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Military Power of the People's Republic of China 2008

Office of the Secretary of Defense

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Military Power of the People's Republic of China

A Report to Congress
Pursuant to the National Defense Authorization Act
Fiscal Year 2000

Section 1202, "Annual Report on Military Power of the People's Republic of China," of the National Defense Authorization Act for Fiscal Year 2000, Public Law 106-65, provides that the Secretary of Defense shall submit a report "on the current and future military strategy of the People's Republic of China. The report shall address the current and probable future course of military-technological development on the People's Liberation Army and the tenets and probable development of Chinese grand strategy, security strategy, and military strategy, and of the military organizations and operational concepts, through the next 20 years."

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Executive Summary

China's rapid rise over recent years as a regional political and economic power with growing global influence is an important element in today's strategic landscape, one that has significant implications for the region and the world. The United States welcomes the rise of a stable, peaceful, and prosperous China. No country has done more to assist, facilitate, and encourage China's national development and its integration in the international system. The United States continues to encourage China to participate as a responsible international stakeholder by taking on a greater share of responsibility for the stability, resilience and growth of the global system. However, much uncertainty surrounds China's future course, in particular in the area of its expanding military power and how that power might be used.

The People's Liberation Army (PLA) is pursuing comprehensive transformation from a mass army designed for protracted wars of attrition on its territory to one capable of fighting and winning short-duration, high intensity conflicts along its periphery against high-tech adversaries – an approach that China refers to as preparing for "local wars under conditions of informatization." China's ability to sustain military power at a distance remains limited but, as noted in the 2006 *Quadrennial Defense Review Report*, it "has the greatest potential to compete militarily with the United States and field disruptive military technologies that could over time offset traditional U.S. military advantages."

China's near-term focus on preparing for contingencies in the Taiwan Strait, including the possibility of U.S. intervention, is an important driver of its modernization. However, analysis of China's military acquisitions and strategic thinking suggests Beijing is also developing capabilities for use in other contingencies, such as conflict over resources or disputed territories.

The pace and scope of China's military transformation have increased in recent years, fueled by acquisition of advanced foreign weapons, continued high rates of investment in its domestic defense and science and technology industries, and far reaching organizational and doctrinal reforms of the armed forces. China's expanding and improving military capabilities are changing East Asian military balances; improvements in China's strategic capabilities have implications beyond the Asia-Pacific region.

China's nuclear force modernization, as evidence by the fielding of the new DF-31 and DF-31A intercontinental-range missiles, is enhancing China's strategic strike capabilities. China's emergent anti-access/area denial capabilities – as exemplified by its continued development of advanced cruise missiles, medium-range ballistic missiles, anti-ship ballistic missiles designed to strike ships at sea, including aircraft carriers, and the January 2007 successful test of a direct-ascent, anti-satellite weapon – are expanding from the land, air, and sea dimensions of the traditional battlefield into the space and cyber-space domains.

The international community has limited knowledge of the motivations, decision-making, and key capabilities supporting China's military modernization. China's leaders have yet to explain in detail the purposes and objectives of the PLA's modernizing military capabilities. For example, China continues to promulgate incomplete defense expenditure figures, and engage in actions that appear inconsistent with its declaratory policies. The lack of transparency in China's military and security affairs poses risks to stability by increasing the potential for misunderstanding and miscalculation. This situation will naturally and understandably lead to hedging against the unknown.

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Glossary of Acronyms

AEW&C: Airborne Early Warning and Control

ARM: Anti-Radiation Missile

ASAT: Anti-Satellite

ASBM: Anti-Ship Ballistic Missile

ASCM: Anti-Ship Cruise Missile

ASM: Air-to-Surface Missile

C4ISR: Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance

CAD/CAM: Computer-Assisted Design/ Manufacturing

CCP: Chinese Communist Party

CMC: Central Military Commission

CNA: Computer Network Attack

CND: Computer Network Defense

CNE: Computer Network Exploitation

CNO: Computer Network Operations

CNP: Comprehensive National Power

DDG: Guided Missile Destroyers

EEZ: Exclusive Economic Zone

EMP: Electro-Magnetic Pulse

FFG: Guided-Missile Frigate

GAD: General Armament Department

GDP: Gross Domestic Product

GSD: General Staff Department

ICBM: Intercontinental-Range Ballistic Missile

ICE: U.S. Immigration and Customs Enforcement

IMF: International Monetary Fund

IOC: Initial Operational Capability

IRBM: Intermediate-Range Ballistic Missile

LACM: Land Attack Cruise Missile

MaRV: Maneuvering Re-entry Vehicle

MINURSO: UN Mission on Referendum in Western Sahara

MIRV: Multiple Independently Targeted Re-entry Vehicle

MND: Ministry of National Defense

MR: Military Region

MRBM: Medium-Range Ballistic Missile

MRL: Multiple Rocket Launcher

NCO: Non-Commissioned Officer

OECD: Organization of Economic Cooperation and Development

OMTE: Outline for Military Training and Evaluation

OTH: Over-the-Horizon

PAP: People's Armed Police

PBSC: Politburo Standing Committee

PLA: People's Liberation Army

PLAAF: People's Liberation Army Air Force

PRC: People's Republic of China

SAM: Surface-to-Air Missile

SESS: Space Event Support Ship

SCO: Shanghai Cooperation Organization

SLBM: Submarine-Launched Ballistic Missile

SS: Diesel-Electric Attack Submarine

SRBM: Short-Range Ballistic Missile

SSBN: Nuclear-Powered Ballistic Missile Submarine

SSN: Nuclear-Powered Attack Submarine

UAV: Unmanned Aerial Vehicle

UCAV: Unmanned Combat Aerial Vehicle

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Chapter One
Key Developments

"The world today is undergoing extensive and profound changes, and China today is undergoing extensive and profound transformations."

– President Hu Jintao

Several significant developments in China over the past year relate to the questions Congress posed in Section 1202 of the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65).

Developments in China's Grand Strategy, Security Strategy, and Military Strategy

- The Chinese Communist Party (CCP) convened the 17th Party Congress on October 15-21, 2007. At the Congress, President of the People's Republic of China (PRC) and CCP General Secretary Hu Jintao reaffirmed a long-term strategy of "opening and development," which seeks to maintain domestic and regional stability while China develops its economic, military, scientific, and cultural power.

- Immediately following the Congress, Shanghai Party Secretary Xi Jinping and Liaoning Party Secretary Li Keqiang were appointed to the Politburo Standing Committee (PBSC), putting them in line for top leadership positions at the next Party Congress in 2012. Party leaders also endorsed inclusion of Hu's ideological concept of "scientific development" (ensuring balance between economic growth and social and environmental needs) into the Party Constitution.

- Prior to the Congress, three of the 11-member Central Military Commission (CMC) were replaced. The new CMC members are General Chang Wanquan, Director of the General Armament Department (GAD); General Xu Qiliang, PLA Air Force (PLAAF) Commander; and, Admiral Wu Shengli, PLA Navy Commander. Defense Minister General Cao Gangchuan retired as Vice Chairman of the CMC and as a member of the Politburo, and will retain the title of Defense Minister until probably March 2008.

- Military leaders also appointed new commanders for five of seven military regions (MR) in the months leading up to the 17th Party Congress. These included Lieutenant General Fang Fenghui, Beijing MR; Lieutenant General Zhang Qinsheng, Guangzhou MR; Lieutenant General Zhao Keshi, Nanjing MR; Lieutenant General Wang Guosheng, Lanzhou MR; and Lieutenant General Zhang Youxia, Shenyang MR. These new commanders reflect the PLA's modernization priorities and efforts to promote officers who are younger, better educated, and trained according to the PLA's evolving professional military education guidelines.

- Regarding Taiwan, President Hu's 17th Party Congress speech did not emphasize military threats, but affirmed the importance of continuing China's military modernization and urged the Party to "accelerate the revolution in military affairs with PLA characteristics [and] ensure preparations for military struggles…."

- Hu's speech also included an offer to hold consultations with Taiwan, based on Beijing's One China principle, toward "reaching a peace agreement." Taiwan President Chen Shui-bian rejected the offer.

- In an August 2007 speech celebrating the 80th anniversary of the founding of the PLA, President Hu called for accelerating the modernization of weapons and equipment, enhancing personnel training, and strengthening combat skills through "coordinated development between national defense building and economic construction." China began to use this language in the late 1990s, reflecting the CCP's strategy of balancing economic growth and military modernization, as opposed to privileging one over the other.

- In December 2007, China announced the elevation of Hainan Province's Xisha Islands office to a county-level office named "Sansha City," which would hold administrative jurisdiction over the Paracel and Spratly island groups, and Macclesfield Bank – claims disputed by Brunei, the Philippines, Malaysia, Taiwan, and Vietnam. A PRC spokesperson asserted that China has "indisputable sovereignty" and effective jurisdiction over the islands of the South China Sea "and the adjacent waterways." In reaction to China's declaration, hundreds of Vietnamese protesters demonstrated outside the Chinese embassy in Hanoi.

Developments in China's Military Forces

China's long-term, comprehensive transformation of its military forces is improving its capacity for force projection and anti-access/area denial. Consistent with a near-term focus on preparing for Taiwan Strait contingencies, China deploys many of its most advanced systems to the military regions opposite Taiwan.

China describes operating under "informatized" conditions and improving "integrated joint operations" capabilities as the primary objectives for the PLA's build-up. Informatized conditions are operating environments characterized by communications jamming, electronic surveillance, and precision weaponry. "Integrated joint operations" is the PLA's term for multi-service, combined arms operations.

Ballistic and Cruise Missiles. China has the most active ballistic missile program in the world. It is developing and testing offensive missiles, forming additional missile units, qualitatively upgrading certain missile systems, and developing methods to counter ballistic missile defenses.

- By November 2007, the PLA had deployed between 990 and 1,070 CSS-6 and CSS-7 short-range ballistic missiles (SRBM) to garrisons opposite Taiwan. It is increasing the size of this force at a rate of more than 100 missiles per year, including variants of these missiles with improved ranges, accuracies, and payloads.

- The PLA is acquiring large numbers of highly accurate cruise missiles, such as the domestically produced ground-launched DH-10 land attack cruise missile (LACM); the Russian SS-N-22/SUNBURN supersonic anti-ship cruise missile (ASCM) outfitted on China's two SOVREMENNYY and two SOVREMENNYY II-class guided missile destroyers (DDG), also acquired from Russia; and, the SS-N-27B/SIZZLER supersonic ASCM, outfitted on the last eight of twelve total Russian-built KILO-class diesel electric submarines China has acquired.

- China is developing an anti-ship ballistic missile (ASBM) based on a variant of the CSS-5 medium-range ballistic missile (MRBM) as a component of its anti-access strategy. The missile has a range in excess of 1,500 km and, when incorporated into a sophisticated command and control system, is a key component of China's anti-access strategy to provide the PLA the capability to attack ships at sea, including aircraft carriers, from great distances.

- China is modernizing its longer-range ballistic missile force by adding more survivable systems. Most notably, the DF-31 and longer-range DF-31A are now being deployed to units within the Second Artillery Corps.

- China is also working on a new submarine-launched ballistic missile, the JL-2, for deployment aboard new JIN-class (Type 094) nuclear-powered ballistic missile submarines (SSBN). The JL-2 is expected to reach initial operational capability (IOC) between 2009-2010.

Space and Counterspace. China is developing a multi-dimensional program to limit or prevent the use of space-based assets by its potential adversaries during times of crisis or conflict. Although China's commercial space program certainly has utility for non-military research, it demonstrates space launch and control capabilities that have direct military application.

- In January 2007, China successfully tested a direct ascent, anti-satellite (ASAT) weapon, destroying a defunct PRC weather satellite. The unannounced test demonstrated the PLA's ability to attack satellites operating in low-Earth orbit. The test raised concern among many nations, and the resulting debris cloud put at risk the assets of all space faring nations, and posed a danger to human space flight.

- China launched its first lunar orbiter on October 24, 2007. The Chang'e 1 orbiter reached lunar orbit on November 5, 2007. Successful completion of this mission demonstrated China's ability to conduct complicated space maneuvers – a capability which has broad implications for military counterspace operations. The Chang'e 1 mission completed the first of a three-stage plan for lunar exploration which includes China's desire to launch an unmanned lunar rover mission in 2012 and a manned lunar landing by 2020.

- In October 2007, China launched the fifth in a class of Space Event Support Ships (SESS), the Yuanwang 5, an ocean-going space tracking and survey vessel intended to support China's growing space program, including its expanding space launch activities.

- China launched its 100th Long March series rocket in 2007, and continues to put a more sophisticated and diverse set of satellites into orbit. China is developing the Long March 5, an improved heavy-lift rocket that will be able to lift larger reconnaissance satellites into low-earth orbit or communications satellites into geosynchronous orbits by 2012, and is constructing a new satellite launch complex on Hainan Island. China expects to replace all foreign-produced satellites in its inventory with indigenously produced sun-synchronous and geo-stationary models by 2010, with life expectancies of 5 and 15 years, respectively.

- China announced plans to launch 15 rockets and 17 satellites in 2008. Additionally, China announced its intention to launch a third manned space mission, Shenzhou VII, in October 2008 on the heels of the Beijing Olympics, underscoring space development as an important symbol of national pride. The majority of the technology used in China's manned space program is derived from Russian equipment, and China receives significant help from Russia with specific satellite payloads and applications.

- China's leaders remain silent about the military applications of China's space programs and counterspace activities.

Cyberwarfare Capabilities. In the past year, numerous computer networks around the world,

including those owned by the U.S. Government, were subject to intrusions that appear to have originated within the PRC. These intrusions require many of the skills and capabilities that would also be required for computer network attack. Although it is unclear if these intrusions were conducted by, or with the endorsement of, the PLA or other elements of the PRC government, developing capabilities for cyberwarfare is consistent with authoritative PLA writings on this subject.

- In 2007, the Department of Defense, other U.S. Government agencies and departments, and defense-related think tanks and contractors experienced multiple computer network intrusions, many of which appeared to originate in the PRC.

- Hans Elmar Remberg, Vice President of the German Office for the Protection of the Constitution (Germany's domestic intelligence agency), publicly accused China of sponsoring computer network intrusions "almost daily." Remberg stated, "across the world the PRC is intensively gathering political, military, corporate-strategic and scientific information in order to bridge their [sic] technological gaps as quickly as possible." Referring to reports of PRC infiltration of computer networks of the German government, German Chancellor Angela Merkel said "we must together respect a set of game rules." Similarly, in September 2007, French Secretary-General of National Defense Francis Delon confirmed that government information systems had been the target of attacks from the PRC.

- In addition to governments, apparent PRC-origin network intrusions targeted businesses. In November 2007, Jonathan Evans, Director-General of the British intelligence service, MI 5, alerted 300 financial institution officials that they were the target of state-sponsored computer network exploitation from the PRC.

Naval Power. China's naval forces include 74 principal combatants, 57 attack submarines, 55 medium and heavy amphibious ships, and 49 coastal missile patrol craft.

- China has an active aircraft carrier research and design program. If the leadership were to so choose, the PRC shipbuilding industry could start construction of an indigenous platform by the end of this decade.

- The PLA Navy is improving its over-the-horizon (OTH) targeting capability with Sky Wave and Surface Wave OTH radars, and is developing missiles with improved range and accuracy.

- Two new SHANG-class (Type 093) nuclear-powered attack submarines (SSN) and one JIN-class (Type 094) SSBN may soon enter service alongside four older HAN-class SSNs and China's single XIA-class SSBN.

- China has an estimated ten SONG-class (Type 039) diesel-electric attack submarines (SS) in its inventory. The SONG-class SS is designed to carry the YJ-82 (CSS-N-8) ASCM. The YUAN-class SS is now assessed to be in full production and will be ready for service by 2010.

- The PLA Navy has received seven new domestically produced surface combatants in the past two years, including two LUYANG II-class (Type 052C) DDGs fitted with the indigenous HHQ-9 long-range surface-to-air missile (SAM); two LUZHOU-class (Type 051C) DDGs equipped with the Russian SA-N-20 long-range SAM, and three JIANGKAI II-class (Type 054A) guided missile frigates (FFG) to be fitted with the medium-range HHQ-16 vertically launch naval SAM currently under development. These ships reflect

leadership's priority on advanced anti-air warfare capabilities for China's naval forces, which has historically been a weakness of the fleet.

- China is continuing construction of its new Type 022 catamaran-style missile patrol craft, which likely will be armed with ASCMs.

Air and Air Defense. China bases 490 combat aircraft within un-refueled operational range of Taiwan, and has the airfield capacity to expand that number by hundreds. Many of these aircraft are upgrades of older models; however, newer, and more advanced, aircraft make up a growing percentage of the inventory.

- The modernized FB-7A fighter-bomber will augment other multi-role and strike aircraft, such as the F-10 and Su-30MKK, already deployed with China's air forces.

- China is upgrading its B-6 bomber fleet (originally adapted from the Russian Tu-16) with a new variant which, when operational, will be armed with a new long-range cruise missile.

- The PLAAF received four battalions of upgraded Russian SA-20 PMU-2 long-range (200km) SAM systems in July 2007. Another four battalions are expected to be delivered in 2008. The SA-20 system reportedly provides limited ballistic and cruise missile defense capabilities.

- China's aviation industry is developing several types of airborne early warning and control (AEW&C) aircraft. This includes the KJ-200, based on the Y-8 transport, for AEW&C as well as intelligence collection and maritime surveillance, and the KJ-2000, based on the Russian A-50 airframe.

Ground Forces. The PLA has about 1.25 million ground forces personnel, with approximately 400,000 based in the three MRs opposite Taiwan. China is upgrading these units with modern tanks, armored personnel carriers, and artillery. Among the new capabilities acquired by PLA ground forces are the approximately 200 Type 98 and Type 99 main battle tanks now deployed to units in the Beijing and Shenyang MRs.

