 2000. Finally, *Combat Fleets 2000*, p. 107, reports that "up to ten Chinese submarines" are scheduled for refits in Russia.

- 5 See, for instance, Jacques Isnard "Chinese Submarine Was 'Submarining' on a Freighter in Channel", *Le Monde*, Paris, February 4, 1999, p. 4, in FBIS-FTS19990204000699, which mentions ten additional KILOs for China; Frank Umbach, "Financial Crisis Slows but Fails to Halt East Asian Arms Race-Part Two", *Jane's Intelligence Review*, vol. 10, No. 9, September 1998, p. 36, gives this number as "10–12 additional" KILOs. The author's conversations with US analysts and senior PLAN officers do not support these reports.
- 6 Author's conversation with US analysts; *Combat Fleets 2000*, p. 597, reports that construction has halted on construction of the AMUR family of submarines. The NATO designation for the AMUR is the "ST PETERSBERG". AIP has long promised to revolutionize conventional submarine capabilities by extending maximum submerged operating time from the KILO's four days to as long as 40 days, but a practical, operational AIP system has yet to be produced. AIP-propelled submarines are also limited in speed: the faster they go underwater, the shorter the time they can remain submerged. Several types of AIP engineering plants are under development; they fall into two broad categories: fuel-burning heat engines, which reuse a combination of oxygen and the products of engine combustion, and electrochemical engines, which transform chemical energy into electrical power by using hydrogen and oxygen. Russia is a leader in developing AIP technology, and the proposed LADA-class will employ a "fuel cell" using liquid oxygen and hydrogen. AIP system variants have been tested at sea by Australia, Russia, and Sweden, with the latter actually operating three submarines equipped with AIP "Stirling" engines that enable them to operate submerged for as long as two weeks. A useful explanation of AIP technology is contained in Richard Scott, "Boosting the Staying Power of the Non-Nuclear Submarine", *Jane's International Defense Review*, 32, No. 11, November 1999, pp. 41–50.
- 7 The PLAN uses "type" numbers for its submarines. For example, the ROMEO is designated Type-033, the MING is Type-035, the SONG is Type-039, the HAN is Type-091, and the XIA is Type-092. "New Nuclear Submarines To Be Launched by Year 2002", *Ming Pao*, Hong Kong, December 8, 1999, p. B17, in FBIS-FTS19991207002001, seems too optimistic, given China's shipbuilding record (author's conversations with US analysts). Several late-1999 press reports that China was going to purchase two ABULA-class SSNs from Russia have not been substantiated. The AKULA is a circa. 1980-designed submarine, but very quiet and far superior to the HAN, which is patterned on the c.1960 Soviet NOVEMBER-class.
- 8 Quoted in Chuan, FBIS-CHI-99-024.
- 9 A point-defense system is designed to defend only its own ship; an "area-defense" system has the capability to defend a formation of ships. The key to this difference is the area-defense system's range, and its ability to detect and process multiple targets simultaneously, especially targets with a crossing component in their fire-control solution.
- 10 These numbers are very "soft". Over 90 percent of these weapons are old-fashioned "contact" mines, although China's inventory does include mines with other detonation methods, including pressure, magnetic, and acoustic.
- 11 Wan Xiaoyun, "Problems and Solutions for War Zone-wide Mobilization Under High-tech Conditions", *Zhanyi Houwin*, pp. 705–06, cited in Jianxiang Bi, "Managing Taiwan Operations in the Twenty-first Century: Issues and Options", *Naval War College Review*, Vol. 52, No. 4, Autumn 1999, p. 12. Also, see "Fujian mobilizes Civilian Vessels in Drills", *Fuzhou Fujian Ribao*, July 16, 1999, p. 2, in FBIS-CHI-99-0802 for a report on an exercise in which "more than 100 civilian vessels" conducted "mobilization and drills"; and "PLA Refits Merchant Ships in Reserve", *Ming Pao*, November 2, 1999, p. B14, in FBIS-CHI-99-1102, for reports that these ships are also being outfitted to augment the PLAN in warfare missions. The past several hundred years of warfare—including the Napoleonic wars, the American Civil War, and last Century's two World Wars—demonstrated the difficulties of organizing and controlling a nation's merchant fleet. Even US efforts in Vietnam showed how difficult it is to

- organize a large, disparate merchant marine force to support an overseas wartime effort. Unpublished manuscript by John Prados, Washington, DC, 1992.
- 12 "Mainland Tests Long-range Missile", *South China Morning Post*, August 3, 1999, reported the successful DF-31 test. The PLAN's lone GOLF-class ballistic-missile submarine reportedly is being modified to serve as a test platform for the JL-2, as it did for the JL-1.
- 13 Mark A. Stokes, *China's Strategic Modernization: Implications for the United States*. Carlisle, PA: US Army War College, Strategic Studies Institute, 1999, provides an excellent synopsis of China's current cruise-missile development programs.
- 14 *Combat Fleets 2000*, p. 103, estimates 485 fixed wing aircraft and 28 helicopters; *Jane's 2000*, p. 115, estimates "over 800 aircraft", but notes some of these are "laid up unrepaired". Sidney Trevethan, Federation of American Scientists' web site, [www.fas.org/nuke/huide/china/agency/plan-af-orbat-st.htm](http://www.fas.org/nuke/huide/china/agency/plan-af-orbat-st.htm), gives a figure of 1,098 PLAN aircraft as of March 2000.
- 15 A good summary of these reports is contained in Thomas J. Hirschfeld, "China's Aircraft Carrier Program: A Virtual Dragonfly?", *The Korean Journal of Defense Analysis*, Vol. 10, No. 1, Summer 1998, p. 148, who notes that "the public record on China's carrier plans is wildly inconsistent", Initial reports that VARYAG would be refitted for PLAN operation—"Beijing Purchases Aircraft Carrier From Ukraine Through Macao Company and Then Puts It on Active Service After Re-Equipping It", *Kuo Jih Pao*, April 17, 1998, p. A20, in FBIS-CHI-98-107, are not supported by the ship's poor material condition, as reported in the Chinese press: see "PRC Converts Old Aircraft Carrier into Military Theme Park", *Xinhua*, May 8, 2000, in FBIS-CPP20000508000073, for the report that the carrier "was poorly maintained by the Russian Navy". Furthermore, *AFP* reported on November 4, 1999 that MINSK had suffered a fire that burned for 14 hours (FBIS-FTS19991104000496). Pictures and eyewitness accounts of these ships indicate that they did not receive the careful preservative treatment required during long-term inactivation to enable a ship to be returned to duty.
- 16 Quoted in Willy Wo-Lap Lam, "PLA Weapons To Be Upgraded By 2010", *South China Morning Post*, December 15, 1999; also see Si Yanwen and Chen Wanjun, "Navy to Develop More High-Tech Equipment", *Jiefangjun Bao*, June 10, 1999, in FBIS-CHI-1999-0611. Similar statements were attributed to Jiang Zemin in Pamela Pun, "PLA Told to Speed Weapons Research", *Hong Kong Standard*, November 6, 1999.
- 17 Author's visits to PLAN training facilities, 1994–2000, and onboard JIANGWEI- and LUHU-class ships in 1998 and 2000.
- 18 Eric McVadon, "Systems Integration in China's People's Liberation Army", in Lilley and Shambaugh, *op. cit.*, p. 234. Also see "Unswervingly Take the Road of Strengthening Armaments With Science and Technology", *Jiefangjun Bao*, July 3, 1999, p. 1, in FBIS-CHI-99-0712, which noted that "supply and maintenance can directly affect the generation and development of battle readiness", especially for high-technology weapons systems.
- 19 Author's conversations with senior PLAN officers.
- 20 Chen Wanjun and Zhang Chunting, "Shouldering the Important Task of a Century-Straddling Voyage—Interviewing Newly Appointed Navy Commander Lieutenant-General Shi Yunsheng", *Liaowang*, No. 8, Beijing, February 24, 1997, p. 2, in FBIS-CHI-97.
- 21 Ren Xiangdong, "PLA Ground, Naval, and Air Units Implement New-Generation Combat Regulations", *Liaowang*, June 7, 1999, pp. 32–33, in FBIS-CHI-99-0629, 12 pp, contains the statements quoted in this section.
- 22 Quoted and cited in Chen and Zhang 1997, pp. 13–15. Also see Zhang Wei, *Jianchuan Zhishi*, January 1997, pp. 8–9, in FBIS-CST-97-006.
- 23 Wang Zudian (identified as a Space Technology Information Research Institute researcher), "The Offensive and Defensive of High-Technology Arms Equipment", in

*Liaowang Weekly*, 21st edn, quoted in *Xinhua*, Hong Kong, May 24, 1999, in FBIS-CHI-99-0526.

- 24 Examples of the importance and difficulty of satisfying this requirement abound. For instance: (1) Nelson's 1805 pursuit of his French enemy through the Mediterranean and then back and forth across the Atlantic; (2) the fumbling and uncertainties of Jellico's and Scheer's maneuvers at the May 1916 Battle of Jutland; (3) Japan's overwhelming defeat at Midway in June 1942; and (4) the battles around the Solomon Islands in 1942 and 1943.
- 25 Discussed by Paul H.B. Godwin, "China and the Use of Force: Power Projection and PLA Military Operations", Working Draft Paper, October 18, 2000, p. 21.
- 26 Author's interview with US Navy Meteorological Service officers, August 1999.
- 27 Zhang Zuqian, "National Defense Modernization and the Taiwan Question", *Ta Kung Pao*, Hong Kong, October 27, 1999, p. D3, in FBIS-CHI-1999-1108.
- 28 Shi Guhaong, "Difficulties and Options: Thoughts On the Taiwan Matter", *Zhanlue Yu Guanli*, Beijing, October 1, 1999, pp. 1–4, in FBIS-CHI-1999-1110 [Shi is accredited to the Nanjing International Relations Institute's International Strategic Studies Center].
- 29 See June Teufel Dreyer, *The PLA and the Kosovo Conflict*, The Letort Papers, Carlisle, PA: The U.S. Army War College Strategic Studies Institute, May 2000, p. 11, for a discussion of PLA attraction to RMA terms such as "a system of systems".
- 30 Public Law 96–8, 96th Cong., *Taiwan Relations Act*.
- 31 See "Taiwan vs Normandy", Federation of American Scientists website, [www.fas.org/man/dod-101/ops/taiwan-d-day.htm](http://www.fas.org/man/dod-101/ops/taiwan-d-day.htm), p. 2, for details of this comparison. A startling fact about the Normandy operation is that US Pacific forces *at the same time* carried out the Marianas invasion, which involved transporting the huge assault force across more than 1,000 nm of ocean.
- 32 See Thomas J. Christensen, "Windows and War: Changes in the International System and China's Decision to Use Force". Draft article of March 23, 2001, p. 49.

## **Part II**

# **The Republic of China's naval options**



## 5 The contents and goals of the ROCN's modernization

*Chih-heng Yang*

### **Introduction**

During the Cold War, the missions of the Republic of China Navy (ROCN) were to safeguard the security of Taiwan Strait and ensure smooth marine transportation to Taiwan's offshore islands.<sup>1</sup> After the Cold War ended, a new emphasis has been placed on ensuring command of the sea in order to protect the security of the sea lanes, which are Taiwan's most important trade and commercial link with the world.<sup>2</sup> The scope of these missions has been enlarged with each passing year. It would not be enough, therefore, for the ROCN construction only to stress war at sea against the People's Republic of China's (PRC) People's Liberation Army Navy (PLAN) in the short term.

Command of the sea in the Taiwan Strait is more important in the long term. But the ROC must remain concerned about whether its Navy has the capability to fulfill these missions. In fact, the modernization of the ROCN has been slow compared to that of the PLAN. Until the 1980s, under the "Taiwan-US Defense Co-operation Act", the United States supplied many weapons systems to Taiwan and assisted in its naval modernization. However, after that formal defense co-operation ended, Taiwan's naval modernization slowed down, while the PRC's naval capability began to develop rapidly, with accelerating acquisition of both surface combatants and submarines, conventional and nuclear. Under this trend, the outlook for Taiwan's ability to ensure command of its seas cannot be too optimistic.

We can say, therefore, that ROCN modernization has been driven by two key factors: the first is defense co-operation between Taiwan and the United States, which dominated until the 1980s; the second is the increasing seriousness of the PRC's military threat after the 1980s. In this chapter, the ROCN's modernization in these two periods will be discussed.

### **ROCN modernization during the period of Taiwan-US defense co-operation (1951-79)**

In the spring of 1951, the ROC and the United States declared their agreement to cooperate over defense under which the United States would supply military assistance to the ROC. On May 1, 1951 the United States Military Assistance



Advisory Group (MAAG) arrived in Taiwan and began to assist ROC military training. On the same day, the Navy Advisory Division of the MAAG's Navy Section was established at Kaohsiung's Tsoying Naval Base and began to help Taiwan's naval development. For the United States, containment of both the PRC and the Soviet Union was the main objective at that time. As part of this strategy, the United States sent troops to fight the Korean War and, at the same time, dispatched the Seventh Fleet to the Taiwan Strait.<sup>3</sup>

From May 1, 1951, to the end of 1979, MAAG operated in Taiwan for 28 years. The first 15 years in particular were the "blossom time" for the ROCN and US co-operation. During that time, the members of MAAG totaled 126 personnel, and the scope of co-operation was at its broadest. In addition to the Navy Division, the United States also established the Marine Advisory Division in Tsoying.<sup>4</sup> After 1967, however, when the United States began to adjust its China policy, the number in the Navy Advisory Division was reduced, and the scope of co-operation in military affairs minimized. In April 1980, the MAAG finally closed down. For Taiwan, those 28 years co-operation with the United States provided an invaluable opportunity to learn about naval modernization. It laid the foundation for the ROCN to go it alone in terms of military modernization in the future.

### ***The background of Taiwan-US defense co-operation***

In 1950, when the Korean War began, the United States was prepared to give Taiwan military and economic assistance in order to protect Taiwan and enhance the security of the Western Pacific. At the time, the US State Department again invited Taiwan's Ministry of Foreign Affairs to discuss the draft of a ROC-US Mutual Defense Assistance Agreement, which had been first raised in 1949. After extended negotiations between the two agencies, an agreement was officially signed in 1951. On May 1, 1951, the US MAAG was established in Taipei. In 1953, following the end of the Korean War, the PRC redeployed its troops southward, and the threat level in the Taiwan Strait increased. In order to contain the PRC's aggression, the United States and the ROC signed the "Taiwan-US Defense Co-operation Treaty" on December 2, 1954. Immediately afterwards, the United States stationed both US Naval and Air Force personnel in Taiwan to assist with the island's defense affairs. In November 1955, the Command Headquarters of Defense Co-operation was established in Taipei.<sup>5</sup>

The US commander of the Taiwan Defense Command was under the Commander-in-Chief of the Pacific Fleet's Seventh Fleet. His missions were to help the ROC defend the Taiwan and Penghu Islands. The bulk of US forces deployed to Taiwan were therefore drawn from the US Navy and US Air Force. From January 1956, especially, the "Le Chen Co-operation Operation Plan" was jointly formulated by the two countries. The purpose of the plan was to defend the island of Taiwan. According to this plan, the United States would supply the necessary weapons systems to Taiwan and gave advice and guidance on new doctrines, technology, and operational combat training. With this assistance, Taiwan's naval modernization took its first steps.

### ***The ROCN's missions***

According to US advice, Taiwan's Navy was to perform the following functions:<sup>6</sup>

- 1 to defend its own major naval bases and patrol the littoral waters along the southeast coast of mainland China;
- 2 to destroy all Communist forces preparing to attack;
- 3 to annihilate any Communist sea-borne invasion force;
- 4 to harass any Communist landing force ashore, and land and support its own counter-landing forces defending Taiwan, the Penghu islands, and forward bases.

According to the bilateral agreement of May 1954, Taiwan's Navy would come under US command in the event of an outbreak of fighting in the Taiwan theater. If necessary, the American Commander could order Taiwan's Navy fleet into action, which would then be deployed alongside the United States Navy (USN) according to the missions set down by the United States as detailed above.<sup>7</sup> In order to ensure smooth co-operation under such single control, the two navies conducted co-operative training programs every week. Year by year, these training programs taught Taiwan's naval officers much about modern military tactics and techniques used by the USN.<sup>8</sup>

### **The Taiwanese Navy's policy**

During the period of Taiwan-US defense co-operation, the Taiwanese Navy's fighting missions were as described above. The most two important missions, however, were:

- to safeguard the security of the Taiwan strait;
- to patrol and supply the offshore islands.

In order to execute these two missions, in 1969 the Director of the Navy Section of MAAG, Capt. David F. Loomis, made three suggestions to the Taiwan Navy:<sup>9</sup>

- 1 Taiwan must have enough warships in case of a sudden military crisis as well as conducting routine duties, undertake training, and perform combat missions.
- 2 Taiwan must have enough logistic ships to support missions now and in the future.
- 3 Taiwan must have the capability to transport at least one division of marines in order to threaten PLA troops deployed on the southeast coast of mainland China, which could easily be moved to other areas and threaten Taiwan.

Following these suggestions, the Taiwan Navy adopted several modernization measures.

***Replace obsolete vessels***

Most of the warships in Taiwan Navy were Second World War generation ships with corresponding weapons systems, both of which were obsolete by the late 1960s. In order to enhance the ROCN's fighting capability, the Navy Section of MAAG agreed to replace these limited fighting vessels with more modern replacements. In order to limit the ROCN to missions to no more than the defense of Taiwan, however, the United States adopted a "one replaced one" policy. This meant that for each new vessel Taiwan acquired from United States, an older vessel of the same type would have to be retired. Because of this restriction, Taiwan sought ways to acquire new vessels from other countries, and also began to build its own warships in order to develop some independence of naval policy.

***Establishing a submarine squadron***

During the time of Taiwan-US defense co-operation, Taiwan had no submarines. American assistance was considered to be adequate for the ROCN's anti-submarine missions. The PRC, however, continued to expand its submarine force capability, steadily increasing this type of threat to Taiwan. According to a ROCN evaluation, this was vitally necessary. There were, of course, many ways to achieve this, but it was generally recognized that the best and quickest way was to acquire submarines—the most effective way to counter submarines is with other submarines. This thus became a priority for the ROCN. At that time, anti-submarine training for the ROCN was conducted sporadically when US Seventh Fleet submarines passed through Taiwanese waters. But these opportunities were infrequent and insufficient. For example, in 1968, there were only sixty-eight such occasions, and these were further reduced by either bad weather or other on-going missions.

Though Taiwan hoped to establish a submarine squadron and repeatedly made such requests, it was not as easy as expected to achieve. In 1969, Taiwan's Naval Attache in Washington DC, Zou Jian, asked the United States to lease four submarines to Taiwan. At that time, the Commander of the Pacific Fleet, understanding the needs of Taiwan, was disposed to agree to the request. If the State Department and Pentagon also agreed, the Pacific Fleet was ready to assist Taiwan in establishing a submarine force. However, the two Departments regarded the proposal as exceeding purely military considerations. Thus, Washington agreed only to sell five SUMNER-class frigates. For additional reasons, the United States said it was too expensive for Taiwan to maintain and operate submarines, and pointed out the logistics and training issues that would be problematic for Taiwan. On October 21, 1969, the State Department responded to Taiwan's overtures that the United States could not agree to give, lease, or sell submarines to the Taiwan Navy.<sup>10</sup>

Nevertheless, the determination of Taiwan to acquire submarines remained unchanged. In April 1971, the Taiwanese Navy Attache in Washington DC, Wang Xi-ling, sent a message to the ROC Armed Forces Chief of Staff, Lai Ming-tang,

in which he reported the Pentagon's agreement to support the lease of two submarines to Taiwan. He mentioned that he did not inform the MAAG of this message. At that time, the Commander-in-Chief of the Navy, Song Chang-jian, convened a task force to address this plan and appointed the Deputy-Commander in Chief of the Navy, Huang Xi-lin, to be the leader of the task force. The plan was code-named "Plan Neptune" and after two meetings with other sectors of the Taiwanese Navy, a submarine force was established.

On July 31, 1973, Taiwan commissioned its first submarine squadron. The two submarines, the SS-91 and SS-92, were leased from the United States and arrived in Taiwan to become the main force of the squadron.<sup>11</sup>

### *Anti-fast-attack missile craft*

In October 1967, Israel's frigate, the EILAT, was damaged and sunk by an Egyptian OSA-class fast-attack missile craft. This event caught the attention of the ROCN. Taiwan's Navy considered the example meaningful and important to the development of its fighting tactics and strategy. It meant that "the small could defeat the large" in naval engagements and thus countries with small-scale navies could use such missile craft to challenge the navies of larger states. At that time, the PRC's Navy possessed both the same OSA-class fast-attack missile craft as Egypt as well as HEMA-class boats, totaling about ten vessels. Furthermore, the PRC was also building fast-attack missile crafts domestically at Liao ning on Changxing Island. Because of Israel's experience, Taiwan also began to formulate an anti-fast-attack missile craft policy, which included three measures:<sup>12</sup> detection, attack, and defence.

### *Detection*

The first element was the procurement of anti-electronic systems for every radar station. The objectives behind this purchase were to acquire the information about the PRC's fast-attack missile craft; direct the Taiwanese Air Force in order to increase its photographic reconnaissance of the mainland Chinese coast; and request friendly states to provide more information from fishing and commercial ships about the activities of the PRC's fast-attack missile craft. Moreover, Taiwan's Navy also improved the radar detection systems installed on its own vessels.

### *Attack*

The second measure was to deploy anti-missile systems and disturbance magnetic systems on board major warships and to request the ROC Air Force and Special Forces to plan strikes against PLAN bases. Moreover, the Taiwanese Navy would plan to build as many fast-attack craft as soon as possible to counter those of the PRC, and requested the United States to supply UH-1B attack helicopters, or upgrade the helicopters already in service in Taiwan, in order to increase their anti-fast-attack missile craft capability.

*Defense*

In order to disrupt the PRC's missile guiding radar and terminal guidance systems, the Taiwanese Navy wished also to procure electronic countermeasures to be deployed on every vessel.

**The Taiwanese Navy's weapon systems modernization**

For defensive operations, the ROCN adopted two approaches. The first was to request additional supplies from the United States, the other was to promote technological co-operation with the United States to enable Taiwan to acquire the capacity and capability to build its own vessels in future, the preferred long-term option. The years 1969 and 1970 were the high water mark for Taiwan in acquiring American-made vessels, due to an increase in the rate at which the United States itself was replacing naval vessels. Taiwan's procurement of many vessels at that time was the fastest and cheapest way to improve and modernize the ROCN's naval weapon systems. During the 1970s, the Taiwanese Navy's primary weapon systems were as follows.<sup>13</sup>

***Surface fighting vessels***

(1) Frigates DD/DDG ( $\times 24$ ): Frigates formed the main fighting force of Taiwan's Navy. Typically, one third of them were in a state of fighting readiness, one third in training, and one third under maintenance. Most of Taiwan's frigates were from the United States, including many that had been replaced by the USN in the 1970s, with additional weaponry. In this period, this was a sufficient naval force to deter the PLAN from attacking the island of Taiwan.

(2) PG-type fast-attack craft ( $\times 30$ ): The predominant characteristics of these vessels were high speed, fire power, and small size. They were well suited to the waters around Taiwan, Penghu, and the offshore islands. They were also the best counter to the PRC's fast-attack missile craft. Built in Taiwan with US technology, the price per vessel was three million US dollars. Their fighting capability was enhanced with the incorporation of missile systems.

(3) Ship-based missiles: The large number of PLAN fast-attack missile craft deployed on the opposite side of the Taiwan Strait, posed a direct threat to Taiwanese vessels sailing in the Strait on patrol or transport missions. Because the air defense capability of Taiwan's naval vessels was very weak, it was necessary to develop ship-based missiles against the PRC's fast-attack missile craft. Although costly, the acquisition of anti-ship missiles was important for the morale of Taiwan's naval force. At the time, the ROC Navy acquired the BPOMS-AIM-7E system at a cost per missile of two million US dollars.

***Naval aviation***

The ROC Navy's aviation arm acquired two systems. The first was the Helicopter UH-IH ( $\times 40$ ). These helicopters increased Taiwan's capability to counter both

submarines and fast-attack missile craft while Taiwan was developing its own fast craft.

The other system was the P2H anti submarine patrol aircraft of which twenty four were acquired. These planes could detect PRC's submarine activities and also escort and support both Navy and ROC Air Force operations. They were particularly useful when operating against PRC submarines.

### ***Submarines***

The ROCN planned to acquire twelve diesel SS submarines. Acquiring them proved a very difficult task, though according to the ROCN's assessment, twelve were necessary. Taiwan continued to try to persuade the United States to sell them, but by the end of the formal Taiwan-US defense co-operation, only two submarines had been delivered.

### ***Mine warfare force***

- 1 Coastal minesweepers MSC ( $\times 14$ );
- 2 Inshore minesweepers MSML ( $\times 7$ ).

### ***An amphibious force (first priority development)***

This was a high-priority requirement. It included landing ship docks, LSD ( $\times 14$ ); an amphibious command ship, LCC ( $\times 1$ ); a fast transport vessel, LPR ( $\times 1$ ); tank landing ships, LST ( $\times 22$ ); medium landing ships, LSM ( $\times 4$ ); general purpose landing ships, LCU ( $\times 21$ ); landing craft, LCM ( $\times 309$ ); and troop landing craft, LCVLP ( $\times 180$ ).

### ***Naval logistic support***

A wide variety of naval logistic vessels included, as top priority: a submarine tender, AS ( $\times 1$ ); submarine rescue vessels, ASR ( $\times 2$ ); and Oilers, AOG ( $\times 6$ ). Other logistic ship requirements of only second priority were: ship repair floating docks, ARD ( $\times 2$ ); floating docks, AFD ( $\times 2$ ); repair ships, ARG ( $\times 1$ ) and ARL ( $\times 1$ ); survey ships, AGS ( $\times 2$ ); coastal survey ship, AGSC ( $\times 1$ ); offshore island transport ships, AP ( $\times 3$ ); light passenger transport ship, AKL ( $\times 1$ ). Of lower priority still were rescue ships, ARS ( $\times 1$ ) and ATR ( $\times 1$ ); ocean going tugs, ATF ( $\times 2$ ); rescue assistance ships, ATA ( $\times 2$ ); offshore island transport boats, LCM ( $\times 2$ ).

Under the category of naval logistic vessels was also the Harbor Boat Service. This organization operated 117 vessels ships and boats of a wide variety of different kinds necessary for harbor service.

### ***Marine Corps***

The Marine Corps in Taiwan in 1970s consisted of two divisions. They hoped to acquire 80 UH-1H helicopters in order to develop a vertical landing capability,

and to enlarge the functions of Marine Corps that were suitable for operations in and around the Taiwan Strait.

### **Taiwan alone against the PRC military threat (1980–present)**

In April 1979, the Navy Section of MAAG ended its co-operation with the ROCN. In the same year, the PRC had engaged in war with Vietnam (February 17–May 15), and military tension increased. In fact, in the 1980s, the PRC suffered both internal and external military tension. Internally, the PRC reduced its military personnel by about one million and adjusted the number of its military regions from eleven to seven. In the Southeast of mainland China, the PRC eliminated the Fu-Zo military region. Under such circumstances, it was more difficult for the PLA to attack Taiwan. Nevertheless, the PLAN continued with its military modernization.

#### ***The PRC's naval posture***

During the period of Taiwan–US defense co-operation, Taiwan maintained superiority in both naval tactics and weapons quality, but not in quantity. Despite its inferiority in quality, the PRC's naval strategy changed from “coastal defense” to “off-shore defense”. The scope of the off-shore areas was very broad, including the Yellow Sea, the East China Sea and the South China Sea. According to the “off-shore defense” strategy, the PLAN needed to build an effective fighting capability through force modernization by the end of the twentieth century.<sup>14</sup>

Since 1950, the PLAN has made some achievements in modernization. At present, it has nuclear and conventional submarines that are its main force in “blue-water” military operations. In a conflict, they can launch submarine-based missiles to attack land targets. In off-shore waters, the main force is made up of destroyers and frigates. Accompanied by land-based bombers of the PLAN Aviation Force, they can attack any target inside the first island chain. In the coastal areas, there are fast-attack missile craft, short-range bombers and coast guard vessels. In other words, the PLAN has created a capability made up of a sky-surface-submarine and long-middle-short range multi-level fighting force.<sup>15</sup>

PLAN planners believe there are three potential theaters of naval conflict: the Yellow Sea, the East China Sea, and the South China Sea, the last highlighted by sovereignty conflicts between the PRC and some ASEAN countries. From the view of naval force deployment, the Yellow Sea and East China Sea are both less than 200 m deep, and their transparency is poor; thus, they are suitable for operations by destroyers and frigates. The South China Sea is different: with depths up to 1,000 m and good transparency, it is suitable for submarine operations.<sup>16</sup>

In order to increase the fighting capability of “off-shore defense”, in the 1990s, the PRC has procured Su27 and Su30 MKK aircraft from Russia. In addition, PRC also procured four KILO-Class diesel-electric submarines and two SOVREMENNY-class destroyers equipped with SS-N-22 “*Sunburn*” anti-ship missiles. All of these high tech aircraft and vessels are deployed in the South Sea and



East Sea Fleets. It is very clear that the PRC hopes to use them to threaten ROC and US naval forces in West Pacific, particularly the US Seventh Fleet.

### **The Taiwanese Navy's response**

After the end of the Cold War, the PRC has shifted its military focus to its South-east coast. For the ROCN, there are two naval defense missions: keeping command of the sea, and keeping safety of the sea lanes. It is clear that the target of these missions is not the entire PLAN. The plan of the Taiwan Navy's fighting capability development remains geared to the needs of defending Taiwan. Basically, the force size has not significantly expanded since the time of Taiwan-US defense co-operation. Since the 1980s, in order to respond to the PLAN's threat, Taiwan has procured many weapons systems from the United States on the basis of the Taiwan Relations Act and also sent military officers to the United States for training. On the other hand, in order to reduce its dependence on procurement from the United States, Taiwan also sought new sources of equipment from countries such as Holland, Germany, France, and Israel. Of course, above and beyond such procurement, the protective umbrella of the Seventh Fleet remained very important for Taiwan as well.

Since 1980, the ROCN has adopted several measures to respond to the threat from the PLAN.

#### ***The acquisition of more submarines (Jian Long plan)***

In 1983, Taiwan procured two submarines from Holland that was the first big procurement expenditure not sourced from US submarines and remains a sensitive issue between Taiwan, the United States, and the PRC. In April 2001, President Bush agreed to sell eight submarines to Taiwan, which represents a significant breakthrough.

#### ***New generation ships plan (Guang Hua plans)***

Beginning in the early 1990s, Taiwan began to build PERRY-class missile frigates domestically, based on a design supplied by the United States. Seven ships have been produced in Taiwan, under the "Guang Hua plan". In addition, Taiwan bought six LAFAYETTE-class frigates from France, under the "Guang Hua II plan". While these new generation ships were being built or purchased, Taiwan rented several KNOX-class frigates from the USN.<sup>17</sup>

#### ***Naval aviation command***

In order to respond to the PRC submarines, Taiwan established a Naval Aviation Command. This force included S-70C helicopters procured from the US and S-2T anti-submarine warfare (ASW) aircraft transferred from the Air Force to the Navy. The existing ASW command was merged into the Naval Aviation Command in order to further modernize the ROC airborne ASW force.<sup>18</sup>



***New missile systems on all vessels***

Facing the threat of PLAN surface combatants and submarines, the ROC developed new generations of anti-ship missiles with long range capability and high penetrating power, including the “*Hsiung Feng II*” all-weather anti-ship missiles with dual homing capability through active radar and imaging. It is now made domestically, and is becoming the main anti-ship force for the ROCN. It has been deployed in both on land and on ships. Mass production is in process.<sup>19</sup>

At the beginning of the twenty-first century, the missions of Taiwan’s Navy are still similar to the 1970s. In peacetime, the Navy is responsible for marine reconnaissance, patrolling, supply of offshore islands, and escorting ships. In wartime, its mission is to carry out counter-blockade and surface interception operations to ensure command of the sea. For the next stage of navy modernization, establishing missile systems; automation of command, control, and communications system; and two-dimensional ASW warfare are the three main objectives.<sup>20</sup>

**What more does the Taiwanese Navy want?**

In the future, the most likely type of naval confrontation between the ROC and the PRC must be an attempted sea blockade of Taiwan by the PLAN. Recently, the PRC procured four KILo-class submarines and two SOVREMENNY-class destroyers equipped with SS-N-22 cruise missile which are deployed in the South Sea Fleet and the East Sea Fleet. These weapons certainly increase the PLAN’s capability for waging a sea blockade.

According to the doctrines of the PLAN, whether such a blockade of Taiwan will succeed depends on the stance of the US–Japan alliance. If both those two countries have the determination to intervene in the conflict in the Taiwan Strait, the PLAN will consider the risk of a war with the US–Japan alliance and retreat from its blockade operation, especially if United States deploys its carrier groups.<sup>21</sup>

The fact that the PRC hopes to avoid confrontation with the US–Japan alliance signals a very important message to the ROCN above and beyond its modernization plan: Taiwan must search for international assistance in case of an attempted blockade. Taiwan must try to enlarge its military exchanges with those friendly countries *in peace time*, even if it angers the PRC. In the past 10 years, a series of five Taiwanese National Defense Reports showed that the guiding principle of using armed force is “strategic endurance but tactical expeditiousness”. “Strategic endurance” means that Taiwan needs to cooperate with friendly countries to contain the PRC’s use of force in the Taiwan Strait. Taiwan must try and try again to discuss with US, Japan, and other East Asian countries to create a military exchange and security co-operation mechanism.

Conversely, the Taiwanese military must understand that this is a cooperative era; no country can defend itself by its own military capability. Taiwan must open its mind and try to enter into the international society to seek military partners *especially with its neighbors, even when there is no official relationship with them*.

In fact, there are two channels that are currently available to Taiwan.

(1) *The United States Taiwan Relations Act*. This Act is a very important channel between Taiwan and the United States in security issues. Taiwan can establish communication networks and net assessment mechanism with Congress, the Pentagon, the State Department, and the White House, in order to supply correct information to each other about the Taiwan Strait situation.

(2) *The intervention mechanism of the US–Japan alliance in East Asia*. To date, the US–Japan alliance has never indicated that in cases of conflict in “areas surrounding Japan” either state would not intervene. Japan has refused to promise the PRC that “areas surrounding Japan” would not include Taiwan. Japan’s purpose is to maintain flexibility in order to intervene in any Taiwan Strait conflict if and when it decides it would affect Japan’s security. Some Japanese Congressmen and retired generals of the Self Defense Forces think that Japan should assist Taiwan in defending against PRC aggression. Therefore, it is favorable to Taiwan to use this channel. Taiwan may be able to establish a communication network and net assessment mechanism with the Japanese Diet, Ministry of Foreign Affairs, Ministry of Defense, and the Prime Minister’s Office in order to mutually supply information about the Taiwan Strait situation.

## Conclusion

The ROC’s naval modernization is the most important focus for the armed forces’ construction. In the 1980s, Taiwan placed its emphasis upon the Army and Air Force, raising these two branches to higher levels than the Navy. Although the ROCN modernization included modern, new generation vessels and fast-attack missile craft and had made much progress, it nevertheless lagged behind the PRC. In particular, the anti-submarine force is still the weak point in the military defense of Taiwan. Recently, in late 2001, President George W. Bush agreed to sell eight submarines to Taiwan, which will be useful for Taiwan to increase its anti-submarine capability. Besides submarines, however, Taiwan also needs advanced ship-to-ship missiles, especially cruise missiles such as the SS-N-22, which the PRC has procured from Russia. Otherwise, in the age of missile war, Taiwan Navy’s morale will be affected by PRC’s cruise missiles. Therefore, after acquiring submarines, the next objective will be the cruise missiles that Taiwan must try to acquire.

## Notes

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- 6 Navy General Headquarter, *op. cit.*, pp. 191–92.
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## 6 An assessment of the ROCN's modernization program

### Strategic and operational considerations

*Martin Edmonds and York W. Chen*

#### Introduction

The central theme of this chapter is to look at the external environment (i.e. threats, geography, technological possibilities, and political constraints) that the Republic of China Navy (ROCN) faces and to ask whether or not the ROCN's current modernization program can effectively respond. It is not possible, however, to interpret and understand this question, or make useful practical and reasoned policy proposals only by describing and analyzing the equipment that the ROCN either has recently obtained, or plans to include in its future inventory. The most critical problem of defense planning for a regional medium power such as Taiwan is to determine what is vital and, in more practical terms, decide—under the whole range of relevant circumstances prevailing at the time—what kinds and range of threats indicate what sorts of response.

The measure of the ROCN's contribution to Taiwan's security is far from being the level or even the sum of its visible fleet. It rests more on the degree of how the Taiwanese Navy planners optimize their capability cost effectively, and promote a more joint approach to Taiwan's defense needs. In other words, the yardstick by which the ROCN's efforts on whether the current modernization program can be regarded as successful or not is the extent to which the ROCN's strategic and operational concepts can credibly and effectively match their future platforms and systems against China's new naval inventory. More importantly, such strategic and operational concepts must also contribute effectively to Taiwan's overall defense and military strategy.

Over the past 50 years, Taiwan's defense and military strategy has been altered five times: "limited offensive" from the 1950s to early 1960s; "active defense" from the late 1960s to the early 1970s; a synthesis of offensive and defensive—*gong shou yi ti*—in the 1980s; and "resolute defense, effective deterrence" in the 1990s. Currently, Taiwan's military strategic posture is one of "effective deterrence and strong defense posture". Each alteration represented not only a response to differing external and environmental circumstances, but also a different stage in the evolution of a continuous struggle for dominant strategic/operational concepts among and between the three ROC Armed Services.

As Builder has correctly pointed out, defense planning is “determined more by culture and institutional preferences for certain kinds of military forces than by ‘threat.’ There are many ways to interpret a threat; (and) there are many ways to deal with any particular interpretation of a threat”.<sup>1</sup>

Although this insight may not surprise anyone who has ever thought about how Armed Services actually operate, at least for foreign analysts or local civilians, the issue of inter-Service rivalry and power-broking in the understanding of Taiwan’s defense policy deserves more attention than it has hitherto received. The formulation of any military strategy or operational concept must be approached from an organizational/cultural perspective. The practice of interpreting defense policy decisions in terms of “rational behavior” is therefore neither realistic nor practical. This is especially the case when applied to the analysis of non-quantifiable and ill-defined problems, such as those posed by issues of defense planning, the formulation of military doctrine, and the roles of the constituent Armed Services. In other words, each of Taiwan’s strategic revisions, in a deeper sense, was not merely a matter of rational response to its perceived strategic environment, but an indicator of the political influence of each individual Service and the politico-military leadership as well.

It is difficult to refute the importance of the navy to a maritime state, such as Taiwan. There is little evidence from the past record of the defense of Taiwan against invasion to suggest that the Taiwanese could successfully overcome an enemy whose forces had *already* landed on her soil.<sup>2</sup> The question should be one of where those enemy forces would attack, rather than whether they would. Most commentators agree that Taiwan should maintain a navy, but there is little consensus about how strong it should be. Much effort has gone into analyzing what kinds of warships the ROCN needs, yet few have addressed the central issue of what the ROCN’s role should be in the overall defense of Taiwan. At the first glance, it seems that the debate over the role of the ROCN in the event of a possible Chinese invasion is encapsulated in what has been referred to as “blue water” school/“gray water” school debate.

This debate has revolved around the *perceived* ability of the ROCN to repel a Chinese amphibious attack from the sea, the relative importance of an anti-blockade operational strategy to Taiwan’s overall military strategy, and the most cost-effective high/low mix of the ROCN’s warships. A better understanding of the ROCN’s programs, however, should begin with what role that the ROCN *intends* or *is expected* to perform by the other two Services or the civilian political leadership. Even if neither of the two extremes of the “blue water”/“gray water” school is representative—in fact, the ROCN Admirals have tended to vacillate somewhere between these two extremes—for analytical purposes, the debate between them will be taken as a starting point in the examination below of the ROCN’s role in Taiwan’s military planning.

The issue is further compounded by the variety of missions—from traditional command (or denial) of the sea to a less clear sea-based anti-theater ballistic missile (ATBM) role—that the ROCN has been tasked to perform over time. It is

further complicated by the scope and range of operational theaters—from operating off the coast of Mainland China (in order to support troops in the Kinmen Islands and Matsu Islands) to the South China Sea (for escorting homebound tankers and merchant ships) that these different missions require. Not only are some of these missions offensive in nature, but the ROCN also has been, is now, and will likely continue be, for the reasons of budgetary constraints or competition among the Services, without sufficient resources and assets to perform all the missions expected of it. The debate over the priorities between different missions and theaters proposed by the different schools of thought, each using different criteria, continues unabated.

Questions such as these have attracted the attention of naval analysts. Surprisingly, the ROCN's doctrinal responses have been less than clear and have often been ambiguous. No positive, or practical, statement about ROC naval doctrine was contained in any of Taiwan's previous *National Defense Reports*—that is, until April 2001. This was the date when some fragments of abstract concepts were included in a twelve-page leaflet entitled *Navy Vision*. As shall be detailed below, *Navy Vision* to some degree reveals a significant bias towards the “blue water” school in the minds of today's naval planners. Although by no means unique to navies around the world, the ROCN's *Navy Vision*, effectively reflects a temporary compromise between the two schools of thought, and does much toward getting an understanding of the current program being pursued by the ROCN. It also, however, points to potential areas of opposition and possible resistance that it will raise.

## **The ROCN before 1980**

Historically, naval assets were effectively controlled by different local warlords after the establishment of the ROC in 1911. Most of these vessels, however, were later sunk during the Second World War. The ROCN, as a Service controlled by the central government, first came into existence during the Civil War (1945–49) between Kai-shek Chiang's Nationalist forces and Mao's Communist guerrilla fighters. The ROCN was initially equipped with a number of obsolete US naval ships the purpose of which was to assist Chiang and his Nationalist forces engage the Communist insurgents.

Bearing in mind that the outcome of the Chinese civil war was largely determined by ground forces, as in Chiang's continental wars first against Japan and then, later, against the Chinese Communists, the embryonic ROCN only played a very minor role. In one sense, however, had the ROCN not been in existence—irrespective of how small it was in number and obsolete its equipment—Chiang would not have been able to evacuate his 400,000 defeated troops and officials from the mainland to Taiwan during 1947–49. They would have had to be left behind, and the Communists would surely have annihilated them without mercy. To that extent, the ROCN performed a significant and major role early in modern Taiwan's existence.

With Russian support, in 1949 the People's Liberation Army Navy (PLAN) hastily embarked on a naval construction program. Under the guiding principle of “*fu* (naval aviation), *chien* (submarine), and *kuai* (fast attack craft)”, the PLAN quickly built up a capable coastal force. In a series of combined arms assaults between 1949 and 1955, the Chinese PLA and PLAN were able to successfully force Chiang's Nationalist troops to withdraw from the Tachen and Nanchishan Islands (off the Zhejiang coast) to the Matzu and Kinmen Islands where the ROC Air Force (ROCAF) could effectively provide air cover for naval activities.<sup>3</sup> After 1954, the ROCN's inventory was also strengthened rapidly following the Mutual Defense Treaty signed that year between the ROC and the United States.

It is to the credit of the ROCN during this period of tension that it successfully maintained and supplied the 11,000 or so Taiwanese troops stationed on the Kinmen and Matzu Islands. It also sustained that support during the two Taiwan Straits Crises of 1954 and 1958. This logistic backing effectively enabled the Taiwan forces to hold on to the islands, a factor in support of Chiang's risky strategy to try and persuade the Eisenhower Administration also to extend the US defense commitment to those islands. In addition to performing this essential logistic support role, in the early 1960s the ROCN also frequently conducted direct assaults on the PRC-controlled islands, actions that, symbolically at least, supported Chiang's resolution to “retake the Mainland by force” and secure the legitimacy of his leadership of the Kuomintang Nationalists Party (KMT).

Before the Battle of Tachen in 1955, the then Minister of National Defense, David D.W. Yu, predicted that, “if we (the ROC) lost air supremacy (and control of the air), the enemy would start striking our fleet and soon devastate our navy. If so, our troops on Tachen (Island) would be strangled”.<sup>4</sup> When the PLA's siege of Tachen finally commenced, the ROCN was faced with the immediate disadvantage that the ROCAF could not provide full air cover for the ROCN's nine-vessel convoy supporting the island. As a consequence, the People's Liberation Army Air Force (PLAAF) was able successfully to sink one ROCN vessel and damage three others during a 6-hr engagement.

This experience clearly demonstrated the priorities of defending Taiwan and its off-shore islands: Taiwan could hardly hold on to its possessions if it could not exercise command of the sea; and, then, it could barely exercise control of the sea if it failed also to achieve air superiority over the areas where its fleet operated.

After the loss of Tachen Island, Minister Yu proposed his “defense-in-depth” strategic concept. He asserted that in order to turn Taiwan into an impregnable fortress, Taiwan's force posture should focus on “the command of the Strait by our Navy and Air Force; in order to increase Taiwan's strategic depth, Taiwan and the Penghu should be our main position and the Kinmen and the Matzu should be our front line”. Minister Yu then concluded, at the strategic level, Taiwan needed:

- to stabilize the front line;
- to command the Strait;
- to increase readiness;
- to commence retaking the Chinese Mainland, if the opportunities arose.

At the tactical level, Taiwan should prepare:

- to check enemy at the point of embarkation;
- to strike the enemy in transit;
- to devastate the enemy on Taiwan's beachheads;
- to annihilate the enemy from inside prepared positions.<sup>5</sup>

In reality, however, neither Tachen lesson was learnt quickly or fully; nor was Defense Minister Yu's strategic conception fully implemented. There were many reasons for this: first, in Chiang's conception, the overarching objective of the ROC's military strategy was to *retake*, rather than to *hold*, ground, even though successive American administrations did not support his ideas. Although the protection of Taiwan and the Penghu Islands was less important in Chiang's strategy than the retaking of Mainland China, it introduced a slight, but profound, distinction between means and ends. It was, and remains, a distinction that has unconsciously influenced Taiwan's military force structures ever since.

For example, large numbers of ground forces were maintained for the purpose of retaking Mainland China were the opportunity ever to arise. Naval assets, to some degree, were regarded merely as floating supply lines for transiting and landing troops onto the Mainland. Second, in addition to a serious quarrel between different factions within the Navy, a major political purge was carried out among the young ROCN officers in the late 1940s. Many, suspected as being "defeatists" or "communists", were removed from their command. Some were even prosecuted. As a result, active debates over naval roles were silenced and no one challenged the strategy of retaking Mainland China by military means. Third, under the security umbrella of the Taiwan/US Mutual Defense Treaty, most responsibilities for the naval patrol of the Taiwan Strait during the 1950s and 1960s were assumed by United States Navy (USN) warships. The ROCN was left to patrol along the Mainland coastline and escort re-supply convoys.<sup>6</sup> For these assigned tasks, a small, coastal navy was considered more than sufficient.

The introduction of guided anti-ship missiles into the PLAN's inventory in the late 1960s rendered the ROCN's offensive patrols along the Mainland coastline a dangerous and risky business. Furthermore, when the US administration suddenly terminated USN patrols along the Taiwan Strait in 1971, the ROCN was forced to redefine its role. However, the ROCN failed to seize the opportunity at the time and the development of the Navy's role progressed slowly. One nevertheless cannot put all the blame onto the shoulders of admirals for this. There was no significant adjustment of to Taiwan's overall strategy and the Army generals still dominated the process of defense planning. More importantly, because of changes in US foreign policy, the American administration neither ignored such a need nor was it willing to support it.

The Americans assumed that the surface threat posed by the PLAN could be countered and held at bay by the capable ROCAF. They judged that, as a consequence, the main role of the ROCN should focus on the PLAN's underwater threats—submarines. The earlier development of the ROCN's platforms, weaponry, doctrines, operational concepts, and training were, therefore, redirected



with a heavy stress on the anti-submarine warfare (ASW) task. By way of illustration, some old ASW capable destroyers (DD) were handed over by way of a last grant of military assistance from the US government to Taiwan when diplomatic relations between the two states formally ended in 1979.

### **The rise of the “gray water” school**

The US departure in 1979, followed by the Shanghai Communiqué of 1982, literally placed a quantitative as well as qualitative limit on American arms sales to Taiwan. This was both a bane and a blessing; it was a bane because they raised immediate uncertainties as to the future role of the United States in cross straits relationships. It was a blessing because it forced Taiwan’s defense and military planners to think about the strategic reality with which they were faced. With regard to the latter, the former Minister of National Defense, Chang-chih Soong, a retired Admiral, pointed out in 1982 that Taiwan was then at “a strategic defense stage. As regards strategic defense, in order to defend the Taiwan Strait, it was imperative to put the emphasis on air defense. The ROCN could command the sea only when the ROCAF had command of the air”.<sup>7</sup>

Although Taiwan had in fact abandoned its offensive activities against China during the late Chiang era, Chang-chih Soong’s statement was the first occasion when the ROC government declared in public that Taiwan’s military strategy against China had shifted from the offensive to the defensive.<sup>8</sup> To reduce the potential for a diplomatic disaster and to raise the morale of Taiwan’s armed forces, the former President, Chin-kuo Chiang, announced the launch of the ROC’s largest military modernization program since 1949 with the objective of building up an independent military force.<sup>9</sup> This initiative also heralded the beginning of the creation of Taiwan’s own defense manufacturing base.

Taiwan’s largest military modernization program was known at the time as the “Construction Programs of the Second-Generation Force”. It started during the 1980s and lasted for almost 20 years. At the early conceptualization of Taiwan’s military modernization program, differences in the perceived role for the ROCN complicated policy-making. This was because the Republic of China Army (ROCA) was the main focus of the modernization. The Army generals argued that the ROCA was *the* decisive Service and that land battles conclude the outcome of war. The ROCN admirals argued instead that the Navy was the last line of defense, for it was virtually impossible to defeat the superior numbers of PLA troops if they could land on Taiwan at will.

To understand the changes of Taiwan military strategy in the 1980s and 1990s it is necessary to appreciate the rise and fall of General Pei-tsun Hau (the former Chief of General Staff, 1981–89, who later became Minister of Defense and Premier). In 1981, General Hau’s promotion to Chief of General Staff (he replaced Admiral Chang-chih Soong who then became Minister of National Defense) from Command-in-Chief of the ROCA, effectively settled the outcome of the strategic debate.

General Hau was the longest serving Chief of General Staff in the ROC’s history (see Table 6.1). For eight years, (1981–89), he essentially dominated the whole conceptualization of Taiwan’s military modernization, including follow-on

Table 6.1 Key figures in Taiwan's naval programs

<i>President</i>	<i>Chief of General Staff</i>	<i>Minister of National Defense</i>	<i>Command-in-Chief of the ROCN</i>
Kai-shek Chiang (–1975)	Chu-tung Ku <i>Army</i> (1948–50)		Yung-ching Kui (1946–52)
	Chih-jou Chou <i>Air Force</i> (1950–54)	Ji-chiao Kuo (1951–54)	Chi-chuang Ma (1952–54)
	Yung-ching Kui <i>Navy</i> (1954)		
	Meng-chi Peng <i>Army</i> (1954–57)	David D.W. Yu <i>Civilian</i> (1954–65)	Hsu-chao Liang (1954–59)
	Shu-ming Wang <i>Air Force</i> (1957–59)		
	Meng-chi Peng <i>Army</i> (1959–65)		Yue-si Ni (1959–65)
			Kuang-kai Liu (1965)
	Yue-si Ni <i>Navy</i> (1965–67)	Chin-kuo Chang <i>Political Warfare</i> (1965–69)	Chi-tsung Fong (1965–70)
	Kuei-yuan Kao <i>Army</i> (1967–70)	Chieh Huang <i>Army</i> (1969–72)	Chang-chih Soong (1970–76)
	Ming-tang Lai <i>Air Force</i> (1970–76)	Ta-ching Chen <i>Army</i> (1972–73)	
Chia-kan Yen (1975–78)		Kuei-yuan Kao <i>Army</i> (1973–81)	Chien Tsou (1976–82)
Ching-kao Chiang (1978–88)	Chang-chih Soong <i>Navy</i> (1976–81)		
	Pei-tsun Hau <i>Army</i> (1981–89)	Chang-chih Soong <i>Navy</i> (1981–86)	Ho-chien Liu (1983–88)
		Tao-yuan Wang <i>Civilian</i> (1986–87)	
Teng-hui Lee (1988–2000)	Hsing-ling Chen <i>Air Force</i> (1989–92)	Pei-tsun Hau (1989–90)	Chang-tung Yeh (1988–92)
		Li-an Chen <i>Civilian</i> (1990–93)	
	Ho-chien Liu <i>Navy</i> (1992–95)		Ming-yao Chuang (1992–94)
		Chen Sun <i>Civilian</i> (1993–94)	
		Chung-ling Chiang <i>Army</i> (1994–99)	Chung-lien Ku (1994–97)
	Pen-li Lo <i>Army</i> (1995–98)		Shih-wen Wu (1997–99)
	Fei Tang <i>Air Force</i> (1998–99)		
	Yiau-ming Tang <i>Army</i> (1999– )	Fei Tang <i>Air Force</i> (1999–2000)	Jei Lee (1999– )
Shui-bian Chen (2000– )		Shih-wen Wu <i>Navy</i> (2000– )	

naval procurement. During his time in charge, not only did the Army's strategic vision reached its peak, but his ideas on the Navy's role in defending Taiwan marked the high point of the "gray water" school. In 1982, he asserted that,

As regard naval command of the sea, the premise of our naval construction must be based on the concept of a coastal navy, a navy without conclusive air superiority, and stress on command of sea by air, from the land, and then at sea. Our Navy should focus on *fu, chien, kuai* as well as mine warfare, rather than building up (a fleet of) large vessels and anti-ship missiles for surface operations. Our Navy is distracted by the thought of a grand fleet and big guns.<sup>10</sup>

In a sense, the "gray water" school, rather than being viewed as a new idea promoted by a ruthless and influential Army general, should be regarded as a logical extension of the ROCN's traditional task. The reasoning is based on the following arguments. First, the Army is *the* decisive force. China cannot finally conquer Taiwan without defeating Taiwan's standing and mobilized ground forces. China will pay a high cost in so doing and take a long time to overcome Taiwanese defense if the ROCA is well fortified and better equipped. If the anticipated cost of a land operation is high enough, it will persuade China from attacking Taiwan; alternatively it will prolong the war and allow sufficient time for US aid and military forces to intervene.