Developments in PLA Military Doctrine

- In January 2007, the PLA General Staff Department (GSD) released its yearly guidance on military training. For the first time, the guidance focuses on training under "informatized" conditions.

- The PLA is compiling and validating a new Outline for Military Training and Evaluation (OMTE) to align its military training with its vision for transformation for warfare under "informatized conditions." The new OMTE will emphasize realistic training conditions, training in electromagnetic and joint operations environments, and integrating new and high technologies into the force structure.

- China's militia forces are shifting from a ground forces-oriented support element to a multi-service force supporting the ground, naval, aviation, and missile forces. The PLA is also integrating militia forces with active duty units in training for future combat operations. China's militia forces number 10-15 million; fully integrating this force will be a challenge.

International Military Exchanges, Exercises, and Interaction

- In March 2007, two PLA Navy guided missile frigates participated in the Pakistan-hosted multinational naval exercise, AMAN 07, in the North Arabian Sea. Naval forces from the United States and seven other countries

participated in the exercise, which focused on maritime counter-terrorism.

- PRC Premier Wen Jiabao paid his first official visit to Japan in April 2007. During the visit, Wen and Japan's then-Prime Minister Abe agreed to expand economic ties and discuss military exchanges and mechanisms for peace in the East China Sea, an area where China and Japan hold competing sovereignty claims. PRC Minister of Defense General Cao Gangchuan followed Wen to Japan in June 2007 for the first senior-level defense visit in ten years. In November 2007, the PLA Navy LUHAI-class destroyer *Shenzhen* conducted the PRC's first port visit to Japan.

- In August 2007, China conducted a first time transnational deployment of 1,600 troops and equipment to Russia to participate with Shanghai Cooperation Organization (SCO) member-states in a highly-scripted exercise, PEACE MISSION 2007.

- Despite a tradition of allowing U.S. naval vessels to make port calls in Hong Kong, in November 2007, Beijing at the last minute denied entry into Hong Kong of the USS PATRIOT and USS GUARDIAN, two small mine sweepers, seeking refueling and weather avoidance – a decision that is inconsistent with international custom regarding safe harbor. The following day, Beijing denied the USS KITTY HAWK carrier strike group entry to Hong Kong harbor on the day it was scheduled to arrive for the Thanksgiving holiday. The PRC's subsequent reversal of this decision following U.S. demarches came too late to be accepted by the ships of the strike group.

- The UN Department of Peacekeeping Operations named Major General Zhao Jingmin as the first PRC commander of a UN peace operation, the UN Mission on Referendum in Western Sahara (MINURSO). As of December 2007, China was engaged in 13 UN peace missions with 1,800 troops deployed globally.

- In November 2007, China deployed 135 military engineers (of an eventual 315-person force) to Darfur as the first non-African Union troop contingent for the "hybrid force."

- In December 2007, China and India staged "HAND-IN-HAND 2007," a week long counterterrorism exercise in China that involved 100 troops from each country. Earlier, in April 2007, the PLA and Indian navies held a combined force exercise in the South China Sea. These events stand in contrast to the PRC's November 2007 destruction of an abandoned Indian bunker near the tri-border area in Bhutan, ignoring Indian protests.

Efforts to Acquire Advanced Technologies to Enhance China's Military Capabilities

- Officials from the Federal Bureau of Investigations (FBI) have identified China as running an aggressive and wide-ranging effort aimed at acquiring advanced technologies from the United States. Similarly, officials from U.S. Immigration and Customs Enforcement (ICE) have referred to China as the leading espionage threat to the United States. Between 2000 and May 2006, ICE initiated more than 400 investigations involving the illicit export of U.S. arms and technologies to China.

- In December 2007, a California resident was sentenced to two years in prison and fined for his role in a scheme to export night vision technology illegally to the PRC.

- The former director of a research institute associated with Russia's space agency was sentenced to eleven and one-half years in prison for passing classified technology to

China. According to a Russian spokesperson, the information could be used to create missiles capable of carrying nuclear warheads.

Taiwan's Defense Capabilities and Cross-Strait Stability

There were no armed incidents in the vicinity of the Taiwan Strait in 2007 and the overall situation remains stable, as it did in 2006. However, China's military build-up and the deployment of advanced capabilities opposite the island have not eased.

For its part, Taiwan recently reversed the trend of the past several years of declining defense expenditures; it is also modernizing select capabilities and improving its overall contingency training. But the balance of forces continues to shift in the mainland's favor.

- In 2005, Taiwan leaders announced plans to increase defense spending to three percent of Gross Domestic Product (GDP) by 2008. In June 2007, the Taiwan legislature passed a long-delayed defense budget totaling some $8.9 billion, or 2.65 percent of GDP, which included funding for P-3C Orion aircraft and PAC-II upgrades – systems the United States first made available to Taiwan in 2001.

- For 2008, the Taiwan Legislature in December 2007 passed a $10.5 billion budget, a twelve percent increase, which included funding for three sets of PAC-III missile defense batteries and a study of the feasibility of purchasing U.S.-made diesel submarines.

- Taiwan also continues to bolster its defense by strengthening its crisis management structure, instituting military personnel reforms, improving its joint capabilities, and modernizing its equipment.

- During its annual Han Kuang exercise in April 2007, Taiwan announced for the first time that it had successfully developed a LACM known as the Hsiung-Feng IIE (HF-IIE). The Ministry of National Defense (MND), which refers to the HF-IIE as a Tactical Shore-Based Missile for Fire Suppression, claims it is a defensive system to be used against a specific set of military targets only after a PRC first strike.

- Consistent with the provisions of the Taiwan Relations Act, Public Law 96-8 (1979), the United States continues to make available defense articles, services, and training assistance to enable Taiwan to maintain a sufficient self-defense capability.

Chapter Two
Understanding China's Strategy

"冷静观察, 站稳脚跟, 沉着应付, 韬光养晦, 善于守拙, 绝不当头."

"Observe calmly; secure our position; cope with affairs calmly; hide our capacities and bide our time; be good at maintaining a low profile; and never claim leadership."

– Deng Xiaoping

Overview

China's leaders have not publicly articulated an explicit, overarching "grand strategy" that outlines national strategic objectives and the means to achieve them, nor are the linkages between the occasional strategic pronouncement and actual policy decisions in China apparent, especially during periods of crisis or instability. Although such vagueness may reflect a deliberate effort to conceal intentions and capabilities, as implied in Deng Xiaoping's "24-character strategy" above, it may reflect genuine uncertainties, disagreements, and debates among China's leaders over preferences for long-term goals and objectives. PLA military writers draw freely from a range of ancient and modern sources, including classical strategists from China's imperial past as well as Chinese Communist Party icons. Given the wide range of such writings and the very real possibility that the PLA authors may be writing specifically for foreign consumption, the study of PLA grand strategy remains a fundamentally inexact science. Still, it is possible to make some generalizations about China's strategy based on strategic tradition, historical pattern, official statements and papers, and emphasis on certain military capabilities and diplomatic initiatives.

Strategy with Chinese Characteristics

PRC strategy is one of maintaining balance

The "24 Character Strategy"

In the early 1990s, former paramount leader Deng Xiaoping (d. 1997) gave guidance to China's foreign and security policy apparatus that has come to be known as the "24 character strategy." Although this strategy has evolved somewhat, core elements of Deng's statement continue to be referenced and quoted by senior PRC national security officials and academics, especially in the context of China's diplomatic and military affairs. Taken as a whole, the "24 character strategy" remains instructive in that it suggests a strategy to maximize future options through avoiding unnecessary provocations, shunning excessive international burdens, and building up China's power over a long-term.

President Hu Jintao's own ideological formulation – "Harmonious World," which emphasizes "diversity" and "equality" in international relations along with traditional PRC foreign policy dictums of "noninterference" and the "democratization of international relations" – was endorsed at the October 2007 17th Party Congress. Although "Harmonious World" reflects an evolution in the general tone and conduct of China's foreign and security affairs, Hu's ideology does not overturn or supercede Deng's "24 character strategy."

among competing priorities for national economic development and maintaining the type of security environment within which such development can occur. China's leaders have described the initial decades of the 21st Century as a "20-year period of opportunity," meaning that regional and international conditions will generally be peaceful and conducive to China's rise to regional preeminence and global influence.

In discussing strategy, PLA leaders and strategists rarely use a Western "ends-ways-means" construct. Rather, they discuss strategy in terms of "comprehensive national power" (*zonghe guoli* - 综合国力). Comprehensive national power (CNP) is the concept by which China's strategic planners use qualitative and quantitative variables to evaluate and measure China's standing in relation to other nations. CNP incorporates both soft, internally oriented indicators of strength – e.g., economic prosperity, domestic cohesion, and cultural influence – and hard, externally oriented measures such as the size of a state's nuclear arsenal, territory, military capability, diplomatic influence, and international prestige. The tendency to perceive a link between internal and external dimensions of strength and weakness, as evidenced by the composition of CNP, indicates that China's decision-makers might see internal turmoil as an invitation to hostile external forces – or possibly as the work of such forces. By the same token, an external challenge might be perceived to be tied to domestic enemies.

Insights on China's Strategy and Priorities

China's leaders appear to have adopted a coherent set of enduring strategic priorities, which include the perpetuation of CCP rule, sustained economic growth and development, maintaining domestic political stability, defending China's national sovereignty and territorial integrity, and securing China's status as a great power. Less clear are the specific strategies and plans Beijing has developed to achieve these objectives, the decision-making structures that guide strategy development and execution, and the manner and direction in which these priorities may adjust in response to changes in the security environment.

Regime survival and the perpetuation of Communist Party rule shapes the strategic outlook for China's leaders and drives many of their choices. As a substitute for the failure of communist ideology to unify the population and mobilize political support, the CCP has relied on economic performance and nationalism as the basis for regime legitimacy; however, each contains risks that may serve to undermine Party leaders' efforts to sustain political control. For example, while China's leaders have stoked nationalist sentiment to manipulate public opinion, deflect domestic criticism, or bolster diplomacy, such as the widespread anti-Japanese demonstrations in 2004 or the anti-U.S. demonstrations in Beijing and other major cities in China following the 1999 mistaken bombing of the PRC Embassy in Belgrade, they are aware that protests can be difficult to control once begun. Similarly, China's rapid economic growth – vital to the success of China's leaders – has led to increased economic inequality and dislocation, official corruption, and environmental degradation.

To maintain China's level of economic growth, China's leaders emphasize the need to gain access to markets and resources in other countries. In addition to these economic priorities, China's leaders are enhancing bilateral and multilateral political relationships globally to increase China's influence and ability to ensure its interests and preferences are protected (e.g., in the United Nations and to restrict Taiwan's diplomatic space). These combined and increasingly complex interests influence China's approach to, and diplomatic and security relations with, many countries, and, in particular, those in Africa and Latin America.

Economic development plays an especially central role in informing the decision-making of China's leadership. Regime legitimacy, territorial integrity, international political power, great power status, and military modernization are all fundamentally influenced by China's continued economic development.

Preserving China's territorial integrity and internal stability shapes how Party leaders view potential instability along China's periphery – e.g., North Korea, Central Asia, Pakistan, and Burma – which could escalate or spill over into China. Concern over territory and internal stability also influences how Beijing approaches China's land and maritime territorial claims, since any challenge to PRC sovereignty could potentially undermine the authority of the Party. China has settled territorial disputes with many of its neighbors in recent years, most importantly Russia. However, disputes with Japan in the East China Sea, with India along their shared border, and with Southeast Asian nations in the South China Sea are not resolved, and occasionally flare up.

Resource Needs as a Factor in China's Strategy. As China's economy grows, dependence on secure access to markets and natural resources, particularly metals and fossil fuels, is becoming a more significant factor shaping China's strategic behavior. Although China is expected to continue to rely on coal as its primary fuel source, consumption of petroleum and other liquid fuels will likely grow significantly due, in large part, to growth in the transportation sector. For example, automobile ownership in China is expected to rise from 27 million cars in 2004 to nearly 400 million by 2030. China plans to increase natural gas utilization from three percent to eight percent of total consumption by 2010. Similarly, China plans to build some 30 1,000-megawatt nuclear power reactors by 2020, increasing nuclear power from two to six percent of total electricity output – and prompting China's search for foreign uranium supplies.

China currently consumes approximately 7.58 million barrels of oil per day and, since 2003, has been the world's third largest importer of oil and second largest consumer, after the United States. China currently imports over 53 percent of its oil (around 4.04 million barrels per day in the first three quarters of 2007), with the vast majority coming by ship and transiting through the Malacca or Lombok/Makkasar Straits. By 2015, China's oil consumption will rise to 10-12 million barrels per day. China is also working with Russia to develop the East Siberia-Pacific Ocean oil pipeline, with a 1.6 million barrels per day capacity, to ensure China's continued access to Russian oil and reduce dependence on sea-borne shipping for oil imports.

In 2004, China began building its strategic petroleum reserve. The first phase, to be completed by 2008, will hold 100 million barrels or the equivalent of 25 days of China's net oil imports. The second phase is planned to add 200 million barrels, covering approximately 42 days of net oil imports. After 2010, work on the third phase may increase net storage capacity to about 500 million barrels, but without significant improvements to China's transportation and distribution networks, gross storage capacity may prove insufficient to cushion severe disruptions.

China's reliance on foreign energy imports has affected its strategy and policy in significant ways. As recently as 1996, China relied primarily upon three countries, Oman, Yemen, and Indonesia, for 70 percent of its oil imports. Since then, China has pursued long-term supply contracts with a diverse range of supplier nations including Chad, Egypt, Indonesia, Kazakhstan, Nigeria, Oman, Russia, Australia, Saudi Arabia, Sudan, and Venezuela. In 2006, China's top three suppliers were:

China's Territorial Disputes

Since 1998, China has settled eleven territorial disputes with six of its neighbors. However, disputes continue over exclusive economic zones (EEZ) and ownership of potentially rich oil and gas deposits, including some 7 trillion cubic feet of natural gas and up to 100 billion barrels of oil in the East China Sea, which has contributed to friction with Japan. Japan maintains that an equidistant line should separate the EEZs, while China claims an Extended Continental Shelf beyond the equidistant line to the Okinawa Trench – extending almost to Japan's shore. In the South China Sea, China claims exclusive sovereignty over the Spratly and Paracel island groups – claims disputed by Brunei, the Philippines, Malaysia, Taiwan, and Vietnam. In December 2007, China announced the establishment of "Sansha City" to assert "indisputable sovereignty" and jurisdiction over the islands of the South China Sea "and the adjacent waterways."

The South China Sea plays an important role in Northeast Asian security considerations. Over 80 percent of crude oil supplies to Japan, South Korea, and Taiwan flow through the South China Sea – making these countries especially dependant on South China Sea shipping routes. In 2007, Vietnam reported repeated incidents with the PLA Navy in the waters near the Spratly Islands. In April, Vietnam's coast guard reported that PLA Navy vessels had captured four Vietnamese fishing boats, detaining and fining 41 fishermen; and, in July, a PLA Navy ship fired on Vietnamese fishing vessels, reportedly sinking one ship, killing a fisherman, and injuring several others.

Although China has attempted to prevent these disputes from disrupting regional relations, statements by PRC officials underscore China's resolve to maintain its claims in these areas. For example, on the eve of a broadly successful October 2006 visit to India by President Hu Jintao, PRC Ambassador Sun Yuxi told Indian press, "the whole of what you call the state of Arunachal Pradesh is Chinese territory . . . we are claiming all of that – that's our position." In November 2007, despite a general improvement in bilateral relations over the course of the year, PRC troops destroyed an abandoned Indian bunker near the tri-border area in Bhutan, ignoring the protests of Indian officials.

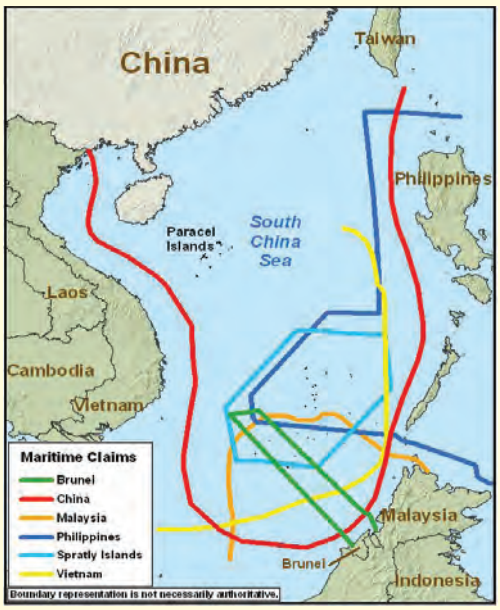

Figure 1. China's Territorial Disputes.

Saudi Arabia (16 percent), Angola (16 percent), and Iran (12 percent). Through the first nine months of 2007, six percent of China's crude oil imports had come from Sudan. Currently, slightly over half of China's imported oil comes from the Middle East and almost a quarter from Africa.

China has also pursued equity positions in a variety of overseas energy assets and investments, although these remain small compared to investments by the international oil majors. China's national oil companies have invested in oil ventures (oil field development, and pipeline and refinery projects) in Kazakhstan, Turkmenistan, Nigeria, Sudan, and in over 20 other countries in North Africa, Central Asia, Southeast Asia, Latin America, and North America.

The extent to which Beijing's concerns over the security of its access to energy supplies shapes China's defense policy and force planning is not known. However, it is apparent that these concerns influence China's thinking about the problems of defense planning. China's 2006 defense white paper states explicitly in its description of the security environment that "security issues related to energy, resources, finance, information and international shipping routes are mounting." It also defines the PLA's primary tasks as "upholding national security and unity, and ensuring the interests of national development."

The PLA appears to be debating how to translate these tasks into doctrinal evolution, resource

Figure 2. China's Critical Sea Lanes. *Like many other industrialized East Asian Countries, China is heavily dependent upon critical sea lanes for its energy imports. Over 80 percent of China's crude oil imports transit the Strait of Malacca.*

allocations, force structure changes, and contingency planning. However, as China's current ability to project and sustain power at a distance remains limited, the PLA, at least for the near and mid-terms, will face an ambition-capability gap. Currently it is neither capable of using military power to secure its foreign energy investments nor of defending critical sea lanes against disruption.

Looking to the future, China's leaders may seek to close this gap by developing: extended-range power projection, including aircraft carrier development; expeditionary warfare; undersea warfare; anti-air warfare; long-range precision strike; maritime C4ISR; expeditionary logistics and forward basing; training and exercises, especially in open water; and a more activist military presence abroad.

Factors Shaping Pathways to China's Future

Since initiating its "reform and opening up" policy in 1978, China has made tremendous economic progress and has overcome many developmental challenges. In thirty years, these reforms have lifted hundreds of millions of its citizens out of poverty, improved domestic stability, and increased China's influence in international affairs. China continues to face many problems, but the CCP's accomplishments cannot be overlooked.

The United States welcomes the rise of a peaceful and prosperous China. However, there are forces – some beyond the control of China's leaders – that could divert China from a peaceful pathway. Which pathway China pursues, or finds itself upon, will be determined in large part by the choices of China's leaders, which are influenced by a set of drivers and inhibitors that will both enable and constrain their ability to achieve their objectives.

Economics. Continued economic development, central to China's emergence as a regional and global power, remains a foundation of the CCP's popular legitimacy and underwrites its military expansion and modernization. Consistent economic growth is the bedrock of China's future development. Since 1978, China's economic growth has improved the quality of life of many of China's citizens, has garnered support for the CCP, and has contributed to regional and global economic growth. However, underlying weaknesses (e.g., undervalued currency, non-performing loans, inefficient state-owned enterprises, and economic disparity between urban and rural areas) threaten continued economic growth. Economic shocks, setbacks, or even modestly slower growth could lead to higher unemployment, inflation, and significant unrest, potentially giving rise to greater reliance on nationalism to maintain popular support for the CCP. Unexpected increases in resource demands, shrinking demand for labor and manufacturing, global resource shortages or price shocks, or restricted access to resources could also impact China's strategic outlook and behavior, and may force China's leadership to re-examine its resource allocation priorities, including those for the military. Since China's leaders have limited experience handling an economic correction or recession in a complex market economy, it is not certain whether their responses would ease or exacerbate temporary dislocations.

Demographic Pressures. Population shifts and social dislocations are stressing an already weak social safety net. Demographic stresses will become greater in the future, creating a structural constraint on China's ability to sustain high growth rates. Between 2000 and 2030, over 400 million people – a population greater than the entire United States – will transition from the countryside into urban residences. As a result of this shift, China is expected to account for half of global building construction during that period. China's population is also aging rapidly; China's population of 146 million senior citizens will increase to an estimated 290 million by

2025. Accommodating the needs of a large senior citizen population will present challenges to the CCP's ability to maintain economic growth, growing defense budgets, and perhaps domestic stability.

Domestic Political Pressures. CCP leaders are confronted with popular demands for improved government responsiveness and accountability, posing challenges to their ability to maintain domestic stability and their monopoly on political power. Beijing's response has been to enact administrative reforms and expand avenues for expert – and occasionally public – input as evidenced by the emergence of non-governmental organizations (NGOs) throughout China focused on addressing the concerns of the population, while preserving one-party rule. However, political dissent remains criminalized, the media and internet remain tightly controlled, independent trade and labor unions are suppressed, ethnic Tibetan and Uighur minorities are repressed, and religious groups not recognized by the regime continue to be harassed. The Party is wary of any unsanctioned organization in China, even if non-political, fearing these organizations could facilitate organized opposition.

The emergence of an educated middle class that demands greater participation in political decision-making and greater leeway for self-expression has the potential to challenge the CCP's unwillingness to allow for independent political organization or dissent. Already, people in China are finding ways to obtain and disseminate information Party censors attempt to block. It is unclear if the Party will be able to manage these aspirations and challenges, which have the potential to undermine Beijing's sense of domestic control and stability, with attendant effects on its grand strategy.

Corruption. Official corruption in China is pervasive, structural, and persistent, due to the high degree of state involvement in the economy and the weakness of the rule of law. In 2001, 65 percent of embezzlement cases involved multiple officials, indicating the activity of independent networks of elites colluding at the expense of the state. China's National Audit Agency uncovered $170 billion of misappropriated and misspent public funds between 1996 and 2005, and academic research estimates that the direct costs of corruption in 2003 amounted to as much as $86 billion (three percent of GDP), an amount that was more than double China's announced defense budget for that year. Corruption also directly affects the PLA; bribery for advancement and promotion, unauthorized contracts and projects, and weapons procurement are all identified by the PLA as corruption problems. Beijing's response so far has focused on the use of criminal prosecution to deter bad behavior. Half of provincial transportation chiefs in China have been sentenced to jail terms (some have been executed) for corruption. Shanghai Communist Party Chief Chen Liangyu was dismissed in September 2006 for allegedly misusing Shanghai's municipal social security fund. Although the PRC's public actions indicate a greater awareness of the problem, enforcement of anti-corruption measures remains ineffective.

Environment. A 2007 World Bank report prepared in consultation with Chinese environmental authorities offered the following conclusions:

- The combined health and non-health cost of outdoor air and water pollution on China's economy comes to around $100 billion a year (or about 5.8 percent of China's GDP).
- Air pollution, especially in large cities, is leading higher incidences of lung diseases, including cancer, respiratory system problems, and therefore higher levels of work and school absenteeism.
- Water pollution is also causing growing levels of cancer and disease particularly in children under

the age of five. It is also exacerbating China's water scarcity problems, bringing the overall cost of water scarcity to about one percent of GDP.

China's leaders are concerned that these environmental problems could undermine the CCP by threatening China's economic development, public health, social stability, and international image. In the spring of 2006, China's top environmental official, Zhou Shengxian, announced that there had been 51,000 pollution-related protests in 2005 (almost 1,000 per week). Pollution and deforestation in China have worldwide implications. China may have overtaken the United States as the world's largest emitter of atmospheric carbon dioxide. Japan and South Korea both suffer from acid rain produced by China's coal-fired power plants and yellow dust storms that originate in the Gobi desert. The PRC's public actions, such as arrests of public officials and new environmental controls, indicate a greater awareness, but China's leaders' ability to manage environmental degradation as a long-term political, if not strategic problem, remains uncertain.

Cross-Strait Dynamics. A potential military confrontation with Taiwan, and the prospect of U.S. military intervention, remain the PLA's most immediate military concerns. China's current strategy toward Taiwan appears to be one of containing and preventing what it perceives as moves by Taipei toward *de jure* independence, rather than seeking a near-term resolution. A perceived shift in military capabilities or political will – on either side – or a change of the internal political landscape on the mainland or Taiwan, could cause Beijing to calculate its interests, and its preferred course of action, differently.

Regional Concerns. With China close to, or an interested party in, many of the world's "flashpoints" (e.g., Taiwan, North Korea, Burma, the Spratly Islands, the Senkaku/Diaoyutai Islands, Afghanistan, and Pakistan), China's leaders seek to prevent regional instability that may spill across China's borders and interfere with economic development or domestic stability. Changes in regional balances could lead to shifts in China's military development and deployment patterns, likely with consequences for neighboring states. Examples of such changes include disruptions on the Korean Peninsula (e.g., a North Korean collapse), democratic revolutions in Central Asia which would represent both near-term and long-term security challenges for Beijing, a downturn in relations with Japan leading to greater mistrust, or perceived threats to China's ability to access foreign resources and transport them back to China. Conversely, an upturn in relations with Japan would probably lead to positive developments, such as greater trust and economic integration.

Chapter Three
China's Military Strategy and Doctrine

". . . resolutely and effectively carry out the sacred duty of defending national sovereignty, unification, territorial integrity, and security . . ."

– President Hu Jintao

Overview

PLA theorists have developed a framework for doctrine-driven reform to build a force capable of fighting and winning "local wars under conditions of informatization." This concept emphasizes the role of modern information technology as a force multiplier to enable the PLA to conduct military operations with precision at greater distances from China's borders. Drawing upon foreign military experiences, particularly U.S.-led campaigns up to and including Operation ENDURING FREEDOM and Operation IRAQI FREEDOM, Soviet and Russian military theory, and the PLA's own combat history, China is transforming across the whole of its armed forces.

Although the pace and scale of these reforms are high, the PLA remains untested, and this lack of operational experience complicates outside assessment of its progress in meeting the aspirations of its doctrine. The same applies to internal assessment and decision-making among China's senior civilian leaders who, for the most part, lack direct military experience, giving rise to potential miscalculation that could spark or exacerbate crises. Such miscalculation could also arise if crisis decisions are based on advice from operationally inexperienced commanders or from "scientific" combat models divorced from the realities of the modern battlefield.

Military Strategic Guidelines

China does not publish equivalents to the U.S. *National Security Strategy*, *National Defense Strategy*, or *National Military Strategy*. Outside observers therefore have few direct insights into the leadership's thinking about the use of force or into the contingency planning that shapes the PLA's force structure or doctrine. Analysis of authoritative speeches and documents suggests China relies on a body of overall principles and guidance known as the "National Military Strategic Guidelines for the New Period" (*xin shiqi guojia junshi zhanlue fangzhen* - 新时期国家军事战略方針) to plan and manage the development and use of the armed forces. However, the PLA has not made the contents of the "Guidelines" available for outside scrutiny.

Scholarly research suggests that the current "Guidelines" most likely date to 1993, reflecting the impact of the 1991 Persian Gulf War and the collapse of the Soviet Union on PRC military-strategic thinking, and form the basis for much of the PLA's transformation over the past decade. Based upon on-going assessment of the rapid pace of change in global military affairs – perhaps including lessons learned from U.S. and Coalition military operations in Iraq and Afghanistan – elements of the 1993 "Guidelines" appear to have been revised recently to update China's perceptions of its security environment and the character of modern war, integrate lessons learned from China's military modernization, and shift from "building" forces for modern, information-age warfare to training to "win" such wars.

The operational, or "active defense," (*jiji fangyu* - 积极防御) component of the "Guidelines," posits

Offense as Defense

Beijing's definition of an attack against its sovereignty or territory is vague. The history of modern Chinese warfare provides numerous case studies in which China's leaders have claimed military preemption as a strategically defensive act. For example, China refers to its intervention in the Korean War (1950-1953) as the "War to Resist the United States and Aid Korea." Similarly, authoritative texts refer to border conflicts against India (1962), the Soviet Union (1969), and Vietnam (1979) as "Self-Defense Counter Attacks." This logic suggests the potential for China to engage in military preemption, prevention, or coercion if the use of force protects or advances core interests, including territorial claims (e.g., Taiwan and unresolved border or maritime claims).

Chinese strategic-level military theory establishes seemingly contradictory guidance: "strike only after the enemy has struck," and "seize the initiative." Yet, the authoritative work *The Science of Military Strategy* makes it clear that the definition of an enemy strike is not limited to conventional, kinetic military operations. Rather, an enemy "strike" may also be defined in political terms. Thus:

> *striking only after the enemy has struck does not mean waiting for the enemy's strike passively…It doesn't mean to give up the "advantageous chances" in campaign or tactical operations,* ***for the "first shot" on the plane of politics must be differentiated from the "first shot" on that of tactics.***
>
> [This section continues] *if any country or organization violates the other country's sovereignty and territorial integrity,* ***the other side will have the right to "fire the first shot" on the plane of tactics.*** *(emphasis added).*

These passages illustrate the duality of Chinese strategic thinking as well as the justification for offensive – or preemptive – military action at the operational and tactical level under the guise of a defensive posture at the strategic level.

a defensive military strategy in which China does not initiate wars or fight wars of aggression, but engages in war only to defend national sovereignty and territorial integrity. Once hostilities have begun, according to the PLA text, *Science of Campaigns* (2000), "the essence of [active defense] *is to take the initiative and to annihilate the enemy* . . . . While strategically the guideline is active defense, [in military campaigns] the emphasis is placed on taking the initiative in active *offense*. Only in this way can the strategic objective of active defense be realized [emphasis added]."

In addition to developing the capacity to "annihilate" opposing forces, the PLA is exploring options for limited uses of force. PLA campaign theory defines these options as "non-war" uses of force or "no contact" warfare – an extension of political coercion. The 1995 and 1996 amphibious exercises and missile firings in the Taiwan Strait are examples of "non-war" uses of force. However, the concept also includes limited kinetic options such as air and missile strikes, targeted attacks against adversary leaders, and sabotage. Such writings highlight the potential for China to miscalculate given the likelihood that the target of any such actions, and

the broader international community, would view them as acts of war.

The PLA is developing and implementing supporting doctrine for "active defense" warfare and new operational methods across the various services.

Naval Warfare. The naval component of "active defense" is termed "Offshore Defense Strategy." The PLA Navy has three main missions: resist seaborne aggression, protect national sovereignty, and safeguard maritime rights. PLA Navy doctrine for maritime operations focuses on six offensive and defensive campaigns: blockade, anti-sea lines of communication, maritime-land attack, anti-ship, maritime transportation protection, and naval base defense.

Ground Warfare. Under "active defense," ground forces are tasked to defend China's borders, ensure domestic stability, and exercise regional power projection. PLA ground forces are transitioning from a static defensive force allocated across seven internal MRs – oriented for positional, mobile, urban, and mountain offensive campaigns; coastal defense campaigns; and landing campaigns – to a more mobile force organized and equipped for operations along China's periphery. China's ground forces are placing emphasis on integrated operations (especially with aviation forces), long-distance mobility, "quick tempo" operations, and special operations, modeling their reforms on Russian doctrine and U.S. military tactics.

Air Warfare. The PLAAF currently is converting from an over-land, limited territorial defense force to a more flexible and agile force able to operate off-shore in both offensive and defensive roles, using the U.S. and Russian air forces as models. Mission focus areas include air strike, air and missile defense, early warning and reconnaissance, and strategic mobility. The PLAAF also has a leading role in the "Joint Anti-Air Raid" campaign. Underscoring the duality of offense and defense in PLA theory, this campaign is strategically defensive in nature, but at the operational and tactical levels, it calls for attacks against adversary bases and naval forces.

The People's Armed Police (PAP)

The PAP consists of approximately 660,000 personnel organized for internal defense and police enforcement missions. Internal defense units are responsible for border security, fire fighting, and domestic security including counterterrorism. Police enforcement units include troops charged with gold, forestry, hydroelectric, and communication security. In recent years, the PAP has also supported disaster relief operations and infrastructure construction (e.g., power projects, highways, tunnels, and bridges).

During wartime, the PAP is charged with supporting PLA operations, primarily domestic security, enabling the PLA to focus on combat missions. The PAP may also be responsible for protecting logistics and transportation, and military, economic, and political installations.

The PAP has participated in exercises with PLA and other units on a variety of missions including medical support, reconnaissance and air patrol, air defense, and counterterrorism. The PAP has also participated in exchanges with other countries, including Russia, and has been deployed to provide embassy security in Iraq and Afghanistan.

Space Warfare. Currently, China does not have a discrete space campaign; rather, space operations form an integral component of all campaigns. The PLA's military theoretical journal *China Military Science*, argues that "it is in space that information age warfare will come into its more intensive points." Specifically, space-based command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) are key to enabling and coordinating joint operations and winning modern wars. Accordingly, the PLA is acquiring technologies to improve China's space-based C4ISR, and is developing the ability to attack an adversary's space assets. PLA writings emphasize the necessity of "destroying, damaging, and interfering with the enemy's reconnaissance/observation and communications satellites," suggesting that such systems, as well as navigation and early warning satellites, could be among initial targets of attack to "blind and deafen the enemy…."

The January 2007 test of a direct-ascent ASAT weapon demonstrates that the PLA's interest in counterspace systems is more than theoretical. In addition to the "kinetic kill" capability demonstrated by the ASAT test, the PLA is developing the ability to jam, blind, or otherwise disable satellites and their terrestrial support infrastructure.

Toward a Comprehensive View of Warfare

Over the past two decades, PRC civilian and military strategists have debated the nature of modern warfare. These debates draw on sources within the PLA strategic tradition and its historical experiences to provide perspective on the "revolution in military affairs," "asymmetric warfare," and "informatized" war. Such debates highlight China's interest in non-kinetic means of warfare and the increased role of economic, financial, information, legal, and psychological instruments in PLA theory and war planning. Underscoring a comprehensive, multi-dimensional view of warfare, the PLA Academy of Military Science text, the *Science of Military Strategy*, notes that "war is not only a military struggle, but also a comprehensive contest on fronts of politics, economy, diplomacy, and law."

In 2003 the CCP Central Committee and the CMC approved the concept of "Three Warfares" (*san zhong zhanfa* - 三种战法), highlighting the relevance of non-kinetic options in modern war:

- *Psychological Warfare:* the use of propaganda, deception, threats, and coercion to affect the enemy's ability to understand and make decisions.
- *Media Warfare:* the dissemination of information to influence public opinion and gain support from domestic and international audiences for China's military actions.
- *Legal Warfare:* the use of international and domestic laws to gain international support and manage possible political repercussions of China's military actions.

These "Warfares" are being developed for use in conjunction with other military and non-military operations. For example, China has incorporated its Legal Warfare concept into its attempts to shape international opinion and interpretation of the UN Convention on the Law of the Sea, moving away from long-accepted norms of freedom of navigation and territorial limits toward increased sovereign authority out to the 200 nautical mile Exclusive Economic Zone, the airspace above it, and possibly outer space.