Second, air supremacy is critical for the defense of Taiwan. But the Army generals doubt whether or not the ROCAF has the capability to exercise control of the air over a long period of time when significantly outnumbered by the PLAAF aircraft and also when faced with a full-scale missile assault. Therefore, the ROCAF should "preserve its strength, maximize gain by minimizing cost, avoid being committed in full strength during the initial stages of the campaign, and engage the enemy at the most advantageous time".<sup>11</sup> These are the four principles underlying General Hau's idea of "strategic sustainability". They, echoed, to some degree, the former Defense Minister Yu's concept of the "annihilation of the enemy at the water's edge", but not his "annihilation of the enemy from a prepared position". For General Hau, the most advantageous time to engage the enemy would be when their feet first touched dry land.

Third, since the ROCAF was not able to guarantee a sustained air supremacy over the Taiwan Strait, the Army generals further questioned the survivability of the ROCN's fleet without permanent command of the air. Under the Army's dominant concepts of "*yi lu zhi kong, yi lu zhi hai*", (command of the air by land, command of the sea by land) land-based air defense systems could provide the ROCN's fleet the opportunity to sail away and find protection some distance away from Taiwan to the East. The fleet should, therefore, evacuate to the Pacific Ocean, either to secure Taiwan's Eastward "safety route" (the possible sea route for foreign aid), or to wait in some safety before intercepting the PLA's amphibious forces and follow-on logistic support convoys that approached Taiwan's western shores. The ROCN's contributions to the defense of Taiwan in the light of the Army generals' expectations were less one of an anti-blockade fought in distant waters and more ones of preventing an amphibious landing and intercepting

Table 6.2 The ROCN's major naval ship procurement (late 1970s to 1990s)

Fifty new HAIYOU-class FABGs (guided missile fast attack boats)	Commissioned from 1977
Refitted existing 20 YANG class DDGs (guided missile destroyers): WU CHIN I (9), II (4), and III (7) Projects	From 1981
Two new HAILUNG (ZWAARDIVE)-class SSKs	Commissioned from 1987
Four new YUNGFENG (MWW 50)-class MHCs (coastal mine hunters)	Commissioned from 1991
Seven new CHENGKUNG (PERRY)-class FFGs (guided missile frigates): KWANG HUA 1 Project	Commissioned from 1993
Eight lent CHINYANG (KNOX)-class FFGs: KWANG HUA 4 Project	Recommissioned from 1994
Four new YUNG (AGGRESSIVE)-class MSOs (ocean minesweepers)	Recommissioned from 1995
Eleven new JINCHIANG-class PGGs (guided missile patrol gunships): KWANG HUA 3 Project	Commissioned from 1994
Two new CHUNG (NEWPORT)-class LSTs (tank landing ships)	From 1995
Six new KANTING (LA FAYETTE)-class FFGs: KWANG HUA 2 Project	Commissioned from 1996
One new ANCHORAGE-class LSD (dock landing ship)	Recommissioned from 1999

in home waters the re-supply of the PLA's operations in Taiwan. Thus, the "gray water" proponents argued that the naval role in defending Taiwan was defensive, reactive, and focused on the denying the enemy's use of the Strait.

As a result, the modernization of the ROCN's aging fleet was embarked upon according to General Hau's conception (see Table 6.2). As might be expected, General Hau's ideas stood clearly in marked contrast with those of the ROCN admirals. His faith in the "annihilation of the enemy at the water's edge", coupled with the priority given anyway to an advanced, but numerically small, fleet for supporting ground missions, also undermined the ROCN's original procurement plans.

Perhaps this may best be illustrated by the procurement of six new KANGTING (LA FAYETTE)-class frigates (FFGs) (also known as the KWANG HUA 2 Project). In order to replace its twenty-four aged YANG-class destroyers (DDGs), the admirals had initially planned a high-low-mix shopping list for the ROCN's second generation force, of eight 3,000-tons FFGs and sixteen 2,000-tons smaller and cheaper FFGs. Admiral Ho-chien Liu, then Command-in-Chief of the ROCN, suggested that eight CHENGKUNG (PERRY)-class FFGs (also known as KWANG HUA 1 Project) should be procured, mixed with sixteen 2000-ton Korean ULSAN-class FFGs. In the event, General Hau rejected Admiral Liu's proposal; instead of the sixteen Korean UBAN-class FFGs, he decided at a very short notice to buy six LA FAYETTE FFGs at the same cost.<sup>12</sup>

With the benefit of hindsight, General Hau's decision seems fortuitous since the LA FAYETTE-class FFGs' stealth properties would be well suited for operations in the narrow Taiwan strait. On reflection, however, it was not surprising that the ROCN admirals, at the time of Hau's initiative, should have hesitated over accepting the Army generals' strategic assumptions and the procurement priorities that followed from them. For those admirals who considered quantitative superiority to be so important for naval ASW and anti-blockade missions,<sup>13</sup> Hau's decision was seen as diminishing the ROCN's ability to exercise command of the sea as well as seriously undermining naval interests. It would, for example, inevitably curtail the promotion opportunities for senior front line captains and officers by nearly one surface flotilla (i.e. the equivalent of ten FFGs). As a result, the pace of YANG-class DDGs replacement was reduced until Admiral Chang-tung Yeh, the next Command-in-Chief of ROCN, secured the lease of eight CHINYANG (*Knox*)-class FFGs (as known as KWANG HUA 4 Project) from the United States in 1993.<sup>14</sup>

### **The rise of the "blue water" school**

After his involuntary retirement as Chief of General Staff, General Hau soon actively opposed former President Teng-hui Lee and questioned Lee's pro-independence position. Lee's response was to remove any evidence of Hau's ideas and influence on the military, including his subordinates. Long dominated by the ROCA, the ROCAF and ROCN seized the opportunity to regain some of their autonomy in developing operational concepts. The latest revision of Taiwan's military strategy started slowly when the struggle between Lee and Hau fully broke out in the early 1990s. This conflict intensified after the missile crisis of 1995/96, which exposed Taiwan's total vulnerability to possible PLA missile raids and the inadequacy of the Army's strategic thinking.

The new President, Shui-bian Chen, indirectly abandoned the Army's vision when he introduced a new operational concept, "*jue zhai jing wai*" (decisive battle outside the territory), in May 2000. Under the "*jue zhai jing wai*" concept, the roles of the ROCAF and the ROCN were given particular emphasis, whereas the ROCA was scarcely assigned any significant task. The ROCA's resistance to change proved much less effective than previously because, this time, the ROCAF and the ROCN dominated the core defense decision-making circle.<sup>15</sup> Although initially obscured by debates over the exact meaning and political implications of his strategic concept, the sense and thrust of President Chen's ideas quickly gathered momentum. With the ROCAF and the ROCN as the principal beneficiaries, "*jue zhai jing wai*" soon overcame its initial linguistic shortcomings and became the dominant frame of reference in developing the operational concepts of both Services.

For the ROCA, General Hau's, "annihilate enemy at the water's edge" concept was the key to their strategic thinking and the main rationale behind the maintenance of substantial land forces. Correspondingly, they considered that all maritime and aviation efforts should therefore be directed in support of that primary

defensive task. However, following by the decline of Hau's influence, many opponents of his strategy emerged. There were a number of interconnected reasons leveled against the Army's vision; all of them go to the heart of the problem of the probability of "annihilating enemy at the water's edge". Among these are first, that the PLA might not choose to initiate a general war against Taiwan but instead adopt a strategy of military compellance, or intimidation, to coerce Taiwanese into accepting Chinese terms at the negotiation table. A maritime blockade is generally regarded as the most probable scenario for such coercive acts of intimidation and military compellance. Furthermore, they argue that the PLA still could defeat Taiwan in a general war without the need to land PLA forces on Taiwanese soil. If the Taiwanese lost air supremacy and maritime command over the Strait, the PLA could land forces on Taiwan at will, conduct aerial bombardment at targets and times of its own choosing, and effectively block any foreign aid. With the psychological impact that would likely follow, the Taiwanese would have little or no choice other than to capitulate and surrender.

Even if a reinforced and upgraded ROCA had the ability to conduct an organized resistance against an enemy invasion, the PLA could bomb at will Taiwan's ground forces continuously until they collapsed themselves, rather than risk conducting an amphibious landing. As Admiral Tsen-huei Wang has argued, the ROCA's concept of "annihilate the enemy at the water's edge" is at best a poor imitation of Tirpitz's "risk theory" based on false assumptions and wishful thinking.<sup>16</sup>

Second, the concept of "annihilating the enemy at the water's edge" can only refer to Taiwan's Western coast line (geography dictates that no amphibious landing places are available on the eastern side of the island). It is here, however, where the most densely populated and prosperous areas of the island are to be found. In the event of fighting, the built-up Western coast-line area would quickly be turned into a devastated battleground and reduced to rubble. This would be something that neither side, China or Taiwan, would politically or economically want. If the Taiwanese wished to reduce the damage to its homeland, were war to break out, then the rational strategy would be to strike the enemy before it reached the Taiwan coast, rather than to try to defeat the invaders on Taiwan's beaches and immediate hinterland. If the Taiwanese needed to prevent the enemy from approaching across the strait, then the Taiwanese would have to adopt some kind of pre-emptive offensive action designed to frustrate, at source, the PLA's war preparations. This leads to the conclusion that the ROCN, as well as the ROCAF, would need to acquire the capability to strike at the PLA's coastal, or even inland, targets.

Third, the role and tasks of "force projection" should rest primarily with the aviators and sailors of the ROCAF and ROCN, since the ROCA did not possess any long-range platforms for attacking the enemy on the other side of the Taiwan Strait. The ROCN's warships, which by their nature enjoy considerable maneuverability, could sail to any point off the Chinese coast at relatively little notice. There they can attack and destroy any PLAN attempts to sail their vessels to the Taiwan Strait, assuming that the ROCAF has already secured command of the air. As Admiral Liu has also argued, "if we limit the focus of the anti-blockade operation to the area of Taiwan Strait, this perspective is not broad enough".<sup>17</sup>

The anti-blockade mission also needs to be refined and extended. The ROCN should not only be responsible to secure the “safety route” in Taiwan’s Eastern water only, but also be needed to escort homebound convey from the South China Sea to Taiwan.

The perceived need for air superiority to cover fleet actions tie naval assets close to land. As Gray put it, “in practice since 1939, maritime command has been understood to subsume the necessity for achieving air superiority over the fleet. One does not command the sea if one does not command the air”.<sup>18</sup> Of all the reasons proposed by the “gray water” school, one is not disputed: air superiority over the Taiwan Strait or, at the least, to cover ROCN operations, is critical. Though conceptions of the naval role in defending Taiwan may differ in their perceived mission priorities and the main theater of operations, a characteristic that both schools share is the importance of the ROCAF’s air superiority to the ROCN’s maritime command. However, the “gray water” school regards the fleet as a protégé of air power, whereas the “blue water” school proposed to increase naval capabilities against threats from air in order to become a partner of the ROCAF in providing for the air defense of Taiwan.

Some proponents of the “blue water” school opposed the “gray water” school ideas that incorporated naval operations within a strategy of passive defensive.<sup>19</sup> Bearing in mind that a surprise attack was unlikely, due to insufficient operational depth, were the two navies to encounter each other in a restricted environment, the side that seized the initiative would enjoy a much greater tactical advantage, even if the balance of forces in an era of high-tempo and precision-strike warfare were roughly equal.<sup>20</sup> Gray further argues that, “a maritime-dependent power or coalition need not seek battle at sea, but if it tries to avoid battle, it concedes sea denial, and hence the war, to a battle-willing enemy”.<sup>21</sup> The proponents of the “blue water” school have also noted that Taiwan has had to adopt a defensive posture at the strategic level. This has led to the erroneous assumptions that control of the sea is not dependent on being able to engage with the enemy at sea, and a sea battle was better avoided lest the irreplaceable fleet be lost.

A recent edition of *Navy Vision* highlights the ROCN’s priorities and marks the peak of the “blue water” school’s current strategic and operational thinking. It suggests two guidelines for the future ROCN force requirements. First, there is emphasis on joint operations. The requirement is to integrate the C3ISR systems of three Services in order to provide “the capability of wider defense and battle-space management. Using sea-based systems strengthens the land-based systems so as to constitute a joint operational system as a whole”.

Second, is the requirement for an unbalanced force structure in which the ROCN would try to construct an “unbalanced, asymmetric counterstroke force”. At the operational level, the ROCN contemplates being able to “control the surrounding waters and possess wider operational capabilities for extending our (its) strategic depth and operational radius”. It would thereby build up a force that was “capable both of offensive and defensive” operations. At the strategic level, the goal for the ROCN would be “to be credible in peacetime, decisive in wartime”.<sup>22</sup>

Furthermore, external developments have largely encouraged public support for the development of “blue water” school strategy. First, the PLAN’s ocean-going



capabilities had been significantly strengthened when it obtained the advanced SOVREMENNY-class DDGs, LUHU-class DDGs and LUDA II-class DDGs. For these reasons, some have argued that the traditional view that regarded Taiwan's Western waters as a sanctuary for the ROCN to implement a counterstroke, was no longer valid. In order to counter these significant new PLAN surface threats, the ROCN needed to expand the size of the Fleet in addition to the new FFGs currently being acquired.

Second, the lessons of the 1995/96 missile crises exposed Taiwan's strategic vulnerability to ballistic missile attack. Proponents of the "blue water" school have proposed that Taiwan should acquire the larger, *Aegis*-equipped, DDGs as one of the layers of an ATBM system. Third, the 2000 arms request list submitted to the United States particularly stressed naval items (see Table 6.3), one that supported the ideas of "blue water" school. The Americans' willingness to make available some naval items of equipment that Taiwan had long been requesting, such as submarines, that previously had been regarded as offensive weapons and therefore rejected, has done much to encourage support for the "blue water" school.

Table 6.3 gives indications of what the ROCN will look like in the near future: The KIDD-class DDGs have a much more powerful air defense capability than the Taiwanese Navy currently possesses. Air defense radar on the KIDD-class DDGs can deal with forty air targets simultaneously, whereas the CHENGKUNG, Taiwan's key combatants for naval air defense, can handle only two at one time. The KIDD-class DDG carries sixty-two, 153-km-range SM-2 surface-to-air missile (SAMs) and their combat system can guide 7–13 SAMs to engage the targets. These capabilities give the ROCN a better chance to neutralize saturated attacks by PLAN and PLAAF aircraft. Meanwhile, they also carry eight *Harpoon* II surface-to-surface missiles (SSMs), which enjoy a better range and performance than the *Harpoon* I SSMs on the CHINYANG or the *Hsiungfeng* II SSMs on the CHENGKUNG and KANGDING. The combat systems on the KIDD-class DDGs can shorten the response time and also have data link (Link-11) with other friendly vessels at sea.

The implications of the KIDD-class DDG procurement as far as the ROCN planners are concerned, are: (1) to perform the role of the command ship within a battle group arising from the ships capabilities in battle space management and area air defense. With an extended operational radius and strategic depth,

Table 6.3 Planned ROCN procurement

<i>Item</i>	<i>US Attitude</i>
8 SSKs	Assist Taiwan to obtain
12 P3Cs	Agreed
MH53Es	Agreed
MK-48 Torpedoes	Agreed
Sub-Harpoon anti-ship missile	Agreed
4 Kidd-class DDGs	Agreed
4 <i>Aegis</i> -equipped DDGs	Not yet agreed



the KIDD-class DDG can make the PLAN's operational planning more uncertain since it would make the intentions and whereabouts of such a battle group will be hard to predict. (2) By cooperating with land- or air-based air defense systems, a layered defense-in-depth against the enemy's air attack can be formed. If the KIDD-class DDGs are forward deployed, they can mount a first line of air defense and enhance the protection of key politico-military installations. (3) The KIDD-class DDG can be the air battle command/control unit in guiding the ROCAF's aircraft in over-the-horizon attack and thus extend the ROCAF's capability for force projection.<sup>23</sup> In short, the procurement can largely fulfill most of the "blue water" school of thinking as expressed in the *Navy Vision*.

### Conclusion: the ROCN after 2000

At present, the "blue water" school has the upper hand. It is predicted that their ideas will be further implemented within the next few years if Admiral Jei Lee, the current Command-in-Chief of the ROCN, is promoted Chief of General Staff. In the next 10 years, the ROCN will increase the existing twelve JINCHIANG-class PGGs to twenty-four, thirty new stealth FABGs (also known as KWANG HUA 6 Project with each vessel armed with four *Hsiungfeng* II SSMS), will possibly replace the fifty old HAIYOU-class FABGs and still try to get the United States to agree to make available the required four AEGIS-equipped DDGs.<sup>24</sup> If all these

Table 6.4 "Gray water" and "blue water" schools compared

	<i>"Gray water" school</i>	<i>"Blue water" school</i>
<i>Strategic assumptions</i>		
Land battle in determining the outcome of war	The PLA cannot conquer Taiwan without defeating the ROCA	The PLA can defeat Taiwan without landing
The most advantageous time to engage the enemy	Annihilate enemy at the water's edge	Check enemy on yonder shore or strike enemy in transit
The role of the ROCN	Defensive, reactive and sea denial	Offensive/Defensive, active and sea control
<i>Mission priorities</i>		
Anti-submarine	High	High
Anti-landing	High	Low
Anti-blockade	Low	High
Air defense	Point/fleet	Forward/area
ATBM	Negative	Medium
Early warning	Supported by land-based system	Supported land-based system
Offensive force projection	Negative	High
Crisis response	Ambiguous	Ambiguous
<i>Main theater</i>		
	Home water	Home water and near sea

plans are realized, by 2010 the ROCN will enjoy a considerable surface/underwater capability with a sound high-low mix of vessels. The size of the fleet may even go far beyond the original expectations of "blue water" school, and become a balanced fleet.

This is, of course, an ideal, since it would appear to offer the solution to the most of the problems that the ROCN faces. It is a commonplace, however, to say that the field of naval warfare and operations has been difficult to assess accurately because they can be easily affected by a range of non-quantifiable variables, such as quality of equipment, the skill of its personnel, and strategy and doctrine. Generally, naval planners have tended to think in simpler, more arithmetical ways, giving less attention to these more normative considerations. The advocates of the "blue water" school seem now to be arguing that the strategic importance of "blue water" should be taken seriously. They argue that they have something to contribute on how to exercise maritime command far from Taiwan and do not just express a blind faith in particular naval vessels or the size of ROCN fleet.

In the 1950s, the ROCN calculated that it would need forty-eight main surface combatants to maintain the "safety route" for a period of 3 months, or forty vessels for 1 month. After further analysis, however, some naval planners believe that these figures may be exaggerated and that only fourteen main surface combatants will be sufficient for such a task.<sup>25</sup> There is an urgent requirement for extensive naval operational analysis, but such analysis will be of little relevance without the necessary data and quantification.

The ROCN's modernization program has a particular poignancy inasmuch as it reflects a contrast, on the one hand, between the confidence of the military leadership in their strategic concepts and, on the other, the degree of the resistance that might be encountered when these concepts are put before the general public. By way of illustration, consider what would happen if Admiral Jei Lee, the leading candidate, were not appointed as next Taiwan's Chief of General Staff in January 2002. In that event, the introduction and implementation of a balanced ROCN fleet could well be called into question.

Compared with the other two Services, the ROCN is relatively young. Its cultural influence on naval operational concepts is much less significant than, say, in the British Royal Navy. Conversely, the ROCN planners may be less constrained by tradition, such as in Nelson's "engage the enemy more closely", that has been prevalent in the Royal Navy.<sup>26</sup> This relative freedom of thought may well help the ROCN innovate at both the strategic and operational levels. "Rarely, if ever, do military organizations receive the opportunity to innovate with a clear slate", as Murray has argued in this regard. "The past weighs in with a laden hand of tradition that can often block innovation".<sup>27</sup>

Each branch of the Armed Services in Taiwan, or the Taiwanese military as a whole, lacks a "joint" culture. They tend to be over preoccupied with the question of "who dominates whom", and with an obsolete legacy of which should lead in tri-service "combined" operations. Due to the ill-designed organization of the defense establishment, the rivalry and lack of mutual understanding among and

between the three Services are worsening. The formulation of strategy and operational concepts has produced zero-sum games or led to coalitions between two Services against the third. These conditions make the revision of strategy or operational concepts deeply rooted in organizational interests and single Service culture, rather than rational defense debate. Some believe that the ROCN's current procurement list, which will absorb a significant proportion of Taiwan's limited defense procurement budget, will inevitably deepen the gap between the three Services.<sup>28</sup>

There is neither effective civilian control in Taiwan nor a strong civilian leadership that provide clear policy guidelines for the armed forces with regard to strategy or military operational concepts. Not until domestic political needs (such as Chin-kuo Chiang's initiative in the early 1980s) or new external military threats (e.g. the PLAN acquisition of advanced ocean-going warships in the 1990s) did the Taiwan government feel it necessary to appropriate more funding for the modernization of its armed forces. Only after the required new weapons and equipment have been procured in the near term have the Taiwanese armed forces felt it incumbent on them to embark on a revision of their military doctrines. No matter what doctrinal innovations have emerged, however, all major changes in military organization, strategy and operational concepts, have rarely been the result of military professionalism alone. In the past, changes have arisen much more from the military and political leadership—a top-down approach—than from ideas generated from below.

At the policy level, however, the intentions of Taiwan's civilian leadership regarding military policy have always been ambiguous. Taiwan's national military strategy is rarely outlined or disseminated in a precise fashion. Generally, it is expressed in highly abstract terms, such as "resolute defense effective deterrence", or "effective deterrence and strong defense posture". These offer few focused or workable guidelines for defense planners and certainly mean little to the lay man in the street. As a result, the authoritative interpretations are often left to, and with, the Chief of General Staff to formulate. For this reason, the competition for this appointment is keen, since it is the Chief of General Staff who largely determines the distribution of defense budget resources between the Services and who dominates the country's strategic vision.

The statutory responsibilities of the Minister of National Defense have increased significantly since the introduction of Defense Two Laws. However, in the foreseeable future, this legislation has merely changed the location of the defense organizational battleground; the situation of "players as referee" remains unaffected. In addition, the United States can manipulate Taiwan's defense thinking by its promise, or denial, of arms sales. For example, the recent arms sales agreed between the United States and Taiwan has encouraged the rise of the "blue water" school.<sup>29</sup> But it is a short-term tactic, at best, and may in time cause unexpected consequences.

These three factors will probably influence the pace and direction of the ROCN's modernization over the next 10 years. Each of them, at one extreme, involves organization and culture; at the other extreme, they are links to the

choice of strategy or operational concepts. The Taiwanese Armed Services react to external demands, but they do so through the mechanisms and filter of military culture and defense organizational preferences. The understanding of how the ROCN's strategy and operational concepts are actually made requires that organizational/cultural factors are taken fully into account.

## Notes

- 1 Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis*, Baltimore: Johns Hopkins University, 1989, p. 6.
- 2 Only few exceptions (all were before the nineteenth century) that Taiwanese defeated landed invaders, such as the French and Dutch, whose supplies were short.
- 3 Chung Chien, "Review of ROC Military Reform: A Case Study of Taiwanese Navy", *Taiwan Defense Affairs Conference Paper*, 0106, January 2001, p. 12.
- 4 David D.W. Yu, *Retreat from the Tachen and Bombardment of Huangchi*, Taipei: Ministry of National Defense, 1976, p. 1.
- 5 David D.W. Yu, *Retreat from the Tachen and Bombardment of Huangchi*, p. 17.
- 6 Chung, "Review of ROC Military Reform", *op. cit.*, p. 13.
- 7 Cited from Taiwan Research Foundation, *Defense White Paper*, Taipei: Taiwan Research Foundation, 1989, p. 92 (in Chinese).
- 8 Shui-bian Chen and Chen-heng Ko, *White Paper on the Black Box of Defense*, Taipei: Formosa Foundation, 1992, p. 251 (in Chinese).
- 9 Chih-heng Yang "The Evolution and Adaptation of Taiwan's Military Strategy", *Taiwan Defense Affairs Conference Paper*, 0103, January 2001, p. 6.
- 10 Pei-tsun Hau, *The Late Years of President Ching-kuo Chiang in General Hau's Dairy*, Taipei, 1995, p. 59 (in Chinese).
- 11 Pei-tsun Hau, *Eight-year Diary as the Chief of General Staff*, Taipei: Vol. 1, 2000, p. 238 (in Chinese).
- 12 *China Times*, September 5, 2000, p. 2.
- 13 For example, Admiral Ho-chien Liu regards naval ASW operation "basically is a kind of games of numbers". See "Sea Power, the Great Enabler: Conversation with Admiral Liu, Ho-chien", *Taiwan Defense Affairs*, Vol. 1, No. 3, Spring 2001, p. 199.
- 14 *China Times*, February 25, 2000, p. 2.
- 15 In May 2000, besides the Primer Fei Tang was a retired Air Force General, both Minister of Defense Shih-wen Wu and General Secretary of National Security Council Ho-chien Liu were retired Admirals as well. Only the Chief of General Staff General Yiau-min Tang was from the Army.
- 16 Details see Tsen-huei Wang, "Examining Our Current Strategic Thinking from a Deadly Policy of 'Risk Theory' ", in *The Ocean and Naval Technology Conference Papers*, Tzoying: Naval Academy, 1998 (in Chinese).
- 17 "Sea Power, the Great Enabler: Conversation with Admiral Liu, Ho-Chien", p. 197.
- 18 Colin S. Gray *The Navy in the Post Cold War World: The Uses and Value of Strategic Sea Power*, Philadelphia: Pennsylvania State University Press, 1994, p. 17.
- 19 Tsen-Huei Wang, "The Don Quixote Style of Strategy: From Effective Deterrence to All-Out Defense", *Taiwan Defense Affairs*, Vol. 1, No. 2 (2000/01), p. 137.
- 20 Milan N. Vego, *Naval Strategy and Operations in Narrow Seas*, London: Frank Cass, 1999, p. 11.
- 21 Colin S. Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War*, New York: Free Press, 1992, p. 24.
- 22 Quoted from Michael Tsai, "The Practical Importance of Ideas", *Taiwan Defense Affairs*, Vol. 1, No. 3, Spring 2001, p. 2.