Secrecy and Deception in PLA Military Strategy

PLA doctrinal writings point to a working definition of strategic deception as "[luring] the other side into

developing misperceptions . . . and [establishing for oneself] a strategically advantageous position by producing various kinds of false phenomena in an organized and planned manner with the smallest cost in manpower and materials." In addition to information operations and conventional camouflage, concealment, and denial, the PLA draws from China's historical experience and the traditional role that stratagem and deception have played in Chinese doctrine. Recent decades have witnessed within the PLA a resurgence of the study of classic Chinese military figures Sun Zi, Sun Pin, Wu Qi, and Shang Yang and their writings, all of which highlight the centrality of deception.

There is uncertainty regarding how the tendencies of China's military and security establishment toward secrecy will conflict with the demands of the integrated global economy, which depends upon transparency and the free flow of information for success. This contradiction notwithstanding, the CCP's institutional emphasis on secrecy, acting in tandem with the PLA's use of denial and deception to cover force modernization and disposition, supports opacity in national security affairs, which could lead to miscalculation or misunderstanding by outsiders of China's strategic intentions. Conversely, overconfidence among China's leaders in the uncertain benefits of stratagem and deception might lead to their own miscalculation in crises. In addition, the same skills commanders use against adversaries often are used to slow – or cover up – the revelation of bad news internal to the PLA. Secrecy and deception, therefore, may serve to confuse China's leaders as much as its adversaries.

Asymmetric Warfighting

Classic military strategists like Sun Zi and Sun Pin have found new currency as China looks for ways to defeat an adversary by avoiding his strong points and attacking his weak points. PLA strategic and military writings focus on identifying military technologies and doctrines by which a weaker force could defeat one that is stronger. Since the 1991 Persian Gulf War and Operation ALLIED FORCE (1999), PLA military strategists have emphasized using asymmetric approaches to level the playing field against technologically superior opponents.

- "[A] strong enemy with absolute superiority is certainly not without weakness… [O]ur military preparations need to be more directly aimed at finding tactics to exploit the weaknesses of a strong enemy." *Liberation Army Daily (1999)*.

Assassin's Mace Programs

As part of China's asymmetric warfighting strategy, the PLA has developed capabilities, referred to as "assassin's mace" (*sha shou jian* - 杀手锏) programs, designed to give a technologically inferior military advantages over technologically superior adversaries, and thus change the direction of a war. Since 1999, the term has appeared more frequently in PLA journals, particularly in the context of fighting the United States in a Taiwan conflict.

It is unclear what platforms are specifically designated as "assassin's mace." However, descriptions of their intended use and effects are consistent with PLA asymmetric warfighting strategy. In this context, systems designated as "assassin's mace," are most likely a mixture of new technologies and older technologies applied in innovative ways.

- "[The] application of non-nuclear high technologies can bring about strategic effects similar to that of nuclear weapons, and at the same time, it can avoid the great political risk possibly to be caused by transgressing the nuclear threshold.… Among other things, following the advent of cyber information age, information warfare and information warfare strategy are widely drawing attention." *Science of Military Strategy (2001).*

Elements of China's approach to asymmetric warfare can be seen in its heavy investment in ballistic and cruise missile systems; undersea warfare systems, including submarines and advanced naval mines; counterspace systems; computer network operations (CNO); special operations forces; and the non-kinetic elements of the "Three Warfares" concept.

Through analysis of U.S. and coalition warfighting practices since 1991, Beijing hopes to develop approaches to waging future conflict by adapting and emulating lessons learned in some areas while seeking perceived vulnerabilities that could be exploited through asymmetric means in others. Examples of some current thinking in China on asymmetric warfare include:

- *Counterspace:* The PLA has developed a variety of kinetic and non-kinetic weapons and jammers to degrade or deny an adversary's ability to use space-based platforms. China also is researching and deploying capabilities intended to disrupt satellite operations or functionality without inflicting physical damage. The PLA is also exploring satellite jammers, kinetic energy weapons, high-powered lasers, high-powered microwave weapons, particle beam weapons, and electromagnetic pulse weapons for counterspace application.

- *Missiles/C4ISR:* By fusing advanced ballistic and cruise missiles with a modern C4ISR architecture, the PLA is seeking to build the capability to degrade a potential adversary's force generation and sustainment by holding at risk or striking aircraft carriers, logistics nodes, and regional bases.

- *"Non-Contact" Warfare:* An example of China's current thinking on asymmetric warfare is encapsulated by a military theory termed "non-contact" which seeks to attain a political goal by looking for auxiliary means beyond military boundaries or limits. Examples include: cyberwarfare against civilian and military networks – especially against communications and logistics nodes; fifth column attacks, including sabotage and subversion, attacks on financial infrastructure; and, information operations.

Chapter Four
Force Modernization Goals and Trends

"China pursues a three-step development strategy in modernizing its national defense . . . . The first step is to lay a solid foundation by 2010, the second is to make major progress around 2020, and the third is to basically reach the strategic goal of building informatized armed forces and being capable of winning informatized wars by the mid-21st century."

– China's National Defense in 2006

Overview

China's leaders have stated their intentions and allocated resources to pursue broad-based military transformation that encompasses force-wide professionalization; improved training; more robust, realistic joint exercises; and, accelerated acquisition and development of modern conventional and nuclear weapons. China's military appears focused on assuring the capability to prevent Taiwan independence and, if Beijing were to decide to adopt such an approach, to compel the island to negotiate a settlement on Beijing's terms. At the same time, China is laying the foundation for a force able to accomplish broader regional and global objectives.

The U.S. Intelligence Community estimates China will take until the end of this decade or longer to produce a modern force capable of defeating a moderate-size adversary. China will not be able to project and sustain small military units far beyond China before 2015, and will not be able to project and sustain large forces in combat operations far from China until well into the following decade. In building its forces, China's leaders stress asymmetric strategies to leverage China's advantages while exploiting the perceived vulnerabilities of potential opponents using so-called "assassin's mace" programs (e.g., counterspace and cyberwarfare programs). The PLA hopes eventually to fuse service-level capabilities with an integrated network for C4ISR, a new command structure, and a joint logistics system. However, it continues to face deficiencies in inter-service cooperation and actual experience in joint exercises and combat operations.

Emerging Anti-Access/Area Denial Capabilities

As part of its planning for a Taiwan contingency, China is prioritizing measures to deter or counter third-party intervention in any future cross-Strait crisis. China's approach to dealing with this challenge centers on what DoD's 2006 *Quadrennial Defense Review* refers to as "disruptive capabilities":

Potential for Miscalculation

As PLA modernization progresses, three misperceptions could lead to miscalculation or crisis. First, other countries could underestimate the extent to which PLA forces have improved. Second, China's leaders could overestimate the proficiency of their forces by assuming new systems are fully operational, adeptly operated, adequately maintained, and well integrated with existing or other new capabilities. Third, China's leaders may underestimate the effects of their decisions on the security perceptions and responses of other regional actors.

forces and operational concepts aimed at deterring or denying the entry of enemy forces into a theater of operations (anti-access), and limited duration denial of enemy freedom of action in a theater of operations (area denial). In this context, the PLA appears engaged in a sustained effort to develop the capability to interdict or attack, at long ranges, military forces – particularly air or maritime forces – that might deploy or operate within the western Pacific. Increasingly, China's anti-access/area denial forces overlap, providing multiple layers of offensive systems, utilizing the sea, air, space, and cyber-space.

PLA planners are focused on targeting surface ships at long ranges from China's shores. Analyses of current and projected force structure improvements suggest that China is seeking the capacity to hold surface ships at risk through a layered capability reaching out to the "second island chain" (i.e., the islands extending south and east from Japan, to and beyond Guam in the western Pacific Ocean). One area of investment involves combining conventionally-armed ASBMs based on the CSS-5 (DF-21) airframe, C4ISR for geo-location and tracking of targets, and onboard guidance systems for terminal homing to strike surface ships on the high seas or their onshore support infrastructure. This capability would have particular significance, as it would provide China with preemptive and coercive options in a regional crisis.

PRC military analysts have also concluded that logistics and mobilization are potential vulnerabilities in modern warfare, given the requirements for precision in coordinating transportation, communications, and logistics networks. To threaten regional bases and logistics points, China could employ SRBM/MRBMs, land-attack cruise missiles, special operations forces, and computer network attack (CNA). Strike aircraft, when enabled by aerial refueling, could engage distant targets using air-launched cruise missiles equipped with a variety of terminal-homing warheads.

China's emerging local sea denial capabilities – mines, submarines, maritime strike aircraft, and modern surface combatants equipped with advanced ASCMs – provide a supporting layer of defense for its long-range anti-access systems. Acquisition and development of the KILO, SONG, SHANG, and YUAN-class submarines illustrates the importance the PLA places on undersea warfare for sea denial. In the past ten years, China has deployed ten new classes of ships. The purchase of SOVREMENNYY II-class DDGs and indigenous production of the LUYANG I/ LUYANG II DDGs equipped with long-range ASCM and SAM systems, for example, demonstrate a continuing emphasis on improving anti-surface warfare, combined with mobile, wide-area air control.

The air and air defense component of anti-access/area-denial includes SAMs such as the HQ-9, SA-10, SA-20 (which has a reported limited ballistic and cruise missile defense capability), and the extended-range SA-20 PMU2. Beijing will also use Russian-built and domestic fourth-generation aircraft (e.g., Su-27 and Su-30 variants, and the indigenous F-10 multirole fighter). The PLA Navy would employ Russian Su-30MK2 fighters, armed with AS-17/Kh-31A anti-ship missiles. Acquisition of an air refueling platform like the Russian IL-78 would extend operational ranges for PLAAF and PLA Navy strike aircraft armed with precision munitions, thereby increasing the threat to surface and air forces, bases, and logistics nodes distant from China's coast. Additionally, acquisition and development of longer-range unmanned aerial vehicles (UAVs) and unmanned combat aerial vehicles (UCAVs), including the Israeli HARPY, expands China's options for long-range reconnaissance and strike.

Building Capacity for Conventional Precision Strike

Short-Range Ballistic Missiles (SRBMs) (< 1,000 km). According to DIA estimates, as of November 2007 the PLA had 990-1,070 SRBMs and is increasing its inventory at a rate of over 100 missiles per year. The PLA's first-generation SRBMs do not possess true "precision strike" capability; later generations have greater ranges and improved accuracy.

Medium-Range Ballistic Missiles (MRBMs) (1,000-3,000 km). The PLA is acquiring conventional MRBMs to increase the range to which it can conduct precision strikes, to include targeting naval ships, including aircraft carriers, operating far from China's shores.

Land-Attack Cruise Missiles (LACMs). China is developing air- and ground-launched LACMs, such as the YJ-63 and DH-10 systems for stand-off, precision strikes.

Air-to-Surface Missiles (ASMs). According to DIA estimates, China has a small number of tactical ASMs and precision-guided munitions, including all-weather, satellite and laser-guided bombs, and is pursuing improved airborne anti-ship capabilities.

Anti-Ship Cruise Missiles (ASCMs). The PLA Navy has or is acquiring nearly a dozen ASCM variants, ranging from the 1950s-era CSS-N-2 to the modern Russian-made SS-N-22 and SS-N-27B. The pace of ASCM research, development and production – and of foreign procurement – has accelerated over the past decade.

Anti-Radiation Weapons. The PLA has imported Israeli-made HARPY UCAVs and Russian-made anti-radiation missiles (ARM), and is developing an ARM based on the Russian Kh-31P (AS-17) known domestically as the YJ-91.

Artillery-Delivered High Precision Munitions. The PLA is deploying the A-100 300 mm multiple rocket launcher (MRL) (100+ km range) and developing the WS-2 400 mm MRL (200 km range).

A final element of an emerging area denial/anti access strategy includes the electromagnetic and information spheres. PLA authors often cite the need in modern warfare to control information, sometimes termed "information blockade" or "information dominance." China is improving information and operational security, developing electronic warfare and information warfare capabilities, and denial and deception. China's "information blockade" likely envisions employment of military and non-military instruments of state power across all dimensions of the modern battlespace, including outer space.

Strategic Capabilities

Nuclear Force Structure. China is qualitatively and quantitatively improving its strategic forces. These presently consist of: approximately 20 silo-based, liquid-fueled CSS-4 ICBMs (which constitute its primary nuclear means of holding continental U.S. targets at risk); approximately 20 liquid-fueled, limited range CSS-3 ICBMs; between 15-20 liquid-fueled CSS-2 intermediate range ballistic missiles (IRBMs); upwards of 50 CSS-5 road mobile, solid-fueled MRBMs (for regional deterrence missions);

Figure 3. The First and Second Island Chains. *PRC military theorists conceive of two island "chains" as forming a geographic basis for China's maritime defensive perimeter.*

and, JL-1 submarine-launched ballistic missiles (SLBMs) on the XIA-class SSBN (although the operational status of the XIA is questionable).

By 2010, China's nuclear forces will likely comprise enhanced CSS-4s; CSS-3s; CSS-5s; solid-fueled, road-mobile DF-31 and DF31A ICBMs, which are being deployed to units of the Second Artillery Corps; and up to five JIN-class SSBNs, each carrying between 10 and 12 JL-2 SLBM. The addition of nuclear-capable forces with greater mobility and survivability, combined with ballistic missile defense countermeasures which China is researching – including maneuvering re-entry vehicles (MaRV), multiple independently targeted re-entry vehicles (MIRV), decoys, chaff, jamming, thermal shielding, and ASAT weapons – will strengthen China's deterrent and enhance its capabilities for strategic strike. New air- and ground-launched cruise missiles that could perform nuclear missions would similarly improve the survivability, flexibility, and effectiveness of China's nuclear forces.

The introduction of more mobile systems will create new command and control challenges for China's leadership, now confronted with a different set of variables related to release and deployment authorities. For example, the PLA has only a limited capacity to communicate with submarines at sea and the PLA Navy has no experience in managing an SSBN fleet that performs strategic patrols. Limited insights on how the Second Artillery Corps, which control's China's land-based nuclear forces, may be seeking to address these issues can be derived from recent missile forces training which, as described by China's state-owned press, has begun

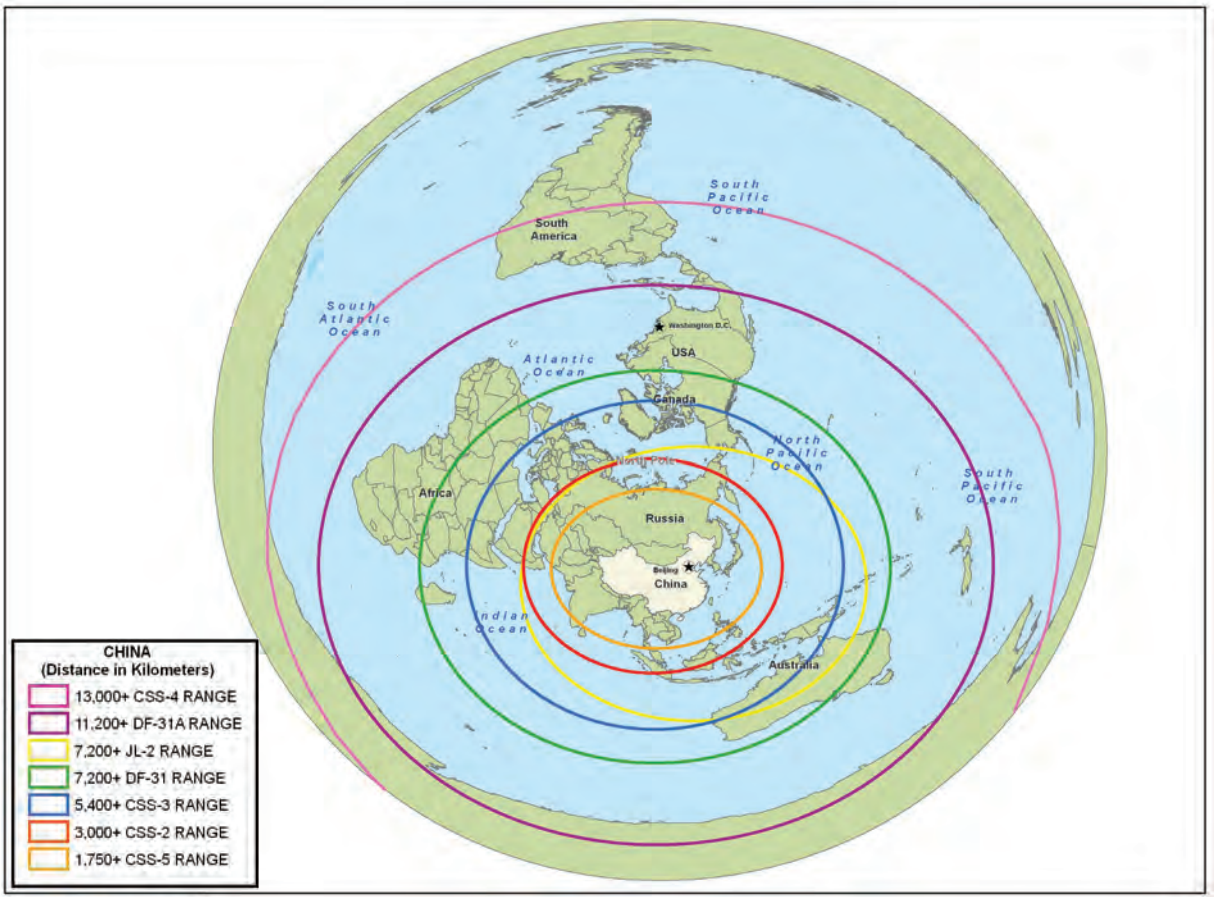

Figure 4. Medium and Intercontinental Range Ballistic Missiles. *China currently is capable of targeting its nuclear forces throughout the region and most of the world, including the continental United States. Newer systems, such as the DF-31, DF-31A, and JL-2, will give China a more survivable nuclear force.*

to include scenarios in which missile batteries lose communication links with higher echelons and other situations that would require commanders to choose alternative launch locations.