- 23 *Independence Evening News*, 20/21 May, 2001, p. 2.
- 24 *United Daily News*, October 29, 2001, p. 2; *Liberty Times*, December 18, 2001, p. 3.
- 25 *China Times*, December 21, 1997, p. 1.
- 26 Although former Command-in-Chief Admiral Kuang-kai Liu had an informal phrase of “engage when encounter” when he was in office (1965), it nevertheless did not evolve as a dominant concept later. See Li Chang and Chin-ian Tseng, “Interview with Mr. Ting-pang Liu”, in Li Chang, Shou-cheng Wu, and Chin-ian Tseng, *Collected Reminiscences of People in ROC Navy*, Vol. 1, pp. 179–80.
- 27 Williamson Murray, “Innovation: Past and Future”, in Williamson Murray and Allan R. Millett (eds), *Military Innovation in the Interwar Period*, Cambridge: Cambridge University Press, 1996, p. 313.
- 28 Some assess that Taiwan will need NT 4–5 hundred billion Dollars to invest on Naval planned procurement in next 10 years. However, the ceiling of total procurement budget in the past 10 years was no more than NT 2 hundred billion Dollars. *China Times*, April 25, 2001, p. 2.
- 29 *China Times*, April 25, 2001, p. 2.

## 7 Taiwan's maritime strategy and the new security environment

*Ming-hsien Wong and Tung-lin Wu*

### Introduction

Human maritime concepts have evolved from an initial “living by the sea” and “inshore sailing” to the subsequent acceptance of the oceans as important channels for transportation and as important spaces for human existence and development.<sup>1</sup> The oceans as treasure boxes, therefore, have become a stage for competing powers. Long before 500 AD, the Persians constantly crossed the oceans, fought the Greeks around Cyprus, and tried to conquer them from the sea.<sup>2</sup> Nowadays, the oceans have become the subject of every kind of political, economic, technological, geographical, and national defense viewpoint. In the process, human beings have raised a whole raft of opinions and views regarding the oceans, formulated new maritime concepts, and promoted their understanding from many different perspectives.<sup>3</sup>

Many maritime states see the oceans as the basis of their existence and development, even to the extent of exploiting them as being the most important resource in their development of national power.<sup>4</sup> This, as a consequence, has made the oceans a “new high spot” in international competition. Since the end of the Cold War and in a situation whereby the multilateral international system is being gradually transformed, many states have begun to look to and develop the oceans as a more promising resource than the land. This trend also catalyzes the formation of a multilateral maritime structure. Competing maritime interests between states have, therefore, become no less significant than conflicts and disputes on land.<sup>5</sup>

Competing maritime interests constitute the essence of sea power. As Colin S. Gray notes in his *The Leverage of Sea Power*, sea power is the ability of a country to use the oceans for military or business purposes and stop or prevent others from doing the same thing. Sea power is, therefore, part of a nation's objective rights; it can be efficiently employed to maximize state interests through the implementation of maritime strategy.<sup>6</sup> Maritime strategy has been defined as, “the art of directing maritime assets (i.e. those that operate on, over, or under the sea) to achieve the required political objectives”.<sup>7</sup> With a coherent maritime strategy, maritime policy, which disposes of matters relating to a country's exploitation of the oceans,<sup>8</sup> is designed to develop enough maritime strength to secure national and maritime interests.

If the properties and interactive relations between sea power, maritime strategy, maritime policy, and maritime strength are analyzed, it becomes relatively easy to recognize that sea power lies at the heart of maritime strategy (Figure 7.1). Maritime strategy is the art of exerting sea power, maritime policy is the approach for implementing maritime strategy, and maritime strength is the instrument for achieving maritime policy.

A maritime or an island state with sea power but no maritime strategy would be like a country that has sovereignty but no national strategy. It would not be capable of maintaining its existence or sustaining national development. If maritime interests are to be efficiently maintained, the oceans have to be approached from a strategic perspective. The oceans have to be taken seriously and put on a strategic level; only then can the maximum interests necessary for national existence and development from the oceans be achieved.<sup>9</sup>

This applies especially to Taiwan. Surrounded by the sea and lacking natural resources, Taiwan faces post Cold War challenges from the new international environment that every other state faces, especially in respect of competing maritime interests. Taiwan has maritime strength and many maritime institutions, but there is no organization with the specific responsibility for maritime strategy and the formulation of marine policy. Even with limited abilities to achieve its national strategic goals of “existence, security, and development,” Taiwan has to formulate an appropriate, reasonable, and feasible maritime strategy to instruct

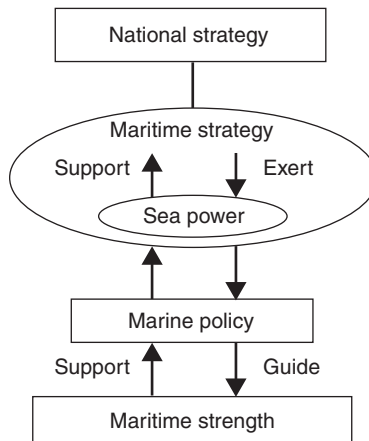


Figure 7.1 Interactive relations of maritime strategy.

Source: Ming-hsien Wong and Tung-lin Wu.

Notes

*Maritime strategy art:* Exerting arts of sea power in order to achieve national political objectives.

*Sea power right:* Rights of the usage of oceans.

*Marine policy approach:* Statecrafts of disposing maritime affairs. Approaches of executing maritime strategy.

*Maritime strength instrument:* Instruments of protecting maritime interests to fulfill marine policy.

and inform both maritime policy and the formulation of maritime strength necessary for the country's continuing development.

Maritime strategy is, therefore, an important part of disposing maritime affairs within the framework of national strategy and an important field concerning international political, military, and economic interaction. If the formation and formulation of maritime strategy can be studied within the framework of international relations theory, it should then be possible to arrive at more concrete and reasonable conclusions. In the preparation of this chapter, we have taken the analytical framework for international relations theory from Richard N. Rosecrance's works as the basis for explaining Taiwan's maritime strategy.

## Maritime strategy and national security

### *Maritime strategy research theories and framework*

Before formulating the analytical framework for Taiwan's maritime strategy, two key points from American, Soviet, and Chinese documents on maritime strategy can be induced: first, the construction of a navy is the core of all states maritime strategic development. Some scholars even take maritime strategy as a part of national military strategy, though this approach is inadequate and incorrect in respect of the definition of maritime strategy and its relationship with the challenges of the new international security environment. Second, research into states' maritime strategy is seldom analyzed and formulated within a framework of international relations theory. Maritime strategy therefore tends only to be about naval employment, and conveys no reference to political intentions or connections with national strategy.<sup>10</sup>

Rosecrance's framework of international relations theory is shown in Figure 7.2 and consists of four parts: (1) a disruptive source—or input; (2) a Regulator; (3) a table of environmental constraints; and (4) Outcomes.<sup>11</sup> In this framework, the actors represent different inputs. All of them influence the final outcome.

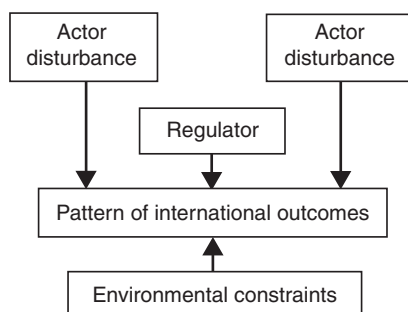
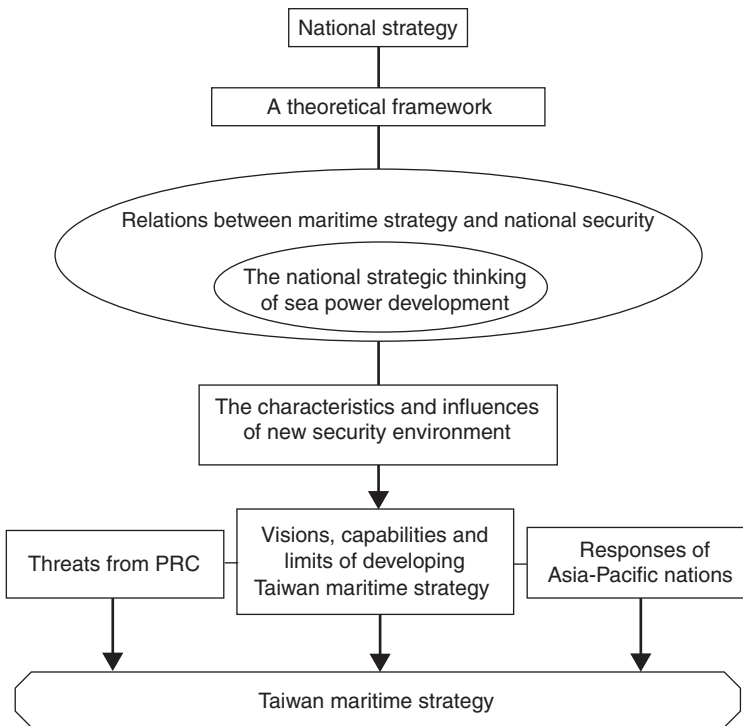


Figure 7.2 Richard N. Rosecrance's international political system.

Source: Richard N. Rosecrance, *Action and Reaction in World Politics: International System in Perspective*, Boston: Little, Brown, 1963, p. 229.





*Figure 7.3* Research framework for Taiwan's maritime strategy within the new international security environment.

Source: Designed by Ming-hsien Wong and Tung-lin Wu.

The Regulator is an institution. Finally, a table of environmental constraints identifies the physical constraints that influence the decision and transform actors and regulators into the final outcome.<sup>12</sup>

Using Rosecrance's framework, the analytical framework of this chapter is shown in Figure 7.3. Clarification of Figure 7.3 is as follows:

- 1 As maritime strategy is the maritime formulation of national strategy, the development of maritime strategy is therefore taking national strategic goals as the main principle, and combining them with an international relations analytical framework.
- 2 According to the government's national strategy, sea power development and the relations between maritime strategy and national security are seen as a regulative concept for developing Taiwan's maritime strategy.
- 3 Analyze the transformation and characteristics of the international security environment and isolate the factors of new international security environment that affect the development of Taiwan's maritime strategy.

- 4 Combine the characteristics and influences of the new international security environment and analyze the special factors influencing the development of Taiwan's maritime strategy, such as estimates of the threats from the People's Republic of China (PRC), possible responses of the Asia-Pacific nations, and visions, capabilities, and limits to Taiwan's maritime strategy.
- 5 From the research and analyses above, identify Taiwan intentions regarding future sea power, its maritime strategic goals, the formulation of maritime policy, and finally the construction of maritime capability.

***National strategic thinking behind the development of Taiwan's sea power***

According to the analytical framework outlined above, this chapter explores the relationship between maritime strategy and national security and the real intention of sea power as a part of national strategy and as a concrete regulative concept.

As mentioned before, competing maritime interests constitute the essence behind sea power thinking. That is to say, the development of a basic sea power capability is the benefit, or return, that a state acquires from its maritime activities.<sup>13</sup> A state that is not engaged in maritime activities cannot acquire maritime interests.<sup>14</sup> Without the goal of maritime interests, there is no competition and correspondingly no development of sea power.

The definition of sea power is the ability of a state to use the oceans for military or business purposes and to stop adversaries doing likewise. In the process of acquiring and exercising sea power, therefore, there is the intention to exploit the oceans from the outset, including exerting maritime strength, operating ships, pursuing communications, conducting fishing, undertaking marine farming, excavating sea bed resources, and engaging in marine research.<sup>15</sup> In addition, according to the definition above, sea power is not only the ability, but also the right, to exploit the oceans within a defined area. The purpose of a state competing for power is to maintain the right to pursue its national interests within a sea domain. The right is the goal and the outcome is the result of contending; the ability is the condition for exercising that right.<sup>16</sup>

Sea power is the right to exploit and use the world's oceans. The core of maritime strategy is the maritime element within national strategy. The development of sea power, therefore, is the most efficient use of the world's oceans. Based on national interests, sea power includes three factors: the use of the oceans and their resources, commercial merchant and fishing fleets and their ability to integrate with national interests, and a maritime strength in support of national interests.<sup>17</sup> To sum up, national strategic thinking of sea power starts from possessing the right to employ marine resources, exploiting the oceans such as Territorial Seas, Exclusive Economic Zones (EEZs), and the High Seas, ensuring the freedom to engage in maritime activities; using sea lanes of communication (SLOC); and, even, building up maritime and naval strength.<sup>18</sup> National strategic thinking on sea power therefore incorporates three objectives: (1) preserving maritime rights, (2) managing SLOCs, and (3) building maritime strength.

***Preserving maritime rights***

The oceans, which have a close connection with the origin of life on earth, are both important for human existence and lie at the center of human activity.<sup>19</sup> Sailing, fishing, and the climate are three main contributors to human life.<sup>20</sup> With improvements to human civilization, the maritime environment influences states' economic behavior in numerous ways. As an island country that benefits from the oceans, Taiwan should develop and exploit its maritime resources within a specific sea domain. This involves acquiring fish and salt for living, developing and using marine creatures, extracting minerals from the seabed, and using marine energies for developing maritime industries to improve national productivity, and economic efficiency.<sup>21</sup>

***Managing SLOCs***

It is well known that the most important and obvious value of the oceans is as extensive waterways for the transportation and movement of people, goods, and services. These waterways, or SLOCs, have to be managed. Despite their familiar or unfamiliar dangers, traveling, or trafficking by sea is more convenient and cheaper than either over land or by air. According to Mahan, internal trade is only a small element for modern states, especially for seaboard nations; states have to rely on shipping to improve the efficiency of external economic activities and to maintain a constant economic development.<sup>22</sup> Mahan, therefore, takes shipping and its protection as one important element in the development of sea power.<sup>23</sup>

The use of the oceans is mainly for transportation. Shipping remains the main means of international transportation and commerce, even after the rise of railways and the airplane. Statistics show that shipping transportation accounts for more than 80 percent of international trade.<sup>24</sup> This figure alone demonstrates that all states that rely on trade for their existence must place a heavy emphasis on the management of the SLOCs. The natural environment gives Taiwan certain geographic benefits in this respect. An island, surrounded by the sea, Taiwan has to rely on shipping and sea-borne trade to improve the efficiency of its external economic activities.

From a national strategic perspective, SLOCs play a key role in the international economic system formed by the exchange of natural resources and products in modern international society. In the light of global developments in the international economy, SLOCs have somehow become the strategic lifeline of littoral states such as Taiwan. Mahan connected national power with marine mobility. He argued that competing for and maintaining command of the sea,<sup>25</sup> especially in exercising control over SLOCs, were related to national strategy and overseas trade. Today, this is the essential qualification if a state or country wishes to be strong and to thrive.<sup>26</sup>

From a narrow perspective, maritime strength, especially the construction of a navy, is mainly designed to protect SLOCs against attack from an enemy or pirates. In the development of sea power, Mahan even thought that a navy would disappear if shipping disappeared and that a country would not maintain a navy

unless it intended to use it for invasion purposes against another state.<sup>27</sup> Though this point of view is too narrow and not strictly applicable to modern circumstances, from a national strategic perspective in respect of the development of sea power, a navy capable of providing protection against maritime threats should be included.

### ***Building maritime strength***

When the threat to national security becomes serious, the construction of maritime strength is even more important in the development of sea power. That is to say, maritime strength is one of the important elements of sea power; it is a guarantee of national security and an important instrument for maintaining national maritime interests.<sup>28</sup> In Taiwan's situation, the need to maintain maritime rights and the security of SLOCs are two of the purposes of the construction of maritime strength. In the new international security environment, Taiwan has to develop new approaches to sea power with regard to prevention and diplomacy. That is to say Taiwan must move away from traditional, passive thinking about sea power to a new active thinking that is linked to the maintenance of its national existence, security and future development.

### **Relations between maritime strategy and national security**

Sea power development lies at the heart of maritime strategy formulation. From a national security perspective, three national strategic elements of sea power will reflect the three main objectives of maritime strategy: (1) protecting basic maritime interests, (2) securing a lifeline over the oceans, and (3) enhancing national prestige on the oceans. These three elements will then be analyzed in respect of national security, and comparisons drawn between the different types of states that prudently formulate maritime strategies necessary for themselves in the light of contemporary circumstances.

The first goal of maritime strategy is the protection of basic maritime interests. Since the announcement of "United Nations Convention on the Law of Sea", the concept of "marine territory", includes Territorial Seas, EEZ, and the Continental Shelf. New maritime strategies are commonly promoted in the world to protect basic maritime interests, which in turn become an important characteristic of international competition, conflicts over marine boundaries, and disputes over maritime resources, and issues over island sovereignty between adjacent countries. Many of these disputes happen at the same time.<sup>29</sup> The protection of basic maritime interests has, therefore, become a critical national security issue for seaboard nations.

The second maritime strategic goal is the protection of life at sea. In the development of sea power, SLOCs have become the strategic lifeline for littoral states. Mahan pointed out that the major difference between a sea voyage and going by road is the distance covered. The distance for a sea voyage is longer, more dangerous, precarious, and vulnerable to enemy threats.<sup>30</sup> Today, with improvements in manufacturing processes, international economic activities have become closer

and more interdependent, and the transportation of raw materials and products relies more than ever on SLOCs. Consequently, the importance of SLOCs has increased and has become the maritime lifeline of seaboard nations. Seaboard nations, therefore, pay close attention to local marine crises and any incident that might threaten the security of their oceanic lifelines. Securing a state's lifeline over the oceans is therefore the second issue of national security.<sup>31</sup>

The third goal of maritime strategy is that of maritime prestige at sea. This goal is related with the construction of maritime strength. The goal of littoral states' maritime strategy is to achieve political purposes through controlling the seas in order to acquire maritime interests. This goal needs maritime strength for support. The function of maritime strength in respect of maritime strategy and national security can be distinguished in two ways, passive and active. The former is traditional, and is designed to protect maritime interests and coastal security through the use of maritime strength. The latter is to employ a policy of maritime prestige through the deployment of maritime strength to protect maritime interests, to use diplomatic means, or to be involved in international affairs. That is to say, they need to fulfill their maritime strategic goals through a policy of maritime prestige and improvements in international status.

In international theory, the policy of prestige is often used to reflect a state's capability to maintain, or increase, national policy goals. Because a state's naval vessels fly its national flag, symbolize its power around the world, have a high degree of mobility and project a spectacular image, navies have always projected a prestigious instrument at sea. Moreover, during the colonial period, navies were often sent as symbols of a state's rights when those rights were under challenge. In today's modern international security environment, states with a maritime strength and prestige have deployed their maritime capabilities to actively participate in international peace-keeping operations yet also in support of their own national strategic goals. This formulation of maritime strategy has active and substantial functions on a littoral state's international status and national security.

The three goals contained in the relationship between maritime strategy and national security can also be treated as regulative concepts in respect of the development of a maritime strategy. Depending on which state and its particular circumstances, so these three goals do not have to be present at the same time, nor do they all have to be related to national security. That is to say, the relative extent of maritime strategy and national security differs from one state to another. Normally, states that are self-sufficient do not rely on maritime resources, are not willing or capable of participating in international affairs, or are politically neutral. They can only adopt the first maritime strategic objective, namely the protection of basic maritime interests. These states can be categorized as "first-level" states, ones that have the lowest level of national security sensitivity.

Self-sufficient countries that are willing to participate in international affairs and have the capability can adopt both first- and third-level maritime strategies. These are designed to protect basic maritime interests and pursue a policy of prestige at sea. These states can be categorized as "second-level" states that also have a low level of national security sensitivity. When countries lack resources, but can protect their maritime interests through maritime strength, however, are also

Table 7.1 Relations between maritime strategy and national security

	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>
Protecting basic maritime interests	✓	✓	✓	✓
Securing lifeline on oceans			✓	✓
Policy of prestige on oceans		✓	✓	
Security sensitivity	Low ←————→ High			

Source: Designed by Ming-hsien Wong and Tung-lin Wu.

willing and capable to participate in international affairs, and can adopt three maritime strategic objectives, they can be categorized being of a “third-level” state, with a high level of national security sensitivity.

States that lack the resources, rely on assistance from abroad, do little to protect their maritime interests, are not willing or capable to participate international affairs, and can only adopt the first and second maritime strategic objectives—namely protecting basic maritime interests and securing SLOC—can be categorized as “fourth-level” states. They also have the highest level of national security sensitivity. These are illustrated in Table 7.1.

## Characteristics and influences of the new security environment

### *Transformation and characteristics of international security environment*

After the Second World War, the competition for marine resources, spaces, and interests between states continued and were no less intense than that between states during the nineteenth century on land. From the end of Cold War to the beginning of twenty-first century, the international security environment went through a transitional period, from an old to a new strategic structure. In the process, a number of factors made the competition at sea more acute. First, land resources were decreasing and not in proportion to the world’s population. States, therefore, emphasized marine resources’ strategic value more and actively formulated maritime strategies for national existence and development.

Second, in the new century of globalization, SLOCs continued to be important. States depended more on trade with others and relied on commerce to increase their economic growth and national power. The protection of SLOCs today equates to securing a national security lifeline. States, therefore, try their best to maintain and protect the “blue artery” of international trade against threats.<sup>32</sup>

Third, the oceans remain national security barriers. Statistically, most states and regions in the world are located close or adjacent to the sea. More than 70 percent of the world’s population is concentrated within 200 km of the sea. Key national political, economic, and cultural positions of littoral states are densely spread over coastal regions; their security and stability are inevitably of major interest. The security and stability of coastal regions have therefore become an important issue in the competition for maritime influence.<sup>33</sup>

Broadly speaking, the characteristics of the new international security environment can be induced as: first, following the disintegration of bipolar strategic structure, maritime interests among regional states have gradually surfaced. In the process, local maritime conflicts, often with intervention from strong foreign maritime powers, have aggravated the changing security environment. Second, the key international political and economic drivers have gradually been transferred from Europe to Asia, and especially to the Asia-Pacific region. Within the Asia-Pacific region, the focus of maritime interest is on the Eastern and the Southeastern seas of Asian continent. Asian states capable of efficiently developing and using these seas can exploit their maritime interests and control the important SLOCs within them.

Third, the main form of maritime conflict will be local wars fought at sea. Undoubtedly, they will involve advanced technological military and nautical equipment. States, therefore, should know characteristics of these wars well if they want efficiently either to deter conflict or to seize the initiative when wars break out.<sup>34</sup>

### **The influence of the new security environment on the development of Taiwan's maritime strategy**

The description of the three characteristics of the new international security environment above is consistent with current strategic thinking on sea power and with the three goals of maritime strategy. In order to recognize the influences on Taiwan's maritime strategy in the new international security environment, the following factors should be taken into account: maritime rights, SLOCs, and maritime strength.

#### ***Maritime rights***

Taiwan has announced a policy of "Expansion of Territorial Sea and the Establishment of an EEZ". It expanded its EEZ to 200 nm in 1979. However, this area of sea overlaps with the EEZ and territorial seas of adjacent states. So far, however, Taiwan has not been able to exercise its rights under the EEZ convention. Its fishermen do not understand the International Law of the Sea and as a consequence many Taiwanese fishing boats have been arrested for having entered a sea area belonging to a foreign state. Conflicts, therefore, have increased between states within the region.<sup>35</sup> This is the first dimension of the new security environment that has directly affected the formulation of Taiwan's maritime strategy.

#### ***Sea lanes of communication***

The Eastern and the Southeastern seas of the Asian continent, especially the South China Sea, are the most important SLOCs for the Asian-Pacific states. Consequently, since the end of the Cold War, conflicts have occurred between those states bordering the South China Sea particularly over the sovereignty of the islands located within it. SLOCs in the South China Sea are arguably even more important for Taiwan than any other Asian-Pacific country. Taking into account

its geographical position and lack of resources, Taiwan has to rely on imports particularly essential oil and energy fuels. According to statistics, Taiwan uses about 85,000 barrels of oil per day, with an oil tanker from the Middle East arriving on Taiwan's Western coast every two days. The route taken by these massive tanker vessels passes mainly through the South China Sea. It is patently evident that Taiwan's economy would be quickly paralyzed if an enemy were to hijack those tankers midway.<sup>36</sup> That is the second dimension of the new international security environment that impacts on Taiwan's maritime strategy.

The construction and maintenance of maritime strength is to protect maritime interests. The Taiwanese Coast Guard Administration is responsible for maritime enforcement—specifically, to protect and support ships within 24 nm of the shore, and to maintain the security of fishing boats within the EEZ. Although its operational range extends to the Pratas and Spratly Islands, the Coast Guard Administration does not have the capability to protect maritime interests that far and therefore has to seek the assistance of the Republic of China Navy (ROCN). Bearing in mind that the main task of the Taiwanese Navy, is to exercise command of the sea, from a national strategy, perspective, the meaning of “command of the sea” means effectively to secure Taiwan's SLOC.<sup>37</sup>

It is doubtful, however, whether the ROCN is capable of fulfilling this responsibility extending as it does from the Strait of Malacca to Taiwan's Western coast. Assuming that maritime strength is the most useful instrument for projecting national power and underpins a nation's economic strength in the new century, Taiwan must build up its maritime strength in order to participate effectively in international affairs. This is the third dimension of the new international security environment that influences Taiwan's maritime strategy.

Maritime rights, SLOCs and maritime strength are the exogenous influences of the contemporary international security environment over Taiwan. To understand fully Taiwan's situation, the unique factors that affect Taiwan's maritime strategic development have to be identified and analyzed.

### **Unique factors in the development of Taiwan's maritime strategy**

In Rosecrance's framework, different inputs have an influence on outcomes. Three specific factors are relevant in the development of Taiwan's maritime strategy: threats from the PRC, responses of the other Asia-Pacific states, and the visions, abilities, and limits of developing a Taiwanese maritime strategy. It is the objective of this chapter first to try and influence international factors after having confirmed the relations between maritime strategy and national security and identified the characteristics and influences of the exogenous environment. The second objective is to offer suggestions for future Taiwanese maritime strategy.