China's 2006 Defense White Paper states that: 1) the purpose of China's nuclear force is to "deter other countries from using or threatening to use nuclear weapons against China;" 2) China "upholds the principles of counterattack in self-defense and limited development of nuclear weapons;" and, 3) China "has never entered into and will never enter into a nuclear arms race with any other country." The document reiterated China's commitment to a declaratory policy of "no first use (*bu shouxian shiyong* - 不首先使用) of nuclear weapons at any time and under any circumstances," and states China "unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear weapon-free zones." Doctrinal materials suggest additional missions for China's nuclear forces include deterring conventional attacks against PRC nuclear assets or conventional attacks with WMD-like effects, reinforcing China's great power status, and increasing freedom of action by limiting the extent to which others can coerce China with nuclear threats.

Given the above missions for China's nuclear forces, the conditions under which China's "no first use" policy applies are unclear. The PRC government has provided public and private assurances that its "no first use" policy has not and will not change, and doctrinal materials indicate internal PLA support for this policy. Nevertheless, periodic PRC military and civilian academic debates have occurred over the future of China's nuclear doctrine, to question whether a "no first use" policy supports or detracts

from China's deterrent, and whether or not "no first use" should remain in place, adding a further layer of ambiguity to China's strategic intentions for its nuclear forces.

Space and Counterspace

China's space activities and capabilities, including ASAT programs, have significant implications for anti-access/area denial in Taiwan Strait contingencies and beyond. China further views the development of space and counter-space capabilities as bolstering national prestige and, like nuclear weapons, demonstrating the attributes of a world power.

Reconnaissance. China is deploying advanced imagery, reconnaissance, and Earth resource systems with military applications. Examples include the Ziyuan-2 series, the Yaogan-1 and -2, the Haiyang-1B, the CBERS-1 and -2 satellites, and the Huanjing disaster/environmental monitoring satellite constellation. China is planning eleven satellites in the Huanjing program capable of visible, infrared, multi-spectral, and synthetic aperture radar imaging. In the next decade, Beijing most likely will field radar, ocean surveillance, and high-resolution photoreconnaissance satellites. In the interim, China probably will rely on commercial satellite imagery to supplement existing coverage.

Navigation and Timing. China has launched five BeiDou satellites with an accuracy of 20 meters over China and surrounding areas. China also uses GPS and GLONASS navigation satellite systems, and has invested in the EU's Galileo navigation system. However, the role of non-European countries in Galileo currently is unsettled, as the Europeans are focusing on internal funding issues.

Manned Space and Lunar Programs. In October 2005, China completed its second manned space mission and Chinese astronauts conducted their first experiments in space. In October 2007, China launched its first lunar orbiter, the Chang'e 1. Press reports indicate China will perform its first space walk in 2008, and rendezvous and docking in 2009-2012. China's goal is to have a manned space station and conduct a lunar landing, both by 2020.

Communications. China increasingly uses satellites, including some obtained from foreign providers, like INTELSAT and INMARSAT, for communications, may be developing a system of data relay satellites to support global coverage, and has reportedly acquired mobile data reception equipment that could support rapid data transmission to deployed military forces.

Small Satellites. Since 2000, China has launched a number of small satellites, including oceanographic research, imagery, and environmental research satellites. China has also established dedicated small satellite design and production facilities, and is developing microsatellites – weighing less than 100 kilograms – for remote sensing, and networks of imagery and radar satellites. These developments could allow for a rapid reconstitution or expansion of China's satellite force in the event of any disruption in coverage, given an adequate supply of boosters. Beijing's efforts to develop small, rapid-reaction space launch vehicles currently appears to be stalled.

Anti-Satellite (ASAT) Weapons. In January 2007, China successfully tested a direct-ascent ASAT missile against a PRC weather satellite, demonstrating its ability to attack satellites in low-Earth orbit. The direct-ascent ASAT system is one component of a multi-dimensional program to limit or prevent the use of space-based assets by its potential adversaries during times of crisis or conflict.

In a PLA National Defense University book, *Joint*

Space War Campaigns (2005), author Colonel Yuan Zelu writes:

> *[The] goal of a space shock and awe strike is [to] deter the enemy, not to provoke the enemy into combat. For this reason, the objectives selected for strike must be few and precise . . .[for example] on important information sources, command and control centers, communications hubs, and other objectives. This will shake the structure of the opponent's operational system of organization and will create huge psychological impact on the opponent's policymakers.*

China's nuclear arsenal has long provided Beijing with an inherent ASAT capability; the extent to which China's leaders have thought through the consequences of nuclear use in outer space or of nuclear EMP to degrade terrestrial communications equipment is unclear. UHF-band satellite communications jammers acquired from Ukraine in the late 1990s and probable indigenous systems give China today the capacity to jam common satellite communications bands and GPS receivers. In addition to the direct-ascent ASAT program demonstrated in January 2007, China is developing other technologies and concepts for kinetic and directed-energy (e.g., lasers and radio frequency) weapons for ASAT missions. Citing the requirements of its manned and lunar space programs, China is improving its ability to track and identify satellites – a prerequisite for effective, precise counterspace operations.

Information Warfare. There has been much writing on information warfare among China's military thinkers, who indicate a strong conceptual understanding of its methods and uses. For example, a November 2006 *Liberation Army Daily* commentator argued:

> *[The] mechanism to get the upper hand of the enemy in a war under conditions of informatization finds prominent expression in whether or not we are capable of using various means to obtain information and of ensuring the effective circulation of information; whether or not we are capable of making full use of the permeability, sharable property, and connection of information to realize the organic merging of materials, energy, and information to form a combined fighting strength; [and,] whether or not we are capable of applying effective means to weaken the enemy side's information superiority and lower the operational efficiency of enemy information equipment.*

The PLA is investing in electronic countermeasures, defenses against electronic attack (e.g., electronic and infrared decoys, angle reflectors, and false target generators), and CNO. China's CNO concepts include CNA, computer network exploitation (CNE), and computer network defense (CND). The PLA sees CNO as critical to achieving "electromagnetic dominance" early in a conflict. Although there is no evidence of a formal PLA CNO doctrine, PLA theorists have coined the term "Integrated Network Electronic Warfare" (*wangdian yitizhan* - 网电一体战) to prescribe the use of electronic warfare, CNO, and kinetic strikes to disrupt battlefield network information systems that support an adversary's warfighting and power projection capabilities.

The PLA has established information warfare units to develop viruses to attack enemy computer systems and networks, and tactics and measures to protect friendly computer systems and networks. In 2005, the PLA began to incorporate offensive CNO into its exercises, primarily in first strikes against enemy networks.

Power Projection – Modernization Beyond Taiwan

In a speech at the March 2006 National People's Congress, then-PLA Chief of the General Staff General Liang Guanglie stated that "one must attend to the effective implementation of the historical mission of our forces at this new stage in this new century . . . preparations for a multitude of military hostilities must be done in concrete manner, [and] . . . competence in tackling multiple security threats and accomplishing a diverse range of military missions must be stepped up."

China continues to invest in military programs designed to improve extended-range power projection. Current trends in China's military capabilities are a major factor in changing East Asian military balances, and could provide China with a force capable of prosecuting a range of military operations in Asia – well beyond Taiwan. Given the apparent absence of direct threats from other nations, the purposes to which China's current and future military power will be applied remain unknown. These capabilities will increase Beijing's options for military coercion to press diplomatic advantage, advance interests, or resolve disputes in its favor.

Official documents and the writings of PLA military strategists suggest Beijing is increasingly surveying the strategic landscape beyond Taiwan. Some PLA analysts have explored the geopolitical value of Taiwan in extending China's maritime "defensive" perimeter and improving its ability to influence regional sea lines of communication. For example, the PLA Academy of Military Science text, *Science of Military Strategy* (2000), states:

> *If Taiwan should be alienated from the mainland, not only [would] our natural maritime defense system lose its depth, opening a sea gateway to outside forces, but also a large area of water territory and rich resources of ocean resources would fall into the hands of others.... [O]ur line of foreign trade and transportation which is vital to China's opening up and economic development will be exposed to the surveillance and threats of separatists and enemy forces, and China will forever be locked to the west of the first chain of islands in the West Pacific*.

China's 2006 Defense White Paper similarly raises concerns about resources and transportation links when it states that "security issues related to energy, resources, finance, information, and international shipping routes are mounting." The related desire to protect energy investments in Central Asia and land lines of communication could also provide an incentive for military investment or intervention if instability surfaces in the region. Disagreements that remain with Japan over maritime claims in the East China Sea and with several Southeast Asian claimants to all or parts of the Spratly and Paracel Islands in the South China Sea could lead to renewed tensions in these areas. Instability on the Korean Peninsula likewise could produce a regional crisis in which Beijing would face a choice between diplomatic or military responses.

Analysis of China's weapons acquisitions also suggests China is looking beyond Taiwan as it builds its force. For example, new missile units outfitted with conventional theater-range missiles at various locations in China could be used in a variety of non-Taiwan contingencies. AEW&C and aerial-refueling programs would permit extended air operations into the South China Sea and beyond.

Advanced destroyers and submarines reflect Beijing's desire to protect and advance its maritime interests up to and beyond the second island chain. Potential expeditionary forces (three airborne divisions, two amphibious infantry divisions, two

marine brigades, about seven special operations groups, and one regimental-size reconnaissance element in the Second Artillery) are improving with the introduction of new equipment, better unit-level tactics, and greater coordination of joint operations. Over the long term, improvements in China's C4ISR, including space-based and over-the-horizon sensors, could enable Beijing to identify, track, and target military activities deep into the western Pacific Ocean.

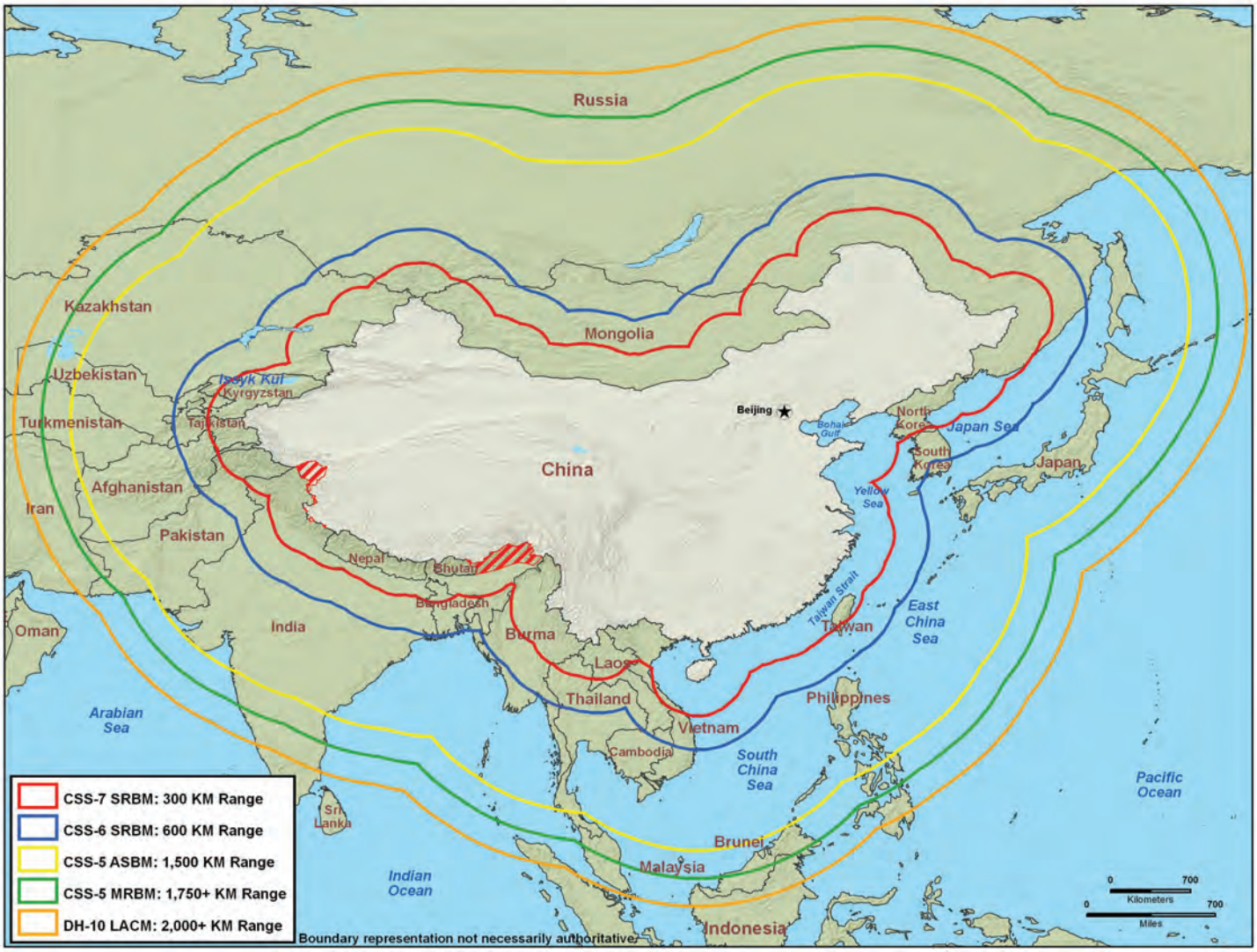

Figure 5. Regional Conventional Missiles. *China currently is capable of employing land-based ballistic and cruise missile forces to support a variety of regional contingencies. Not represented in this map are the sea- and air-based missiles that also contribute to China's strategy.*

Chapter Five
Resources for Force Modernization

"We need to build an innovative system of defense science and technology … that integrates military and civilian scientific-technological resources, and that organically integrates basic research, applied R&D, product designing and manufacturing, and procurement to technologies and products so as to create a good structure under which military and civilian high technologies are shared and mutually transferable."

– President Hu Jintao

Overview

Resources for PLA modernization include domestic defense expenditures, indigenous defense industrial developments, dual-use technologies, and foreign technology acquisition – all of which are driven by the performance of the economy. As China's defense industries develop, the PLA is relying on acquisition of foreign weapons and technology, primarily from Russia, to fill near-term capability gaps. China also harvests spin-offs from foreign direct investment and joint ventures in the civilian sector, technical knowledge and expertise of students returned from abroad, and state-sponsored industrial espionage to increase the level of technologies available to support military research, development, and acquisition. Beijing's long-term goal is to create a wholly indigenous defense industrial sector able to meet the needs of PLA modernization as well as to compete as a top-tier producer in the global arms trade. China is already competitive in some areas, such as communications, with leading international defense firms.

Military Expenditure Trends

On March 4, 2007, Beijing announced a 17.8 percent increase in its military budget to approximately $45 billion. This number was later revised by the PRC State Council to $45.99 billion, a 19.47 percent increase from 2006. The announced 2007 military budget continues a trend of official annual budget increases that surpass growth of the overall economy. Analysis of PRC budget data and International Monetary Fund (IMF) GDP data for the period of 1996 to 2006 show average annual defense budget growth of 11.8 percent (inflation adjusted) compared with average annual GDP growth of 9.2 percent (inflation adjusted).

Of note, China's 2006 Defense White Paper states that between 1990 and 2005 the defense budget grew by an average of 9.6 percent, while China's GDP over the same period grew in constant prices an average of 9.7 percent yearly, according to the IMF. The 1996-2006 data are a more useful measure, however, as they cover the period following the 1995 and 1996 Taiwan Strait crises and incorporate the 9th and 10th Five Year Plan periods (1996-2000 and 2001-2005, respectively), which more fully reflect the post-Persian Gulf War reinvigoration of the PLA modernization drive.

Estimating China's Actual Military Expenditures. China's published defense budget does not include large categories of expenditure, such as expenses for strategic forces, foreign acquisitions, military-related research and development, and China's paramilitary forces. Accurately estimating actual PLA military expenditures is a difficult process due to the lack

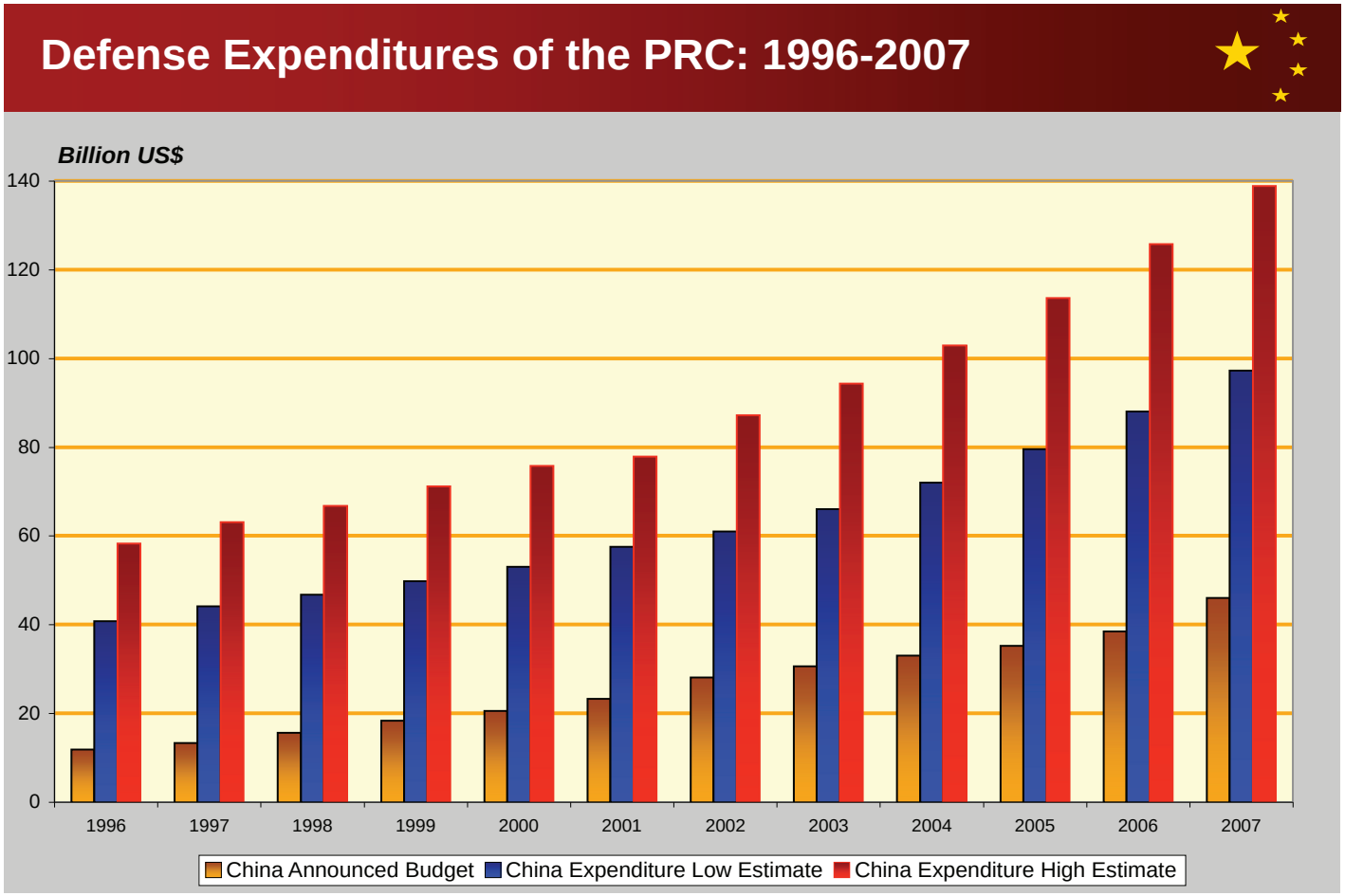

Figure 6. Defense Expenditures of the PRC: 1996-2007. *The graphic depicts China's official defense budget since 1996, and associated DoD estimates of actual defense expenditures. Announced budgets are from State Council announcements during the annual National People's Congress meeting. DoD estimates include projected expenses for strategic forces, foreign acquisitions, military research and development, and paramilitary forces. All figures are in 2007 U.S. dollars*

of accounting transparency and China's incomplete transition from a command economy. As a result, outside estimates of China's military spending vary. The Department of Defense estimates China's total military-related spending for 2007 could be between $97 billion and $139 billion.

Outside the Department of Defense, many think tanks and academic institutions produce a wide range of analyses of PRC military expenditure, applying alternative methodologies to estimate defense-related expenditures and funding streams, and various models to convert these estimates to U.S. dollars. Although experts may disagree about the exact amount of military expenditure in China, most arrive at the same conclusion: Beijing significantly under-reports its defense expenditures.

The United States and other countries have for many years urged China to increase transparency in defense spending. On August 31, 2007, China announced that it will begin submitting an annual report to the UN Secretary General on its military expenditures. China has not disclosed whether it will report based on the UN's Standardized Reporting Form used by the United States, the NATO countries, and many of China's neighbors such as Russia, Japan, Indonesia, Thailand and the Philippines, or the more superficial and less useful Simplified Reporting Form.

Budgetary increases that have supported domestic military production and foreign acquisitions have accelerated modernization in each military service, as evidenced by:

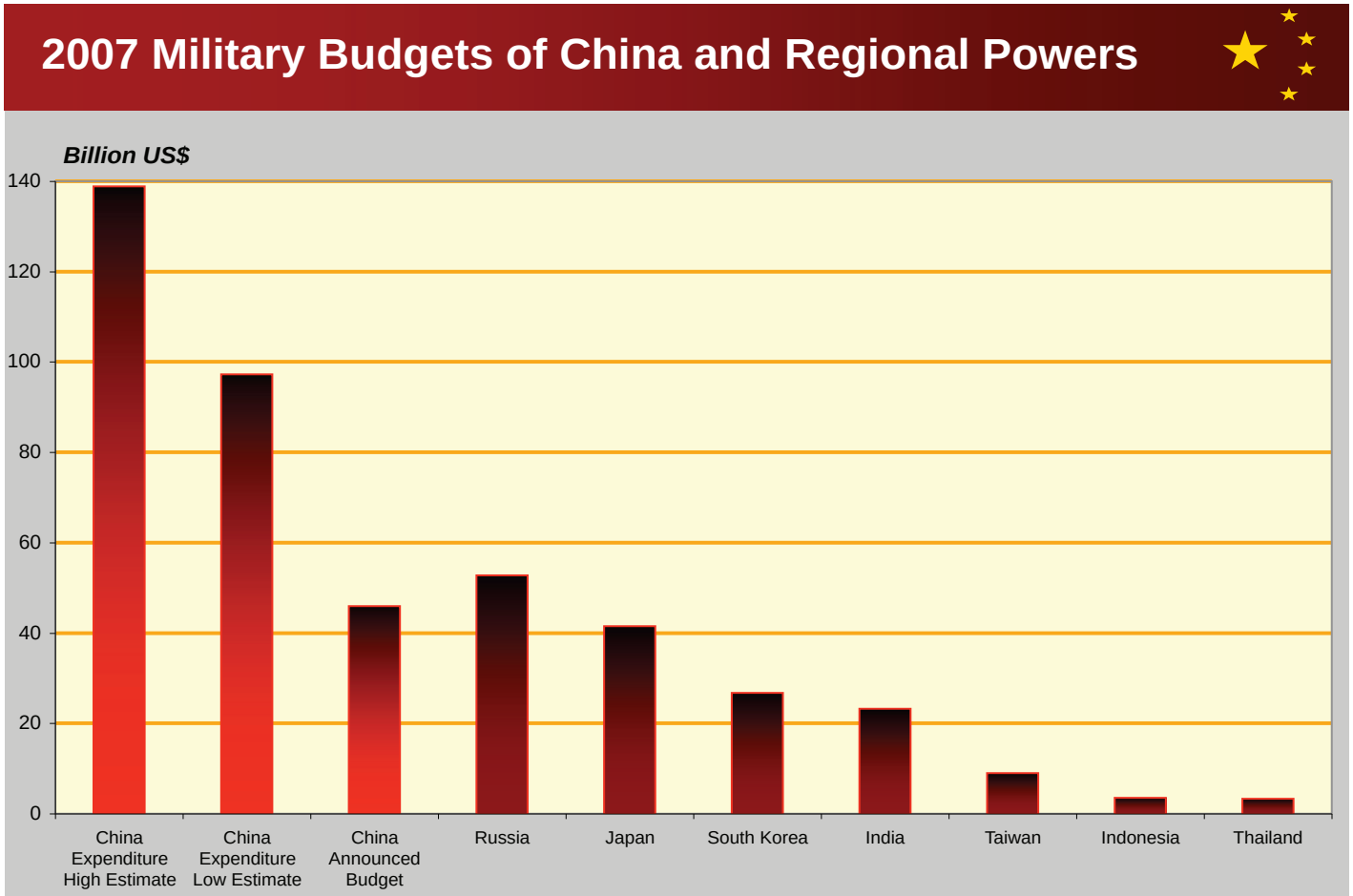

Figure 7. 2007 Military Budgets of China and Regional Powers. *This graphic compares China's official and DoD-estimated military expenditures with that of other regional militaries. Military expenditures are derived from authoritative (e.g., government) sources. All figures are in 2007 U.S. dollars.*

- New generations of survivable nuclear missiles, both land- and sea-based, capable of targeting the United States as well as regional powers;
- Domestic production of advanced short- and medium-range ballistic missiles;
- Advanced attack and ballistic missile submarines and associated weaponry;
- Advanced Russian aircraft and precision weaponry for the air and naval air forces;
- Domestic development of the multi-mission F-10 fighter aircraft;
- Advanced Russian guided missile destroyers and domestic versions of modern guided missile destroyers, frigates, and amphibious landing craft;
- Modern, long-range, mobile air defense systems; and,
- Programs to increase professionalism and quality of life for military personnel.

China's Advancing Defense Industries

Since the late 1990s, China's state-owned defense and defense-related companies have undergone a broad-based transformation. Beijing is attempting to improve business practices, streamline bureaucracy, shorten development timelines, boost quality control, and increase production capacity for military orders.

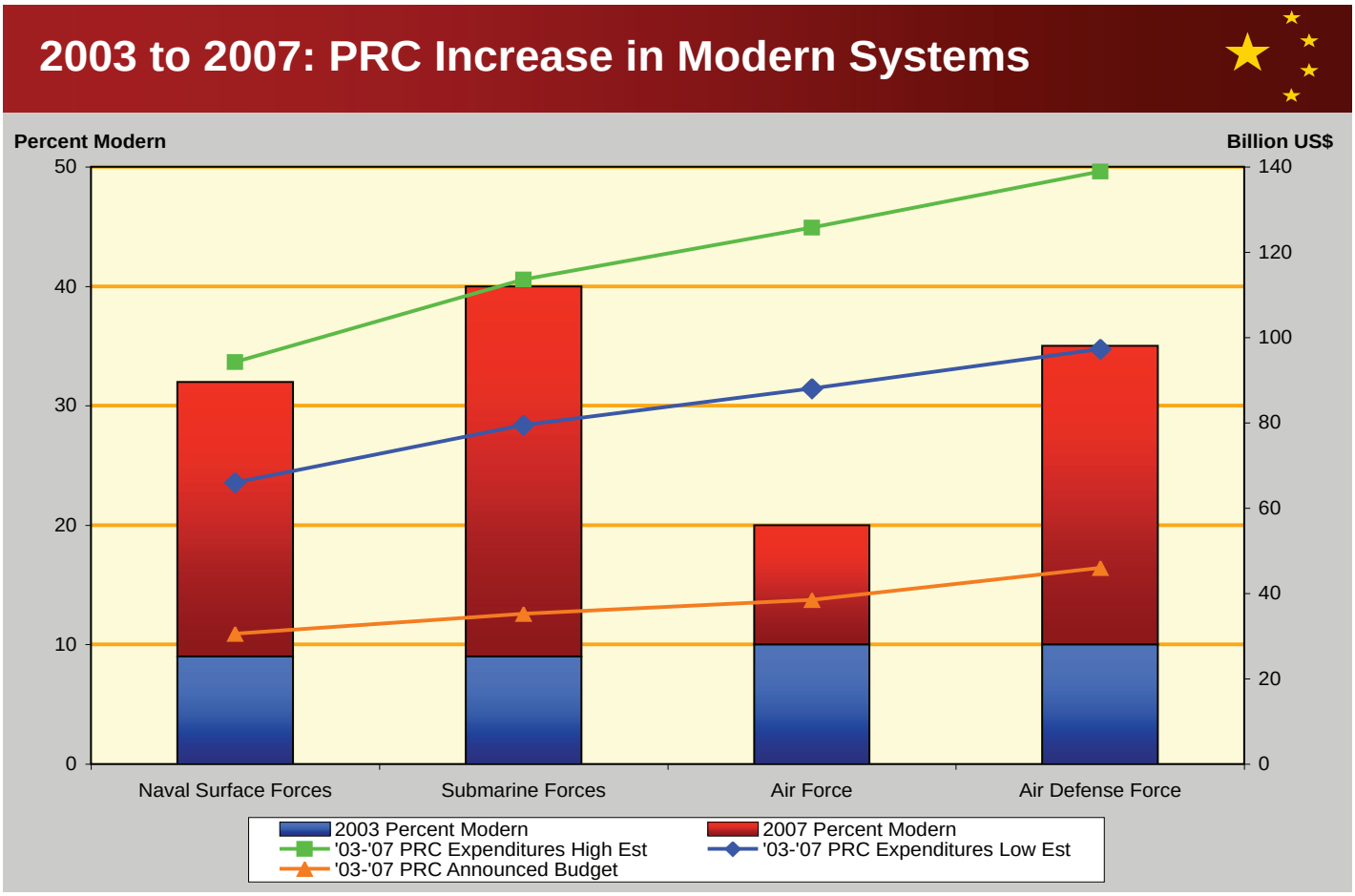

Figure 8. 2003 to 2007: PRC Increase in Modern Systems. *This graphic compares the expansion of modern*[1] *operational systems between 2003 and 2007 (left side in percent) with the rise of China's defense expenditures during the same period (right side in billions of 2007 U.S. dollars).*

Beijing is also emphasizing integration of defense and non-defense sectors to leverage the latest dual-use technologies on the market and the output from China's expanding science and technology base. Augmented by direct acquisition of foreign weapons and technology, these reforms have enabled China to develop and produce advanced weapon systems, such as missiles, fighter aircraft, and warships.

Increasing Efficiency and Capacity. China's 2006 Defense White Paper notes that across the spectrum of defense-related science, technology and industry the output value, added value, and gross revenue in 2005 increased by 24.3 percent, 20.7 percent, and 21.6 percent, respectively, over the previous year. Through at least the 11th Five-Year Plan period (2006-2010), China's defense-related industries will continue to reap benefits from:

- Transfers of technology and skills from foreign joint ventures;
- Increased government funding for research, development, and procurement;
- The manned space flight program, including its vessels and tracking stations;
- Legal and illegal acquisition of foreign military and dual-use technology;

[1] For surface and subsurface forces, "modern" is defined as those platforms that are capable of firing an anti-ship cruise missile. For air forces, "modern" is defined as 4th generation platforms (SU-27, Su-30, F-10) and platforms with 4th generation-like capabilities (FB-7). Modern air defenses are defined as advanced Russian SAMs (SA-10, SA-20), and their PRC indigenous equivalents (HQ-9).

- Increased partnerships with some academic institutions, which improve student recruitment and technical training for existing staff; and

- Overseas training and experience gained by an increasing number of scientists, engineers, and managers returning to China.

Civil-Military Integration. The development of an innovative dual-use technology and industrial base that serves both military and civilian needs is among the highest priorities of China's leadership, as expressed by President Hu Jintao in his political report to the CCP's 17th Party Congress:

> *We must establish sound systems of weapons and equipment research and manufacturing … and combine military efforts with civilian support, build the armed forces through diligence and thrift, and blaze a path of development with Chinese characteristics featuring military and civilian integration.*

China's defense industry has benefited from integration with China's rapidly expanding civilian economy and science and technology sector, particularly those elements that have access to foreign technology. According to the Organization of Economic Cooperation and Development (OECD), China's research and development (R&D) spending has increased at an annual rate of 19 percent since 1995 to reach $30 billion in 2005. The OECD assessed that while China has significantly invested in R&D, human resources, and R&D infrastructure, China still has "a long way to go" to build a mature national innovation system.

Progress within individual defense sectors appears to be linked to the relative integration of each – through China's civilian economy – into the global production and research and development chain. For example, the shipbuilding and defense electronics sectors, benefiting from China's leading role in producing commercial shipping and information technologies, have witnessed the greatest progress over the last decade. Information technology companies, including Huawei, Datang, and Zhongxing maintain close ties to the PLA and collaborate on research and development. Commercial off-the-shelf technologies, such as computer network switches and routers, increasingly provide the PLA with state-of-the-art telecommunications equipment.

In contrast, enterprises producing specialized defense microelectronics with no counterpart in the civilian economy, such as those found in radars and weapons subsystems, have experienced slower progress. The aviation and ordnance sectors have similarly suffered from a lack of spin-on benefits from partnerships between foreign multinational corporations and domestic industry.

Foreign Technology Acquisition. As of October 2007, China had signed arms agreements worth more than $150 million in 2007, up from the approximately $100 million in agreements in 2006. This represents a steep decline from recent years in which China was one of the largest arms purchasers among developing countries. On-going negotiations for several major Russian weapons systems suggest this trend could be short-lived.

Russia remains China's primary weapons and materiel provider, having sold it advanced fighter aircraft, missile systems, submarines, and destroyers. China relies on Russian components for several of its production programs, has purchased production rights to Russian weapon designs, and is negotiating the purchase of several advanced systems. Russia cooperates with China on technical, design, and material support for numerous weapons and space systems.

Logistics Reform

Over the last decade, the PLA has improved its capability to support operations within its borders and along its periphery. Frequent training in mobility operations, improvements to command, control and coordination, professionalization, standardization, and reforms to the warehouse system have strengthened the PLA's overall ability to mobilize and support local military operations. Integration of automated logistics systems into PLA command and control systems, and civil logistics capabilities into military support systems will further improve this capability.

The absence of a true expeditionary logistics capability, however, will limit the PLA's ability to project and sustain military operations at distances from the mainland. First among these is the capability to transport and sustain more than a division of ground troops and equipment by sea or air. The PLA Navy's total amphibious lift capacity has been estimated to be one infantry division of approximately 10,000 troops and equipment at one time. Likewise if all the large transport aircraft in the PLAAF were operational and rigged for parachute drop, only approximately 5,000 parachutists could be delivered in a single lift, much less if equipment is carried at the same time. PLA in-flight refueling capability is limited and can only support small numbers of fighter aircraft. The PLA Navy has gained some proficiency with underway replenishment and sustainment of long distance deployments, but this capability remains limited by the small numbers of support ships.

The PLA's force projection capabilities will remain limited over the next decade as the PLA replaces outdated aircraft and maritime vessels and adjusts operational doctrine to encompass new capabilities. These changes will require tailored logistics equipment and training which will take time and money to develop proficiency. Although foreign produced equipment and maintenance parts, as well as the civil sector, may help to fill near-term gaps, continued reliance on non-organic assets will hinder PLA capabilities to sustain large-scale operations over time.

Israel has previously supplied advanced military technology to China. However, in 2005, Israel began to improve government oversight of exports to China by strengthening controls of military exports, establishing controls on dual-use exports, and increasing the role of the Ministry of Foreign Affairs in export-related decisions. The Israeli Knesset also took a positive step in passing the Defense Export Control Act in July 2007, and adopting associated implementing regulations for this law in December 2007. The United States looks forward to working with the Government of Israel on continued implementation and effective enforcement of these new procedures.