#### ***Threats from the PRC***

From a maritime strategic perspective, the outward orientation of the PRC's economic policy in 1979 released resources necessary for a shift in its national



strategy. Chinese operational doctrines changed from one of “offshore defense” to “active defense at sea” by 1989 and, with it, the objective of exercising control over the South China Sea became both necessary and a priority. In 1992, China declared its “Law of Territorial Sea and Contiguous Zone” by which it redrew its boundaries with other countries. In so doing, it increased its Territorial Sea by about three million square kilometers of Continental Shelf and EEZ. This move also meant that its claimed Territorial Sea overlapped with neighboring countries, including Taiwan. China has tried to justify this expansion by appealing to International Law, but the effect has been to threaten other Asian states’ economic interests, especially those of Taiwan.<sup>38</sup>

Previously, in the mid-1980s, China had introduced the concept of the “Strategic Boundary”. According to Liu Huaqing, the Commander-in-Chief of People’s Liberation Army Navy, China would adopt a “three-level defense” maritime strategy: an “internal level” within 150 nm from the Chinese mainland, a “middle level” of 300 nm, and finally an “external level” extending from the Aleutian Islands to South China Sea. China also hoped to extend its maritime influence to the First Island Chain—the Kuril Islands, Japan, Ryukyu, Taiwan, the Philippines, and Sunda Islands—by the beginning of twenty-first century, to control of the Second Island Chain—Bonin, Maliana, Guam, to Caroline Islands—as shown in Figure 7.4.<sup>39</sup> By co-operating, having adjusted its maritime strategy, China plans to efficiently control important sea lanes and passages and to acquire the maritime strength needed to intercept and attack enemies beyond a range of 1,000 nm, in order to secure its national security.<sup>40</sup> Chinese initiatives in recent

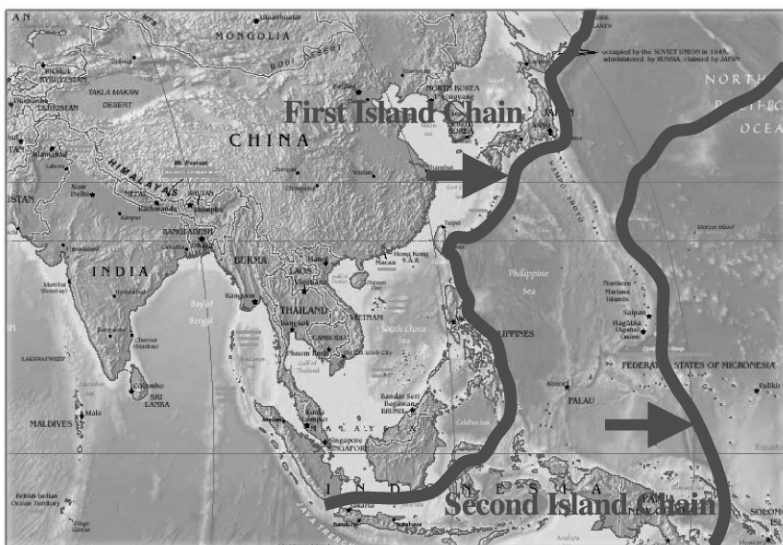


Figure 7.4 The PRC's concept of strategic boundary.

Source: Quoted in Hans Binnendijk and Ronald N. Montaperto (eds), *Strategic Trends in China*, Washington, DC: INSS National Defense University, 1998, p. 13.

years have threatened the ocean lifelines of Taiwan as well as those of the other Asia-Pacific states.

Chinese expansion into the Western Pacific poses a potential threat towards neighboring states. In maritime terms, however, China is currently relatively weak. Despite this, China's maritime industrial sector has doubled its work force in recent years with output expanding at more than 20 percent every year from 1996 to 1998. This increase in the maritime sector accounts for approximately 2 percent of China's GDP. With improvements in the performance of the maritime sector goes the expansion of China's interest in securing its maritime assets. For example, over its oil requirements, China has become an oil-importing nation since 1993. Estimates suggest that China's future demand for oil imports will exceed those of the United States by the year 2015. As a consequence, oil producing states around the world will be important to China and the secure transportation of oil via super-tanker over the world's oceans will become both a critical security issue and one crucial to China's further economic development.<sup>41</sup>

### *Responses of the Asia-Pacific states*

#### *Japan*

In the development of Taiwan's maritime strategy, both PRC threats and the reactions to them from the Asia-Pacific states have to be taken into account. First, Japan is a foreign trade-oriented state in Northeastern Asia. Since the early 1990s, its trade structure has been transformed from one that relied on the United States to one that emphasizes Asia, especially Southeastern Asia. The South China Sea, which connects Japanese manufacturing output with its import of strategic raw materials, has effectively become a Japanese economic lifeline.<sup>42</sup> Moreover, 70 percent of the oil imported from Western Asia to Japan passes through the South China Sea. Japan fully appreciates this vulnerability and its national strategy emphasizes the security of its sea lanes of communication.<sup>43</sup> Objectively, and from a geographical perspective, the protection of the SLOC through the South China Sea and beyond is more critical for Japan than it is for Taiwan.

#### *South Korea*

Second, geographically, the Republic of Korea (ROK, or South Korea) is virtually surrounded by the sea and likewise relies on shipping lanes for its imports and exports. Foreign trade, therefore, and shipping lanes have become lifelines for Korea's existence and economic development. The protection of Korean SLOCs is therefore extremely important. Since 1990, the Korean Navy has held joint maneuvers with the United States, Australia, Japan, and Canada for securing the security of SLOCs in the Pacific.<sup>44</sup> Both states take a close interest in Taiwan's maritime strategy insofar as it is also directed at exercising control over their SLOC. From a wider Asia-Pacific perspective, it makes more sense for Taiwan, Japan, and Korea to co-operate over maritime affairs than to be in conflict.

*Taiwan*

Third, because of the decline of American and Soviet influence in Southeastern Asia after the Cold War, the balance of power in the region disappeared and conflicts between the bordering states erupted. The situation first threatened the states in Northeastern Asia, including Taiwan. The main official organization responsible for dealing with disputes in the South China Sea, however, is the ASEAN Regional Forum (ARF), founded in 1994. Taiwan, however, is not a member of ARF and its maritime strategy will therefore automatically attract the attention of the states bordering the South China Sea. Taiwan's proposal for a U-shaped boundary around the region has met with strong opposition. Consequently, the balance between Taiwan's maritime interests and an area of sea in which it has had an historical interest is also a factor in the development of Taiwan's maritime strategy.

*The United States*

Finally, the United States is the only state with maritime interests in the Asia-Pacific region that are not potentially in conflict with Taiwan. After the Cold War, the United States developed many plans with many states bordering the South China Sea for co-operation and the exploitation of its islands and maritime resources. Basically, however, the United States refused to recognize the sovereignty of the islands by any of the states in the region and hoped to solve any territorial conflict within an Asian security framework. The US strategy was to restrict ASEAN by APEC, and to restrict Chinese expansion by the ARF.<sup>45</sup> In addition to considering Chinese threats and the responses of Asia-Pacific nations, therefore, Taiwan can consider co-operation with the Americans as part of its future maritime strategy.

**Visions, abilities, and limits of Taiwan's maritime strategy**

Taiwan is at the intersection between the Asian continent and the Pacific Ocean. From a SLOC perspective, Taiwan and its adjacent sea domain in the Taiwan Strait are the key to communications in the Western Pacific, for the Chinese Eastern Sea, and for the Far East states such as Japan, South Korea, and Russia to the Malay Islands and the Indian Ocean. From a geostrategic perspective, Taiwan and the Taiwan Strait are at the center of the First Island Chain in the Western Pacific, and divides the East and South China Sea.<sup>46</sup> Moreover, Taiwan is an island in the Asia-Pacific region and controls abundant resources in its territorial seas. The reasonable excavation of marine resources, and the freedom and security of lifeline across the oceans not only influence the security interests of Taiwan and other states but also allocate international duties and rights.<sup>47</sup>

Accordingly, at the beginning of a new century, Taiwan should consider the characteristics, influences, and factors of new international security environment when developing a new maritime strategy. At the core of maritime strategy is not

the goal of maritime domination, but the guarantee of the freedom to use its territorial seas without interference, freely pass through nearby sea areas, and co-operate with adjacent states over issues of defending maritime interests and ensuring national security.<sup>48</sup>

The development of Taiwan's maritime strategy should also consider the capabilities of, and constraints on, its shipbuilding industry, maritime skills, and overall maritime strength.<sup>49</sup> In shipbuilding, the China Shipbuilding Corporation (CSC), founded in 1973, is the only large-scale shipbuilding factory; with two facilities in Kaohsiung and Keelung, CSC can build merchant ships capable of transporting cargo of up to 1.62 million tons and repair about 120 to 150 ships per annum. Since its foundation, however, the CSC has incurred debts of NT\$ 11.576 billion to the end of 2000 because of the imbalance in the international shipbuilding market and the decline in the price of ships, whilst being unable to hold down costs.<sup>50</sup> This has seriously damaged Taiwan's shipbuilding industry. So far, CSC has been employing a "restructuring program", looking for investors, working on privatization, and trying to get benefits in 2002 in order to improve its international competitiveness.<sup>51</sup>

In merchant shipping, Taiwan has 128 shipping companies engaged in transporting cargo and passengers, and 260 tankers above 100 tons. The total shipping registered with Taiwan amounts is 5.07656 million tons. 8.348999 million tons is used for carrying<sup>52</sup> about 1.1 percent of world shipping.<sup>53</sup> Taiwan not only relies on ships for its economy, but also uses merchant ships as naval reinforcement in wartime. In Taiwan, according to the statistics, there were 10 regular shipping lanes of communication routes used by national tankers at the end of 2000. These ships sailed 47–52 times through Southeast Asia, 43–47 times through Northeast Asia, and 10–12 times into Hong Kong. In total, Taiwan has, on more than 100 occasions, had ships sailing in the Western Pacific, the main economic artery. Taiwan's most urgent objective is to keep these passages open and secure, as shown in Figure 7.5.

Taiwan's maritime strategy is designed to achieve maritime domination. Taiwan does not need an aggressive maritime strategy; rather, the main purpose is to protect Taiwan's maritime interests and be able to participate in international peace-keeping operations. As mentioned above, however, Taiwan's maritime strength is only sufficient to protect the seas around the island, it is not strong enough to guarantee the security of its SLOCs in the South China Sea. Since Taiwan has no central, dedicated institute for drawing up a maritime strategy and there are no internal mechanisms for co-ordinating maritime policies and resources.

### **Taiwan's maritime strategy in new international security environment**

The next task is to induce the main concepts outlined above into the development of a viable Taiwanese maritime strategy. Maritime strategy, as noted above, is defined as the art of exerting sea power; maritime policy is an approach to implementing maritime strategy; and maritime strength is an instrument of



Figure 7.5 Taiwan's main shipping lanes.

Source: Designed by Ming-hsien Wong and Tung.

achieving maritime policy. A reasonable maritime strategy has, therefore, to define sea power and then identify national objectives. These should include: identification of the goals of a maritime strategy, the formulation of a maritime policy, and, finally, the construction of a maritime capability sufficient to fulfill national strategic objectives.

### *Formulating maritime strategic goals*

According to the literature, major states regard the construction of a navy as the basis of the development of a maritime strategy. It forms part of a national military strategy. This alone, however, cannot fit into the new international security environment. From a national security perspective, we have to reflect the three main elements of sea power in the formulation of maritime strategy for fulfilling the goals and purposes of maritime strategy.

When the three main elements of sea power—maritime rights, managing SLOCs, and building a maritime capability—are applied to the formulation of maritime strategy, they must be seen relative to three concrete goals: protecting basic maritime interests, securing lifelines at sea, and maritime prestige. These three goals can be applied to four types of state when formulating their maritime strategy. According to our analysis, Taiwan lacks resources and relies on foreign assistance; it therefore has to seek help to ensure the security of its sea lifelines and expand its diplomatic status. Therefore, Taiwan can be categorized as a third

category of state characterized by a lack of resources, protection of maritime interests by maritime strength, and capability and willingness to participate in international affairs (see Table 7.1). This type of state can adopt all three goals mentioned above to improve its national status and enhance its national security.

***Protecting Taiwan's territorial sea, EEZ, high seas, and continental shelf***

Taiwan possesses abundant maritime resources in adjacent sea areas. The excavation of marine resources is of common concern to the interests of both Taiwan and its neighbors. According to the "United Nations Convention on the Law of Sea", Taiwan announced its "Expansion of Territorial Waters and the Establishment of its EEZ" in 1979, and defined a basic right to its territorial sea, EEZ, and continental shelf, and its access to the high seas.<sup>54</sup>

The enlargement of its EEZ, however, overlaps with other states' boundaries, including that of China; A glance at a map of the region shows that Taiwan is not capable of protecting its rights over its claimed EEZ; Taiwan's acquisition of maritime rights is therefore affected. The first goal of Taiwan's maritime strategy in the new international security environment is, therefore, to protect Taiwan's basic maritime interests. Because of the restrictions imposed by Asia-Pacific geography, Taiwan should try to co-operate with China and other nearby states over the exploitation of marine resources under the lawful foundation of the "United Nations Convention on the Law of Sea", and avoid conflicts over maritime interests.

**Securing the SLOCs from the Taiwan Strait to the South China Sea**

Taiwan's economic development relies on foreign resources; the SLOC through the South China Sea is therefore more important for Taiwan than other Asia-Pacific states. According to Taiwan's Ministry of Transportation and Communication, Taiwanese tankers sail on more than 100 occasions along ten regular shipping lanes through Southeastern and Northeastern Asia and Hong Kong; the total is more than two-thirds of all sailings and is Taiwan's main lifeline at sea. The South China Sea is a potential for conflict; if Taiwan-imported oil and other fossil fuels were hijacked in the South China Sea, its economy would soon be paralyzed. Ensuring the security of its lifelines at sea is the second goal of Taiwan's maritime strategy.

This goal is threatened, however, by the expansion of mainland Chinese forces. The PRC's attempt to compete for strategic supremacy in the Western Pacific also threatens Taiwan lifelines at sea. But since mainland China's rapidly developing economy relies on foreign resources the risk to its SLOCs also rises. That is a Chinese weakness. Taiwan, therefore, should balance the threats it perceives with mainland China's weakness. Moreover, it is more likely that Japan and Korea would co-operate in securing the security of SLOCs against any Chinese threat. Taiwan, therefore, should also co-operate with them over SLOC security.



Conflicts between riparian states over territorial seas in the South China Sea have threatened Taiwan's lifelines; in response, Taiwan declared a U-shaped boundary line in the region, but this was not approved by other states. Taiwan is not a member of the ARF, the official institute dealing with disputes in the South China Sea and therefore receives no support. Taiwan should, therefore, consider co-operating with the United States, which is involved in disputes in the South China Sea, reduce the threats toward its lifelines at sea and ensure peace and security of this area of sea on the basis of mutual trust.

### **Exercising the policy of prestige on oceans**

A riparian state that lacks resources can meet its basic requirements by fulfilling the two maritime strategic goals mentioned above. In the global political and economic system, however, no state can stand alone and be independent of international society. Therefore, a state will try to participate in international affairs after acquiring the basic means with which to improve its international status and to expand its national power to ensure its national security. Maritime strength represents the concrete exercise of the goal of projecting prestige at sea. As to Taiwan, maritime strength not only protects maritime interests and national security but also employs good will missions through "midshipman cruises and training squadron" visits to other states.

The active part of the policy of maritime prestige, however, is to promote co-operation in maritime affairs and to participate in international political affairs through maritime strength. Bearing in mind Taiwan's international status and sensitive situation, it can only participate in activities of a non-combat nature. Taiwan is a maritime state, and has to actively implement a maritime policy. This is the third goal in Taiwan's maritime strategy and provides a most important access for Taiwan to international society.

### **Concrete marine policies**

Marine policy is the policy that deals with national maritime affairs and the approach and intention for implementing maritime strategy. After Taiwan announced its "Expansion of Territorial Sea and the Establishment of an EEZ" and expanded its EEZ to 200 nm in 1979, the proportion of territorial sea to land grew to 12.1, much higher than that for Japan at 10.4, Indonesia at 2.8, and the Philippines at 6.3. Though Taiwan has dealt with maritime affairs for years, each jurisdictional institute often designed policies that were based on its own interests and consequently wasted resources and investments. Most policies of marine exploitation come under each organization or institute; there is no common, or firmly formulated, maritime policy and the occasional governmental instruction usually only refers to an individual unit. Taiwan still cannot, therefore, efficiently concentrate its national power for the exploitation of its marine resources and the protection of its maritime interests.<sup>55</sup> These factors have had a major influence on the effectiveness of Taiwan's maritime strategy.

Based on the importance of maritime policies in the implementation of a maritime strategy, this chapter tries to raise concrete and realistic recommendations for maritime policies from three perspectives: the Law at Sea, maritime administration, and maritime enforcement.

### ***The Law at sea***

In Maritime Law, following the expansion of territorial seas to 12 nm and the establishment of an EEZ in 1979, Taiwan announced its “Law of ROC EEZ and Continental Shelf”, and its “Law of ROC Territorial Sea and Contiguous Zone” in 1998. These Acts defined the radius of Taiwan’s territorial sea and maritime jurisdiction, and indicated the limits of national sovereignty and people’s rights. As these two statutes are the principal sources of the claim to territorial seas and the right to exercise authority over them, it is necessary to establish further functional regulations. The system includes: increasing or revising regulations, connecting coastal legislation with legislation at sea, confirming the jurisdiction and functional division of responsibility in maritime affairs and territorial sea activities between central and local governments, and establishing a comprehensive management mechanism for protecting the environment and preventing the quality and quantity of sea resources from becoming exhausted.<sup>56</sup>

### ***Establishing an exclusive institute for maritime affairs***

Since 1988, Taiwan has recommended the establishment of an exclusive institute of marine affairs but the proposal has not enjoyed support to date. This exclusive maritime institute could be a super agency at ministerial level responsible for the conduct of maritime affairs, or an inter-ministerial committee empowered to co-ordinate plans or make recommendations to every ministry or local government authority involved in maritime affairs.<sup>57</sup> It is important to establish an exclusive institute, no matter what type; it should follow the directions laid down in the government’s national strategy in order to connect the central and local development of Taiwan’s maritime strategy.

### ***Confirming an exclusive unit in maritime enforcement***

Finally, the ROCN, the Customs Service, and the Coast Guard Administration are responsible for maritime enforcement. There can be three interpretations of this responsibility: (1) maritime problems are due to unlawful behavior, not military threats and, therefore, maritime enforcement is a civilian affair and should be conducted by the Coast Guard Administration alone. (2) From the interpretation above, the Coast Guard Administration should be the lead agency for maritime enforcement for which reason there should be no co-ordinating problems between the three organizations. (3) Co-operation between maritime enforcement organizations should be distinguished by functions and duties, but not by distances; maritime enforcement organizations should therefore be given the appropriate equipment with which to perform their missions.<sup>58</sup> These recommendations



above are urgent for the sound formulation of Taiwan's marine policy without which its maritime strategy cannot be properly developed.

### **Building maritime strength**

In the process of developing Taiwan's maritime strategy, maritime strength is needed to achieve national objectives as defined by maritime strategy. Taiwan lacks natural resources and faces potential threats. Its maritime strategy has therefore to achieve three goals: the protection of basic maritime interests, the security of its sea lifelines, and national prestige at sea to efficiently secure its national security. However, as mentioned before, Taiwan does not have a maritime strategy based on expansion or aggrandizement, or maritime domination. The build up of maritime strength, therefore, is only to pursue the three objectives of its national maritime strategy. Maritime strength discussed here is not only that of the ROCN, but also the Coast Guard Administration.

It has been argued that a Navy can play police, military, and diplomatic roles within the concept of the use of the sea.<sup>59</sup> However, the Coast Guard can also perform some of these roles.

#### ***Police role: the Coast Guard operating to the Pratas Islands and Spratly Islands***

The three roles of policing, defense, and diplomacy are related to national maritime strategy. The policing role is to protect Taiwan's maritime interests; the Coast Guard Administration should perform this enforcement role in Taiwan's territorial sea and its EEZ. The composition of the Coast Guard enables it to exercise authority as far afield as the Pratas and Spratly Islands.

#### ***Military roles: protection of coastal waters and SLOCs in the South China Sea***

Second, the military role is to secure the security of coastal waters around the island of Taiwan and its sea lifelines. The ROCN should be responsible for these missions. The threats to, and importance of, the SLOCs in the South China Sea have been noted above, and to achieving these two objectives Taiwan needs to construct a navy. The construction of such a force can be divided into three periods defined by the geographic location of Taiwan's sea lifelines. In the short term, the goal is to secure the security of Taiwan's coastal waters, counter its enemies' maritime threats, and co-operate with Japan, Korea, and other Northeastern Asian nations to ensure the security of the Taiwan Strait SLOC. In the mid-term, the goal is to build a mobile, rapid reaction navy that can reach as far as the Pratas and Spratly Islands to protect the SLOC there and to co-operate with the Southeast Asian states. In the long term, the goal is to build a "blue" navy capable of protecting the SLOCs as far as the Malacca Strait and to co-operate with mainland China. In sum, the Taiwanese Navy should be able to protect coastal waters and ensure the security of SLOCs in South China Sea at the same time (Figure 7.6).

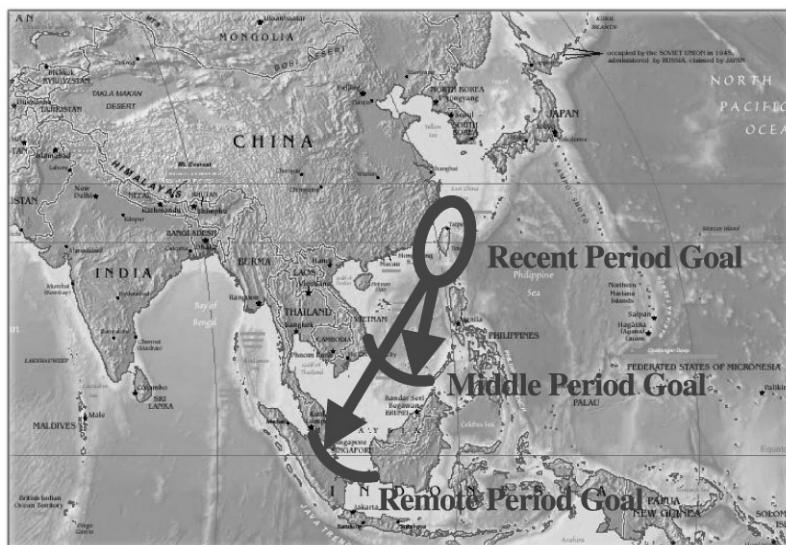


Figure 7.6 Taiwan's maritime strategic goals over time.

Source: Designed by Ming-hsien Wong and Tung-lin Wu.

### ***Diplomatic role: appropriate forces participating international affairs***

The diplomatic role is to implement the policy of prestige at sea. The ROCN and Coast Guard Administration should perform this role together. The Coast Guard Administration can co-operate with nearby states in implementing maritime enforcement roles and for improving Taiwan's status when co-operating with other states on international maritime operations. In addition to good-will visits to foreign ports, the ROCN should also actively participate in non-combat missions or peace-keeping operations. The Navy should therefore retain a proportion of non-combat ships, including transport and salvage ships, in its fleet inventory.

### **Conclusion**

Taiwan's national strategic thinking on sea power development contains three objectives: preserving maritime rights, managing SLOCs, and building up maritime capability. From a national security perspective, these three objectives will impact on the three goals of maritime strategy: the protection of Taiwan's basic maritime interests, the security of its sea lifelines, and the policy of maritime prestige at sea. These three goals are regulative concepts for developing maritime strategy.

Taiwan's economic development relies on foreign resources. Consequently, Taiwan has to ensure the security of its lifeline at sea and to expand its diplomatic reach and status in international society. Taiwan is a third type of country, which

lacks resources, protects its marine interests by maritime strength, and is capable and willing to participate international affairs. Taiwan can adopt three methods to improve its national status and to secure national security:

- protecting basic interests of Taiwan territorial sea, EEZ, high seas and continental shelf;
- securing the security of SLOC from Taiwan Strait to South China Sea;
- exercising the policy of prestige on oceans.

Taiwan maritime policies currently are formulated by every organization or institute with a responsibility for maritime affairs. There is no central authority to co-ordinate their activities. There are three ways to efficiently support a maritime strategy:

- define the responsibility for maritime legislation;
- establish an exclusive institute for maritime affairs;
- define the responsibility for maritime enforcement.

Finally, the construction of Taiwan maritime strength is not only about the ROCN, but also about the Coast Guard Administration. Their respective composition can be defined in respect of three roles:

- the policing role, extending to the Pratas and Spratly Islands;
- the military role, encompassing the protection of coastal waters and ensuring the security of SLOCs in the South China Sea;
- the diplomatic role, involving appropriate forces participating in international affairs.

By combining the framework of international relations theory and the formulation of maritime strategy, the relationship between maritime strategy and national security in the context of the changing international security environment can be better understood and the formulation of maritime strategy made more reasonable and comprehensive. In addition to which, three recommendations are made for the government to take into account when formulating Taiwan's future maritime strategy:

- first take into account changes in the international security environment and then formulate a national strategy for the development of maritime strategy;
- establish a central institute of maritime affairs for formulating marine policies and protecting maritime interests;
- solve the problem of the management and lack of expertise in Taiwan's ship-building industry. The industry can then provide the foundation for the build-up of Taiwan's maritime strength and fully support the implementation of maritime strategy.

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## **Part III**

# **Taiwan's maritime and shipbuilding options**





## 8 Missile defense at sea

### Options for Taiwan

*Jeremy Stocker*

The ability of the People's Republic of China (PRC) to mount a successful invasion of Taiwan in order to achieve enforced re-unification is doubtful.<sup>1</sup> But Beijing's ability to blockade the island or to attempt to intimidate Taipei through the use of missile attacks are both well demonstrated. Taiwan's defense efforts, whilst maintaining an invasion-denial posture, need to address these more likely threats.

Ballistic missile proliferation was an increasing concern for international security throughout the 1990s,<sup>2</sup> especially in Asia. For much of the world, concerns about China rested on its source as a major proliferator to other countries. But for some of its immediate neighbors, especially Taiwan, the concern has been the PRC's own developing ballistic missile arsenal which in addition, unlike most states, is partially nuclear-armed.

The 1995–96 Taiwan Strait crisis showed clearly the importance of ballistic missiles in the cross-straits strategic balance. Ballistic missile defense (BMD) has been high on the Taiwanese military agenda ever since. Taiwan is an offshore island, so maritime forces feature prominently in its defense posture. A sea-based BMD element seems almost a natural choice, but defense against ballistic missiles is a technically and strategically complex subject that requires detailed examination before deciding on the best approach.

The Chinese ballistic missile program began in the mid-1950s, and was initially based on the delivery of Soviet-made R-2 (NATO SS-2 *Sibling*) rockets. A direct derivative of the German V-2, the world's first operational ballistic missile, it had a maximum range of 600 km and introduced, for the first time, a separating warhead.<sup>3</sup> Locally produced versions were known as the *Dong Feng* (East Wind)-1, the first launch of which took place in November 1960. Following the Sino-Soviet rift in 1963, the Chinese embarked on an indigenous program, drawing heavily on components and technologies previously transferred from the Soviet Union. The result was the *Dong-Feng-2* (NATO CSS-1) first tested in 1964, and which was used in nuclear tests 2 years later.<sup>4</sup>

The *Dong Feng* (DF)-2 was soon followed by longer-range missiles that also introduced storable liquid propellants. The DF-3 and DF-4 derivatives, with ranges of 2,800 and 4,750 kms, respectively, entered service in the 1970s and limited numbers remain operational today. DF-3s were also exported to Saudi Arabia in 1987.