Since 2003 China has been pressuring EU states to lift the embargo on lethal military sales to China that the EU imposed in response to China's 1989 crackdown on Tiananmen Square demonstrators. In their Joint Statement following the 2004 EU-China Summit, European and PRC leaders committed to work towards lifting the embargo. Although the issue officially remains on the EU agenda, there is no consensus among the EU Member States on lifting the embargo any time in the near future.

China continues a systematic effort to obtain dual-use and military technologies from abroad through legal and illegal commercial transactions. Many

dual-use technologies, such as software, integrated circuits, computers, electronics, semiconductors, telecommunications, and information security systems, are vital for the PLA's transformation into an information-based, network-enabled force. Several high-profile legal cases highlight China's efforts to obtain sensitive U.S. technologies (e.g., missile, imaging, semiconductor, and submarine) illegally by targeting well-placed scientists and businessmen. ICE officials have rated China's aggressive and wide-ranging espionage as the leading threat to U.S. technology. Between 2000 and May 2006, ICE initiated more than 400 investigations involving the illicit export of U.S. arms and technologies to China, which led to several convictions of U.S.-based violators of the Export Administration Act and the Arms Export Control Act.

Key areas where China continues to rely most heavily on foreign technologies include guidance and control systems, turbine engine technology, and enabling technologies such as precision machine tools and advanced diagnostic and forensic equipment, applications and processes essential to rapid prototyping, computer-assisted design/manufacturing (CAD/CAM) and reverse-engineering.

Sector-by-Sector Analysis. Progress across sectors of China's defense industry has been uneven. Production trends and resource allocations appear to favor missile and space systems, followed by naval assets (both surface and sub-surface), aircraft, and ground force materiel. In all areas, however, China is increasing the quality of its output and surge production capabilities.

Missile and Space Industry: China develops and produces a broad range of sophisticated ballistic, cruise, air-to-air, and surface-to-air missiles. Many of China's primary SRBM and MRBM final assembly and rocket motor production facilities have received upgrades over the past few years, increasing overall production capacity. In addition to supplying China's military, these complete systems and missile technologies could also be marketed for export by Chinese entities. Surge production for these systems could result in a significantly higher output of SRBMs and perhaps double the number of MRBMs per year. China's space launch vehicle industry is expanding to support satellite launch services and the manned space program.

Naval Industry: China operates a vibrant commercial and naval shipbuilding industry that is globally competitive. China is the third-largest shipbuilder in the world, after Japan and South Korea. Shipyard modernization and expansion has increased China's overall shipbuilding capacity and capabilities, generating corresponding benefits for all types of naval projects, including submarines; surface combatants; naval aviation, including initiatives for aircraft carriers; and amphibious/sealift-airlift assets. China continues to rely on foreign suppliers for some propulsion units and, to a lesser degree, fire control systems, cruise missiles, ship-to-air missiles, torpedo systems, sensors, and other advanced electronics. Modular shipbuilding techniques will allow China to spread production across multiple locations, increasing both efficiency and the number of ships that can be simultaneously produced. China has already demonstrated an ability to surge submarine and amphibious ship production.

Ground Force Industry: China's ground force modernization includes the development and production of new tanks, armored personnel carriers, and artillery pieces. There have been advances in almost every area of PLA ground forces, and China has developed the production capacity to accommodate surge requests. China continues to rely on foreign partners to fill gaps in critical technical capabilities that could limit actual surge output.

Status of Aircraft Carrier Developments

There does not appear to be evidence that China has begun construction of an aircraft carrier. However, evidence in recent years increasingly suggests China's leaders may be moving forward with an aircraft carrier program. For example, beginning in early 2006 and with the release of China's Eleventh Five Year Plan, PRC-owned media reported on statements from high-level government and military officials on China's intent to build aircraft carriers – including a March 2007 statement from the then-minister of China's Commission on Science, Technology and Industry for National Defense (COSTIND). Continued renovations to the former Soviet Kuznetsov-class aircraft carrier suggest China may choose to use the platform for training purposes. Moreover, Russian press has reported Chinese interest in acquiring Russian Su-33 carrier-borne fighters. In October 2006 a Russian press report suggested early-stage negotiations were underway for China to purchase up to 50 such aircraft at a cost of $2.5 billion. However, there has been no announcement of a contract for the aircraft.

Analysts in and out of government project that China could not have an operational, domestically-produced carrier before 2015. However, changes in China's shipbuilding capability and degree of foreign assistance to the program could alter those projections.

Aviation Industry: China's commercial and military aviation industry has advanced from producing direct copies of early Soviet models to developing and producing indigenous aircraft, including improved versions of older aircraft and modern fourth generation fighters. China's commercial aircraft industry has imported high-precision and technologically advanced machine tools, electronics, and other components that can also be used in the production of military aircraft. China's ability to surge production in the aircraft industry will be limited by its reliance on foreign sourcing for aircraft engines and avionics, as well as the availability of skilled personnel and facilities.

Looking to the Future: Trends and Projections

China's *National Medium- and Long-Term Program for Science and Technology Development (2006-2020)*, issued by the State Council in February 2006, seeks to transform China into an "innovation-oriented society by 2020." The plan defines China's science and technology focus in terms of "basic research," "leading-edge technologies," "key fields and priority subjects," and "major special items" – all of which have military applications.

Basic Research. As part of a broad effort to expand basic research capabilities, China has identified five areas that have military applications as major strategic needs or science research plans requiring active government involvement and funding: material design and preparation, manufacturing in extreme environmental conditions, aeronautic and astronautic mechanics, information technology development, and nanotechnology research. In this last area, China has gone from virtually no research or funding in nanotechnologies and processes five years ago, to being a close second to the United States in total government investment.

Leading-edge Technologies. China is emphasizing the following technologies for rapid development:

- *Information Technology:* priorities include intelligent perception technologies, *ad hoc* networks, and virtual reality technologies.

- *New Materials:* priorities include smart materials and structures, high-temperature superconducting technologies, and highly efficient energy materials technologies.

- *Advanced Manufacturing:* priorities include extreme manufacturing technologies and intelligent service robots.

- *Advanced Energy Technologies:* priorities include hydrogen energy and fuel cell technologies, alternative fuels, and advanced vehicle technologies.

- *Marine Technologies:* priorities include three-dimensional maritime environmental monitoring technologies, fast, multi-parameter ocean floor survey technologies, and deep-sea operations technologies.

- *Laser and Aerospace Technologies* are also high priorities.

Key Fields and Priority Subjects. China has identified certain industries and technology groups which hold the potential to provide technological breakthroughs, remove technical obstacles across industries, and improve international competitiveness. Specifically, China's defense industries are pursuing advanced manufacturing, information technology, and defense technologies. Examples include radar; counter-space capabilities; secure C4ISR; smart materials; and, low-observable technologies.

Major Special Items. China has also identified 16 "major special items" for which it plans to develop or expand indigenous capabilities. These include: core electronic components; high-end universal chips and operating system software; very-large-scale integrated circuit manufacturing; next-generation broadband wireless mobile communications; high-grade numerically controlled machine tools; large aircraft; high-resolution satellites; manned spaceflight; and, lunar exploration.

Chapter Six
Force Modernization and Security in the Taiwan Strait

"In recent years, the situation of the Taiwan Strait has become increasingly complicated and severe … our army … has stepped up its efforts to prepare for military struggles to safeguard the security and unity of the state."

– General Cao Gangchuan, Minister of Defense

Overview

The security situation in the Taiwan Strait is largely a function of dynamic interaction between the United States, the mainland, and Taiwan. The U.S. Government has made clear that it opposes unilateral changes to the status quo by either side of the Taiwan Strait and supports peaceful resolution of cross-Strait differences in a manner acceptable to the people on both sides of the Taiwan Strait. China's emergence as a global economic force has given it increased diplomatic clout and economic tools to coerce Taiwan without resorting to military force. At the same time, China has utilized some of its growing economy to fund enhanced military capabilities that can be brought to bear directly upon Taiwan. These new capabilities might be coupled with concepts China is developing to coerce Taiwan short of invasion, or to mount an invasion, if necessary. Taiwan, meanwhile, has allowed its defense spending to decline in real terms over the past decade, creating an increased urgency for the Taiwan authorities to make the necessary investments to maintain the island's capability for self-defense. These trends pose challenges to Taiwan's security, which has historically been based upon the inability of the PLA to project power across the 100-nm Taiwan Strait, the natural geographic advantages of island defense, the technological superiority of its own armed forces, and the possibility that the United States might intervene.

In accordance with the Taiwan Relations Act [Public Law 96-8, (1979)], the United States has taken steps to help maintain peace, security, and stability in the Taiwan Strait. In addition to making available defense articles and services to enable Taiwan to maintain a sufficient self-defense capability, the U.S. Department of Defense, through the transformation of the U.S. Armed Forces and global force posture realignments, is maintaining the capacity to resist any effort by Beijing to use force or coercion to dictate the terms of Taiwan's future status.

For its part, Taiwan has taken important steps to improve its joint operations capability, strengthen its officer and non-commissioned officer (NCO) corps, build its war reserve stocks, and improve crisis response capabilities. In June 2007, the Taiwan legislature passed a defense budget of $8.9 billion, which included funding for 12 P-3C maritime patrol aircraft, six Patriot missile system upgrades, three TP-3A airframes for spares, 144 SM-2 naval SAMs and to initiate a feasibility study for the purchase of eight diesel-electric submarines. Additionally, Taiwan approved funding for precision weapons over the next three years to include: 218 AMRAAM air-to-air missiles, 235 Maverick air-to-surface missiles, and 60 Harpoon Block II ASCMs. For 2008, the legislature in December 2007 passed a $10.5 billion budget, a twelve percent increase, including funding for a study that would produce a diesel submarine design to support follow-on production contract bidding. These improvements have, on the whole, reinforced Taiwan's natural defensive advantages in the face of Beijing's continuing military build-up.

Operationalizing PLA Concepts

The PLA's use of military force during a Taiwan contingency, regardless of the specific military course of action engaged, would be shaped by the doctrine and conceptual framework first detailed in Chapters Three and Four of this report. In any such contingency, China faces the dual planning problems of rapidly degrading Taiwan's will to resist while deterring or countering intervention by third parties. Numerous PRC statements describe the United States as the most likely outside power to intervene in a Taiwan Strait crisis, as well as the most difficult military to counter. It therefore is likely that China requires its military planners to assume and address U.S. military intervention in any future Taiwan Strait contingency.

China's Strategy in the Taiwan Strait

Beijing appears prepared to defer unification as long as it believes trends are advancing toward that goal and that the costs of conflict outweigh the benefits. In the near term, Beijing aims to prevent Taiwan from moving toward *de jure* independence while continuing to hold out for a peaceful resolution under a framework that would purportedly provide Taiwan a high degree of autonomy in exchange for its unification with the mainland. China's leaders are pursuing this policy through a coercive strategy that integrates political, economic, cultural, legal, diplomatic, and military instruments of power.

Although Beijing professes a desire for peaceful resolution as its preferred outcome, the PLA's ongoing deployment of short range ballistic missiles, enhanced amphibious warfare capabilities, and modern, long-range anti-air systems opposite Taiwan are reminders of Beijing's unwillingness to renounce the use of force.

The circumstances in which the mainland has historically warned it would use force against the island are not fixed and have evolved over time in response to Taiwan's declarations and actions relating to its political status, changes in PLA capabilities, and Beijing's view of other countries' relations with Taiwan. These circumstances, or "red lines," have included: a formal declaration of Taiwan independence; undefined moves "toward independence"; foreign intervention in Taiwan's internal affairs; indefinite delays in the resumption of cross-Strait dialogue on unification; Taiwan's acquisition of nuclear weapons; and, internal unrest on Taiwan. Article 8 of the March 2005 "Anti-Secession Law" states that Beijing would resort to "non-peaceful means" if "secessionist forces . . . cause the fact of Taiwan's secession from China," if "major incidents entailing Taiwan's secession" occur, or if "possibilities for peaceful reunification" are exhausted.

The ambiguity of these "red-lines" appears deliberate, allowing Beijing the flexibility to determine the nature, timing, and form of its response. Added to this atmosphere of ambiguity are political factors internal to the regime in Beijing that might affect its decision-making but are opaque to outsiders.

Beijing's Courses of Action Against Taiwan

The PLA is capable of pursuing increasingly sophisticated military courses of action against Taiwan. Some analysts hold that Beijing first would pursue a measured, judicious, and deliberate approach characterized by signaling its readiness to use force in an attempt to coerce Taiwan, followed by a deliberate buildup of force, which would optimize speed of engagement over strategic deception. Others assess that the more likely course of action would be for China to sacrifice deliberate preparations in favor of strategic surprise to force a

Figure 9. Taiwan Strait SAM and SRBM Coverage. *This map depicts notional coverage based on the range of the Russian-designed SA-20 PMU2 SAM system, the CSS-6 and CSS-7 SRBMs. Actual coverage would be non-contiguous and dependent upon precise deployment sites. If deployed near the Taiwan Strait, the PMU2's extended range provides the PLA's SAM force with an offensive capability against Taiwan aircraft.*

rapid military and/or political resolution before the United States or other countries could respond. If a quick resolution is not possible, Beijing would seek to deter potential U.S. intervention; or, failing that, delay such intervention, seek to defeat it in an asymmetric, limited, or quick war, or fight to a standstill and pursue a political settlement after a protracted conflict.

Limited Force or "No War" Options. China might use a variety of lethal, punitive, or disruptive military actions in a limited campaign against Taiwan, likely in conjunction with overt and clandestine economic and political activities. Such a campaign could include CNA against Taiwan's political, military, and economic infrastructure to target the Taiwan people's confidence in their leadership. Similarly, PLA special operations forces infiltrated into Taiwan could conduct economic, political, or military sabotage or attacks against leadership targets.

Air and Missile Campaign. Limited SRBM attacks and precision strikes against air defense systems, including air bases, radar sites, missiles, space assets, and communications facilities could support a campaign to degrade Taiwan's defenses, neutralize Taiwan's military and political leadership, and possibly break the Taiwan people's will to fight.

Maritime Quarantine or Blockade. Beijing could declare that ships en route to Taiwan ports must stop in mainland ports for safety inspections prior to transiting on to Taiwan. It could also attempt the equivalent of a blockade by declaring exercise or

Factors of Deterrence

China is deterred on multiple levels from taking military action against Taiwan. First, China does not yet possess the military capability to accomplish with confidence its political objectives on the island, particularly when confronted with the prospect of U.S. intervention. Moreover, an insurgency directed against the PRC presence could tie up PLA forces for years. A military conflict in the Taiwan Strait would also affect the interests of Japan and other nations in the region in ensuring a peaceful resolution of the cross-Strait dispute.

Beijing's calculus would also have to factor in the potential political and economic repercussions of military conflict with Taiwan. China's leaders recognize that a war could severely retard economic development. Taiwan is China's single largest source of foreign direct investment, and an extended campaign would wreck Taiwan's economic infrastructure, leading to high reconstruction costs. International sanctions could further damage Beijing's economic development. A conflict would also severely damage the image that Beijing has sought to project in the post-Tiananmen years and would taint Beijing's hosting of the 2008 Olympics. A conflict could also trigger domestic unrest on the mainland, a contingency that Beijing appears to have factored into its planning. Finally, China's leaders recognize that a conflict over Taiwan involving the United States would give rise to a long-term hostile relationship between the two nations – a result that would not be in China's interests.

missile closure areas in approaches to ports with the effect of closing port access and diverting merchant traffic – as occurred during the 1995-96 missile firings and live-fire exercises.

Although a traditional maritime quarantine or blockade would have greater impact on Taiwan, it would also tax PLA Navy capabilities. PLA doctrinal writings describe potential lower cost solutions: air blockades, missile attacks, and mining or otherwise obstructing harbors and approaches to achieve the desired outcome at lower cost. Chinese elites could underestimate the degree to which any attempt to limit maritime traffic to and from Taiwan would trigger countervailing international pressure and risk military escalation.

Amphibious Invasion. China's Joint Island Landing Campaign envisions a complex operation relying on interlocking, supporting, subordinate campaigns for logistics, electronic warfare, and air and naval support – all coordinated in space and time – to break through or circumvent shore defenses, establish and build a beachhead, transport personnel and materiel to designated landing sites, and then launch an attack to split, seize, and occupy key targets and/or the entire island.

The PLA currently is capable of accomplishing various amphibious operations short of a full-scale invasion of Taiwan. With few overt military preparations beyond seasonally routine amphibious training, China could launch an invasion of a small Taiwan-held island such as Pratas or Itu Aba. Such a limited invasion of a lightly defended island could demonstrate military capability and political resolve, would achieve tangible territorial gain, and could be portrayed as showing some measure of restraint. However, such an operation includes significant – if not prohibitive – political risk as it could galvanize the Taiwan populace and generate international opposition.

A PLA invasion of a medium-sized defended offshore island such as Mazu or Jinmen, while within China's capabilities, would involve logistic and military preparation well beyond routine training.

Large-scale amphibious invasion is one of the most complicated and logistics-intensive, and therefore difficult, military maneuvers. Success depends upon air and sea supremacy in the vicinity of the operation, rapid buildup of supplies and sustainment on shore, and an uninterrupted flow of support thereafter. An invasion of Taiwan would strain the capabilities of China's untested armed forces and would almost certainly invite international intervention. These stresses, combined with the combat attrition of China's forces, the complex tasks of urban warfare and counterinsurgency – assuming a successful landing and breakout – make an amphibious invasion of Taiwan a significant political and military risk for China's leaders. Modest targeted investments by Taiwan to harden infrastructure and strengthen defensive capabilities could have measurable effects on decreasing Beijing's ability to achieve its objectives.