These intermediate-range systems were soon followed by China's first inter-continental ballistic missile (ICBM). The liquid-fuelled DF-5 and DF-5A entered service in the 1980s. Between twenty and thirty of these two-stage, single war-head missiles still comprise China's strategic deterrent that is capable of reaching targets in the United States.<sup>5</sup>

The first mobile, solid-fuelled ballistic missile appeared in the late 1980s, some 25 years after comparable Soviet and American developments. The DF-21 (NATO CSS-5) is a land-based variant of the JL-1 submarine-launched missile, and has a maximum range of 2,500 km with a nuclear or conventional warhead. Two of the six missiles test-launched near Taiwan in 1995 were DF-21s.<sup>6</sup>

In numerical terms, the greatest potential ballistic threat to Taiwan comes from the M-series of short-range, solid-fuel ballistic missiles that entered service from the early 1990s. The M-9/DF-15 has a range of 600 km whilst the M-11/DF-11, which is a solid-fuel version of the old *Scud* (NATO SS-1) design, can travel up to 300 km. Both have been widely exported and form the basis for local missile development programs, notably in Iran and Pakistan.<sup>7</sup> As many as 900 M-9s could be deployed by about 2010, according to Taiwanese estimates,<sup>8</sup> at a rate of fifty per year.<sup>9</sup>

Future developments include the DF-31 and DF-41 solid-fuel ICBMs to replace the current force of liquid-fuel missiles. Though believed to be single-warhead systems, multiple warheads are widely seen as a logical next development for the Chinese, though again over a quarter of a century after similar advances elsewhere. A second-generation submarine-launched ballistic missile (SLBM) with a range of up to 8,000 km is also under development.

The exact size of China's ballistic missile forces is difficult to determine. Table 8.1 represents a working estimate of China's current missile order of battle.<sup>10</sup>

The total estimated in Table 8.1 could rise to as many as 2,000 missiles by 2010.<sup>11</sup> Perhaps of greater importance are the likely improvements in accuracy over the same period, for example, by the incorporation of global positioning system (GPS) navigation systems.

It is noteworthy that the overwhelming majority of these missiles are in the short- and intermediate-range categories, and that China's long-range missile

*Table 8.1* The PRC's missile order of battle

<i>Missile</i>	<i>Range (km)</i>	<i>Numbers in service</i>
DF-3/3A	2,400–2,800	60–80
DF-4	4,750	10–25
DF-5/5A	12,000–13,000	20–30
DF-21/21A	2,150–2,500	35–50
JL-1/1A	2,150–2,500	15–20
DF-15 (M-9)	600	650
DF-11/11A (M-11)	280–300	300
HQ-2 (M-7)	150	100–500
Total (estimated)		1,200–1,400

force remains modest (smaller even than the strategic deterrents of Britain and France). This has enormous significance for the PRC's immediate neighbors including Taiwan. It implies that Chinese ballistic missiles are intended mainly to play a role in local, regional conflicts, both in isolation and as part of a wider, all-arms military campaign. In particular, ballistic missiles are seen by China as one instrument of an "asymmetric" strategy designed to offset the technological superiority in conventional military terms of states such as Taiwan, Japan, and of course, the United States.<sup>12</sup>

Any consideration of the future part to be played by China's ballistic missiles in its relations with Taiwan must start with the 1995–96 Taiwan Strait Crisis. Two DF-21s and four shorter-range DF-15s (M-9s) were "test-fired" into the sea about 90 miles Northeast of Taipei between July 21 and 26, 1995.<sup>13</sup> This was followed by further "tests" of another four M-9s in March 1996 in the seas off Taiwan's two major ports of Kaohsiung and Keelung.<sup>14</sup> This so-called "missile diplomacy"<sup>15</sup> was in fact part of a much larger program of military exercises and live-firings, though it was the total of ten ballistic missile firings that gained the greatest attention.

China's motives behind what was widely seen as a provocative action appear two-fold. One motivation was concerned with internal party politics within the PRC's political and military leadership.<sup>16</sup> The other was concern about Taiwan's Legislative and Presidential elections in December 1995 and March 1996, respectively. China sought to influence—even intimidate—the Taiwanese electorate and political leadership, particularly by demonstrating the island's vulnerability to attack from the mainland. That this attempt at strategic coercion was largely unsuccessful<sup>17</sup> is beside the point. What matters is that it did demonstrate the PRC's ability and willingness to employ armed force, and ballistic missiles in particular, in pursuit of its policies toward what it judged to be a "renegade province". It also demonstrated the economic effect, at least in the short term, of a partial "blockade" of a relatively advanced economy such as that of Taiwan.<sup>18</sup>

A repeat of the 1995–96 crisis is not the only scenario for future PRC employment of ballistic missiles against Taiwan. A 1999 Pentagon Report identified several possible courses of action.<sup>19</sup> Civilian analysts have come to similar conclusions.<sup>20</sup> They include:

- the use of missiles against Taiwan itself for strategic coercion;
- an air- and sea-blockade of the island, including the threat of missile strikes on ports and airports;
- attacks on Taiwan's outlying islands, of which missiles might form a part;
- an invasion of Taiwan itself, in which missiles could be expected to play a major role.

None of these scenarios is mutually exclusive. In all circumstances, ballistic missiles could be used as one means of delivering payloads—whether nuclear, biological, chemical, or conventional—either in conjunction with, or as an alternative to, cruise missiles, and manned aircraft. Ballistic missiles might be used in isolation, especially for intimidation or coercion, or as part of a co-ordinated military campaign. The events that could prompt such actions are outside the

scope of this chapter, but obviously include moves toward outright independence by Taiwan, or an internal political crisis in China in which moves to reunify Taiwan forcibly with the Mainland might pay dividends. "Taiwan threatens the legitimacy of Communist rule, because it represents a successful political and economic alternative".<sup>21</sup>

Whatever the nature of some future crisis in China–Taiwan relations, ballistic missiles must be a major factor, not least because the compact nature of Taiwan makes it a promising target even for relatively inaccurate weapons.<sup>22</sup> It has also been argued that the PRC might be less discriminating in its use of nuclear war-heads than Cold War nuclear deterrence theories might otherwise suggest.<sup>23</sup>

Responses to ballistic missile proliferation are generally considered to be multi-faceted. They include:<sup>24</sup>

- arms control
- deterrence
- counter-force operations
- active defense
- passive defense.

In terms of a Taiwanese response to the PRC's established and growing missile inventory, however, the options are more limited. It is difficult to imagine an arms control regime that would inhibit the Chinese arsenal of short- and intermediate-range missiles that face Taiwan. A Taiwanese deterrent posture can be seen in its general capability to resist a Mainland attack; a deterrent capability that specifically addresses the ballistic missile threat, however, would seem to require a nuclear program. This has been postulated as one of the scenarios that might itself prompt Chinese aggression in the first place.<sup>25</sup> There also seems little scope for Taiwan to develop the kind of large-scale attack capabilities that would be necessary to strike at China's missiles on the Mainland, irrespective of the political context in which such pre-emption might occur.

Taiwan's responses to Mainland missile capabilities are, therefore, limited to a mix of active and passive defense. Passive defense seeks to mitigate some of the effects of a missile strike, particularly where weapons of mass destruction (WMD) are involved. The hardening and concealment of Taiwanese military assets must play an important role in complicating China's military options against Taiwan. Unfortunately, passive defense measures implemented to protect a population of 22 million with a modern, sophisticated economy, concentrated in a few large cities on a relatively small island, can be of little more than marginal effectiveness. Taiwan lacks "strategic depth".<sup>26</sup>

That leaves active defense, which seeks to destroy incoming missiles in flight. Before examining in detail Taiwan's current and future active defense capabilities, it is important to place such efforts in their wider context. Just as the Mainland missile threat must be seen as part of a broader capability to coerce and perhaps attack Taiwan, so defense against such a threat must be viewed as part of a wider effort to resist such moves. This is so in two senses: first, Taiwan's own defensive military capabilities, and, second, its crucial relationship with the United States.

It is widely believed that China lacks the ability to invade and successfully occupy Taiwan and is unlikely to gain that capability in the foreseeable future. This judgement rests on three foundations. First, that Taiwan possesses a qualitative/technological advantage over the forces of the PRC.<sup>27</sup> Second, that China specifically lacks the type of forces, especially sea- and airlift, necessary to undertake a large-scale amphibious invasion.<sup>28</sup> Third, that Taiwan's relationship with the United States ensures a military response by the latter to any Chinese aggression.<sup>29</sup> The United States is also an important source of military hardware, including systems with missile defense potential.

All of these assumptions are subject, however, to challenge. Some analysts believe that the People's Liberation Army's (PLA's) modernization program is narrowing and might one day eliminate Taiwan's technological edge.<sup>30</sup> It has also been suggested that the Taiwanese armed forces do not necessarily possess training and systems integration advantages over the People's Liberation Army (PLA).<sup>31</sup> This point has particular implications for missile defense, because the seamless integration of diverse and dispersed assets is a key enabler. China is also developing the longer-range intervention capabilities, including missile forces, that increase her military options in the Taiwan Strait and beyond.<sup>32</sup> United States support for Taiwan is not unconditional. The United States is anxious that Taiwan not precipitate a new crisis by making moves toward formal independence from the Mainland, and has set limits on the technologies and hardware it is prepared to supply to the island.<sup>33</sup>

This strategic context means that Taiwan's missile defense capabilities must be viewed in relation to the Chinese missile threat. Also to be taken into account is Taiwan's ability to acquire and operate effectively missile defense systems and the likelihood of the United States itself providing protection to the island.

Happily for Taiwan, it is the United States that is taking the lead in the development and deployment of active missile defense systems. American plans for a National Missile Defense (NMD) of North America have gained widespread attention and generated more than a little controversy.<sup>34</sup> Of far greater significance to Taiwan, are plans for Theatre Missile Defense (TMD), which, for the United States, means the defense of American forces deployed overseas and regional allies. Of course, what is "theatre" defense in US terms is often "national" defense for others—including Taiwan.<sup>35</sup>

There is a further technological dimension to this "theatre"/"national" distinction. There is a direct correlation between the range and speed of ballistic missiles. A missile with the range to reach North America from East Asia or the Middle East has to be very fast—much faster than the shorter-range missiles that pose a threat to countries located much closer to origin of the threat—like Taiwan in relation to China. Obviously, the faster the missile, the more difficult it is to intercept. "Theatre" systems that can defend states like Taiwan, as well as US forces deployed abroad, cannot engage the much faster missile threats that have the speed, and so the range, to reach North America.

It is sometimes asserted that the United States, in conjunction with regional allies, is planning to construct a region-wide TMD system or umbrella,<sup>36</sup> in effect,

a regional variation of the US NMD plan for North America. In fact, no such plans exist. That is not the nature of TMD at all. Rather, TMD describes an operational requirement that is to be met by a number of systems, whether alone or in combination. These systems will be deployed and employed much like any other air defense system, noting that most TMD systems in development are based on existing air defense weapons systems. Moreover, talk of a regional missile shield further unnecessarily antagonizes Beijing. An underlying assumption is that Taiwanese missile defense would be part of a larger, integrated system that also covered Japan and South Korea,<sup>37</sup> thus linking Taiwan institutionally to those states.

In formulating plans for an active ballistic missile defense capability, the Taiwanese government is not starting with a blank sheet of paper. Taiwan has already acquired extensive air defense assets, some of which already have a limited BMD role.

Taiwan acquired the *Patriot* PAC-2 missile system from the United States in 1988.<sup>38</sup> This land-based air defense system was not originally designed with an anti-ballistic missile role. It did, however, demonstrate a limited BMD capability in the 1991 Gulf War, though its operational effectiveness has been the subject of some controversy.<sup>39</sup> When countering even short-range missiles, such as the M-11, PAC-2 has a brief engagement opportunity and a small defended “footprint”. This gives it a limited role in the defense of specific points, such as airfields, but no more.

An improved version of *Patriot*, the PAC-3, is now entering service with the US Army, and will in future be acquired by other countries such as the Netherlands. PAC-3 adds a new missile, the extended range interceptor (ERINT), which is a hit-to-kill, BMD-specific weapon. This will be operated alongside the existing PAC-2 interceptors that are retained for air-breathing threats (aircraft and cruise missiles). PAC-3 provides greatly improved defended footprints and an ability to engage somewhat faster targets, though remains capable only of conducting descent-phase terminal intercepts. An upgrade to PAC-3 standard would be a logical development for Taiwan,<sup>40</sup> particularly for the defense of key points. A request to that effect has apparently been made to the US government.<sup>41</sup>

Taiwan has also developed an indigenous missile defense system, though based in large part on US components. The *Sky Bow* (*Tien Kung*) is a hybrid system combining *Patriot* and *Hawk* elements.<sup>42</sup> Development continues on the *Sky Bow 3* that will have a lower-tier BMD capability. Its performance in relation to that of PAC-3 is unclear, but it will provide a similar point-defense lower tier capability.

Command and control and surveillance are as important in any missile defense architecture as the surface-to-air missiles themselves. Taiwan has had an integrated air defense system in place since the 1980s<sup>43</sup> and, like such networks elsewhere (e.g. NATO Europe), should form the basis of a NMD capability. This would be in accordance with the principle of extended air defense—the functional and geographic extension of air defense to include defense against ballistic missiles.<sup>44</sup> For early warning purposes, the United States has agreed to supply Taiwan with a “*Pave Paws*” radar.<sup>45</sup> This will be able to detect ballistic missiles up to 3,000 km away and will amply meet Taiwan’s ballistic missile early warning requirements.

Taiwan is a compact country, whose defense needs relate solely to the defense of the island itself and its immediate sea and air communications. It is, therefore, impossible to separate a “theatre” (i.e. tactical) from a “national” (i.e. strategic) defense requirement. Whilst “theatre” defense systems such as *Patriot* and *Sky Bow* provide a defense for relatively small areas, especially key military targets, in doing so they clearly provide a degree of protection for Taiwanese territory itself. However, the defense of Taiwan from ballistic threats clearly requires more than just PAC-3 type capabilities. This is not only because of the relatively modest geographic coverage of such systems, but also because they are limited to the interception of slower (shorter-range) ballistic missiles.

As we have noted above, the great majority of Chinese missiles are in the shorter-range categories and fall within the engagement profiles of these lower-tier, terminal phase defense systems. But China does have limited numbers of much longer-range (and therefore faster) missiles. The use of any of its handful of ICBMs against Taiwan, however, seems extremely unlikely. Those missiles (like the DF-21) which have the speed to challenge systems like PAC-3, but not enough to reach North America, could well be used against Taiwan.

In order both to defend Taiwan as a whole, and counter these faster missiles, Taiwan therefore requires missile defense systems based on more than just a lower-tier point defense. This means moving to so-called “upper-tier” defense systems, those that intercept their targets in the upper atmosphere or outside it altogether. A ballistic missile on an optimum trajectory climbs to an apogee (maximum altitude) roughly 20 percent of its range. As the appreciable atmosphere extends only to about 70 km in altitude, all but the very shortest-range missiles spend most of their flight-time outside the earth’s atmosphere.

Both land- and sea-based upper-tier defense systems are under development in the United States for deployment towards the end of this decade. The US Army is developing the theater high altitude area defense (THAAD) system, which will engage “theatre-range” ballistic missiles in the upper atmosphere (high endo-atmospheric intercept) and outside the atmosphere (exo-atmospheric interception). It is a BMD-specific system as its minimum intercept altitude is higher than any air-breathing threat could achieve. THAAD will provide the outer, upper-tier layer for a ground-based defense architecture, whilst PAC-3 will provide the inner, lower-tier defense. Several PAC-3 batteries might provide local defense within a much larger “envelope” provided by a single THAAD battery.<sup>46</sup> As a “theatre” system, THAAD can intercept missiles with ranges of up to about 3,500 km, but no more.

Taiwanese efforts to improve the island’s missile defense capabilities have, however, been focused on sea-based systems, specifically the US *Aegis* system. The United States currently has in service over 60 TICONDEROGA-class cruisers and ARLEIGH-BURKE-class destroyers, with more of the latter under construction. All are based around the *Aegis* weapon system (AWS) and its associated SPY-1 passive phased array radar and *Standard* SM-2 surface-to-air missiles. The first *Aegis* ship entered service in 1983—nearly 20 years ago—and was designed for the wide-area anti-air warfare protection of United States Navy (USN) Carrier Battle Groups.<sup>47</sup> All *Aegis* ships, except the first five, are being adapted for the TMD role, in parallel with the US Army’s BMD efforts.



*AEGIS* will in future provide both lower- and upper-tier TMD. The lower-tier system, known as Navy Area Defense, is based on the latest version of the *Standard* SM2 missile, the Block IVa.<sup>48</sup> This retains the missile's existing air-breathing threat capability for naval air defense needs whilst adding a BMD capability up to about 35 km in altitude and out to a range of 150 km. The defended "footprint" is somewhat larger than that of PAC-3.<sup>49</sup> An initial capability is already at sea in two trials ships, and fully operational units will be in service in 2003.<sup>50</sup>

A further, and more ambitious, BMD development is the upper-tier navy theater-wide (NTW) program. This employs the new *Standard* SM-3 missile which, like THAAD, is BMD-specific. Unlike SM-2, the new missile employs the same hit-to-kill techniques as THAAD and PAC-3; unlike the land-based systems can only carry out exo-atmospheric interceptions as it lacks the aerodynamic control surfaces required to manoeuvre within the atmosphere.<sup>51</sup>

NTW differs from all other surface-based BMD systems in that it is capable of conducting ascent-phase engagements; that is to say, it can engage the oncoming missile once its booster(s) have burnt out, but whilst the missile is still climbing. It can also achieve mid-course and descent-phase interceptions, but only outside the atmosphere (i.e. at a minimum altitude of 70 km). This crucially affects the employment of an NTW ship. As the size of the defended area is increased the closer the ship can get to the ballistic missile's launch site. This is because the earlier in the trajectory an intercept is effected, the greater is the possible number of target areas protected. So, for example, computer modelling has shown that a single NTW *Aegis* ship stationed close to the North Korean coast could provide protection for most of mainland Japan against North Korean *No-Dong* or *Taepo-Dong* missiles.<sup>52</sup>

Japan has four *AEGIS* ships in service and plans to acquire two more. It is also a partner in the development of the SM3 Block II missile.<sup>53</sup> In August 1998, the Japanese Defense Ship (JDS) MYOKO successfully tracked a North Korean *Taepo Dong-1* test firing.

Current US plans for NMD are based on the ground-based mid-course segment (GMCS) system, the initial site for which will be in Alaska. The Bush Administration has, however, indicated that in the longer term it intends to deploy a more comprehensive defense, including a sea-based element. This would entail an upgraded version of NTW, forward-deployed, and able to intercept the faster missiles that have the range to reach the United States. NTW development is at present limited by a 1997 agreement with Russia defining what constitutes "theatre" as opposed to "strategic" defense systems. Preliminary studies have, however, indicated that an *AEGIS*-based NMD capability is technically feasible, though not with the existing SPY-1 radar.<sup>54</sup>

Taiwan has requested from the United States the purchase of four *AEGIS*-class ships. Unlike the Japanese *AEGIS*-class ships, they would need to be built in the United States.<sup>55</sup> However, when the supply of the *Pave Paws* radar was approved, Washington declined to sell the ships. This apparently was in an effort to mollify

Beijing, but it was also in response to concerns as to whether the Taiwanese Navy could effectively man and operate such sophisticated ships.<sup>56</sup>

A sea-based BMD capability has obvious attractions for Taiwan. For any island state, a maritime defense posture is a natural choice. In general terms, the defense of Taiwan must be conducted at sea or in the airspace above the sea. Ballistic missiles fired at or near Taiwan must pass over water, and in 1996 Chinese missile launches were tracked, though not of course engaged, by US *Aegis* ships. The modernization of the Chinese Navy, and specifically its acquisition of ex-Russian SOVREMENNY-class destroyers makes an improvement in the Taiwanese Navy's anti-air warfare capabilities imperative. Adding a BMD role to that naval requirement would appear to be a logical and cost effective move.<sup>57</sup>

Naval forces possess several advantages in addressing the ballistic missile defense problem. Not the least of these is that they are themselves largely invulnerable to ballistic threats.<sup>58</sup> Ballistic missiles lack a terminal seeker that is required for them to home on a moving object; in effect, they are capable only against static targets. There are two partial qualifications to this statement, however. One is that when the ballistic missile is delivering a nuclear payload, the precise accuracy obtainable from a radar seeker is not required. Second, when ships are in port, they are subject to ballistic missile threat like any other asset. In 1991, an Iraqi *Scud* missile landed just yards from the USS TARAWA that was moored alongside in Al Jubayl in Saudi Arabia.<sup>59</sup> Those two reservations aside, however, naval BMD assets are in the relatively unusual position of being able to counter a threat to which they are themselves not subject.

Ships engaged in BMD, however, may be vulnerable to other threats, for example, conventional air attack or submarines. This is especially so for an NTW unit that, in order to optimize its stationing so as to maximize its early intercept opportunities and the size of its defended foot-print, must be positioned "up-threat". In the case of a ship defending Taiwan, this means being close to the Chinese Mainland, with all that implies in terms of survivability. If the ship operates further away, it reduces its BMD performance. In any event, a surface unit operating in the Taiwan Strait, whether Chinese or Taiwanese, must be regarded as being in a high-threat environment.

A further complication for an *AEGIS* ship is that lower-tier defense requires the ship to be stationed "down-threat" of the target area and shooting over the top of it, whilst "upper-tier" defense needs the ship to be "up-threat". One ship, though fitted for both tasks, cannot do both simultaneously.<sup>60</sup>

An *Aegis*/SM-3 upper-tier BMD solution for Taiwan has the potential advantage of being able to effect an intercept of Chinese missiles much earlier than a system, such as THAAD, positioned on the island itself. In the case of the shorter-range M-9 and M-11 missiles, *Aegis* can detect them as they are still climbing. However, the PRC could employ longer-range missiles, such as the DF-21, and fire them from further inland (which is where they are positioned anyway).<sup>61</sup> In this case, although *Aegis* can still engage these faster threats, it could only do so in the midcourse and terminal phases of their trajectories.

One of the prime characteristics of maritime forces is their mobility. This is so in both tactical and strategic terms. As applied to missile defense, tactical mobility means that ships can re-position rapidly to optimize stationing as a threat develops, and to enhance their own survivability. A land-based system such as *Patriot* is not so mobile. However, a land-based system can, when required, be co-located with the defended area, which is especially important in the case of lower-tier systems with relatively modest defensive cover. A ship must, by its nature, be offset from the defended area.

Strategic mobility means that surface ships can re-deploy over distances of 3–400 miles every 24 hours. They are also self-contained units ready to operate on arrival and free from reliance on airlift and extensive logistic support. A *Patriot* battery, by comparison, requires a total of 128 C-5 *Galaxy* missions in order to deploy, and THAAD makes similar demands.<sup>62</sup> This confers a major advantage for a navy, such as the USN, which has to forward-deploy its BMD assets and indeed maintain a high proportion of its fleet routinely forward-deployed. For a country such as Taiwan, however, this strategic mobility is to no avail, as all its defense systems are required on, or in the immediate vicinity of, Taiwan itself.

The *Aegis*/SPY-1/SM-2 combination represents a mature but evolving technology. The first *Aegis* equipped ship first went to sea nearly 20 years ago. It remains the only path available to upper-tier ballistic missile defense. For a more conventional naval air defense, however, several European navies are moving to the next generation of technology, employing active phased array radar and, in the case of the British/French/Italian *Aster*-based principal anti-air missile system (PAAMS), active homing surface-to-air missiles. Both elements have significant advantages in terms of naval anti-air warfare and, potentially, for lower-tier ballistic missile defense as well. The USN itself is now looking seriously at European active phased array radar technology, as the passive array SPY-1 is coming to the end of its development potential.<sup>63</sup> Access to non-US technology is problematic for Taiwan, but a navy facing a sophisticated anti-ship missile threat such as the SSN-22 carried by the Chinese SOVREMENY destroyers might find its air defense needs better met elsewhere.

An *Aegis*-based naval BMD capability does make sense for one vital aspect of Taiwan's security—its ultimate reliance on the United States. The deployment of USN *AEGIS*-class ships in or near the Taiwan Strait enables the United States to defend Taiwan whilst avoiding a politically sensitive deployment of American forces actually on the island.<sup>64</sup> For Taiwan itself, a naval solution to the BMD problem does not offer all the advantages that it does for other countries.

An Australian analyst has written that as the “Revolution in Military Affairs” spreads to Asia and introduces longer-range and more accurate weapons supported by good surveillance information, the geography of Asia will be compressed. The introduction of long-range cruise missiles and the development of ballistic missiles will make smaller countries much more vulnerable if deterrence fails.<sup>65</sup>

The 1995–96 missile crisis has already demonstrated the truth of this observation to Taiwanese observers. The importance of missile defense systems is well

understood in Beijing, and accounts for the PRC's acute sensitivity on the issue.<sup>66</sup> The ultimate guarantee of Taiwan's security is its strategic relationship with the United States. However, that relationship is compromised by the dynamics of the "one-China" policy, Washington's wider interests in maintaining at least cordial relations with Beijing, and by China's limited, but improving, strategic nuclear deterrent. For Taiwan to rely exclusively on American TMD assets for its defense would seem to be an uncertain gamble.

What type of missile defense systems are most appropriate for Taiwan? The question is complicated, but the answer simplified by the unique place of Taiwan in world affairs. Many sources of armaments are simply not open to Taipei, and whatever the attractions of European, or for that matter Israeli, systems, the United States is virtually a monopoly supplier. Such indigenous developments as Taiwan is able to pursue still draw heavily on US sources.

An additional layer of defense for key points on the island mandates lower-tier, ground-based defense systems such as Taiwan is already developing, and needs to upgrade with PAC-3. The wider defense of the island as a whole requires the addition, when and if available, of an upper-tier system. A sea-based system has many attractions, but Taiwan's particular circumstances do not necessarily offer all the benefits it does to some other countries. A land-based THAAD may actually be more appropriate as would also the Israeli *Arrow* system.

Taiwan also needs to address naval air defense needs in view of China's acquisition of advanced anti-ship missiles and the proximity of the Taiwanese Navy's operating areas to the Chinese Mainland. A battlegroup protection system like *Aegis* may not be the most appropriate here either, though again Taiwan is limited by what is available—which in March 2002 does not even include *Aegis*.

Of equal importance to the acquisition of defense systems themselves is their effective integration. This applies not just to their technical integration, though that is vital, but also to doctrinal integration. Practical, seamless inter-service operational integration is crucial, and nowhere is this more relevant than in air defense.

Development of an integrated, layered ballistic missile defense capability is vital for Taiwan's future security. A sea-based component may well play an important part in that, but does not offer all the attractions that Taiwan's island status might otherwise indicate.

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# 9 Taiwanese shipbuilding capabilities

*Cho-Chung Liang*<sup>1</sup>

## Introduction

Taiwan needs to import advanced military technology to protect its national interests. Foreign arms imports to Taiwan, however, have proven to be extremely difficult due to an unfavorable international political environment. Consequently, the Republic of China (ROC) government has assertively begun to develop an indigenous self-sufficient defense research capability together with the construction of an infrastructure that focuses on key technical research and systematic scientific investigation through the integration of civil and defense technologies. In the meantime, the pressure to put into practice an “active” defense policy has accelerated the formation of new-generation armed forces with substantially upgraded in-service weapons at combat, tactical, and strategic levels. As a result, relatively small-scale and effectual-deterrent forces are attained in Taiwan, which manifest such characteristics as fineness, fast-response, and high efficiency.<sup>2</sup>

The primary mission of the ROC Navy (ROCN) is to protect Taiwan’s national interests as well as to assure the safety of sea-borne transportation routes within its territorial seas. The Navy carries out reconnaissance, patrol, and escort exercises regularly across the Taiwan Straits. When a war breaks out, the ROCN will defend the island against its enemies from the sea and prevent any sea-based blockade. In order to accomplish these goals, it has continuously upgraded its defense systems by implementing a series of “*Kwong-hua*” shipbuilding programs. These “*Kwong-hua*” programs comprise the fabrication of warships of various categories, which inherently involve numerous projects ranging from manufacturing to maintenance of the “*Kwong-Hua*” I, II, III, V, and VIII warships. In the future, 1,200–1,600 hp harbor tugs, 2,000-ton fast attack missile boats (FABGs), 800-ton minelayers, 1,500-ton frigates (FF), and police patrol craft will be built.

The major challenge was how to establish the shipbuilding and maintenance technologies for these different types of warships to be built in the domestic shipbuilding industry. Taiwan’s national strategy in peacetime has been to nurture a civilian shipbuilding capability through a variety of shipbuilding projects so that, in time of war, that civilian shipbuilding industrial capability could meet the Navy’s demand for warships. The naval shipyard, however, would maintain a limited core technical capability to maintain vessels required for special missions in



either peace or war and retain the professionalism of Taiwan's shipbuilding industry. The main purpose of this chapter now is to shed light on Taiwan's shipbuilding capability and also its potential for designing, constructing, and maintaining submarines.<sup>3</sup>

## ROCN forces and the General Maritime Patrol Agency (GMPA)<sup>4</sup>

### *ROCN warships in commission*

#### *Patrol frigates (PFG), frigates, and destroyers (DDG)*

Warships of this category, considered to be the main force power of the Navy, are divided into four classes: the PFG/FF-classes, the LA FAYETTE-class, the KNOX-class, and the FLETCHER/ALLEN M. SUMNER/GEARING-classes. A detailed technical analysis, consisting of the ship type, performance specifications, numbers, and acquisition details, is displayed in Table 9.1.

#### *Fast attack missile boats and light patrol craft*

These types of warships can be categorized into three classes: the DVORA-class boats, the SEAGULL-class FABGs, and the PCL-class light patrol craft (LPC). The first DVORA boat was built by Israel, but the remaining two were built in Taiwan by the China Shipbuilding Corp (CSC). Currently, there are fifty-eight

Table 9.1 Frigates (PFG/FF) and destroyers (DDG) of Taiwanese Navy

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
Patrol frigate guidance, PFG	8	CHENG GONG, ZHENG HE, JI GUANG, YUE FEI, ZI YI, BAN CHAO, ZHENG QIAN, TIAN SHAN	CSC in Taiwan
LA FAYETTE/FFG	6	1202 KANG DING, 1203 XI NING, 1205 KAN MING, 1206 DI HUA, 1207 WU CHANG, 1208 CHENG DE	France
KNOX/FFG	6	932 JI YANG, 933 FENG YANG, 934 FEN YANG, 935 LAN YANG, 936 HAIYANG, 937 HUAI YANG	USA
FLETCHER/DDG	4	918 AN YANG, 919 KUN YANG, 908 GUIYANG, 909 QING YANG	USA
ALLEN M. SUMNER/DDG	3	UI YANG, LUO YANG, NANYANG	USA
GEARING/DDG	7	JIAN YANG, LIAO YANG, SHEN YANG, DE YANG, YUN YANG, ZHENG YANG, SHAO YANG	USA



*Table 9.2* Fast attack missile boats (FABG) and light patrol craft (LPC)

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
Israel DVORA fast attack missile boat/FABG	2	FAB-5, FAB-6	Israel
SEAGULL fast attack boat missile/FABG	48	FAB-7–FAB-59	CSC in Taiwan
Light patrol craft/PCL	8	PCL-1–PCL-9	1 Navy fourth shipyard 2 CSC in Taiwan
GUANG-HUA SIXTH large-scale fast attack boat missile	30	Building	Taiwan Navy Shipyard

*Table 9.3* Fast patrol gunboats (PGC), patrol gunboats (PG), coastal mine hunters (MHC), and ocean mine sweepers (MSO)

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
LONG-JIAG patrol gunboat/PGC	2	601 Long-Jiag 602 Sui-Jiag	1 USA 2 CSC in Taiwan
PSMM-MK5 fast patrol gunboat			
JIN-JIAG patrol gunboat, PGC/PG	12	603 JIN-JIAG 605 DAN-JIAG 606 XIN-JIAG 607 FENG-JIAG 608 ZENG-JIAG 609 GAO-JIAG 610 XIANG-JIAG 611 JIN-JIAG 612 ZI-JIAG 614 P0-JIAG 615 CHANG-JIAG 617 ZHU-JIAG	1 United Ship Design and Development 2 CSC in Taiwan
YOUG-FENG mine hunter coast/MHC	4	1301 YOUG-FENG 1302 YOUG-JIA 1303 YOUG-DING 1305 YOUG-SHUN	Germany
YOUG-YANG ocean minesweeper/MSO	4	1306 YOUNG-YANG 1307 YOUG CI 1308 YOUG-GU 1309 YOUG-DE	USA

in commission. The types of ship, specifications, numbers, model numbers, and means of acquisitions are listed in Table 9.2. Given that the SEAGULL fast attack missile boat is becoming obsolete, the ROCN has initiated the “*Kwong-Hua VI Shipbuilding Project*”—a joint project by the Naval Design and Development Center and the Naval Shipyard. They will build a prototype FABG of 150 tons to replace the aged SEAGULL boats.

*Missile corvettes and minewarfare ships*

These types of warship can be categorized into two classes: the ship's models, numbers, model numbers, and the method of acquisition are listed in Table 9.3.

*Landing ships*

These warships can also be categorized into two classes: the ship's models, quantities, model numbers, and the means of acquisition are listed in Table 9.4.

*Table 9.4* Landing ship dock (LSD), landing ship tank (LST), landing craft utility (LCU), landing craft medium (LCM), and landing craft vehicle personnel (LCVP)

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
ANCHORAGE Landing ship, dock/LSD	1	193 XU-HAI	USA
Landing ship, tank/LST	11	201 ZHONG-HAI 205 ZHONG-JIAN 208 ZHONG-XUN 216 ZHONG-GUANG 217 ZHONG-ZHAO 218 ZHONG-QI 221 ZHONG-QUAN 226 ZHONG-ZHI 227 ZHONG-MING 230 ZHONG-BANG 231 ZHONG-YE	USA
"ZHONG-HE" landing ship, tank/LST	2	232 ZHONG-HE 233 ZHONG-PING	USA
Landing ship, medium/LSM	4	637 MEI-LE 649 MEI-ZHEN 659 MEI-PING 694 MEI-SONG	USA
Landing craft utility/LCU	15	402 HE-HUI 403 HE-YAO 406 HE-CHAO 481 HE-QUN 484 HE-ZHONG 486 HE-ZHEN 494 HE-CHUN 495 HE-YONG 489 HE-CHUAN 491 HE-HENG 492 HE-MAO 493 HE-SHOU 497 HE-CHENG 498 HE-GONG	1 USA 2 Japan 3 Taiwan
Landing craft mechanized	134		1 USA
LCM landing craft, vehicle, personnel/LCVP	25		2 Taiwan Navy Shipyard

*Table 9.5* Fast combat support ship (AOE), transport ships (AP), survey ships (AGS), salvage ships (ARS), large harbor tugs (YTB), and small harbor tugs (YTL)

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
Fast combat support ship/AOE	1	YI	CSC in Taiwan
Transport/AP	3	WU-GAN XIN-KANG YUN-FENG	CSC in Taiwan
Surveying ship/AGS	1	1601 DA-GUAN	Italy
Fleet ocean tug/ATF	4	548 DA-TONG, 551 DA-WAN, 553 DA-HAN, 554 DA-GANG	USA
Salvage/ARS	2	552 DA-HU 556 DA-TUN	USA
Large harbour tug/YTB	17	YTB-37, YTB-38, YTB-39, YTB-41, YTB-42, YTB-43, YTB-45, YTB-46, YTB-47, YTB-48, YTB-49, YTB-50, YTB-51, YTB-52, YTB-53, YTB-54, YTB-55, YTB-56, YTB-57	1 Tai-Ji Shipbuilding Plant (YTB-37-49) 2 Ching-Fu Shipbuilding Plant (YTB-50-57)
Small harbour tug/YTL	20	YTL-27 YTL-28 YTL-29 YTL-30 YTL-32 YTL-33 YTL-34 YTL-35 YTL-36 YTL-37~YTL-48	1 Navy First Shipbuilding Plant (YTB-27-36) 2 Jong-Shyn Shipbuilding Plant (YTL-37-48)

*Auxiliary ships*

This type of warship can be categorized into two classes: the ships' models, quantities, model numbers and the ways of acquisitions are listed in Table 9.5.

*Submarines*

This type of warship can be categorized into two classes: the ship's models, quantities, model numbers, and the ways of acquisitions are listed in Table 9.6.

*Taiwan GMPA ships*

The main roles of the Taiwanese GMPA are to control and regulate sea traffic in Taiwanese waters, conduct search and rescue missions, resolve entanglement, perform fishery patrol tasks, protect marine resources, ensure maritime safety and environmental protection, and investigate accidents, such as collisions, at sea. The area that the GMPA patrols covers the waterways around the island of

Table 9.6 Taiwan's conventional submarines (SSK)

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
GUPPY-class submarine	2	SS791 HAI-SHI SS792 HAI-BAO	USA
SEA DRAGON-class submarine	2	SS793 HAI-LONG SS794 HAI-HU	Holland: Wilton Fijeuoord Plant

Taiwan, Penghu, and the restricted waterways of Dongyin, Matsu, Wuchu, Kinmen, Pratas Island, the Spratlys, etc. There are about 150 patrol boats in commission under the Taiwan GMPA. The types, numbers, model numbers, and the method of acquisition are shown in Table 9.7.

### Shipbuilding industrial capabilities in Taiwan

Ship design in Taiwan comes under the United Ship Design and Development Members' Foundation. Their activities range from the research, development, and design of commercial and military ships, fishing boats, yachts, and specialized vessels. They also review the blueprints of new ships and ship modifications, conduct research and development into key shipbuilding technologies and promote the technology transfer of naval developments into civilian industries. In so doing, they provide a shipbuilding technology information service. Departments related to shipbuilding education include: the Department of Naval Architecture and Ocean Engineering of the National Taiwan University, the Department of Naval Architecture and Marine Engineering of National Chengkung University, the Department of System Engineering and Naval Architecture of the National Taiwan Ocean University, the Department of Naval Architecture and Engineering of Chengchung Institute of Technology, and the Department of Marine Engineering of the ROCN Academy.

According to the statistics released by the Shipbuilding Association in Taiwan, there are more than 200 shipbuilding companies in Taiwan. Only the CSC is owned by the government; the rest are small- or medium-sized civilian companies, including: the Jong Shyn Shipbuilding Company Ltd, the United Shipbuilding Co. Ltd, Fong Kuo shipbuilding Co. Ltd, the Taiwan Machinery Company, Ltd (Shipbuilding division), etc.

The naval shipyards include the Tzoying Shipbuilding Division, the Chiching Shipbuilding Division, the Submarine Service Center of the Suao Shipbuilding Division, and the Naval Design and Development Center. Based on details contained in Tables 9.1–9.7, the CSC has the most advanced shipbuilding capability and manufacturing skills. The CSC built PFG/FF, SEAGULL FABG, Light Patrol Craft-PCL, PGC-class missile patrol escorts; PG-class patrol escorts, the AOE fast combat support ship; the transport AP, etc. The Jong Shyn Shipbuilding Company built eleven Small harbor tugs (YTL) for the ROCN, flat platforms for Police Peace Preservation Corps, and a 10,100-ton patrol craft for the GMPA.

*Table 9.7* Patrol craft of the coast guard administration

<i>Class of warship</i>	<i>Number</i>	<i>Name of ship</i>	<i>Shipyard</i>
PBC-3501 patrol craft	21	PBC-3501–24	Taiwan Navy Shipyard
PBC-5503 patrol craft	10	FAB-7–FAB-59	Taiwan Navy Shipyard
P-001 PVC patrol craft	2X		Xiang-Ching Shipbuilding Plant
F-001 FRP patrol craft			
800-ton patrol protect craft	1	XUN-HU No. 1	Jong-Shyn Shipbuilding Plant
400-ton patrol protect craft	2	XUN-HU No. 2	
		XUN-HU No. 3	
200-ton patrol protect craft	1	XUN-HU No. 5	Jong-Shyn Shipbuilding Plant
500-ton patrol escort	1	116 Taipei Ship	Jong-Shyn Shipbuilding Plant
600-ton patrol escort	4	117, 118, 119, 120	Ching-Fu Shipbuilding Plant
100-ton patrol craft	12	PP10001–23, PP10005–13, PP10015–18	1 Tai-Ji Boat Plant 2 Jong-Shyn Shipbuilding Plant 3 Ching-Fu Shipbuilding Plant
60-ton patrol craft	6	PP6001–03, PP6005–07	Lung, The Shipbuilding Plant
55-ton patrol craft	10	PP5501–03, PP5505–11	Lung, The Shipbuilding Plant
55-ton patrol craft	2	PBC-5501–02	Feng-Guo Shipbuilding Plant
50-tons patrol craft	13	PP5001–03, PP5005–08, PP5010–13, PP5015–16	Lung, The Shipbuilding Plant
50-tons patrol craft	13	PP5017–23, PP5025–31	Da-Zhou Business Shipbuilding Plant
35-tons patrol craft	21	PP3501–PP3532	1 Taiwan Navy Shipyard 2 Lung-The Shipbuilding Plant
35-tons patrol craft	10	PP3535–39; PP3550, PP3552, PP3553, PP3555, PP3556	Lung, The Shipbuilding Plant
30-tons patrol craft	14	PP3002–03, PP3005–09, PP3011–12, PP3015–19	Lung, The Shipbuilding Plant
10-ton patrol craft	4	PP101–02, PP105–06	Lung, The Shipbuilding Plant

The United Shipbuilding Company built PG-class patrol escorts for the Navy, and Taiwan Machinery built a mechanized landing craft.

Vehicle and personnel landing craft, large harbor tugs (YTB) and 100-ton patrol craft, etc. have been built for the Navy. The Ching Fu Shipbuilding Co. Ltd

built the YTB for the Navy and 600-ton patrol escorts for the GMPA. Fong Kuo Shipbuilding Co. Ltd also built 55-ton patrol craft for GMPA; Ta Chiao Shipbuilding Co. Ltd built 50-ton police patrol craft. The Lung-Tec Shipbuilding Co. Ltd constructed a wide variety of patrol craft from 60- down to 10-tons for the GMPA. The naval shipyard is responsible for both the maintenance of warships and built PCL/LPC, large FAMB under the “*Kwong-Hua*” Shipbuilding Program VI, mechanized landing craft, vehicle and personnel landing craft, small harbor tugs (YTL), 100-ton patrol craft, PBC-3501/PBC/5503-class patrol craft and 35-ton patrol craft for the GMPA. However, among all the shipbuilding industries in Taiwan, the CSC is the most capable when it comes to building large warships. The civilian shipbuilding companies and the Naval Shipyard are capable only of building medium-sized and small patrol craft.

### Taiwan’s submarine design, construction, and maintenance capability

#### *Submarines in commission*

In total, there are currently four submarines in service with the ROCN. They are: the SEA LION (SS791), the SEAL (SS792), the SEA DRAGON (SS793), and the SEA TIGER (SS794). Of these, the SEA LION and the SEAL have been in service for more than 40 years. The other two, the SEA DRAGON and the SEA TIGER, built in 1987 and 1988, respectively, have been in service for more than 10 years.

Under a joint defense agreement signed between the ROC and the US government, two GUPPY-class submarines, the SEA LION and the SEAL (Table 9.8), were handed to the ROCN in April 1978 and marked the start of its second

Table 9.8 Characteristics of the GUPPY-class submarine

Crew	75		
Displacement	1,870 tons (surfaced)		
Displacement	2,440 tons (dived)		
Length	93.57 m		
Beam	8.33 m	Radar	SS-2 radar system
Draught	5.18 m	Sonar	BQR2B passive sonar and BQS4A active sonar, DUUG-1B sonar warn implement
Speed	16 knots (dived)	ESM	WLR-1G × 1
Speed	12 knots (surfaced)	LCS	MK106 mng
Range	4,500 miles (5 knots surfaced)	Propulsion	4 part Fairbanks-Morse 38D8Q diesel engine
Range	95 miles (58 knots dived)	Diesel engine	2 part
Torpedoes	21 inch torpedo tubes, front 6, rear 4, total 10 valves	Max. depth	112 m

generation submarine force. The SEA LION and the SEAL, classified as TENCH-class boats, were powered by traditional diesel engines and had been constructed during the Second World War for the US Navy. Although they were modernized and upgraded to GUPPY II-class boats in 1950, there is little doubt that the two are obsolete by today's standards. A Japanese submarine magazine once observed of them, "The oldest serving submarines on duty for more than 50 years". Among all the other submarines built in WWII, the SEA LION and the SEAL are the only boats that still carry out military missions in the twenty-first century.

The ROCN purchased two modified ZWAARDVIS-class submarines, the SEA DRAGON (SS793) and the SEA TIGER (SS794), from a Dutch warship contractor, Wilton Feijnoord, in 1980 as part of the "SEA DRAGON-class" project. The two submarines commenced carrying out military duties in 1987 and 1988, respectively, under the 256th Battle Division. The specifications of SEA DRAGON are shown in Table 9.9.<sup>5</sup>

The establishment of a submarine fleet is one of the long-term goals of the Taiwanese Navy. The formation of 256th Battle Division was one important step towards the establishment of a submarine fleet and, at the time, the two SEA DRAGON-class submarines were advanced enough to lay the foundation. However, a follow-on contract for four more submarines, which had been agreed between the two governments, was canceled by the Dutch government after the direct interference of the PRC government.<sup>6</sup>

According to a report in the US *Defense Weekly* in September 1997, the PRC Navy was engaged in a series of new projects to improve its anti-underwater battle space capabilities. The development of modern submarines was one of its top priorities. In addition to the development of the Type-093 and Type-094

*Table 9.9* Characteristics of the SEA DRAGON (DINOSAUR-class) submarine

Crew	77		
Displacement	2,370 tons (surfaced)		
Displacement	2,657 tons (dived)		
Length	66.92 m		
Beam	8.4 m	Radar	ZW-60 type radar system
Draught	6.7 m	Sonar	SIASS sonar system
Speed	12 knots (surfaced)	ESM	WLR-1G × 1Elbit company TIMNEX4 CH V2 ESM and Sperry company Mk29 Mod2A inertia navigation system
Speed	20 knots (dived)	LCS	MK 106 mng SINBADs-M type combat system
Range	5,000 miles (9 knots surfaced)	Propulsion	Single Axle five leaf type screw propulsion
Horsepower	Water up 1,400 hp, dived 5,100 hp	Diesel engine	3 part Brons/Stork-Werkspoor 12ORUB215 type diesel engine, 2 part 922KW Holec generator
Torpedoes	21 inch torpedo tube, 6 valves, 28 pursue sound torpedo	Max. depth	240 m

nuclear submarine series, the PRC Navy has since then also obtained two Russian made 877 KILO-class conventional submarines. Compared with the large number and variety of submarines in the PRC Navy, it is evident that Taiwan's underwater forces are significantly weaker. This is a handicap, as it has been proved that the best underwater defense is the one with an aggressive underwater counter-attack defense system.<sup>7</sup>

In order to guarantee a continuing economic growth and national security, the acquisition of a larger number of underwater warships, either by means of purchase from foreign countries or even by indigenous construction, is indeed the top priority for the Taiwan Navy.

### *Taiwan's submarine requirements*

In April 2000, the US government agreed to sell eight diesel-electric submarines to the ROC as a result of the US-ROC Arms Talks. A US submarine-sale evaluation team came to Taiwan at the end of September 2001, to evaluate the needs of the ROCN. Both sides reached a purchase agreement based on the ROCN's requirements. According to this agreement, the concerns of the ROCN have been met, including its operational concepts, military strategy, size of the vessels, personnel training, system automation, underwater battle capability, maneuverability and command, and control communication systems.<sup>8</sup>

A "US Industry Day" was organized by the US Department of Defense in Virginia on October 16, 2001. The main agenda of the meeting was the sale of eight diesel-electric submarines to Taiwan organized by the ADI Technology Company. All qualified international companies were invited to the request for information (RFI) sales meeting. However, as far as the military control system was concerned, the meeting was restricted and open only to qualified US companies. The representatives of the ROC government in the United States were also invited to attend the meeting.<sup>9</sup>

The US Navy requested all the participating companies to submit a submarine-building proposal including design, manufacture, delivery, and whole life maintenance for the eight submarines. The proposal was then submitted to the ROCN after US Navy evaluation. The cost of the program was to be submitted within 6 months and the submarine contract signed in 2004. The construction of the first submarine is to start in 2005 and is expected to be completed in 2011. In total, it will take approximately 8–11 years to complete all eight submarines.<sup>10</sup>

Based on the political situation and the submarines' specifications, the RDM group located in the Netherlands proposed two submarine designs. One was based on the ROCN's DINOSAUR-class submarine with a few modifications; the other was the SEA EEL 1800 model (Table 9.10). The latter is still under review. The Navy, however, is very satisfied with the performance of the DINOSAUR-class submarines, which are built in the Netherlands. The company has accumulated more than 10 years of submarine building and operating experience. The advantages of the modified DINOSAUR-class submarines are that they have bigger platforms, and adequate interior space for future development. The disadvantage of the



*Table 9.10* Characteristics of the SEA EEL 1800-class submarine

Crew	38		
Displacement	1,626 tons (surfaced)		
Displacement	2,233 tons (dived)		
Length	75.9 m	Endurance	65 days
Beam	6.4 m	Torpedo	6 × 533 mm tubes
Range	over 300 m	Propulsion	MTU diesel-electric + AIP propulsion system

*Table 9.11* Characteristics of the 209-class type 1400 submarine

Crew	35 (including 8 officers)		
Displacement	1,464 tons (surfaced)		
Displacement	1,586 tons (dived)		
Length	61 m	Endurance	50 days
Beam	6.2 m	Sonar	STN Atlas Elektronik CSU-83/1 type sonar system
Draught	5.5 m	Torpedo	8 × 533 mm tubes, 24 STN Atlas Elektronik DM2AA4 torpedoes
Speed	11 knots (surfaced)	Propulsion	4part MTU 12V 493 diesel engine, 5,000 hp
Speed	23 knots (dived)	Max. depth	300 m
Range	7,000 miles (8 knots surfaced)	Dived distance	400 miles (4 knots dived)

SEA EEL-class submarines is that the manufacturer has no submarines of that class in stock and its ability to build a new class of the submarine might have been weakened in the light of it not having built any similar submarine for more than 10 years.

In contrast, those navies that operate the German-made Model 209 (Table 9.11), Model U212 (Table 9.12), and Model U214 (Table 9.13) have expressed great confidence in them and their reliability. Both the 209 and 214 are popular models in the global market, for they have a highly advanced design and are appropriate in size. The ROCN therefore placed a priority on the German-made submarine for purchase.<sup>11</sup>

Conventional submarines are currently equipped with advanced technology that, in some respects, means they can almost pass for nuclear submarines. These modernized traditional submarines can be utilized to carry out stealth strikes, intelligence gathering, special military operations, minelaying, and support for land forces ashore. They are also equipped with advanced signal processing units, advanced towed sonar array, high-tech weapons, and the ability of long underwater operations allowing them to perform small-scale anti-submarine, anti-blockade, and anti-surface vessel functions.<sup>12</sup>

In studies by Captain Bo Rask<sup>13</sup> and Michael M. Tsai and York Chen,<sup>14</sup> the immediate necessity for the ROCN is the acquisition of third-generation conventional

Table 9.12 Characteristics of the U212-class submarine

Crew	27 (including 5 officers)		
Displacement	1,524 tons (surfaced)		
Displacement	1,830 tons (dived)		
Length	56 m	ESM	Daimler Aerospace FL 1800U
Beam	7 m	Decoys	TAU 2000 torpedo countermeasures system
Draught	6 m	Radar	Kelvin Hughes Type 1007 I-band navigation radar
Speed	12 knots (surfaced)	Sonar	STN Atlas Elektronik DBQS-40 sonar suite
Speed	20 knots (dived)	Sonar	STN Atlas Elektronik MOA3070 mine detection sonar
Range	8,000 miles (at 8 knots surfaced)	Periscopes	Zeiss-Eltro Optronic Sero 14 search and Sero 15 attack periscope
Range	420 miles (at 8 knots dived)	Propulsion	Diesel-electric + AIP propulsion system
Torpedoes	6 × 533 mm <sup>2</sup> tubes, 24 × STN Atlas Elektronik DM2A4 torpedoes	Diesel engine	1 part MTU 16V 396 diesel engine, 3.12 MW
Combat data system	Basic command and weapons control system (BCWCS)	AIP propulsion system	HDW/Siemens AIP (air independent propulsion) system, 306 kW

Table 9.13 Characteristics of the U214-class submarine

Displacement	1,700 m <sup>3</sup> (surfaced)		
Length	64 m		
Beam	13 m		
Pressure vessel diameter	6.30 m		
buoyancy	>10%	Endurance	12 week
Crew	30	Low submerged speed	Submerged 3 week
Speed	6 knots (surfaced)	High submerged speed	15 knots ~ 20 knots
Range	12,000 miles (surfaced)	Max. depth	Over 400 m

submarines. Nevertheless, the third-generation conventional submarines that Taiwan requires should not only be reliable and contain sophisticated combat systems, sonar systems, and ESM, but they should also include the following: the capability of air independent propulsion (AIP), submerged launch anti-ship missiles, intelligence gathering ability, minelaying capability, degaussing systems, vibration isolation floating platforms, superior vertical and horizontal steering capabilities, and heavy-duty logistics.