Special Topic:
Human Capital in PLA Force Modernization

… In one to two decades, the PLA will possess a contingent of command officers capable of directing informatized wars and of building informatized armed forces, a contingent of staff officers proficient in planning armed forces building and military operations, a contingent of scientists capable of planning and organizing the innovative development of weaponry and equipment and the exploration of key technologies, a contingent of technical specialists with thorough knowledge of new- and high-tech weaponry performance, and a contingent of NCOs with expertise in using weapons and equipment at hand.

– China's National Defense in 2004

Overview

The PLA's ongoing military reforms emphasize building a qualified officer and NCO corps. Many of the PLA's investments in human capital are described in the 2004 Defense White Paper as elements of the "Strategic Project for Talented People," which focuses on personnel management, education, and training reforms. The 2006 Defense White Paper reiterated the importance of training and educational reforms in addition to improving morale and welfare in the military. Improvements in the quality of personnel will continue to parallel broader force structure, doctrine, and training reforms across the PLA as it seeks to build a force able to fight and win "local wars under conditions of informatization."

Emphasizing Reform

China is attempting to transform its military from a force dependent upon mass to a streamlined information-based military with highly-qualified officers and soldiers. To meet these new requirements, the PLA has implemented programs to rejuvenate its officer corps, enhance professional military education, reform its NCO program, establish new guidelines for training and exercises, and improve the quality of life for its officers and soldiers. While the CMC began discussing the implementation of human capital programs almost 10 years ago, improvements in the PLA personnel system have only recently become evident.

Guidance identified in recent Defense White Papers reflects the PLA's focus since the late 1990s on increased integration of domestic and foreign training as well as of military and civilian education to support defense needs. The PLA has also begun focusing more attention on morale and welfare within its officer and NCO corps, and has implemented a series of measures to strengthen and modernize its personnel system, to include reforms to streamline the force, improve quality of life, strengthen political work, increase the education levels of members, and address corruption.

Development of NCOs. In 2005, the CMC approved the "Opinions on Strengthening the Noncommissioned Officer Corps," which stipulated that as of 2005 candidates for the NCO corps must at least have a high school education, specialized skills, and must take continuing education and training courses. Some of the NCOs will also take over technical and administrative positions customarily held by officers, within the PLA.

Conscription in the PRC

The system of conscription used by the PLA differs from Western practices. Instead of a general requirement of service for citizens of a certain age, the PLA's conscription system functions more as a "levy," in which the PLA establishes the number of conscripts needed, which produces quotas that are imposed on local governments which are charged with providing a set number of soldiers or sailors. If the number of volunteers fails to meet quota despite efforts to cajole or convince candidates, local government officials may compel unwilling individuals to enter service. China does not release data on what share of recruits are compelled rather than volunteers. Annual quota numbers for both the PLA and PAP are estimated to be 500,000. The vast majority of NCOs come from conscripts who then elect to continue service in the PLA.

Revisions in the NCO corps structure are intended to compensate for the recent decision to decrease the length of conscription service to two years for all services, and will replace the earlier system which had allowed conscripts to voluntarily extend their service obligation. Enlisted personnel can now potentially serve for up to 30 years, which would establish a continuously available core of soldiers from which the PLA could draw expertise and experience.

Officer Accession & Development. To create a professional and technically proficient officer corps, the PLA is reforming its officer accession and promotion standards, areas historically prone to corruption. Bribery and nepotism not only breed discontent, but can lead to the promotion of unqualified officers. China's 2006 Defense White Paper highlights PLA efforts to reform the evaluation, selection, and appointment process for commanding officers. These reforms are likely intended to increase professionalism, establish standard practices, and decrease corruption-based promotion.

Expanding Education. China's rapid military build-up has necessitated a parallel effort to improve the education and training of its officers and soldiers responsible for operating its sophisticated equipment. Continued education through NCO schools and academies as well as unit training and distance learning have also been implemented, and night schools in barracks have grown rapidly. NCO education will take time to develop as many of the NCOs were previously conscripts with at most an 8th grade education. PLA reforms in education are underway to improve the computer-based military training, and the PLA has built virtual laboratories, digital libraries, and digital campuses.

China has expressed concerns that low education levels in the PLA negatively affect its operating capability and professionalism. The CMC-directed program "Strategic Project for Talented People" that began in 2003 is an attempt to develop a well-educated and technically capable officer corps by 2020. The project aims to train and retain highly qualified individuals from the military academies as well as to attract graduates of civilian universities. To do this, the PLA is implementing improved training programs, increasing cooperation with civilian universities, and increasing military pay to be more competitive with private sector salaries.

In addition to recruiting from the civilian sector, the PLA is attempting to supplement modernization and reforms of the curricula in its professional military education system by organizing programs for continuing education at civilian universities. In 2007, a representative from the General Political

Department's personnel department stated that, "more than 1,000 officers are studying for doctorate or master's degrees in top-notch universities." Although this number may seem insignificant compared to the overall size of the PLA, the program's potential for growth when coupled with civilian graduate recruitment, is noteworthy.

Realistic Training. An equally important aspect of the PLA's modernization is enhancing the realism and quality of military training. During the Army-Wide Military Training Conference in 2006, the CMC announced training would be more robust and information-intensive to better prepare the PLA to face technologically advanced adversaries.

The PLA General Staff Department (GSD) 2007 training guidelines indicate the PLA expects training scenarios to resemble actual combat conditions as closely as possible. The PLA is attempting to enhance the level of realism by incorporating opposing forces into its exercises and, in some cases, by designing training that compels officers to deviate from the scripted exercise plan. The PLA is also conducting more joint service exercises. Although these efforts tend to be based more on de-confliction than truly joint operations, they do signify that the PLA is attempting to prepare its officers and soldiers for the demands of the future battlefield. In addition, the PLA is utilizing simulators to increase training time and conducting more command post exercises to improve its officers' planning and decision-making skills.

Quality of Life. China's defense expenditures reflect in part increased salaries for military personnel and improved living conditions. The PLA has also focused on quality of life in the barracks, including improving the nutritional quality of service members' meals, providing new uniforms and equipment, constructing more ecologically friendly barracks, and sustaining remote areas with better medical support. In addition, the PLA has made improvements in its benefits program, which includes insurance, medical needs, housing, and increasing pensions for retired officers.

Civilian Personnel. The PLA has focused on developing a modernized civilian personnel recruitment system, giving priority to the recruitment and retention of science and technology professionals and other technical experts. The PLA has also implemented an incentive mechanism to reward professional skill and performance, including budget increases for the employment of contract civilians. Early promotions, honorary medals, and extended leave programs have also been created for those individuals who make significant contributions to their field.

Streamlining the Force. As part of the effort to streamline the forces, the PLA has reduced the overall officer corps while increasing the number of NCOs and contract civilians. The PLA has also streamlined the educational system by cutting departments and closing some training organizations, while adjusting headquarters and regional command posts.

Political Work. The PLA places priority on political work, particularly regarding education in its historical missions, combined with a "combat spirit" along with the concepts of "honor and disgrace." The PLA has emphasized improving the competence of political instructors and discipline within the force for accomplishing PLA tasks. Expected wartime tasks of the PLA's political work system are not well understood among outside observers.

Addressing Corruption. The PLA does not publish specific data on corruption, but claims to target corrupt activity aggressively. The PLA claims that its audits during the Tenth Five-Year Plan (2001-2005) saved the PLA $840 million, some of which probably resulted from corruption investigations. Of the

approximately 1,000 officers at regiment-level and above audited in 2004, 5.2 percent were determined to have unspecified irregularities. According to PRC literature, the majority of these missing funds are attributed to unauthorized contracts and projects. Another major source of corruption is bribery for advancement. These problems probably contributed to the strengthening of the PLA's audit program for the Eleventh Five-Year Plan (2006-2010), with which the PLA intends to audit 4,000 officers under an "anti-graft" campaign. Other official investigations range from corruption in the selection of noncommissioned officers, to construction project bidding and weapons procurement.

Looking to the Future

China's reforms are intended to satisfy the PLA's need to staff the armed forces with competent officers and NCOs better able to use the modern equipment, weapon systems, and platforms being developed and acquired. A significant portion of the reforms focus on developing a modernized recruitment system that targets individuals with skill sets to fill the need for highly competent and qualified individuals. However, the PLA is likely to continue to face several problems as reforms are implemented. For example, the PLA itself acknowledges that military training continues to suffer from units "going through the motions," heavy scripting, and a lack of realism. The PLA will need to address these deficiencies if the human capital reforms are to achieve any long-term improvements across the military.

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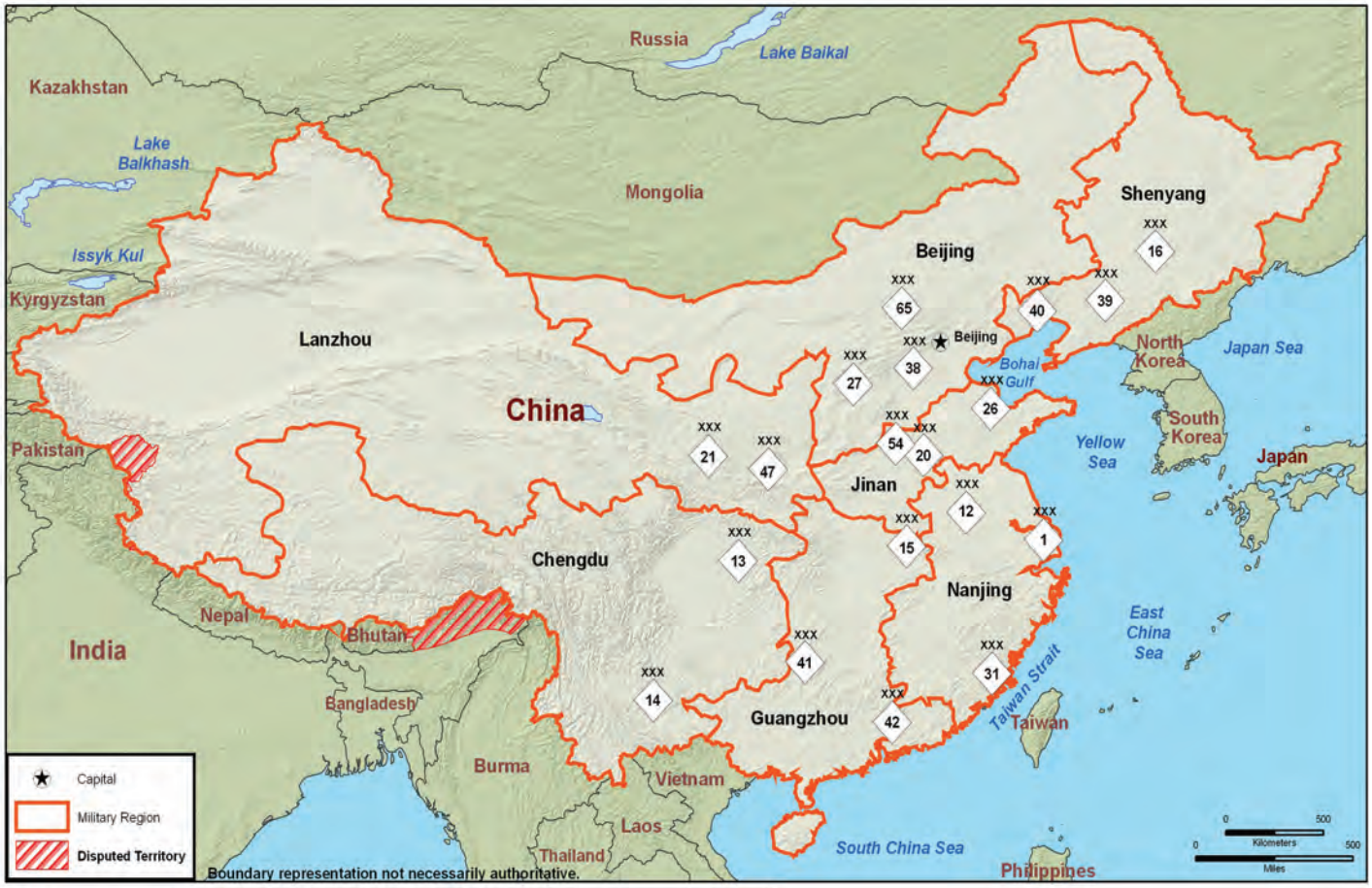
Appendix
China and Taiwan Forces Data

Taiwan Strait Military Balance, Ground Forces			
	China		Taiwan
	Total	Taiwan Strait Area	Total
Personnel (Active)	1.25 million	440,000	130,000
Group Armies	18	8	3
Infantry Divisions	19	8	0
Infantry Brigades	24	11	8
Mechanized Infantry Divisions	4	1	0
Mechanized Infantry Brigades	5	1	3
Armor Divisions	9	4	0
Armor Brigades	8	3	5
Artillery Divisions	2	2	0
Artillery Brigades	17	6	5
Airborne Divisions	3	3	0
Amphibious Divisions	2	2	0
Amphibious Brigades	3	3	3
Tanks	6,700	2,800	1,100
Artillery Pieces	7,400	2,900	1,600

Note: The PLA active ground forces are organized into Group Armies. Infantry, armor, and artillery units are organized into a combination of divisions and brigades deployed throughout the PLA's seven MRs. A significant portion of these assets are deployed in the Taiwan Strait area, specifically the Nanjing, Guangzhou, and Jinan MRs. Taiwan has seven Defense Commands, three of which have Field Armies. Each Army contains an Artillery Command roughly equivalent to a brigade plus.

Figure 10. Taiwan Strait Military Balance, Ground Forces



CHINA: Group Armies (GA) Primary Missions

Shenyang MR
16 GA – Defensive, Offensive CT
39 GA – RRU, Offensive MF
40 GA – Defensive, Offensive CT

Beijing MR
65 GA – Defensive
38 GA – RRU, Offensive MF
27 GA – Defensive

Jinan MR
26 GA – Offensive CT, Defensive
20 GA – Offensive CT, Defensive
54 GA – Offensive MF, Amphibious

Nanjing MR
1 GA – Amphibious, Offensive CT
12 GA – Amphibious, Offensive CT
31 GA – Amphibious, Offensive CT

Guangzhou MR
15 Airborne – RRU, Offensive MF
41 GA – Offensive CT, Amphibious
42 GA – Amphibious

Chengdu MR
13 GA – Defensive, Offensive CT
14 GA – Defensive, Offensive CT

Lanzhou MR
47 GA – Defensive, Offensive CT
21 GA – Offensive MF, Defensive

MR – Military Region
MF – Mobile Force
RRU – Rapid Reaction Unit
CT – Complex Terrain (mountain, urban, jungle, etc.)

Figure 11. Major Ground Force Units

Taiwan Strait Military Balance, Air Forces			
China			Taiwan
Aircraft	**Total**	**Within range of Taiwan**	**Total**
Fighters	1,630	330	390
Bombers/Attack	620	160	0
Transport	450	40	40

Note: The PLAAF and the PLA Navy have approximately 2,250 operational combat aircraft. These consist of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers and trainers are employed for training and R&D. The two air arms also possess approximately 450 transports and over 100 surveillance and reconnaissance aircraft with intelligence, surface search, and airborne early warning capabilities. The majority of PLAAF and PLA Navy aircraft are based in the eastern half of the country. Currently, 490 aircraft could conduct combat operations against Taiwan without refueling. However, this number could be significantly increased through any combination of aircraft forward deployment, decreased ordnance loads, or altered mission profiles.

Figure 12. Taiwan Strait Military Balance, Air Forces

Figure 13. Major Air Force Units

Taiwan Strait Military Balance, Naval Forces			
	China		Taiwan
	Total	East and South Sea Fleets	Total
Destroyers	29	17	4
Frigates	45	36	22
Tank Landing Ships	26	24	12
Medium Landing Ships	28	23	4
Diesel Attack Submarines	54	32	4
Nuclear Attack Submarines	5	1	0
Coastal Patrol (Missile)	45	35	51

Note: The PLA Navy has the largest force of principal combatants, submarines, and amphibious warfare ships in Asia. After years of neglect, the force of missile-armed patrol craft is also growing. In the event of a major Taiwan conflict, the East and South Sea Fleets would be expected to participate in direct action against the Taiwan Navy. The North Sea Fleet would be responsible primarily for protecting Beijing and the northern coast, but could provide mission critical assets to support other fleets.

Figure 14. Taiwan Strait Military Balance, Naval Forces

Figure 15. Major Naval Units

Inventory of PLAAF Surface-to-Air Missile Launchers	
System	**2007**
SA-20 (S-300PMU2)	32
SA-20 (S-300PMU1)	64
SA-10B (S-300PMU)	32
FT-2000*	0
HQ-9 follow-on	0
HQ-9	64
KS-1A	60
HQ-6	30
CSA-1 and variants	400
* Anti-Radiation SAM	

Figure 16. Inventory of PLAAF Surface-to-Air Missile Launchers

China's Missile Force			
China's Missile Inventory	**Ballistic and Cruise**		**Estimated Range**
	Missiles	**Launchers**	
CSS-2	15-20	5-10	3,000+ km
CSS-3	15-20	10-15	5,400+ km
CSS-4	20	20	13,000+ km
DF-31	<10	<10	7,200+ km
DF-31A	<10	<10	11,200+ km
CSS-5	60-80	60	1,750+ km
CSS-6	315-355	90-110	600 km
CSS-7	675-715	120-140	300 km
DH-10	50-250	20-30	2,000+ km
JL-2	Developmental	10-14	7,200+ km
Note: China's Second Artillery maintains at least 5 operational SRBM brigades; an additional two brigades are subordinate to PLA ground forces – one garrisoned in the Nanjing MR and the other in the Guangzhou MR. All of SRBM units are deployed to locations near Taiwan.			

Figure 17. China's Missile Force