### ***Taiwanese submarine design capability***<sup>15</sup>

It normally takes over 50 years to develop a sophisticated and well-equipped submarine design and construction capability. The number of states that own submarines has increased from twenty-nine in 1960, to forty-two in 1980. It is expected that by 2010, fifty countries in the world will operate submarines. The number of states that are capable of designing conventional SSK diesel submarines, however, has declined from eleven in 1960 to nine in 1996. The United States used to have the best conventional submarine design capability half a century ago, but since it constructed its last diesel submarine in 1954, it has lost its leadership in conventional submarine development.

There are four submarines that are currently in service in Taiwan. Two were built in the 1940s and the other two in 1980s. All are maintained regularly by the Navy Sub-Maintenance Division and are supported jointly by the Center for Sea Development. The sale of eight conventional submarines, proposed by the US government, will require technical support. If Taiwan is going to acquire its own submarine design capability, in addition to indigenous submarine and submersible research, it will have to depend on the successful import of relevant technologies from states that are already advanced in submarine construction.

There are a wide variety of submarine technologies. Taiwan will need to consider its defense strategy, the sea conditions around Taiwan, the Navy's war roles, the size of the defense budget, its submarine construction and repair capability, and equipment accessories, etc. The cost of the two Dutch SEA DRAGON-class submarines totaled NT\$ 29.4 billion. The cost breakdown of a newly designed submarine is estimated at: 60 percent for construction, 15 percent for design, 10 percent for project management, 5 percent for planning, and a final 10 percent for cash flow management (Table 9.14).

To date, Taiwan has no successful submarine construction experience and lacks the necessary background in submarine design. It is, therefore, crucial for it to establish an indigenous capability in modern submarine-related technologies, including design and construction, prior to acquiring any new submarines. The modern submarine design is based on an understanding of submarine construction. A sophisticated modern submarine design needs enormous practical experience and naval architectural knowledge, including that of advanced stealth technology and on-board equipment.

### ***The Taiwanese submarine construction abilities***

"Indigenous shipbuilding" is the Taiwanese government's principal industrial sector policy. The CSC has, for many years, been researching submarine construction

Table 9.14 The cost breakdown of current submarines

<i>Country</i>	<i>Submarine class</i>	<i>Years</i>		<i>Submerged displacement (tons)</i>
Germany	U212	1998	310	1,830
Israel	DOLPHIN	1995	404	1,720
Australia	COLLINS	1994	560	3,000
Sweden	GOTLAND		N/a	
Italy	SAURO		N/a	
Spain	SCORPENE	1996	N/a	
France	AGOSTA		N/a	
Norway	ULA	1989	95	940
Netherlands	WALRUS	1988	300	2,800
United Kingdom	UPHOLDER	1988	225	2,400
Russia	KILO	1982	70	3,200
Germany	TYPE 209	1970	200	1,200

technologies. It began its data collection 10 years ago and it sent a group of design engineers to the United States to acquire submarine maintenance information.

When the US government invited manufacturers to bid for the contract to supply eight submarines to Taiwan in October 2001, it made it a condition that, for the platform construction, all the competing companies had been granted an export license. CSC representatives were also invited. The CSC had expressed its ambition to develop an “indigenous shipbuilding” capability and then invited submarine design experts from states such as Germany and Holland to Taiwan to evaluate plant facilities. They all agreed that CSC already had the facilities and ability to construct GUANG I frigates. They also recommended that, after adding certain facilities, making slight changes to its production line, increasing technical co-operation with other qualified factories, CSC should have the ability to construct submarines on its own.<sup>16</sup>

The Executive Yuan is currently reviewing a project proposed by the CSC, which, if approved, will significantly improve its business status. The CSC has expressed its interest in the Navy’s submarine building contracts and has already established a network of experts to help launch the project and appointed experts from abroad. According to an evaluation of its ability to design and build submarines conducted by CSC itself, it is believed that it can fulfill the government’s “indigenous shipbuilding” policy ambition as long as it can acquire the necessary data and submarine construction techniques.<sup>17</sup>

### *Taiwan’s submarine maintenance capability*<sup>18</sup>

The existing Navy repair and maintenance system was established with the assistance of US military advisers in the 1950s. In recent years, due to the rapid development and planning of a second-generation navy, a novel strategic plan has been needed. The policy will maintain the principle of defense but will enhance maintenance through the application of logistic analysis and scientific and enterprising support.

The submarine repair, maintenance and engineering department is responsible for the Taiwanese Navy's submarine maintenance. The department's main facilities include:

- *The factory premises:* New manufacturing machine tools, the submarines' rudder and limb, and general engineering maintenance;
- *The general factory:* Primarily this is the area for repair and maintenance of the electrical engineering and ancillary equipment. It can also maintain any type of mast, any set of air valve system, the test the pressure hull, and main motors, etc.;
- *The electric cell industrial plant:* This can maintain and renew the main electric cell of the DRAGON-class and GUPPY II submarines;
- *The dry dockyard:* The facility contains a tower crane, fresh water, air, electric power, and fire fighting systems. It can allow the submarine to pass in and out of the dockyard, and perform repairs, and maintenance and engineering work.

The repair and maintenance of the submarines GUPPY II, SEA LION, and SEAL after 1973 are based on the practices and documentation employed during the time when the Americans were helping Taiwan. The ROCN have since followed US practices in submarine maintenance and repair operations. After receiving the DRAGON-class submarines from the Netherlands, a program was established to train the relevant personnel. For example, a logistic document (the maintenance operation manual, the factory standard practices, standard work sheet procedures), a technical replenishment document, a technical document (blueprint, technique manual, testing manual), machine tool training manuals, etc. were introduced.

### ***The submarine combat system***<sup>19</sup>

Along with promoting a world-class anti-submarine capability, Taiwan's new generation of submarines must also be able to defend themselves against air, surface, and underwater threats. Advanced countries expect that submarine combat systems must have the following capabilities: to be difficult, if not impossible, to detect, to carry the necessary means of self-defense, to have secure communications, and to be equipped with effective weapons. The fundamental combat system must be the core of the vessel's war fighting capability.

The Chung-San Institute of Science and Technology (CSIST) has already started developing an advanced integrated combat system involving *inter alia* the WU I- and WU III-class, PFG/FFs, the LA FAYETTE frigates, an ACS, fire control systems, intelligence gathering, ship/air control systems, and battle-space display systems, etc. The experience carried out to date has yielded successful results. Based on the surface command ship, and extending their research to incorporate the submarine's combat system, the CSIST has requested that they conduct further research to prolong the life of the submarine and incorporate the submarine in future combat system specifications.

## **Shipbuilding bottlenecks in Taiwan<sup>20</sup>**

### ***Bottleneck 1***

Because of the marked drop in ship building orders, there is stiff competition between public and private shipbuilding companies. This is especially critical for the private shipbuilding industrial sector. In the past, there has been strong competition in the public bidding method for warship contracts, but any number of problems have occurred: for example, the vendor cannot be found, the contract cannot be decided immediately, the contract cannot be signed even though there has been an agreement, the contract is rescinded and the bidding process restarted, the delivery has been postponed, the manufacturing process has been stopped to wait for raw materials, the quality of workmanship is inadequate, etc. Owing to the effect of the public bidding system on the government's "indigenous shipbuilding" policy, the Ministry of National Defense (MND) hopes to transfer the national defense technology to its "national shipbuilding alliance" strategy. In this way, the MND urges local industry to increase investment and look to naval shipbuilding and defense for future work.

Due to the global economic depression, especially in the shipbuilding industry, the CSC cannot achieve all these goals. The company cannot subcontract part of the construction work to other shipbuilders and has not supported the idea of collaboration with them. What is needed is for the government to promote co-operation between shipbuilders and for the CSC to readjust its policies.

### ***Bottleneck 2***

In order to promote efficiency, the Taiwan Navy reduced the warship industry's technical staff and in so doing lost its warship maintenance know-how so that it was later difficult to repair their naval vessels. One consequence is that it has proved difficult to keep ROCN ships maintained on time for duty.

One way to solve the above problems is to privatize naval shipbuilding and leave it to local industry to provide the necessary technical service. The researchers in the naval shipbuilding are an important national defense industrial resource. They should be financially syndicated, as recommended by the Industrial Technology Research Institute, and become the leading research index of the national defense industry.

With regard to the maintenance of naval vessels, the Navy should be much more demanding when it comes to maintenance standards. Had they been so, both public and private companies would more likely have been able to develop the technology necessary to build and maintain different forms of vessels. The current strategy depends on private companies; it is hoped therefore that these facilities will be able to repair the majority of naval vessels in time of war. Nevertheless, the Navy should reserve its core shipbuilding and maintenance capability in order to take on major contracts, stimulate competition, and retain special skills.

**Bottleneck 3**

When a warship is purchased from another country, it is difficult to repair it, because the spare parts and components are not always available.

The ROCN has long been relying on arms imports from other countries. It has become increasingly evident that weapons acquisition is getting more difficult for the ROCN and its heavy demand on foreign sales and armament spares has made Taiwan a heavily dependent state.

To rescue the Navy from its current heavily dependence crisis, the ROC government should actively pursue its “indigenous shipbuilding” policy. The implementation of this policy can, on the one hand, enhance the national defense capabilities and, on the other, it can be of benefit to the country’s manufacturing industry, which itself is experiencing some decline.

Once the “strategic alliance” policy between private and public companies is up and running, both the Navy and the private sector will have the advantage of having established the necessary links. At the moment, private sectors do not have a fair chance to bid for submarine repair and maintenance contracts.

**Conclusion**

The following suggestions are offered to help the Taiwanese private shipbuilding industry expand the civil industrial sector and enhance national defense.

(1) The Taiwanese government should establish a design organization, which provides the techniques and the specifications for warship design. The first step would be to enhance the function of the United Ship Design and Development Center to meet the requirements of civil shipbuilding factories.

(2) The indigenous warship-building industry can learn from the experiences of the United States, Canada, etc. After the fair and open certification of qualified shipbuilders, the Navy could contact particular shipyards to construct or repair its naval vessels. The certification can be conducted openly by academic circles, research institutions, or the Navy, etc.

(3) The current policy of inviting bids should be reviewed together by the Audit Unit of the Legislative Yuan, the shipbuilding factories, the Navy, etc. To ensure that the present bidding policy is appropriate, the law might have to be revised, as necessary.

(4) To carry through the “indigenous shipbuilding” policy, the suggestion is to establish an organization like the Japanese Bureau of Ships, Korea’s Bureau of Shipbuilding, etc., and engage professional and talented people to take charge and handle the related problems of shipbuilding. The best way is to establish a high-level organization managed by Executive Yuan who will push the policy, through. The suggestion is therefore that the Ministry of Economic Affairs should establish a high-level organization to promote Taiwan’s shipbuilding industry.

(5) The “indigenous shipbuilding” policy will be affected by several governmental departments, such as the Department of Transportation, the Department

of Defense, the Department of State, and the Department of Finance. Therefore, conferences will be needed for the representatives from the different governmental departments to discuss this issue. The domestic defense industry should aim at establishing a manufacturing and production capability.

(6) It is suggested that maintenance should be considered in the beginning of any new warship construction as part of a whole-life cost approach to warship procurement.

(7) The establishment of long-term contracts with highly qualified enterprises will improve the warship maintenance in several aspects, such as technology, material, and quality.

(8) The government should clearly define the scope of domestic warship construction for the next 10 years, including the numbers involved and the level of technology. Domestic warship construction will enhance the development of several related industries, such as the steel, electric motor, cable, electronic, and valve industries.

(9) It is suggested that the military department should authorize that maintenance work should be conducted by highly qualified domestic companies.

(10) Because it has become more and more difficult for Taiwan to obtain warships from other countries, the establishment of a domestic warship construction industry is very urgent. Warship construction involves many advanced technologies. The key is experience. Therefore, the government should define the policy, select the warship designs, and train the personnel. At the same time, it is necessary to integrate the expertise from industry, government, the universities, and research laboratories, in order to promote the technical skills and equipment and components.

Because Taiwan is an island, the security of the seas is critical to the nation's sustainable development. In order to ensure territorial security, promote the domestic industries, utilize the ocean's resources, and establish a defense force, it is very important to promote domestic technological integration, instead of relying on foreign support. The development of major breakthrough technologies, associated with the underwater vessels, will serve as an important guideline for a further strategy of submarines and submersibles.<sup>21</sup>

## Notes

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## 10 Conclusion

### A comprehensive assessment of Taiwan's sea power

*Eric Grove*

I have been asked to provide a comprehensive assessment of Taiwan as a sea power. In a fully Mahanian sense, this would include all aspects of the maritime affairs of the Republic of China (ROC). I propose instead to concentrate primarily on naval matters. Suffice it to say that the ROC possesses under its flag a significant mercantile marine of 640 vessels of 12,400,000 tons gross. This represents a smaller fleet than those of South Korea or the United Kingdom, but a bigger fleet than of France or the Netherlands. It is about the same size in tonnage as that of Italy. (The figures come from the Firplay Organization quoted in *Jane's Fighting Ships 2001–2*, which is the source for the rest of this chapter.) Taiwan has one of the world's major shipbuilding industries. She also has, however, one of the world's major navies, a not inconsiderable achievement for a country of her size.

Some years ago, when Jim McCoy was Naval Information Officer for the International Institute for Strategic Studies, he did a ranking of the world's navies; at the time, Taiwan was placed among the “top ten”. The methodology was to work out combat tonnage, the combined tonnage of the major surface combatants, and submarines. This is clearly a crude measure as it cannot deal directly with quality. But there is a good argument that the bigger the vessel, the more capable it is in terms of range and sea keeping; the larger the ship, the bigger the range of weapons and aircraft it can carry and the better it will be equipped with C4ISR equipment. I therefore defined the assets to be counted on naval vessels as: aircraft carriers, cruisers, and destroyers and frigates above 1,500 tons full load displacement. The figures are interesting—and they still place Taiwan very firmly in the “top ten”.

Head and shoulders above the rest of the world is, of course, the United States Navy and Coast Guard with a combined combat tonnage of 2,736,000 tons. There is absolutely no other fleet of this quantity and, indeed, quality. The second place fleet is far behind and is still Russia with 856,000 tons, although the *Jane's* figure overestimates the tonnage of Russian vessels that is actually ready for service and fully operational. Even if it is halved however, Russia would still be second in size.

Next comes the People's Republic of China (PRC) with 323,000 tons, although again this is probably an overestimate of relative capability even in terms of

operational tonnage. I shall return to matters of quality below. Then comes Britain's Royal Navy with 301,000 tons, clearly Europe's premier maritime force. Fifth is Japan with 265,000 tons, sixth is France with 188,000 tons of major warships and, seventh, India with 150,000 tons. Taiwan is clearly number eight, however, not far behind at 118,000 tons about half way between Japan and Italy, Turkey, and Brazil who complete the top ten (actually eleven) at 101,000–102,000 tons apiece.

Undisputedly, Taiwan manifestly has one of the world's major navies and the ROC clearly qualifies as one of the more important, "second rank" naval powers. It is way ahead of countries such as Spain (50,000), the Netherlands (61,000), Germany (65,000), Australia (64,000) or, even, the Republic of Korea (ROK) (61,000 or 90,000 if the 1,220 ton PO HANG-class corvettes are added).

Most of Taiwan's total displacement comes from destroyers and frigates, but its submarine force still displaces about as much as that of the major European navies such as Spain or the Netherlands, each with around 10,000 submerged tons apiece. The balance is totally unlike that of the PRC, however, where about half the total displacement comes from submarines, or India and the UK, where a third of the total tonnage is made up of submarines.

It might be argued that even this overstates Taiwan's true capability as only the two Dutch-type HAI LUNG-class are modern and perhaps fully combatant, but an enemy would not write off the two old American boats completely, given Taiwan's proven capacity to make old American technology work. Taiwan will, of course, move into a more modern balance when the search for new submarines finally comes to fruition from about 2005. The eight new boats will eventually boost tonnage to a figure approaching 20,000 tons, about a third or more than that of Japan and more than most countries' displacement of submarines (e.g. most European navies and the ROK).

Turning now to describe the surface fleet that provides the bulk of Taiwan's combat tonnage, the largest ships are the seven 4,105 tons CHEN KUNG-class frigates. These are the domestically built versions of the American OLIVER HAZARD PERRY (FFG7)-class. They are comparable to the US ships in overall capability and possess all the features of a modern surface combatant, namely action information organization, data link, helicopter, surface-to-air missiles, surface-to-surface missiles, small guns, lightweight torpedoes, sonar—both hull mounted and towed array—and a comprehensive radar and electronic warfare capability. The PRC has only five ships of similar, or greater, capability (the two HANGZHOU, the SHENZHEN, and the two HARBINS). An additional CHENG KUNG is under construction.

Next comes the eight futuristically and stealthily shaped LA FAYETTE frigates of the KANG DING-class; they are a great improvement on the original French version. Built in France, but completed at Kaohsiung, these are also very comprehensively fitted for anti-submarine and anti-surface warfare with action information organization and data link, helicopter, surface-to-surface missiles, and radar and sonar, the latter including towed array. Unlike the CHEN KUNGS, air warfare capability is limited to short range self-defence. Again, these are only comparable in the PRC with the ships listed above.

Backing up these modern ships, all built in the 1990s, are the very distinctively Taiwanese WU CHIN III conversions of the old American GEARING-class destroyers. There are seven of these, the last of the flotilla of modified former American ships that used to form the backbone of the ROCN. The seven WU CHIN IIIs that remain were thoroughly transformed by the addition of the H690 modular combat system (MDS) into modern three-dimensional combatants with fixed standard SAMs, SSM's, modern light guns, *Phalanx* CIWS, new radar, upgraded sonar, modern EW, and data link into the CIC. A new small helicopter was added and the older ASROC anti-submarine warfare (ASW) missiles interfaced with the new digital combat system. These are highly capable and interesting assets although their old mechanical equipment cannot go on for much longer. Problems in this latter regard accelerated the withdrawal of the less capable older vessels. They make an interesting comparison with the PRC's LUDAs that are twice as numerous but, except in two cases, are bereft of modern air defence.

Withdrawal will be possible without loss of capability or combat displacement with the delivery of the four KIDD-class ships. These are highly capable large AAW destroyers (perhaps better seen almost as cruisers) whose new threat upgrade (NTU) standard system gives a capability second only to *Aegis*. With these ships in commission, Taiwan will have better AAW ships than Britain until the new Type 45s appear in 2007. They will also be better multi-dimensional combatants than anything in the PLAN—the HANGZHOU included. The replacement of all seven rebuilt GEARINGS by the KIDDs cannot be seen as anything but a significant leap in capability.

The final class of major combatants in the Republic of China Navy (ROCN) are the eight former US KNOX-class frigates that form the 168 Patrol Squadron at Suao. These are quite capable ASW assets in terms of their sonar, although they do not carry helicopters and rely on ASROC and ship launched torpedoes. They only have Vulcan *Phalanx* for protection in addition to their 5-in guns, the largest mounted in the ROCN. These ships can also carry *Harpoon* missiles in their ASROC launcher. *Seasprite* helicopters were planned for these ships and their capability would be greatly enhanced in all their roles if such were acquired. Although their combat data systems are limited by modern standards, they are adequate for ASW and surface patrol in situations of limited air threat.

All the above ships are strong in ASW and could do much to protect shipping in the event of a submarine blockade of the island. Air defence is adequate rather than strong, but the KIDDs will transform the situation. It must be stressed that all the twenty-eight above ships are fully fledged modern combatants, unlike many of the frigates that make up the surface combatant strength across the Taiwan strait, most of which lack modern combat systems and are wide open to air attack of all kinds. The ROC possesses a sea control fleet of considerable power and should be judged as being fully worthy of its ranking in tonnage.

Moving to amphibious forces, Taiwan possesses a powerful amphibious squadron to sustain its position in the offshore islands and its presence in the Spratley and Pratas islands in the South China Sea. Supplies and reinforcements have to be supplied over the beach. For a long time this capability rested on

venerable former American LSTs that still form a significant part of the force, with ten remaining and another converted to a command ship. There are also four, much rebuilt, smaller LSMs of similar vintage. The 1990s saw significant enhancement of capability, however, with the arrival of two of the NEWPORT-class large LSTs being disposed of post-Cold War by the United States. Another is on its way and more may appear. An even more important addition was the ANCHORAGE-class LSD, SHIU HAI, delivered in 2000. A second such unit is also probably to be delivered. In addition to these, there are four domestically built 4,000–5,000 ton attack transports, a more conventional vessel commissioned in 1979, and three WU KANG-class ships with docking facilities and a helicopter platform built in the 1980s. These all give Taiwan an amphibious lift capability more impressive than that of the average European Navy or even India.

The lack of specialist amphibious helicopters is, however, a significant weakness. There are two brigades of Marines and the Marine Corps is 15,000 strong, two and a half times the strength of the UK's Royal Marines. This is not an unimpressive power projection capacity to reinforce the outlying maritime parts of the ROC. There may be a new emphasis on this role as the ROC demilitarizes its outposts. Some, however, might say that the amphibious capability is rather too impressive, given the overall balance of naval priorities.

Given its need for sea denial operations in coastal waters, the ROCN has historically had a substantial flotilla of missile-equipped small combatants, although this is based around large numbers of the Israeli DVORA-type HAI OU small (47 ton) missile boat, which is being run down. The new class of eleven 680 ton missile-equipped large patrol craft domestically produced since 1994 does form a useful means of coastal presence and surveillance as well as an attack capability. A still larger 1,500 ton missile armed corvette is about to appear that will confirm the trend to larger patrol craft. This is sensible for two reasons. The surface vessel's virtue is its capacity for presence, something a larger high endurance vessel can provide better than a very small craft. Also, a larger craft stands a better chance of protecting itself from air attack. Corvettes can carry combat systems and effective self-defence weapons.

In addition to missiles mounted in small surface craft, defensive sea denial is also carried out by a land-based surface-to-surface missile command in six squadrons, one in the Matsu group, one in the Pescadores and four on Taiwan itself. These would be especially useful in covering defensive minefields.

Mining is a simple and potent means of achieving sea denial. Mine counter-measures are, therefore, a key activity for any state that relies on sea use; here the ROCN is uncharacteristically weak. There are eight minesweepers, four of the 780 ton American AGGRESSIVE MSO type built in the 1950s and sold to Taiwan in the 1990s, and four smaller American coastal minesweepers of similar vintage. The latter are reportedly in poor condition although the larger vessels are quite modern in equipment with minehunting sonar and remotely operated vehicles (ROVs). There are also four minehunters built in Germany as offshore support vessels, also in the 1990s, but it is reported that these rarely go to sea. This limited capability seems rather unwise for a country so dependent on shipping as

the ROC. There are plans to further upgrade the MSOs as hunters and to build a new class. This should be a priority as the current capability is inadequate.

Reach is a key facet of sea power but that of Taiwan is perhaps rather limited. Although the ROCN can project force well enough in its immediate littoral areas of concern, it lacks the capacity to engage much in the way of longer range operations. In Admiral Liu Ho-chien's opinion the ROCN has insufficient escorts to deal with a blockade mounted in the South China Sea.<sup>1</sup> This may be true, but more auxiliaries would also improve this situation.

The fleet train is limited to two old US-built support tankers and a more impressive domestically-built combat support ship the WU YI, the largest ship built to date domestically for the ROCN. This is an effective modern fleet auxiliary with helicopter deck (that could operate an ASW helicopter) and self-defensive armament. This ship makes sustained operations by surface sea control forces possible at significantly greater distances. It might be prudent to replace the two old ships with a similar vessel. Such ships are useful force multipliers and are themselves multi-purpose, especially as helicopter platforms.

The ROC's preoccupation with home defence makes the island itself effectively an aircraft carrier. The aircraft of the Republic of China's Air Force (ROCAF) are, therefore, key maritime assets and part of Taiwan's sea power. Missile delivery by these aircraft would play a key role in any sea denial operation and fighter cover would be necessary for some sea control operations in areas of high threat. Problems of co-ordinating joint operations must be overcome and the closest co-ordination of Navy and Air Force assets in joint operations is a key aim. The same is true of airborne early warning and general situational awareness, where four key assets are the Air Force's four E-2 *Hawkeyes*.

There has been a tendency in recent years to allocate aircraft to the ROCN that have a particularly maritime task. The thirty-two S-2 *Trackers* used for patrol and anti-submarine duties were transferred in 1998. Most of these have been refurbished with new engines and sensors that cover the whole spectrum of ASW capability, radar, ESM, MAD, FLIR, and sonobuoys. The aircraft can also be used for ASuW attack with anti-ship missiles. Some of these aircraft may get replaced by P-3s that will provide a useful increment of range and endurance and there may be a transfer of fighter bombers to the Navy also. This will enhance the effectiveness of the utilization of aircraft for maritime purposes, but it is not a substitute for a wholeheartedly joint approach in the application of maritime power, which, it must be remembered, is an essentially joint concept.

What can Taiwan do with this panoply of maritime power? First, it can assert a significant measure of sea control in its sea approaches. This is vital. The ROC is very vulnerable to maritime interdiction. Over 99 percent of its trade is carried in ships, over 71,000 of which pass in or out of its five major ports. All Taiwan's oil comes by sea. PRC submarines might well be the weapons of choice to interdict this shipping, possibly in limited ways to intimidate and discourage traffic.<sup>2</sup>

The ROCN could escort ships approaching Taiwan to prevent or deter submarine attack. The assets available, both surface and air, could make especially limited submarine operations very difficult. The capabilities available to

Taiwan in ASW stand a good chance of dealing with the threat even from the best PLAN conventional boats—the Russian built KILOs. Towed arrays and maritime patrol aircraft would make life difficult even for the SSNs. Although surface and air assets are the primary sea control forces, submarines could make a significant contribution, for example, by ambushing nuclear powered submarines. Submarines have a wider sea denial task, however, especially if the PRC attempted some type of interdiction operation by asserting sea control by surface ships in more distant waters. Submarines also make intelligence gathering and forward defence against provocative PRC actions a good deal easier. The ROCN is right to make submarine acquisition the priority it is.

Submarines would also make invasion operations more problematical. The power that the ROCN and ROCAF could deploy against an invasion makes it a highly unlikely event. The PRC's armed forces are simply still not in the same technological class as those of Taiwan and this weighs heavily in the balance.

Taiwan is a classic sea power. Her economy and security depend on the sea. She must, therefore, maintain strong maritime forces to allow her to continue to use the seas, especially those around her shores. Ships can be diverted sometimes on very circuitous routes, but there is no alternative but to approach Taiwan of the vital commodities are to pass to and from the island. Sea control in the waters approaching Taiwan is thus the key task and the strength of Taiwan's "top ten" Navy goes a long way to allowing some confidence in asserting it. Taiwan is a sea power of the leading rank and must remain so if she is to survive.

## Notes

- 1 Liu Ho-chien, *Taiwan Defence Affairs*, Vol. 1, No. 3.
- 2 M.M. Tsai and Y.W. Chen "Submarines and Taiwan's Defence", *Taiwan Defense Affairs*, Vol. 1, No. 3, Spring 2001, pp. 122–77.



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